Introducing Economics through a Collection of Free Articles by Economists

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Forward

Economists often say that economics is about scarcity. Ironically, there is little scarcity of economics available for free on the internet, but if you really want to learn about economics, where do you begin? This "Introduction to Economics" is simply a compilation of numerous articles from a free encyclopedia called *The Concise Encyclopedia of Economics* that correspond to topics we learn in Personal Finance and Economics. Because they are available free on the internet, I have compiled them into one document for ease of access (rather than having to click a bunch of links separately). The articles are arranged in a way that they correspond to the content within each module and are designed to complement and supplement the lectures for this course.

Unlike other free resources on the internet, where you do not know who has written it or edited it, *The Concise Encyclopedia of Economics* is written by well-known economists (including some Nobel Prize winners) and other renown intellectuals who have a deep knowledge of the subject. The articles are introductory in nature, requiring little economic background from the reader. However, because they are written by economists, some of the language may be technical at times. For the most part, though, they are written for a general audience and contain deep insights about economics (and our world!) in plain language. After reading this volume, I hope that you take away a better understanding about our world and have a thirst for learning more about economics.[*]

Scott Wentland
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Incentives Matter
by Russell Roberts

Towards the end of the 18th century, England began sending convicts to Australia. The transportation was privately provided but publicly funded. A lot of convicts died along the way, from disease due to overcrowding, poor nutrition and little or no medical treatment. Between 1790 and 1792, 12% of the convicts died, to the dismay of many good-hearted English men and women who thought that banishment to Australia shouldn't be a death sentence. On one ship 37% perished.

How might captains be convinced to take better care of their human cargo?

You might lecture the captains on the cruelty of death, and the clergy from their pulpits did just that. You might increase the funds allotted by the state provided to the captains based on the number of passengers they carried. You might urge the captains to spend more of those funds for the care of their passengers. (Some entrepreneurial captains hoarded food and medicine meant for the convicts and sold them upon arrival in Australia.) You might urge the captains to spend the money more carefully. Shame them into better behavior.

But a different approach was tried. The government decided to pay the captains a bonus for each convict that walked off the boat in Australia alive.

This simple change worked like a charm. Mortality fell to virtually zero. In 1793, on the first three boats making the trip to Australia under the new set of incentives, a single convict died out of 322 transported, an amazing improvement.

I don't think the captains got any more compassionate. They were just as greedy and mean-spirited as before. But under the new regulations, they had an incentive to act as if they were compassionate. The change in incentives aligned the self-interest of the captains with the self-interest of the convicts. Convicts were suddenly more valuable alive than dead. The captains responded to the incentives.

Incentives matter. The most famous example in economics is the idea of the demand curve—when something gets more expensive, people buy less of it. When it gets less expensive, people buy more of it.

Some find this bedrock principle of economics hard to accept, based on introspection. "When the price of gas goes up, I still buy gasoline," says the skeptic. Or in its more extreme form: "You need gasoline, so people will keep buying it even when it gets more expensive."

You may still buy gasoline when it gets more expensive. But you will try and find ways to buy less. Not necessarily zero, less.

Thinking about how people respond to the incentive of the higher price opens up a world of possibility beyond the cold turkey of going without. When gasoline gets more expensive, some people car pool, some people drive at slower speeds, some try and combine multiple errands into one trip. Let the price of gasoline rise enough and be expected to stay higher for a long enough period of time and some people will buy a car that gets better mileage, move closer to work or postpone or cancel that order for the pleasure boat that takes $400 to fill its tank when gasoline is $3 a gallon.

Not everyone will do all of these things. Some people will do very few of them. But the overall effect of an increase in the price of gasoline is to discourage the purchase of gasoline.

And as something gets less expensive, we want to have more of it, everything else held equal.

People respond to incentives. But how they respond can be very creative. During a period of hyperinflation in Chile, the story is told that the government's imposition of a maximum price made it unprofitable for suppliers to sell bread—the legal maximum was below the cost of production.

A simple prediction would be that bread would disappear from the shelves. But that prediction underestimated the ingenuity of bakers in responding to incentives. Their first response was to shrink the loaf of bread until the cost of a loaf fell below the legally mandated price. The government then mandated a minimum weight for a loaf of bread. The bakers responded by selling the bread raw, so that the weight of the raw dough could meet the minimum. As inflation climbed, it became unprofitable to sell even the raw dough to meet the minimum. So the enterprising bakers sold the raw dough in bags with water so the minimum weight could be achieved.

Despite a common belief that economics is about money, non-monetary incentives can be just as important as monetary incentives in affecting behavior. Time is one important non-monetary factor in what we do.

Suppose you're a huge Beatles fan. It is announced that through a miracle, the Beatles will be reunited for one farewell concert one month from today. All four Beatles will be appearing in a small intimate theater near your house. You're ecstatic until you hear that the concert is free and that seats for the concert will be handed out on a first-come, first-served basis: the first 250 fans in line be allowed to hear the Beatles.

The concert isn't free. It's going to be very expensive—if you want to attend you're going to have live in front of the theater for a month. Otherwise, you won't be one of the first 250. And it might be dangerous as well. When goods are priced so that people want to buy a lot more than is available, people don't always line up courteously.

Yogi Berra once famously remarked (or at least supposedly remarked) when asked about a popular restaurant, "It's so crowded, nobody goes there any more." Like all good Yogiisms, the statement's absurd but closer examination reveals a hidden truth. What he could have meant was that is was so crowded that a person with a high value of time or a desire for a more relaxed atmosphere had better alternatives. Or to say it more succinctly, "It's so crowded, nobody *who's anybody* goes there anymore." In fact, Yogi may have meant the opposite—it's so crowded, you have to be somebody to get in—the owners keep out the riff-raff.

So money isn't all that matters. Adding time to the list of incentives isn't enough either. People care about their reputation and fame and their conscience. They care about glory and patriotism and love. All of these can act as incentives.

When an economist says that incentives matter, the non-economist sometimes hears only that people respond to prices. But what the economist really means is that holding everything else constant—the amount of fame or shame, glory or humiliation—and increase the monetary reward, and people will do more of it. Lower the monetary reward while holding those non-monetary factors constant and people will do less of it.

Economists often focus on monetary incentives because they are observable and usually easier to change than non-monetary incentives. An economist will say that when the income of doctors goes up, more people will want to be doctors. People often misunderstand this statement to imply that doctors are motivated by money rather than non-monetary motives to be doctors. But all it means is that holding the non-monetary satisfactions of medicine constant, increasing the monetary satisfaction will make medicine more attractive relative to other professions. If we could measure or stimulate the non-monetary satisfactions of doctors, those factors would be just as relevant as the monetary ones.

The difference between monetary and non-monetary incentives can be seen in the shortage of kidneys available for transplant. It is currently against the law to buy and sell kidneys in the United States. The current supply of kidneys relies on altruism. Thousands of people each year endure the risk of death to donate a kidney to a loved one or a stranger. Others give up their kidneys after death. This willingness to donate is motivated by a desire to help others and that is a powerful incentive. But it is not a sufficiently powerful incentive to create a supply equal to the demand. Thousands die each year waiting for a kidney transplant.

If we want to *increase* the number of kidneys available to patients with failing kidneys, we're back in the situation of the Australian convicts and those tough captains. We need to increase the incentive to provide kidneys. We can exhort people to give up their kidneys—running more public service announcements and trying to convey the satisfactions that come from helping others. But allowing people to buy and sell a kidney legally is more likely to increase the number of kidneys available for transplanting than begging and pleading.

The role of incentives plays a critical role in the way that individuals treat their own property relative to the property of others or communal property. People are more likely to change the oil in their own car relative to a rental car. Private farm plots in the former Soviet Union outperformed communal farms there.

The Pilgrims in Plymouth used communal farming their first winter but then after a dismal harvest that first year, moved to a system where there was a more direct incentive other than guilt and honor. Governor Bradford summed it up in his journal:

"And so assigned to every family a parcel of land, according to the proportion of their number, for that end, only for present use (but made no division for inheritance) and ranged all boys and youth under some family. This had very good success, for it made all hands very industrious, so as much more corn was planted than otherwise would have been by any means the Governor or any other could use, and saved him a great deal of trouble, and gave far better content. The women now went willingly into the field, and took their little ones with them to set corn; which before would allege weakness and inability; whom to have compelled would have been thought great tyranny and oppression."

Not only were all hands more industrious—the incentive to harvest communal corn before it was fully ripe, a problem equivalent to poaching in the case of wildlife, was also eliminated.

Incentives matter. Tangible rewards, monetary or in-kind—as in the case of corn in Plimouth—are very powerful. The focus on monetary incentives creates a straw man—homo economicus, a mercenary who will do anything for a price. I used to tell my students that I would be happy to let them purchase an "A" in my class. The price was the GDP of France. My point was that my price was sufficiently high that it was essentially infinite. But truth be told, I like to think that even an exorbitant bribe would have been unsuccessful.

But even if I would have kept my honor and integrity intact in the face of an enormous bribe, I can imagine a non-monetary price where I would forfeit even my honor. I suspect I would gladly sell a grade or do something else dishonest for much less than the GDP of France if it meant saving the life of one of my children. Properly defined to include non-monetary costs and benefits, perhaps every man really does have his price.

Russell Roberts, "Incentives Matter." June 5, 2006. Library of Economics and Liberty. 13 June 2014. http://www.econlib.org/library/Columns/y2006/Robertsincentives.html

Marginalism
by Steven E. Rhoads

Adam Smith struggled with what came to be called the paradox of "value in use" versus "value in exchange." Water is necessary to existence and of enormous value in use; diamonds are frivolous and clearly not essential. But the price of diamonds—their value in exchange—is far higher than that of water. What perplexed Smith is now rationally explained in the first chapters of every college freshman's introductory economics text. Smith had failed to distinguish between "total" utility and "marginal" utility. The elaboration of this insight transformed economics in the late nineteenth century, and the fruits of the marginalist revolution continue to set the basic framework for contemporary **microeconomics**.

The marginalist explanation is as follows: The total utility or satisfaction of water exceeds that of diamonds. We would all rather do without diamonds than without water. But almost all of us would prefer to win a prize of a diamond rather than an additional bucket of water. To make this last choice, we ask ourselves not whether diamonds or water give more satisfaction in total, but whether one more diamond gives greater additional satisfaction than one more bucket of water. For this marginal utility question, our answer will depend on how much of each we already have. Though the first units of water we consume every month are of enormous value to us, the last units are not. The utility of additional (or marginal) units continues to decrease as we consume more and more.

Economists believe that sensible choice requires comparing marginal utilities and marginal costs. They also think that people apply the marginalism concept regularly, even if subconsciously, in their private decisions. In southern states, for example, a much lower fraction of people buy snow shovels than in northern states. The reason is that although snow shovels cost about the same from state to state, the marginal benefit of a snow shovel is much higher in northern states. But in discussions of public-policy issues, where most of the benefits and costs do not accrue to the individual making the policy decision (e.g., subsidies for **health care**), the appeal of total utility and intrinsic worth as the basis for decision can mask the insights of marginalism.

Even good answers to certain grand questions give little guidance for rational public policy choices. For example, what is more important, health or recreation? If forced to choose, everyone would find health more important than recreation. But marginalism suggests that our real concern should be with proportion, not rank. Finding health in total to be more important than recreation in total does not imply that all diving boards should be removed from swimming pools just because a few people die in diving accidents. We need to compare the

number of lives saved from fewer diving accidents, that is, the marginal benefit of getting rid of diving boards, with the pleasure given up by getting rid of diving boards, that is, the marginal cost of getting rid of diving boards. Similarly, we clearly want cleaner air and **economic growth**. And we want recreational opportunities in natural settings and in developed ones. But how much more? The answer will depend on the marginal value of these things compared with their marginal cost.

One writer argues that early deaths of the young are our greatest life-saving problem, and therefore the health budget should emphasize preventing the largest killers of the young, such as accidents and suicides. But even if one accepts this writer's values, his policy conclusions do not follow. We may not know how to prevent suicides at reasonable cost, but perhaps a medical breakthrough has made possible a low-cost cure for a disease that is the sixth-leading cause of death among the young. We would then save more lives among the young if we devoted more of our resources to their sixth-largest health problem rather than their first or second. Marginalism thus requires looking at the details—looking at the marginal costs and marginal benefits of particular opportunities.

The marginalist insight also illuminates some weaknesses in the health policy outlook of those who base their position on the idea of medical needs. Because health is an essential need, many think that those with medical complaints should have free and quick access to physicians. When they think of health **demand**, such people think of serious, medically treatable illness. But from the viewpoint of the consumer, at least, a significant portion of demand for medical care gives very small benefits. These benefits are poorly indicated by thinking about total utility (i.e., how important health is).

In studying a number of small groups, scholars have observed the effects of **insurance** policy changes on the amount of health care people demanded. A few actual experiments have also been conducted. One required a group of California Medicaid beneficiaries to pay one dollar for their first two office visits each month, while a similar group continued to receive completely free service. This modest charge reduced office visits by 8 percent, and it seems unlikely that those who stopped going to doctors could not afford the one-dollar charge.

Other studies have found that even small changes in time cost can have an effect. For example, when the health facility at one college was moved so that it took twenty minutes rather than five to ten to walk there, student visits fell by nearly 40 percent. Similarly, a 10 percent increase in the travel time to outpatient clinics among a low-income urban group caused an estimated 10 percent decrease in demand for visits to physicians. Whether the health services forgone in these cases were necessary remains an open question, but surely the potential patients did not act as if they had no option other than to obtain care.

Marginalism also leads one to question the old maxim that anything worth doing at all is worth doing well. Nobel laureate **James Buchanan** suggested that an economist can be distinguished from a noneconomist by his reaction to that statement. Another economist actually polled a group of his fellows to judge their agreement or disagreement with this and four other maxims. "Anything worth doing . . ." was by far the least popular, with 74 percent of respondents disagreeing. A careful weighing of marginal cost implies that we should use well the money we devote to a task, but we should rarely do as much as interested professionals think necessary.

These examples apply marginalism to government expenditures directed at specific policy areas such as health care. The tax side of the budgetary equation also calls for the concept. Marginalism reminds us that when contemplating the effect of tax rates on the incentive to work, we are usually less interested in the average tax rate paid on a family's entire income than in the **marginal tax rate**—the proportion of added (marginal) income that the husband or wife will pay in taxes if either works a little more. Similarly, when considering the effect of a tax cut on savings, it reminds us that we should not look at the percentage of a family's total income that is saved but rather at the percentage of any additional income received (in this case from the tax cut). Though the average national saving rate is less than 5 percent, the long-run marginal saving rate is more than double the 5 percent average rate even at the lowest income levels. In the highest income brackets the long-run marginal saving rate has been estimated to be more than 50 percent.

Why Repairmen Earn More Than Child-Care Workers

David R. Henderson

Child-care workers perform important work. The total utility of their work is probably much higher than the total utility of the work performed by workers who repair air conditioners. So why do air-conditioning repairmen earn more than child-care workers? Marginalism has the answer. Suppose there are fewer children and more air conditioners than there used to be. Suppose also that for the same wage there is a surplus of child-care workers and a shortage of people who repair air conditioners. Then the wage cannot be the same. If it were, the only way to get enough air-conditioning repairmen would be to conscript them. So the only peaceful way to get the right number of child-care workers and the right number of air-conditioning workers is to let the market work. This means letting the higher **supply** of child-care workers drive down their wage and the lower supply of air-conditioning repairmen drive up their wage. Although the total utility of work performed by child-care workers exceeds the total utility of work performed by air-conditioning repairmen, the marginal value of the latter's utility exceeds the marginal value of the former's.

Steven E. Rhoads. "Marginalism." The Concise Encyclopedia of Economics.2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Marginalism.html

Free Market
by Murray N. Rothbard

"Free market" is a summary term for an array of exchanges that take place in society. Each exchange is undertaken as a voluntary agreement between two people or between groups of people represented by agents. These two individuals (or agents) exchange two economic goods, either tangible commodities or nontangible services. Thus, when I buy a newspaper from a newsdealer for fifty cents, the newsdealer and I exchange two commodities: I give up fifty cents, and the newsdealer gives up the newspaper. Or if I work for a corporation, I exchange my labor services, in a mutually agreed way, for a monetary salary; here the corporation is represented by a manager (an agent) with the authority to hire.

Both parties undertake the exchange because each expects to gain from it. Also, each will repeat the exchange next time (or refuse to) because his expectation has proved correct (or incorrect) in the recent past. Trade, or exchange, is engaged in precisely because both parties benefit; if they did not expect to gain, they would not agree to the exchange.

This simple reasoning refutes the argument against **free trade** typical of the "mercantilist" period of sixteenth- to eighteenth-century Europe and classically expounded by the famed sixteenth-century French essayist Montaigne. The mercantilists argued that in any trade, one party can benefit only at the expense of the other—that in every transaction there is a winner and a loser, an "exploiter" and an "exploited." We can immediately see the fallacy in this still-popular viewpoint: the willingness and even eagerness to trade means that both parties benefit. In modern game-theory jargon, trade is a win-win situation, a "positive-sum" rather than a "zero-sum" or "negative-sum" game.

How can both parties benefit from an exchange? Each one values the two goods or services differently, and these differences set the scene for an exchange. I, for example, am walking along with money in my pocket but no newspaper; the newsdealer, on the other hand, has plenty of newspapers but is anxious to acquire money. And so, finding each other, we strike a deal.

Two factors determine the terms of any agreement: how much each participant values each good in question, and each participant's bargaining skills. How many cents will exchange for one newspaper, or how many Mickey Mantle baseball cards will swap for a Babe Ruth, depends on all the participants in the newspaper market or the baseball card market—on how much each one values the cards as compared with the other goods he could buy. These terms of exchange, called "prices" (of newspapers in terms of money, or of Babe Ruth cards in terms of

Mickey Mantles), are ultimately determined by how many newspapers, or baseball cards, are available on the market in relation to how favorably buyers evaluate these goods—in shorthand, by the interaction of their **supply** with the **demand** for them.

Given the supply of a good, an increase in its value in the minds of the buyers will raise the demand for the good, more money will be bid for it, and its price will rise. The reverse occurs if the value, and therefore the demand, for the good falls. On the other hand, given the buyers' evaluation, or demand, for a good, if the supply increases, each unit of supply—each baseball card or loaf of bread—will fall in value, and therefore the price of the good will fall. The reverse occurs if the supply of the good decreases.

The market, then, is not simply an array; it is a highly complex, interacting latticework of exchanges. In primitive societies, exchanges are all barter or direct exchange. Two people trade two directly useful goods, such as horses for cows or Mickey Mantles for Babe Ruths. But as a society develops, a step-by-step process of mutual benefit creates a situation in which one or two broadly useful and valuable commodities are chosen on the market as a medium of indirect exchange. This money-commodity, generally but not always gold or silver, is then demanded not only for its own sake, but even more to facilitate a reexchange for another desired commodity. It is much easier to pay steelworkers not in steel bars but in money, with which the workers can then buy whatever they desire. They are willing to accept money because they know from experience and insight that everyone else in the society will also accept that money in payment.

The modern, almost infinite latticework of exchanges, the market, is made possible by the use of money. Each person engages in specialization, or a division of labor, producing what he or she is best at. Production begins with **natural resources**, and then various forms of machines and capital goods, until finally, goods are sold to the consumer. At each stage of production from natural resource to consumer good, money is voluntarily exchanged for capital goods, labor services, and land resources. At each step of the way, terms of exchanges, or prices, are determined by the voluntary interactions of suppliers and demanders. This market is "free" because choices, at each step, are made freely and voluntarily.

The free market and the free price system make goods from around the world available to consumers. The free market also gives the largest possible scope to entrepreneurs, who risk capital to allocate resources so as to satisfy the future desires of the mass of consumers as efficiently as possible. **Saving** and **investment** can then develop capital goods and increase the **productivity** and wages of workers, thereby increasing their standard of living. The free competitive market also rewards and stimulates technological **innovation** that allows the innovator to get a head start in satisfying consumer wants in new and creative ways.

Not only is investment encouraged, but perhaps more important, the price system, and the profit-and-loss incentives of the market, guide capital investment and production into the proper paths. The intricate latticework can mesh and "clear" all markets so that there are no sudden, unforeseen, and inexplicable shortages and surpluses anywhere in the production system.

But exchanges are not necessarily free. Many are coerced. If a robber threatens you with, "Your money or your life," your payment to him is coerced and not voluntary, and he benefits at your expense. It is robbery, not free markets, that actually follows the mercantilist model: the robber benefits at the expense of the coerced. Exploitation occurs not in the free market, but where the coercer exploits his victim. In the long run, coercion is a negative-sum game that leads to reduced production, saving, and investment; a depleted stock of capital; and reduced productivity and living standards for all, perhaps even for the coercers themselves.

Government, in every society, is the only lawful system of coercion. **Taxation** is a coerced exchange, and the heavier the burden of taxation on production, the more likely it is that **economic growth** will falter and decline. Other forms of government coercion (e.g., **price controls** or restrictions that prevent new competitors from entering a market) hamper and cripple market exchanges, while others (prohibitions on deceptive practices, enforcement of contracts) can facilitate voluntary exchanges.

The ultimate in government coercion is **socialism**. Under socialist central planning the socialist planning board lacks a price system for land or capital goods. As even socialists like Robert Heilbroner now admit (see **socialism**), the socialist planning board therefore has no way to calculate prices or costs or to invest capital so that the latticework of production meshes and clears. The experience of the former Soviet Union, where a bumper wheat harvest somehow could not find its way to retail stores, is an instructive example of the impossibility of operating a complex, modern economy in the absence of a free market. There was neither incentive nor means of calculating prices and costs for hopper cars to get to the wheat, for the flour mills to receive and process it, and so on down through the large number of stages needed to reach the ultimate consumer in Moscow or Sverdlovsk. The investment in wheat was almost totally wasted.

Market socialism is, in fact, a contradiction in terms. The fashionable discussion of market socialism often overlooks one crucial aspect of the market: When two goods are exchanged, what is really exchanged is the property titles in those goods. When I buy a newspaper for fifty cents, the seller and I are exchanging property titles: I yield the ownership of the fifty cents and grant it to the newsdealer, and he yields the ownership of the newspaper to me. The exact same process occurs as in buying a house, except that in the case of the newspaper, matters are much more informal and we can avoid the intricate process of deeds, notarized contracts,

agents, attorneys, mortgage brokers, and so on. But the economic nature of the two transactions remains the same.

This means that the key to the existence and flourishing of the free market is a society in which the rights and titles of private property are respected, defended, and kept secure. The key to socialism, on the other hand, is government ownership of the means of production, land, and capital goods. Under socialism, therefore, there can be no market in land or capital goods worthy of the name.

Some critics of the free market argue that **property rights** are in conflict with "human" rights. But the critics fail to realize that in a free-market system, every person has a property right over his own person and his own labor and can make free contracts for those services. Slavery violates the basic property right of the slave over his own body and person, a right that is the groundwork for any person's property rights over nonhuman material objects. What is more, all rights are human rights, whether it is everyone's right to free speech or one individual's property rights in his own home.

A common charge against the free-market society is that it institutes "the law of the jungle," of "dog eat dog," that it spurns human cooperation for **competition** and exalts material success as opposed to spiritual values, philosophy, or leisure activities. On the contrary, the jungle is precisely a society of coercion, theft, and parasitism, a society that demolishes lives and living standards. The peaceful market competition of producers and suppliers is a profoundly cooperative process in which everyone benefits and where everyone's living standard flourishes (compared with what it would be in an unfree society). And the undoubted material success of free societies provides the general affluence that permits us to enjoy an enormous amount of leisure as compared with other societies, and to pursue matters of the spirit. It is the coercive countries with little or no market activity—the notable examples in the last half of the twentieth century were the communist countries—where the grind of daily existence not only impoverishes people materially but also deadens their spirit.

Murray N. Rothbard. "Free Market." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/FreeMarket.html

Demand
by David R. Henderson

One of the most important building blocks of economic analysis is the concept of demand. When economists refer to demand, they usually have in mind not just a single quantity demanded, but a demand curve, which traces the quantity of a good or service that is demanded at successively different prices.

The most famous law in economics, and the one economists are most sure of, is the law of demand. On this law is built almost the whole edifice of economics. The law of demand states that when the price of a good rises, the amount demanded falls, and when the price falls, the amount demanded rises.

Some of the modern evidence supporting the law of demand is from econometric studies which show that, all other things being equal, when the price of a good rises, the amount of it demanded decreases. How do we know that there are no instances in which the amount demanded rises and the price rises? A few instances have been cited, but most have an explanation that takes into account something other than price. Nobel laureate **George Stigler** responded years ago that if any economist found a true counterexample, he would be "assured of immortality, professionally speaking, and rapid promotion" (Stigler 1966, p. 24). And because, wrote Stigler, most economists would like either reward, the fact that no one has come up with an exception to the law of demand shows how rare the exceptions must be. But the reality is that if an economist reported an instance in which consumption of a good rose as its price rose, other economists would assume that some factor other than price caused the increase in demand.

The main reason economists believe so strongly in the law of demand is that it is so plausible, even to noneconomists. Indeed, the law of demand is ingrained in our way of thinking about everyday things. Shoppers buy more strawberries when they are in season and the price is low. This is evidence for the law of demand: only at the lower, in-season price are consumers willing to buy the higher amount available. Similarly, when people learn that frost will strike the orange groves in Florida, they know that the price of orange juice will rise. The price rises in order to reduce the amount demanded to the smaller amount available because of the frost. This is the law of demand. We see the same point every day in countless ways. No one thinks, for example, that the way to sell a house that has been languishing on the market is to raise the asking price. Again, this shows an implicit awareness of the law of demand: the number of potential buyers for any given house varies inversely with the asking price.

Indeed, the law of demand is so ingrained in our way of thinking that it is even part of our language. Think of what we mean by the term "on sale." We do not mean that the seller raised the price. We mean that he or she lowered it in order to increase the amount of goods demanded. Again, the law of demand.

Economists, as is their wont, have struggled to think of exceptions to the law of demand. Marketers have found them. One of the best examples involves a new car wax, which, when it was introduced, faced strong resistance until its price was raised from $.69 to $1.69. The reason, according to economist Thomas Nagle, was that buyers could not judge the wax's quality before purchasing it. Because the quality of this particular product was so important—a bad product could ruin a car's finish—consumers "played it safe by avoiding cheap products that they believed were more likely to be inferior" (Nagle 1987, p. 67).

Many noneconomists are skeptical of the law of demand. A standard example they give of a good whose quantity demanded will not fall when the price increases is water. How, they ask, can people reduce their use of water? But those who come up with that example think of drinking water or household consumption as the only possible uses. Even here, there is room to reduce consumption when the price of water rises. Households can do larger loads of laundry or shower quickly instead of bathe, for example. The main users of water, however, are agriculture and industry. Farmers and manufacturers can substantially alter the amount of water used in production. Farmers, for example, can do so by changing crops or by changing irrigation methods for given crops.

What the skeptics may have in mind is not that people would not cut back their purchases at all when the price of a good increases, but that they might cut back only a little. Economists have considered this thoroughly and have developed a measure of the degree of cutback, which they call the "elasticity of demand." The elasticity of demand is the percentage change in quantity demanded divided by the percentage change in price. The greater the absolute value of this ratio, the greater is the elasticity of demand. When there is a close substitute for one firm's brand, for example, a small percentage increase in that firm's price may lead to a large percentage cut in the amount of the firm's good demanded. In such a case, economists say that the demand for the good is highly elastic. On the other hand, when there are few good substitutes for a firm's product, the firm might be able to raise its price substantially with only a small decrease in the quantity demanded resulting. In such a case, demand is said to be highly inelastic.

Interestingly, though, if a firm is in a position whereby it can increase a price substantially and reduce sales only a little, and if its owners want to maximize **profits**, the firm is well advised to raise the price until it reaches a portion of the demand curve where demand is elastic. Otherwise, the firm is forsaking an increase in revenue that it could have had with no increase

in costs. One important implication of this fact is that the elasticity of demand in a market is a negative test for whether the firms are acting together as a **monopoly**. If, at the existing price, the elasticity of the market demand for the good is less than one, that is, if the demand is inelastic, then the firms are not acting monopolistically. If the elasticity of demand exceeds one—that is, if the demand is elastic—then we do not know whether they are acting monopolistically or not.

It is not just price that affects the quantity demanded. Income affects it too. As real income rises, people buy more of some goods (which economists call "normal goods") and less of others (called "inferior goods"). Urban mass transit and railroad transportation are classic examples of inferior goods. That is why the usage of both of these modes of travel declined so dramatically as postwar incomes were rising and more people could afford automobiles. **Environmental quality** is a normal good, and that is a major reason why Americans have become more concerned about the environment in recent decades.

Another influence on demand is the price of substitutes. When the price of Toyota Camrys rises, all else being equal, the quantity of Camrys demanded falls and the demand for Nissan Maximas, a substitute, rises. Also important is the price of complements, or goods that are used together. When the price of gasoline rises, the demand for cars falls.

David R. Henderson. "Demand." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Demand.html

Supply
by Al Ehrbar

The most basic laws in economics are the law of supply and the law of demand. Indeed, almost every economic event or phenomenon is the product of the interaction of these two laws. The law of supply states that the quantity of a good supplied (i.e., the amount owners or producers offer for sale) rises as the market price rises, and falls as the price falls. Conversely, the law of demand (see **demand**) says that the quantity of a good demanded falls as the price rises, and vice versa. (Economists do not really have a "law" of supply, though they talk and write as though they do.)

One function of markets is to find "equilibrium" prices that balance the supplies of and demands for goods and services. An equilibrium price (also known as a "market-clearing" price) is one at which each producer can sell all he wants to produce and each consumer can buy all he demands. Naturally, producers always would like to charge higher prices. But even if they have no competitors, they are limited by the law of demand: if producers insist on a higher price, consumers will buy fewer units. The law of supply puts a similar limit on consumers. They always would prefer to pay a lower price than the current one. But if they successfully insist on paying less (say, through **price controls**), suppliers will produce less and some demand will go unsatisfied.

Economists often talk of "demand curves" and "supply curves." A demand curve traces the quantity of a good that consumers will buy at various prices. As the price rises, the number of units demanded declines. That is because everyone's resources are finite; as the price of one good rises, consumers buy less of that and, sometimes, more of other goods that now are relatively cheaper. Similarly, a supply curve traces the quantity of a good that sellers will produce at various prices. As the price falls, so does the number of units supplied. Equilibrium is the point at which the demand and supply curves intersect—the single price at which the quantity demanded and the quantity supplied are the same.

Markets in which prices can move freely are always in equilibrium or moving toward it. For example, if the market for a good is already in equilibrium and producers raise prices, consumers will buy fewer units than they did in equilibrium, and fewer units than producers have available for sale. In that case producers have two choices. They can reduce price until supply and demand return to the old equilibrium, or they can cut production until the quantity supplied falls to the lower number of units demanded at the higher price. But they cannot keep the price high and sell as many units as they did before.

Why does the quantity supplied rise as the price rises and fall as the price falls? The reasons really are quite logical. First, consider the case of a company that makes a consumer product. Acting rationally, the company will buy the cheapest materials (not the lowest quality, but the lowest cost for any given level of quality). As production (supply) increases, the company has to buy progressively more expensive (i.e., less efficient) materials or labor, and its costs increase. It charges a higher price to offset its rising unit costs.

Are there any examples of supply curves for which a higher price does not lead to a higher quantity supplied? Economists believe that there is one main possible example, the so-called backward-bending supply curve of labor. Imagine a graph in which the wage rate is on the vertical axis and the quantity of labor supplied is on the horizontal axis. It makes sense that the higher the wage rate, the higher the quantity of labor supplied, because it makes sense that people will be willing to work more when they are paid more. But workers might reach a point at which a higher wage rate causes them to work less because the higher wage makes them wealthier and they use some of that wealth to "buy" more leisure—that is, to work less. Recent evidence suggests that even for labor, a higher wage leads to more hours worked.[1]

Or consider the case of a good whose supply is fixed, such as apartments in a condominium. If prospective buyers suddenly begin offering higher prices for apartments, more owners will be willing to sell and the supply of "available" apartments will rise. But if buyers offer lower prices, some owners will take their apartments off the market and the number of available units will drop. History has witnessed considerable controversy over the prices of goods whose supply is fixed in the short run. Critics of market prices have argued that rising prices for these types of goods serve no economic purpose because they cannot bring forth additional supply, and thus serve merely to enrich the owners of the goods at the expense of the rest of society. This has been the main argument for fixing prices, as the United States did with the price of domestic oil in the 1970s and as New York City has done with apartment rents since World War II (see **rent control**). Economists call the portion of a price that does not influence the amount of a good in existence in the short run an "economic quasi-rent." The vast majority of economists believe that economic rents do serve a useful purpose. Most important, they allocate goods to their highest-valued use. If price is not used to allocate goods among competing claimants, some other device becomes necessary, such as the rationing cards that the U.S. government used to allocate gasoline and other goods during World War II. Economists generally believe that fixing prices will actually reduce both the quantity and the quality of the good in question. In addition, economic rents serve as a signal to bring forth additional supplies in the future and as an incentive for other producers to devise substitutes for the good in question.

Al Ehrbar. "Supply." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Supply.html

Where Do Prices Come From?
Russell Roberts

My three sons, ages seven to twelve, suffer from a chronic condition I've heard described by economist John Baden as *ironitis*—the love of anything made of metal. They are fascinated by cars, trucks, backhoes, tractors and—well, you get the idea. The other day, my middle son suggested that my next car should be a convertible. They're expensive, said his brother and mentioned that the convertible of a particular model was $10,000 more than the more staid version. Why is it more expensive, his brother asked.

A good question. Why are convertibles more expensive than non-convertibles? Why is scotch that's been aged for 21 years more expensive than scotch that's been aged 10? Why are red peppers more expensive than green peppers? Why do Wal-Mart employees earn less than the average worker in the United States? Why is gasoline more expensive in the summer than the winter? Why is gasoline more expensive in Europe than in the United States? Why are roses more expensive on February 14? Why isn't beer more expensive on Super Bowl Sunday? Why are houses in the suburbs of Washington, D.C. more expensive than houses in the suburbs of Richmond, Virginia?

The answers to these questions often turn out to be a little trickier than they first appear. But ignore the answers for now. Just notice that you can ask the questions. There's a certain predictability to prices. An orderliness. It needn't be that way. Prices could be a random jumble, high one day low the next. On some days, movie tickets could cost more than oxford button down shirts, oranges more than a quart of milk. What is the source of that order? Where do prices come from?

The answer at first, seems obvious. The seller sets the price. But if you've ever tried to sell anything, you know that it's not really true. If you want to sell your house, yes, you're free to write whatever number you want on the listing. After all, every house is unique. So you just have to find one person who loves your house, the one who loves the deck you've added or the way you re-did the kitchen or your garden or the hundreds of other things that make a house special. According to this mindset, you can ask a really high price for your house because all you need is one person willing to pay that high price.

But you'll quickly find that if you choose a price that's too high, you won't sell it, even if the person who happens to love your all-purple kitchen happens to walk through the door. That person who loves your house, the one who is willing to pay $500,000, still won't buy it if there's a house that's almost as nice as yours but that's selling for $300,000. As long as the extra value

of your house over the alternative to the potential buyer is less than $200,000, you're cooked. Your house won't sell. People don't pay what they're willing to pay unless they have to. When they have choices, they don't have to. Competition protects the buyer. And it protects the seller. You might be willing to sell your house for $100,000. But you won't have to if there are similar houses selling for $300,000.

Sellers and real estate agents understand a house is in competition with other houses, even ones that aren't as nice as yours and even ones that are nicer. So sellers and real estate agents look at the price of "comparables," houses in the same neighborhood with the same number of bedrooms, roughly the same-sized lot, roughly the same square footage of floor space, roughly the same amount of charm, a subjective but real attribute.

But if the price of your house is set by the prices of comparable houses, then what sets the prices of those comparable houses? The whole thing seems circular. The whole thing's a house of cards! What's holding the housing market together?

One answer is that for a particular good of a particular quality—say, a four bedroom house in a leafy suburb of Washington, D.C. in a good school district on a quiet street on a third of an acre—the price adjusts to equate the amount people want to buy with the amount people want to sell.

Prices adjust to equate how much people want to buy with how much they want to sell.

And if people want to buy more than they did before, prices rise. If people want to sell more than they did before, prices fall.

Supply and demand. Buyers are competing with each other. Sellers are competing with each other.

The prices we observe emerge from this competition.

The simple answer of supply and demand is a strange answer, for it presumes you can talk about a good of a particular quality. In the real world, every good has a unique mix of attributes. Even when two goods are physically identical, they almost always come bundled with differing levels of service attached to them.

It's a strange answer for it presumes you can talk about a single price, "the" price of a 100% cotton no-iron button down dress shirt or a comfortable four-door sedan that gets about 25 miles per gallon or that four bedroom house in the suburbs. In the real world, there are multiple prices for the same good. There are bargains. There are sales. Both buyers and sellers make what appear to be mistakes selling for too little or overpaying.

It's a strange answer because people's desires and situations and income and alternatives are constantly changing, so the amount that people want to buy and sell of something can never be pinned down instantaneously. Even if you can talk about "the" price, it's constantly changing.

It's a strange answer because it seems to require lots of information. Otherwise, how could you know how to set the price if you are the seller or whether to pay the price a seller is asking if you are the buyer?

The strangeness of supply and demand leads some to conclude that it only applies to special cases of a homogeneous good where there are a near-infinite number of sellers and where there is perfect information about the quality of the good and the alternatives and their prices. In this view supply and demand might apply to wheat. Maybe.

The alternative view is that supply and demand has to be unrealistic. Otherwise there's no way to make sense of the myriad transactions that are constantly taking place. A realistic portrait of what happens in the Washington, D.C. housing market would have to chronicle the uniqueness of every transaction. That would not only be impossible but uninformative. What is the relationship between all of these transactions?

Supply and demand is a way to see the relationship that strips away everything except the fact that what people are willing to pay and what they have to pay depends on the alternatives. Supply and demand is a way to organize our thinking about this peculiar thing economists call markets and competition. Let's put it to work without using a graph and see what we can see.

Both Blades of the Scissors

One of the most important virtues of supply and demand is that it forces you to remember what **Alfred Marshall** called both blades of the scissors. With few exceptions, both buyers and sellers play a role in determining prices. That's surprisingly easy to forget. When my son asked why convertibles are so expensive, his brother explained that people really like them, the demand side of the equation. But that can't be the whole story or even most of it. Surely there are many people in colder rainier climates or even too-hot climates where driving a convertible is unpleasant. So why are they expensive? They're more costly to make because of the mechanism that allows the convertible to retract the roof. Convertibles only exist if their price is greater than non-convertibles. If people liked cars without any kind of roof, they'd be cheaper, not more expensive, than cars with roofs.

A similar logic applies to red and green peppers. Why are red peppers consistently more expensive than green peppers? Why should there be any relationship between the two prices? Green peppers are used in a lot of industrial cooking for their intense flavor. Shouldn't they be more expensive? It turns out that a red pepper is a ripe green pepper. A seller always prefers

money today to money tomorrow because money today can be invested in the meanwhile to earn interest. So if green peppers and red peppers sell for the same price, no seller would be willing to supply a red pepper. So red peppers must sell for more. They only exist in the marketplace because some people prefer them to green ones. But if they're going to be available, if sellers are going to be willing to provide them, they're going to have sell for a higher price.

Prices Adjust

Prices adjust. They're not fixed. Supply and demand helps us remember this.

Consider the payroll tax. It's currently structured in the United States to be shared equally between employee and employer. What would happen if all of the tax were paid by the employer? That would seem to benefit employees. But that assumes wages don't change when the legislative burden of the tax changes. But wages are the price of labor. And the price of labor adjusts to equate the amount of labor workers want to sell with the amount that employers want to buy.

Every tax has an impact on both buyers and sellers but the impact isn't described by the legislation. A tax on buyers of labor is going to cause wages to fall. So employees pay part of the tax even if the legislation decrees that half or all of it is on employers. A tax on sellers of cars raises the price of cars. Consumers of cars pay part of the tax in the form of higher prices even if the legislation places all of the tax on the seller.

If legislation were to place the entire payroll tax on employers, then the increased cost to employers would reduce the amount of labor they want to hire. That lowers wages. In fact wages have to fall by the exact reduction in tax to the employees. Similarly, if the tax were to be put entirely on the workers, less labor would be supplied and wages would rise to offset the increase in the tax.

Similarly, increasing taxes on the wealthy does not have the full, intended effect of reducing the gap between the rich and poor. Taxing the wealthy will lead to an increase in wages for high-skilled workers offsetting some or all of the increased tax burden. Mandating benefits for low-wage workers doesn't necessarily achieve the goal of greater equality because the mandated benefits encourage more workers and discourage employers from hiring them. Wages fall, offsetting some or all of the intended increase in well-being the lawmakers and their supporters might have imagined.

Emergence is a different way of seeing

Finally, supply and demand helps us see things in a totally different way. How bizarre it is that partisans credit or blame the president for the average level of wages or inequality in the United States. If wages are rising, the president will brag about all the good jobs the economy is creating. If wages are falling, then the critics of the president fault the president. But the wage level in the United States isn't under the president's control. It's an emergent phenomenon that comes from the choices people make about how much education to get, how many hours to work, and the mix of monetary and non-monetary satisfaction that people choose in various jobs.

The president no more controls wages in the United States than he does the average weight of Americans. He can influence them through various policies that affect the incentives facing workers and employers. But his hand is not on a dial that sets wages any more than he can control how much Americans weigh. As the examples from the previous section show, many of the policies that a president or legislators might propose to improve something, are often offset by market forces.

Available at a price

One of the simplest insights that comes from supply and demand is the *availability* of goods in the marketplace. When people want more of something, the crowd of more enthusiastic buyers rarely exhausts the supply. Prices adjust to equate how much people want to buy with how much people want to sell. So if people suddenly want more of something, it doesn't just disappear. The price rises inducing an increase in what is available. As **Henry George** pointed out:

Here is a difference between the animal and the man. Both the jay-hawk and the man eat chickens, but the more jay-hawks the fewer chickens, while the more men the more chickens. Both the seal and the man eat salmon, but when a seal takes a salmon there is a salmon the less, and were seals to increase past a certain point salmon must diminish; while by placing the spawn of the salmon under favorable conditions man can so increase the number of salmon as more than to make up for all he may take, and thus, no matter how much men may increase, their increase need never outrun the supply of salmon. [***Progress and Poverty*, Book II, Chapter 3**, by Henry George, par. II.III.5.]

Because prices can adjust, the shelves are rarely empty in a market economy. As long as you are willing to pay for it, you can have it. Sometimes, you have to pay a little more. Sometimes, a little less, as circumstances changes. But you can find it. That not only makes life easier for those of us who enjoy salmon, it also means that you can specialize and rely on others for much of what you want, knowing that the market will make it available.

A Caveat

Not all prices are set in what the textbooks call perfectly competitive markets. Supply and demand is a poor tool for predicting precisely the exact level of a price. Any individual transaction may deviate from "the" price because of mistakes or emotions. In many markets, an unusually large seller or buyer can affect the market price in significant ways. But just because a market isn't a textbook example of perfect competition doesn't mean supply and demand can't capture enough of the competition that remains. To take an extreme example, the gasoline market in the United States is full of regulations and amounts of market power that exist in various parts of the supply chain. But there is still competition throughout that market, even if it does not conform to the textbook definitions. And price controls, as the supply and demand model predicts, leads to shortages, lines and reductions in quality. That full story is a topic for another time.

Truck, Barter, and Exchange

Adam Smith talked about man's propensity to truck, barter, and exchange. People are always buying and selling stuff. Always looking for a deal. Always looking for a better deal. Always considering the alternatives. The search for a good deal by both buyers and sellers considering alternatives is what economists call competition. The result is that transactions in a market are not independent of one another.

Where do prices come from? The prices that we observe in the world around us emerge from the interaction between buyers and sellers and their alternatives. How can we capture the strange fact that no transaction takes place in a vacuum? How can we capture the order that emerges from all those transactions?

Supply and demand is a simple and powerful way to describe the ways that transactions across time and space are not independent of one another. It is a powerful way to organize our thinking about the complexity that emerges out of the propensity to truck, barter and exchange, a complexity that is the result of human action but not of human design.

Russell Roberts. "Where Do Prices Come From?." June 4, 2007. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Columns/y2007/Robertsprices.html

Price Controls
by Hugh Rockoff

Governments have been trying to set maximum or minimum prices since ancient times. The Old Testament prohibited interest on loans to fellow Israelites; medieval governments fixed the maximum price of bread; and in recent years, governments in the United States have fixed the price of gasoline, the rent on apartments in New York City, and the wage of unskilled labor, to name a few. At times, governments go beyond fixing specific prices and try to control the general level of prices, as was done in the United States during both world wars and the Korean War, and by the Nixon administration from 1971 to 1973.

The appeal of price controls is understandable. Even though they fail to protect many consumers and hurt others, controls hold out the promise of protecting groups that are particularly hard-pressed to meet price increases. Thus, the prohibition against usury—charging high interest on loans—was intended to protect someone forced to borrow out of desperation; the maximum price for bread was supposed to protect the poor, who depended on bread to survive; and rent controls were supposed to protect those who were renting when the **demand** for apartments exceeded the **supply**, and landlords were preparing to "gouge" their tenants.

Despite the frequent use of price controls, however, and despite their appeal, economists are generally opposed to them, except perhaps for very brief periods during emergencies. In a survey published in 1992, 76.3 percent of the economists surveyed agreed with the statement: "A ceiling on rents reduces the quality and quantity of **housing** available." A further 16.6 percent agreed with qualifications, and only 6.5 percent disagreed. The results were similar when the economists were asked about general controls: only 8.4 percent agreed with the statement: "Wage-price controls are a useful policy option in the control of **inflation**." An additional 17.7 percent agreed with qualifications, but a sizable majority, 73.9 percent, disagreed (Alston et al. 1992, p. 204).

The reason most economists are skeptical about price controls is that they distort the allocation of resources. To paraphrase a remark by **Milton Friedman**, economists may not know much, but they do know how to produce a shortage or surplus. Price ceilings, which prevent prices from exceeding a certain maximum, cause shortages. Price floors, which prohibit prices below a certain minimum, cause surpluses, at least for a time. Suppose that the supply and demand for wheat flour are balanced at the current price, and that the government then fixes a lower maximum price. The supply of flour will decrease, but the demand for it will increase. The result

will be excess demand and empty shelves. Although some consumers will be lucky enough to purchase flour at the lower price, others will be forced to do without.

Because controls prevent the price system from rationing the available supply, some other mechanism must take its place. A queue, once a familiar sight in the controlled economies of Eastern Europe, is one possibility. When the United States set maximum prices for gasoline in 1973 and 1979, dealers sold gas on a first-come-first-served basis, and drivers had to wait in long lines to buy gasoline, receiving in the process a taste of life in the Soviet Union. The true price of gasoline, which included both the cash paid and the time spent waiting in line, was often higher than it would have been if the price had not been controlled. In 1979, for example, the United States fixed the price of gasoline at about $1.00 per gallon. If the market price had been $1.20, a driver who bought ten gallons would apparently have saved $.20 per gallon, or $2.00. But if the driver had to wait in line for thirty minutes to buy gasoline, and if her time was worth $8.00 per hour, the real cost to her was $10.00 for the gas and $4.00 for the time, an overall cost of $1.40 per gallon. Some gasoline, of course, was held for friends, longtime customers, the politically well connected, and those who were willing to pay a little cash on the side.

The incentives to evade controls are ever present, and the forms that evasion can take are limitless. The precise form depends on the nature of the good or service, the organization of the industry, the degree of government enforcement, and so on. One of the simplest forms of evasion is quality deterioration. In the United States during World War II, fat was added to hamburger, candy bars were made smaller and of inferior ingredients, and landlords reduced their maintenance of rent-controlled apartments. The government can attack quality deterioration by issuing specific product standards (hamburger must contain so much lean meat, apartments must be painted once a year, and so on) and by government oversight and enforcement. But this means that the bureaucracy controlling prices tends to get bigger, more intrusive, and more expensive.

Sometimes more subtle forms of evasion arise. One is the tie-in sale. To buy wheat flour at the official price during World War I, consumers were often required to purchase unwanted quantities of rye or potato flour. “Forced up-trading” is another. Consider a manufacturer that produces a lower-quality, lower-priced line sold in large volumes at a small markup, and a higher-priced, higher-quality line sold in small quantities at a high markup. When the government introduces price ceilings and causes a shortage of both lines, the manufacturer may discontinue the lower-priced line, causing the consumer to “trade up” to the higher-priced line. During World War II, the U.S. government made numerous unsuccessful attempts to force clothing manufacturers to continue lower-priced lines.

Not only do producers have an incentive to raise prices, but some consumers also have an incentive to pay them. The result may be payments on the side to distributors (a bribe for the superintendent of a rent-controlled building, for example), or it may be a full-fledged black market in which goods are bought and sold clandestinely. Prices in black markets may be above not only the official price but even the price that would prevail in a **free market**, because the buyers are unusually desperate and because sellers face penalties if their transactions are detected, and this risk is reflected in the price.

The obvious costs of queuing, evasion, and black markets often lead governments to impose some form of rationing. The simplest is a coupon entitling a consumer to buy a fixed quantity of the controlled good. For example, each motorist might receive a coupon permitting the purchase of one set of new tires. Rationing solves some of the shortage problems created by controls. Producers no longer find it easy to divert supplies to the black market since they must have ration tickets to match their production; distributors no longer have as much incentive to accept bribes or demand tie-in purchases; and consumers have a smaller incentive to pay high prices because they are assured a minimum amount. Rationing, as Forrest Capie and Geoffrey Wood (2002) pointed out, increases the integrity and **efficiency** of a system of price controls.

Rationing, however, comes at a cost. The government must undertake the difficult job of adjusting rations to reflect fluctuating supplies and demands and the needs of individual consumers. While an equal ration for each consumer makes sense in a few cases—bread in a city under siege is the classic example—most rationing programs must face the problem that consumer needs vary widely. One solution is to tailor the ration to the needs of individuals: people with a long commute to work can be given a larger ration of gasoline. In World War II, community boards in the United States had the power to issue extra rations to particularly needy individuals. The danger of favoritism and **corruption** in such a scheme, particularly if continued after the spirit of patriotism has begun to erode, is obvious. One way of ameliorating some of the problems created by rationing is to permit a free market in ration tickets. The free exchange of ration tickets has the advantages of providing additional income for consumers who sell their extra tickets and improving the well-being of those who buy. A “white market” in ration tickets, however, does nothing to encourage additional production, an end that can be accomplished by removing price controls. Also, a white market in ration tickets will not necessarily cause the product sold to be moved to the same regions of the country where the tickets are sold. Thus, a white market will not necessarily eliminate regional shortages.

With all of the problems generated by controls, we can well ask why they are ever imposed and why they are sometimes maintained for so long. The answer, in part, is that the public does not always see the links between controls and the problems they create. The elimination of lower-priced lines of merchandise may be interpreted simply as callous disregard for the poor rather

than a consequence of controls. But price controls almost always benefit a subset of consumers who may have a particular claim to public sympathy and who, in any case, have a strong interest in lobbying for controls. Minimum-wage laws may create **unemployment** among the unskilled or drive them into the black market, but **minimum wages** do raise the income of those poor workers who remain employed in regulated markets. Rent controls make it difficult for young people to find an apartment, but they do hold down the rent for those who already have an apartment when controls are instituted (see **rent control**).

General price controls—controls on prices of many goods—are often imposed when the public becomes alarmed that inflation is out of control. In the twentieth century, war has frequently been the occasion for general price controls. Here, the case can be made that controls have a positive psychological benefit that outweighs the costs, at least in the short run. Surging inflation may lead to panic buying, strikes, animosity toward racial or ethnic minorities who are perceived as benefiting from inflation, and so on. Price controls may make a positive contribution by calming these fears, particularly if patriotism can be counted on to limit evasion. This was the limited case for controls made by Frank W. Taussig, a member of the Price Fixing Committee in World War I, in his famous essay "Price-Fixing as seen by a Price-Fixer." A somewhat similar case can be made for removing controls cautiously when suppressed inflation—that is, inflation that the government holds down forcibly by price controls—is significant. Toward the end of World War II, more than fifty leading economists, including friends of the free market such as **Frank H. Knight** and Henry Simons, wrote to the *New York Times* (April 9, 1946, p. 23) calling on Congress to continue controls for another year until supplies and demands were more nearly in equilibrium in order to prevent the inflationary spiral they feared would arise if controls were removed suddenly.

However, most inflation, even in wartime, is due to inflationary monetary and fiscal policies rather than to panic buying. To the extent that wartime controls suppress price increases produced by monetary and fiscal policies, controls only postpone the day of reckoning, converting what would have been a steady inflation into a period of slow inflation followed by more rapid inflation. Also, part of the apparent stability of the price indexes under wartime controls is an illusion. All of the problems with price controls—queuing, evasion, black markets, and rationing—raise the real price of goods to consumers, and these effects are only partly taken into account when the price indexes are computed. When controls are removed, the hidden inflation is unveiled.

Inflation is extremely difficult to contain through general controls, in part because the attempt to limit control to a manageable sector of the economy is usually hopeless. **John Kenneth Galbraith**, in *A Theory of Price Control,* which was based on his experience as deputy administrator of the Office of Price Administration in World War II, argued that the prices of

goods produced by large industrial oligopolists were relatively easy to control. These firms had large numbers of administrators who could be pressed into service—administrators who were willing, moreover, to shift their allegiance from their employers to the government, at least during the war. Galbraith overstated the market power of large firms, most of which were in highly competitive industries. But even if he had been right about these firms' market power, the problem with limiting controls to a particular sector of the economy is that when demand is surging, it tends to shift from the controlled to the uncontrolled sector, forcing prices in the uncontrolled sector to rise even faster than before. Resources follow prices, and supplies tend to rise in the uncontrolled sector at the expense of supplies in the controlled sector. Thus, a government that begins by controlling prices on selected goods tends to end with across-the-board controls. This is what happened in the United States during World War II. The attempt to confine controls to a limited sector of highly concentrated industrial firms simply did not work.

A second problem with general controls is the trade-off between the need to have a simple program generally perceived as fair and the need for sufficient flexibility to maintain efficiency. Creating an appearance of fairness requires holding most prices constant, but efficiency requires making frequent changes. Adjustments of relative prices, however, subject the bureaucracy administering controls to a barrage of lobbying and complaints of unfairness. This conflict was brought out sharply by the American experience in World War II. At first, relative prices were changed frequently on the advice of economists who maintained that this was necessary to eliminate problems in specific markets. However, mounting complaints that the program was unfair and was not stopping inflation led to President Franklin D. Roosevelt's famous "hold-the-line" order, issued in April 1943, that froze most prices. Whatever its defects as economic policy, the hold-the-line order was easy to justify to the public.

The best case for imposing general controls in peacetime turns on the possibility that controls can ease the transition from high to low inflation. If a tight monetary policy is introduced after a long period of inflation, the long-run effect will be for prices and wages to rise more slowly. But in the short run, some prices may continue to rise at the older rate. Wages also may continue to rise because of long-term contracts or because workers fail to appreciate the extent of the change in policy and, therefore, hold out for higher wages than they otherwise would. Rising wages and prices may keep output and employment below their potential. Price and wage controls may limit these temporary costs of disinflation by prohibiting wage increases that are out of line with the new trends in demand and prices. From this viewpoint, restrictive **monetary policy** is the operation that cures inflation, and price and wage controls are the anesthesia that suppresses the pain.

But this best case for price controls is weak. The danger is that the painkiller may be mistaken for the cure. In the eyes of the public, price controls free the monetary authority from

responsibility for inflation. As a result, the pressures on the monetary authority to avoid recession may lead to a continuation or even acceleration of excessive growth in the **money supply**. Something very like this happened in the United States under the controls imposed by President Richard M. Nixon in 1971. Although controls were justified on the grounds that they were being used to "buy time" while more fundamental cures for inflation were put in place, monetary policy continued to be expansionary, perhaps even more so than before.

The study of price controls teaches important lessons about free competitive markets. By examining cases in which controls have prevented the price mechanism from working, we gain a better appreciation of its usual elegance and efficiency. This does not mean that there are no circumstances in which temporary controls may be effective. But a fair reading of economic history shows just how rare those circumstances are.

Hugh Rockoff. "Price Controls." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/PriceControls.html

Human Capital
by Gary S. Becker

To most people, capital means a bank account, a hundred shares of IBM stock, assembly lines, or steel plants in the Chicago area. These are all forms of capital in the sense that they are assets that yield income and other useful outputs over long periods of time.

But such tangible forms of capital are not the only type of capital. Schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty are also capital. That is because they raise earnings, improve health, or add to a person's good habits over much of his lifetime. Therefore, economists regard expenditures on **education**, training, medical care, and so on as investments in human capital. They are called human capital because people cannot be separated from their knowledge, skills, health, or values in the way they can be separated from their financial and physical assets.

Education, training, and health are the most important investments in human capital. Many studies have shown that high school and college education in the United States greatly raise a person's income, even after netting out direct and indirect costs of schooling, and even after adjusting for the fact that people with more education tend to have higher IQs and better-educated, richer parents. Similar evidence covering many years is now available from more than a hundred countries with different cultures and economic systems. The earnings of more-educated people are almost always well above average, although the gains are generally larger in less-developed countries.

Consider the differences in average earnings between college and high school graduates in the United States during the past fifty years. Until the early 1960s, college graduates earned about 45 percent more than high school graduates. In the 1960s, this premium from college education shot up to almost 60 percent, but it fell back in the 1970s to less than 50 percent. The fall during the 1970s led some economists and the media to worry about "overeducated Americans." Indeed, in 1976, Harvard economist Richard Freeman wrote a book titled *The Overeducated American.* This sharp fall in the return to investments caused doubt about whether education and training really do raise **productivity** or simply provide signals ("credentials") about talents and abilities.

But the monetary gains from a college education rose sharply again during the 1980s, to the highest level since the 1930s. Economists Kevin M. Murphy and Finis Welch have shown that the premium on getting a college education in the 1980s was above 65 percent. This premium continued to rise in the 1990s, and in 1997 it was more than 75 percent. Lawyers, accountants,

engineers, and many other professionals experienced especially rapid advances in earnings. The earnings advantage of high school graduates over high school dropouts has also greatly increased. Talk about overeducated Americans has vanished, replaced by concern about whether the United States provides adequate quality and quantity of education and other training.

This concern is justified. Real wage rates of young high school dropouts have fallen by more than 25 percent since the early 1970s. This drop is overstated, though, because the **inflation** measure used to compute real wages overstates the amount of inflation over that time (see **consumer price indexes**). Real wages for high school dropouts stayed constant from 1995 to 2004, which means, given the price index used to adjust them, that these wages have increased somewhat.

Thinking about higher education as an **investment** in human capital helps us understand why the fraction of high school graduates who go to college increases and decreases from time to time. When the benefits of a college degree fell in the 1970s, for example, the fraction of white high school graduates who started college fell—from 51 percent in 1970 to 46 percent in 1975. Many educators expected that enrollments would continue to decline in the 1980s, partly because the number of eighteen-year-olds was declining, but also because college tuition was rising rapidly. They were wrong about whites. The fraction of white high school graduates who entered college rose steadily in the 1980s, reaching 60 percent in 1988, and caused an absolute increase in the number of whites enrolling despite the smaller number of college-aged people. That percentage kept increasing to an all-time high of 67 percent in 1997 and then declined slightly to 64 percent in 2000.

This makes sense. The benefits of a college education, as noted, increased in the 1980s and 1990s. Tuition and fees did rise by about 39 percent from 1980 to 1986, and by 20 percent more from 1989 to 2000 in real, inflation-adjusted terms (again, using the faulty price indexes available). But tuition and fees are not, for most college students, the major cost of going to college. On average, three-fourths of the private cost of a college education—the cost borne by the student and the student's family—is the income that college students give up by not working. A good measure of this "**opportunity cost**" is the income that a newly minted high school graduate could earn by working full time. During the 1980s and 1990s, this forgone income rose only about 4 percent in real terms. Therefore, even a 67 percent increase in real tuition costs in twenty years translated into an increase of just 20 percent in the average student's total cost of a college education.

The economics of human capital also account for the fall in the fraction of black high school graduates who went on to college in the early 1980s. As UCLA economist Thomas J. Kane has pointed out, costs rose more for black college students than for whites. That is because a higher

percentage of blacks are from low-income families, and therefore had been heavily subsidized by the federal government. Cuts in federal grants to them in the early 1980s substantially raised their cost of a college education. In the 1990s, however, there was a substantial recovery in the percentage of black high school graduates going on to college.

According to the 1982 "Report of the Commission on Graduate Education" at the University of Chicago, demo-graphic-based college enrollment forecasts had been wide of the mark during the twenty years prior to that time. This is not surprising to a "human capitalist." Such forecasts ignored the changing incentives—on the cost side and on the benefit side—to enroll in college.

The economics of human capital have brought about a particularly dramatic change in the incentives for women to invest in college education in recent decades. Prior to the 1960s, American women were more likely than men to graduate from high school, but less likely to go to college. Women who did go to college shunned or were excluded from math, sciences, economics, and law, and gravitated toward teaching, home economics, foreign languages, and literature. Because relatively few married women continued to work for pay, they rationally chose an education that helped in "household production"—and no doubt also in the marriage market—by improving their social skills and cultural interests.

All this has changed radically. The enormous increase in the labor participation of married women is the most important labor force change during the past twenty-five years. Many women now take little time off from their jobs, even to have children. As a result, the value to women of market skills has increased enormously, and they are bypassing traditional "women's" fields to enter accounting, law, medicine, engineering, and other subjects that pay well. Indeed, women now constitute about one-third of enrollments in business schools, more than 45 percent in law schools, and more than 50 percent in medical schools. Many home economics departments have either shut down or are emphasizing the "new home economics"—that is, the economics of whether to get married, how many children to have, and how to allocate household resources, especially time. Improvements in the economic position of black women have been especially rapid, and black women now earn almost as much as white women.[1]

Of course, formal education is not the only way to invest in human capital. Workers also learn and are trained outside schools, especially on the job. Even college graduates are not fully prepared for the labor market when they leave school and must be fitted into their jobs through formal and informal training programs. The amount of on-the-job training ranges from an hour or so at simple jobs like dishwashing to several years at complicated tasks like engineering in an auto plant. The limited data available indicate that on-the-job training is an important source of the very large increase in earnings that workers get as they gain greater experience at work. Bold estimates by Columbia University economist Jacob Mincer suggest

that the total investment in on-the-job training may be well above $200 billion a year, or about 2 percent of GDP.

No discussion of human capital can omit the influence of families on the knowledge, skills, health, values, and habits of their children. Parents affect educational attainment, marital stability, propensities to smoke and to get to work on time, and many other dimensions of their children's lives.

The enormous influence of the family would seem to imply a very close relation between the earnings, education, and occupations of parents and children. Therefore, it is rather surprising that the positive relation between the earnings of parents and children is not so strong, although the relation between the years of schooling of parents and their children is stronger. For example, if fathers earn 20 percent above the mean of their generation, sons at similar ages tend to earn about 8-10 percent above the mean of theirs. Similar relations hold in Western European countries, **Japan**, Taiwan, and many other places. Statisticians and economists call this "regression to the mean."

The old adage of "from shirtsleeves to shirtsleeves in three generations" (the idea being that someone starts with hard work and then creates a fortune for the next generation that is then dissipated by the third generation) is no myth; the earnings of grandsons and grandparents at comparable ages are not closely related.2 Apparently, the opportunities provided by a modern economy, along with extensive government and charitable support of education, enable the majority of those who come from lower-income backgrounds to do reasonably well in the labor market. The same opportunities that foster upward mobility for the poor create an equal amount of downward mobility for those higher up on the income ladder.

The continuing growth in per capita incomes of many countries during the nineteenth and twentieth centuries is partly due to the expansion of scientific and technical knowledge that raises the productivity of labor and other inputs in production. And the increasing reliance of industry on sophisticated knowledge greatly enhances the value of education, technical schooling, on-the-job training, and other human capital.

New technological advances clearly are of little value to countries that have very few skilled workers who know how to use them. **Economic growth** closely depends on the synergies between new knowledge and human capital, which is why large increases in education and training have accompanied major advances in technological knowledge in all countries that have achieved significant economic growth.

The outstanding economic records of Japan, Taiwan, and other Asian economies in recent decades dramatically illustrate the importance of human capital to growth. Lacking **natural resources**—they import almost all their **energy**, for example—and facing **discrimination** against

their exports by the West, these so-called Asian tigers grew rapidly by relying on a well-trained, educated, hardworking, and conscientious labor force that makes excellent use of modern technologies. China, for example, is progressing rapidly by mainly relying on its abundant, hardworking, and ambitious **population**.

Gary S. Becker. "Human Capital." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/HumanCapital.html

In Defense of "Sweatshops"
Benjamin Powell

I do not want to work in a third world "sweatshop." If you are reading this on a computer, chances are you don't either. Sweatshops have deplorable working conditions and extremely low pay—compared to the alternative employment available to me and probably you. That is why we choose not to work in sweatshops. All too often the fact that *we* have better alternatives leads first world activists to conclude that there must be better alternatives for third world workers too.

Economists across the political spectrum have pointed out that for many sweatshop workers the alternatives are much, much worse.[1] In one famous 1993 case U.S. senator Tom Harkin proposed banning imports from countries that employed children in sweatshops. In response a factory in Bangladesh laid off 50,000 children. What was their next best alternative? According to the British charity Oxfam a large number of them became prostitutes.[2]

The national media spotlight focused on sweatshops in 1996 after Charles Kernaghan, of the National Labor Committee, accused Kathy Lee Gifford of exploiting children in Honduran sweatshops. He flew a 15 year old worker, Wendy Diaz, to the United States to meet Kathy Lee. Kathy Lee exploded into tears and apologized on the air, promising to pay higher wages.

Should Kathy Lee have cried? Her Honduran workers earned 31 cents per hour. At 10 hours per day, which is not uncommon in a sweatshop, a worker would earn $3.10. Yet nearly a quarter of Hondurans earn less than $1 per day and nearly half earn less than $2 per day.

Wendy Diaz's message should have been, "Don't cry for me, Kathy Lee. Cry for the Hondurans not fortunate enough to work for you." Instead the U.S. media compared $3.10 per day to U.S. alternatives, not Honduran alternatives. But U.S. alternatives are irrelevant. No one is offering these workers green cards.

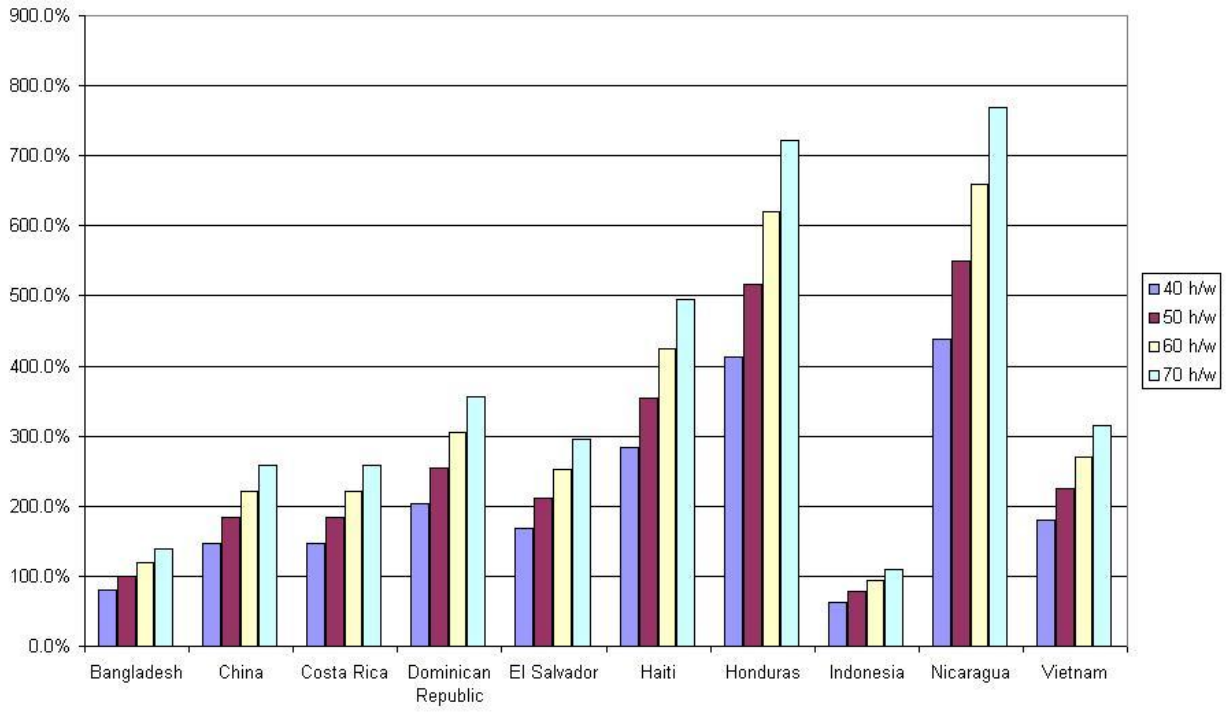
What are the Alternatives to Sweatshops?

Economists have often pointed to anecdotal evidence that alternatives to sweatshops are much worse. But until David Skarbek and I published a study in the 2006 *Journal of Labor Research*, nobody had systematically quantified the alternatives.[3] We searched U.S. popular news sources for claims of sweatshop exploitation in the third world and found 43 specific accusations of exploitation in 11 countries in Latin America and Asia. We found that sweatshop workers typically earn much more than the average in these countries. Here are the facts:

We obtained apparel industry hourly wage data for 10 of the countries accused of using sweatshop labor. We compared the apparel industry wages to average living standards in the country where the factories were located. Figure 1 summarizes our findings.[4]

Figure 1

Apparel Industry Wages as a Percent of Average National Income



Working in the apparel industry in any one of these countries results in earning more than the average income in that country. In half of the countries it results in earning more than three times the national average.[5]

Next we investigated the specific sweatshop wages cited in U.S. news sources. We averaged the sweatshop wages reported in each of the 11 countries and again compared them to average living standards. Figure 2 summarizes our findings.

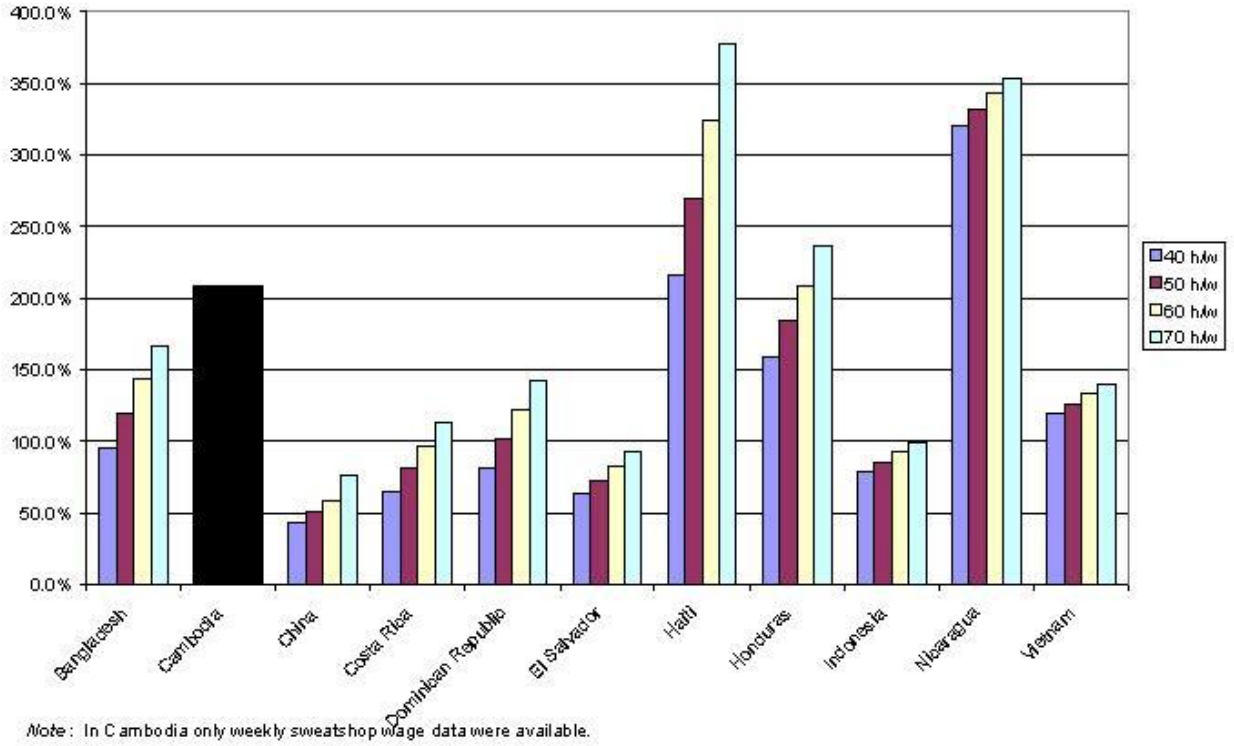
Even in specific cases where a company was allegedly exploiting sweatshop labor we found the jobs were usually better than average. In 9 of the 11 countries we surveyed, the average reported sweatshop wage, based on a 70-hour work week, equaled or exceeded average incomes. In Cambodia, Haiti, Nicaragua, and Honduras, the average wage paid by a firm accused of being a sweatshop is more than double the average income in that country. The Kathy Lee Gifford factory in Honduras was not an outlier—it was the norm.

Because sweatshops are better than the available alternatives, any reforms aimed at improving the lives of workers in sweatshops must not jeopardize the jobs that they already have. To analyze a reform we must understand what determines worker compensation.

What Determines Wages and Compensation?

If a Nicaraguan sweatshop worker creates $2.50 per hour worth of revenue (net of non-labor costs) for a firm then $2.50 per hour is the absolute most a firm would be willing to pay the worker. If the firm paid him $2.51 per hour, the firm would lose one cent per hour he worked. A profit maximizing firm, therefore, would lay the worker off.

Figure 2
Average Protested Sweatshop Wages as a Percent of Average National Income



Note: In Cambodia only weekly sweatshop wage data were available.

Of course a firm would want to pay this worker less than $2.50 per hour in order to earn greater profits. Ideally the firm would like to pay the worker nothing and capture the entire $2.50 of value he creates per hour as profit. Why doesn't a firm do that? The reason is that a firm must persuade the worker to accept the job. To do that, the firm must offer him more than his next best available alternative.[6]

The amount a worker is paid is less than or equal to the amount he contributes to a firm's net revenue and more than or equal to the value of the worker's next best alternative. In any particular situation the actual compensation falls somewhere between those two bounds.

Wages are low in the third world because worker productivity is low (upper bound) and workers' alternatives are lousy (lower bound). To get sustained improvements in overall compensation, policies must raise worker productivity and/or increase alternatives available to workers. Policies that try to raise compensation but fail to move these two bounds risk raising compensation above a worker's upper bound resulting in his losing his job and moving to a less-desirable alternative.

What about non-monetary compensation? Sweatshops often have long hours, few bathroom breaks, and poor health and safety conditions. How are these determined?

Compensation can be paid in wages or in benefits, which may include health, safety, comfort, longer breaks, and fewer working hours. In some cases, improved health or safety can increase worker productivity and firm profits. In these cases firms will provide these benefits out of their own self interest. However, often these benefits do not directly increase profits and so the firm regards such benefits to workers as costs to itself, in which case these costs are like wages.

A profit-maximizing firm is indifferent between compensating workers with wages or compensating them with health, safety, and leisure benefits of the same value when doing so does not affect overall productivity. What the firm really cares about is the overall cost of the total compensation package.

Workers, on the other hand, do care about the mix of compensation they receive. Few of us would be willing to work for no money wage and instead take our entire pay in benefits. We want some of each. Furthermore, when our overall compensation goes up, we tend to desire more non-monetary benefits.

For most people, comfort and safety are what economists call "normal goods," that is, goods that we demand more of as our income rises. Factory workers in third world countries are no different. Unfortunately, many of them have low productivity, and so their overall compensation level is low. Therefore, they want most of their compensation in wages and little in health or safety improvements.

Evaluating Anti-Sweatshop Proposals

The anti-sweatshop movement consists of unions, student groups, politicians, celebrities, and religious groups.[7] Each group has its own favored "cures" for sweatshop conditions. These groups claim that their proposals would help third world workers.

Some of these proposals would prohibit people in the United States from importing any goods made in sweatshops. What determines whether the good is made in a sweatshop is whether it is made in any way that violates labor standards. Such standards typically include minimum

ages for employment, minimum wages, standards of occupational safety and health, and hours of work.[8]

Such standards do nothing to make workers more productive. The upper bound of their compensation is unchanged. Such mandates risk raising compensation above laborers' productivity and throwing them into worse alternatives by eliminating or reducing the U.S. demand for their products. Employers will meet health and safety mandates by either laying off workers or by improving health and safety while lowering wages against workers' wishes. In either case, the standards would make workers worse off.

The aforementioned Charles Kernaghan testified before Congress on one of these pieces of legislation, claiming:

Once passed, this legislation will reward decent U.S. companies which are striving to adhere to the law. Worker rights standards in China, Bangladesh and other countries across the world will be raised, improving conditions for tens of millions of working people. Your legislation will for the first time also create a level playing field for American workers to compete fairly in the global economy.[9]

Contrary to his assertion, anti-sweatshop laws would make third world workers worse off by lowering the demand for their labor. As his testimony alludes to though, such laws would make some American workers better off because they would no longer have to compete with third world labor: U.S. consumers would be, to some extent, a captive market. Although Kernaghan and some other opponents of sweatshops claim that they are attempting to help third world workers, their true motives are revealed by the language of one of these pieces of legislation: "Businesses have a right to be free from competition with companies that use sweatshop labor." A more-honest statement would be, "U.S. workers have a right not to face competition from poor third world workers and by outlawing competition from the third world we can enhance union wages at the expense of poorer people who work in sweatshops."

Kernaghan and other first world union members pretend to take up the cause of poor workers but the policies they advocate would actually make those very workers worse off. As economist David Henderson said, "[s]omeone who intentionally gets you fired is not your friend."[10] Charles Kernaghan is no friend to third world workers.

Conclusion

Not only are sweatshops better than current worker alternatives, but they are also part of the process of development that ultimately raises living standards. That process took about 150 years in Britain and the United States but closer to 30 years in the Japan, South Korea, Hong Kong, and Taiwan.

When companies open sweatshops they bring technology and physical capital with them. Better technology and more capital raise worker productivity. Over time this raises their wages. As more sweatshops open, more alternatives are available to workers raising the amount a firm must bid to hire them.

The good news for sweatshop workers today is that the world has better technology and more capital than ever before. Development in these countries can happen even faster than it did in the East Asian tigers. If activists in the United States do not undermine the process of development by eliminating these countries' ability to attract sweatshops, then third world countries that adopt market friendly institutions will grow rapidly and sweatshop pay and working conditions will improve even faster than they did in the United States or East Asia. Meanwhile, what the third world so badly needs is more "sweatshop jobs," not fewer.

Footnotes

1. Walter Williams, **"Sweatshop Exploitation."** January 27, 2004. Paul Krugman, "In Praise of Cheap Labor, Bad Jobs at Bad Wages are Better Than No Jobs at All." *Slate,* March 20, 1997.

2. Paul Krugman, *New York Times*. April 22, 2001.

3. Benjamin Powell and David Skarbek, "Sweatshop Wages and Third World Living Standards: Are the Jobs Worth the Sweat?" *Journal of Labor Research*. Vol. 27, No. 2. Spring 2006.

4. All figures are reproduced from our *Journal of Labor Research* article. See the original article for notes on data sources and quantification methods.

5. Data on actual hours worked were not available. Therefore, we provided earnings estimates based on various numbers of hours worked. Since one characteristic of sweatshops is long working hours, we believe the estimates based on 70 hours per week are the most accurate.

6. I am excluding from my analysis any situation where a firm or government uses the threat of violence to coerce the worker into accepting the job. In those situations, the job is not better than the next best alternative because otherwise a firm wouldn't need to use force to get the worker to take the job.

7. It is a classic mix of "bootleggers and Baptists." Bootleggers in the case of sweatshops are the U.S. unions who stand to gain when their lower priced substitute, 3rd world workers, is eliminated from the market. The "Baptists" are the true but misguided believers.

8. These minimums are determined by laws and regulations of the country of origin. For a discussion of why these laws should not be followed see Benjamin Powell, "In Reply to Sweatshop Sophistries." *Human Rights Quarterly*. Vol. 28. No.4. Nov. 2006.

9. Testimonies at the Senate Subcommittee on Interstate Commerce, Trade and Tourism Hearing. Statement of Charles Kernaghan. February 14, 2007.

10. David Henderson, **"The Case for Sweatshops."** Weekly Standard, 7 February 2000.

Benjamin Powell. "In Defense of "Sweatshops"." June 2, 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Columns/y2008/Powellsweatshops.html

Profits
by Lester C. Thurow

In a capitalistic society, profits—and losses—hold center stage. Those who own firms (the capitalists) choose managers who organize production efforts so as to maximize their income (profits). Their search for profits is guided by the famous "invisible hand" of **capitalism**. When profits are above the normal level, they attract additional **investment**, either by new firms or by existing firms. New investment enters until profits are competed down to the same level the investment could earn elsewhere. In this way, high profits attract firms to invest in areas where consumers are signaling that they want the investment to occur.

Capitalists earn a return on their efforts by providing three productive inputs. First, they are willing to delay their own personal gratification. Instead of consuming all of their resources today, they save some of today's income and invest those **saving**s in activities (plant and equipment) that will yield goods and services in the future. When sold, these future goods and services will yield profits that can then be used to finance consumption or additional investment. Put bluntly, the capitalist provides capital by not consuming. Without capital much less production could occur. As a result, some profits are effectively the "wages" paid to those who are willing to delay their own personal gratification.

Second, some profits are a return to those who take risks. Some investments make a profit and return what was invested plus a profit; others do not. When an airline goes broke, for example, the investors in the airline lose some of their wealth and become poorer. Just as underground miners, who are willing to perform a dangerous job, get paid more than those who work in safer occupations, so investors who are willing to invest in risky ventures earn more than those who invest in less risky ones. On average, those who take risks will earn a higher rate of return on their investments than those who invest more conservatively.

Third, some profits are a return to organizational ability, enterprise, and entrepreneurial energy. The entrepreneur, by inventing a new product or process, or by organizing the better delivery of an old product, generates profits. People are willing to pay the entrepreneur because he or she has invented a "better mousetrap."

Economists use the word "interest" to mean the payment for delayed gratification, and use the word "profits" to mean only the earnings that result from risk taking and from **entrepreneurship**. But in everyday business language the owner's return on his or her capital is also called profits. (In business language the lender's return is called interest, even though most lending also entails some risks.)

Attempts have been made to organize productive societies without the profit motive. **Communism** is the best recent example. But in the modern world these attempts have failed spectacularly.

While most profits flow to the three previously mentioned necessary inputs into the productive process, there are two other sources of profits. One is **monopoly**. A firm that has managed to establish a monopoly in producing some product or service can set a price higher than would be set in a competitive market, and thus earn higher-than-normal competitive returns. (Economists call these extra returns "economic rents.") Historically, one can find examples of monopolies that have been able to extract large amounts of income from the average consumer. One modern example is taxicab companies, which in virtually every major U.S. city outside of Washington, D.C., have persuaded the local government to limit the number of cabs that may legally be operated.

Although some monopoly profits exist in any economy, they are a very small portion of total profits in any rich society. In rich societies, most consumption consists of either luxuries or products that have close substitutes. As a result, the twentieth-century monopolist has less power to raise prices than the nineteenth-century monopolist. If the monopolistic firm does raise prices very much, the consumer simply buys something else. Professional football, for example, is a monopoly. But Americans have many ways to get pleasure without watching football. The National Football League, therefore, has some, but not much, power to raise prices above the competitive level.

"Market imperfections" provide a second source of profits. Suppose firm A sells a product for ten dollars while firm B sells the same product for eight dollars. Suppose also that many customers do not know that the product can be bought for eight dollars from firm B and, therefore, they pay ten dollars to firm A. Firm A gets an extra two dollars in profit. In a "perfect" market, where every consumer is completely informed about prices, this would not happen. But in real economies it often does. We all recall buying a product at one price only to find later that someone else was selling it for a slightly lower price. Profits from such "imperfections" certainly exist, but here again they are not a large fraction of total profits.

When it comes to actually measuring profits, some difficult accounting issues arise. Suppose one looks at the income earned by capitalists after they have paid all of their suppliers and workers. In 2004 this amounted to $3,689 billion, or 31 percent of GDP. Some of this flow of income represents a return to capital (profits). Some of it needs to be set aside, however, to replace the plant and equipment that have worn out or become obsolete during the year. It is hard to say exactly how much must be reinvested to maintain the size of the capital stock ("capital consumption allowances") because it is hard to know precisely how fast equipment is wearing out or becoming obsolete. But the Department of Commerce thought that $1,352

billion needed to be set aside to maintain the capital stock in 2004. This left $2,337 billion for other purposes.

Many capitalists are small businessmen (technically known as single proprietorships) whose "profits" include their wages. No one knows how to disentangle these two streams of income. In the corporate sector, where this problem does not exist, profits after subtracting capital consumption allowances amounted to $985 billion, or 14 percent of the GDPs produced in the corporate sector. Some of these profits, however, were paid to the government in corporate income taxes. After the payment of taxes, $716 billion, or 10 percent of the corporate GDP, was left as profits. Of this sum capitalists paid themselves $444 billion in dividends and put $272 billion back into their businesses as new investments.

Table 1 provides some information on profits in different industries. In 2005 the highest profits were earned in toiletries and cosmetics (41.4 percent), the lowest in electronics materials (−1.3 percent; i.e., losses rather than profits). Over time, profits rise and fall with the onset of booms and recessions (see **Table 2**). After tax, corporate profits for nonfinancial **corporations** have ranged from above 9 percent of the GDP produced by nonfinancial corporations in 1978 to just above 3 percent in 1986. Profit rates fell in the recession of 1990–91 only to rise again in 1992. They fell again in the recession of 2000 and recovered in 2002. No matter what the year, corporate profits as a percentage of GDP are far below 45 percent, the level, according to a Gallup poll, that many college graduates believe them to be.

Table 1 Return on Stockholders' Equity, 2005 (selected industries, percentage)

Toiletries and cosmetics	41.4
Beverages (alcoholic)	32.6
Tobacco	32.1
Beverage (soft drinks)	26.2
Building materials	22.9
Food processing	21.2
Pharmaceutical	18.3
Petroleum (producing)	16.9
Petroleum (integrated)	15.5
Computer software	13.8
Medical services	13.0
Computers and peripherals	12.7
Publishing	12.3
Chemicals (specialty)	12.3
Apparel	12.0
Auto parts	11.4
Automobiles and trucks	10.0

Furniture and home furnishings	9.9
Machinery	9.3
Metal fabricating	9.2
Trucking	9.0
Aerospace and defense	8.9
Metals and mining	8.5
Chemicals (basic)	8.2
Forest products	2.5
Tire and rubber products	2.0
Precision instruments	−0.2
Electronics	−1.3
Value line market	11.6

The mid-1980s saw a steady decline in profits as firms acquired tremendous debt in the merger and takeover wars. Profits reached a low of 3.1 percent in 1986. Because the owners were effectively withdrawing their own capital from their businesses (substituting debt for equity), they were providing much less of the total capital stock and, therefore, earning less in profits. Profits went down as interest payments to lenders went up.

Table 2 After-Tax Profits as Percentage of GNP for Nonfinancial Corporations, 1970–2004

1970	5.6	1980	7.5	1990	4.6	2000	4.8
1971	6.2	1981	6.8	1991	4.3	2001	3.8
1972	6.8	1982	5.0	1992	5.1	2002	4.3
1973	7.9	1983	5.3	1993	5.7	2003	5.2
1974	8.3	1984	5.6	1994	6.7	2004	5.1
1975	7.8	1985	4.4	1995	7.2		
1976	8.6	1986	3.1	1996	7.4		
1977	8.8	1987	4.5	1997	7.5		
1978	9.1	1988	5.6	1998	6.2		
1979	8.9	1989	4.7	1999	5.8		

Source: U.S. Department of Commerce, *Survey of Current Business.*

Capitalism requires profits, and profits require ownership. Property ownership generates responsibility. Two decades ago I wrote an article about communism entitled “Who Stays Up with the Sick Cow?” Without ownership the answer was too often, “No one,” and the cow and communism died.

Lester C. Thurow. "Profits." The Concise Encyclopedia of Economics. 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Profits.html

Competition
by Wolfgang Kasper

Economic competition takes place in markets—meeting grounds of intending suppliers and buyers.1 Typically, a few sellers compete to attract favorable offers from prospective buyers. Similarly, intending buyers compete to obtain good offers from suppliers. When a contract is concluded, the buyer and seller exchange **property rights** in a good, service, or asset. Everyone interacts voluntarily, motivated by self-interest.

In the process of such interactions, much information is signaled through prices (see **austrian school of economics**). Keen sellers cut prices to attract buyers, and buyers reveal their preferences by raising their offers to outcompete other buyers. When a deal is done, no one may be entirely happy with the agreed price, but both contract partners feel better off. If prices exceed costs, sellers make a profit, an inducement to **supply** more. When other competitors learn what actions lead to**profits**, they may emulate the original supplier. Conversely, losses tell suppliers what to abandon or modify.

Such profit-loss signals coordinate millions of sellers and buyers in the complex, evolving modern economy. The "dollar democracy" of the market ensures that buyers get more of what they want and expend fewer resources on what they do not want. Competitive prices thus work like radio signals; they are easy to perceive, and we do not need to know where they came from. There is no need to analyze all possible causes of the latest **energy** crisis to learn that we should scrap gas guzzlers and save electricity; and oil companies need to know only that petroleum is getting more expensive to start drilling new wells or to experiment with extracting fuel from oil shale or tar sands. Price competition informs millions of independent people in millions of markets, coordinating them effectively—as if by "an invisible hand," as **Adam Smith**, the father of economics, once put it.

Suppliers also engage in nonprice competition. They try to improve their products to gain a competitive advantage over their rivals. To this end, they incur the costs and risks of product **innovation**. This type of competition has inspired innumerable evolutionary steps—between the Wright brothers' first fence hopper and the latest Boeing 747, for example. Such competition has driven unprecedented material progress since the **industrial revolution**.

Differentiated products may give pioneering suppliers a "market niche." Such a niche is never entirely secure, however, since other competitors will strive to improve their own products, keeping all suppliers in a state of "creative unease."

Another tool of competition is process innovation to lower costs, which allows producers to undercut competitors on price. This kind of competitive action has given us ubiquitous two-dollar pocket calculators only a generation after the first calculators sold for three hundred times that price!

A third instrument to outcompete one's rivals is **advertising** to bring one's wares to buyers' attention. Suppliers also compete by offering warranties and after-sales services. This is common with complicated, durable products such as cars. It reduces the buyer's transaction costs and strengthens the supplier's competitive position.

Competition thus obliges people to remain alert and incur costs. Before one can compete effectively in a market, one needs the relevant knowledge. Buyers need to ask themselves what their requirements are, what products are available, what they can afford, and how various products compare, taking prices into account. This imposes search costs—think of the time and effort involved in buying a house, for example. Suppliers have to find out where the **demand** is, what technical attributes people want in their product, where to obtain the many inputs and components, how to train workers, how to distribute their wares, how to improve products and processes, how competitors will react, and much more. Such efforts—in research, development, and marketing—may be very costly and may still come to naught. For every market bonanza, there are many disappointments. And other costs arise as sellers and buyers negotiate contract details and monitor and enforce delivery.

In a dynamic, specialized economy, the costs of searching for knowledge and carrying out exchanges (called "transaction costs") tend to be high. Therefore, it is not surprising that market participants are keen to reduce transaction costs and associated risks. One method is to agree on set rules (called "institutions") that help them to economize on knowledge acquisition costs. Markets fulfill people's aspirations more effectively when there are enforced and expedient rules. Another transaction cost–saving device is to agree on open-ended, long-term relationships, such as employment contracts. Yet another is advertising, a means for sellers to inform buyers and save them some search costs. Deal making is also facilitated by intermediaries—market experts such as brokers, realtors and auctioneers.

Despite these methods of reducing transaction costs, competition is uncomfortable and costly to competitors. Some entrepreneurs enjoy the market rivalry per se. But most people are ambivalent about competition in a particular way; they would like to avoid competing on their own side of the market, but welcome competition among those they buy from or sell to. In a free society, people are, of course, entitled to rest on their laurels by not competing, but they will lose market share, and their assets will probably lose value.

To escape the competitive discipline, suppliers may try to conclude a "competitive truce," forming cartels, particularly in markets with few suppliers or suppliers who need large lumps of capital to start operating. For example, the world's airlines once formed the International Air Transport Association (IATA) cartel, which fixed airfares, schedules, and even such petty details as meal services. Cartels normally fail when a cartel member cheats on the agreed price (see **cartels** and **opec**) or when a firm not in the cartel competes by price or product innovation and established suppliers lose market share. For consumers and for the market as a whole, this cheating on cartel agreements is a boon.

The only way for cartels or **monopolies** to avoid competition over the long term is to obtain government protection. All too often, politicians and bureaucrats readily oblige by imposing coercive regulations. They tend to hide behind all sorts of excuses—safeguarding jobs, ensuring public health and safety, or protecting nationals from foreign competitors. Yet, in reality, inhibiting competition is most often rewarding for regulators, who obtain moral or financial support for the next election campaign or secure lucrative consultancies. Economists call this "**rent seeking**" and point out that it is invariably at the expense of the many buyers, who are often unaware of the costs inflicted by political interference. Interventions may offer comfort to a few suppliers, but they harm the wealth of nations, which benefits the many. Most economists, therefore, consider untrammeled competition a public good that governments should protect and cultivate. This conclusion has, for example, inspired political attempts to control mergers, monopolies, union power, and cartels through internal competition policy; and the creation of the World Trade Organization, which was formed to protect international competition from opportunistic governments.

Competition works well only if private property rights are protected and people are free to make contracts under the rule of law. Who would incur high knowledge-exploration costs knowing that the hoped-for gains might be expropriated, or that subsequent contracts to market a discovery are prohibited by **regulation**? That is why secure property rights, the freedom of contract, and the rule of law—in short, **economic freedom**—make for rapid **economic growth**, low **unemployment**, and diminishing poverty. International surveys invariably show that none of the poorest economies in the world is free, and that none of the world's freest and most competitive economies is poor.

From a society-wide viewpoint, lively market competition fulfills three vital functions:

Discovery. Human well-being can always be improved by new knowledge. Competitive rivalry among suppliers and buyers is a powerful incentive to search for knowledge. Self-interest motivates ceaseless, widespread, and often costly efforts to make the best use of one's property and skills. Central planning by government and government provision are sometimes advocated as a better means of discovering new products and processes. However, experience

has shown that central committees are not sufficiently motivated and simply cannot marshal all the complex, often petty, and widely dispersed knowledge needed for broad-based progress.

Selection and peaceful coordination. Competitive "dollar voting" selects what people really want and exposes errors through the "reprimand of red ink," in the process dispersing useful knowledge. Since innovators cannot keep their discoveries secret, others see what is profitable and may emulate success. Despite occasional unsettling surprises and changing opportunities, competition fosters orderly evolution, distributing unavoidable adjustment burdens and coordinating divergent expectations. Competing and trading educates people in practicing a "commercial ethic": pragmatism in problem solving and keeping peace to get on with the job. A competitive market order thus inspires confidence, social optimism, and a can-do spirit.

Control of power. Supplier competition empowers consumers; competing employers empower workers. While some may try rent seeking, it is important that wealthy people remain exposed to competitive rivalry. Only then will they reinvest their wealth and talents in further knowledge searches, to the benefit of humankind. They will not always remain successful. Virtually none of the big American fortunes that existed in 1950 is still intact today. Competition tames concentrations of economic power and redistributes wealth. One may indeed go further and say that **capitalism** is legitimized by competition—the readiness of citizens of property to shoulder the costs of socially beneficial knowledge search. Socialists, with their slogan "Property is theft," will gain followers only where competition is absent or politically distorted.

Competition, as discussed here, hardly figures in standard, neoclassical economics since so-called perfect competition unrealistically assumes perfect knowledge. Yet, in reality, most economic activity is about finding and exploiting knowledge and motivating reluctant people with wealth and talents to do the same.

Senator Henry Clay was right when he told the U.S. Senate in 1832, "Of all human powers operating on the affairs of mankind, none is greater than that of competition." Indeed, competing is part and parcel of the pursuit of happiness.

Wolfgang Kasper. "Competition." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Competition.html

Monopoly
by George J. Stigler

Amonopoly is an enterprise that is the only seller of a good or service. In the absence of government intervention, a monopoly is free to set any price it chooses and will usually set the price that yields the largest possible profit. Just being a monopoly need not make an enterprise more profitable than other enterprises that face **competition**: the market may be so small that it barely supports one enterprise. But if the monopoly is in fact more profitable than competitive enterprises, economists expect that other entrepreneurs will enter the business to capture some of the higher returns. If enough rivals enter, their competition will drive prices down and eliminate monopoly power.

Before and during the period of the classical economics (roughly 1776–1850), most people believed that this process of monopolies being eroded by new competitors was pervasive. The only monopolies that could persist, they thought, were those that got the government to exclude rivals. This belief was well expressed in an excellent article on monopoly in the *Penny Cyclopedia* (1839, vol. 15, p. 741):

It seems then that the word monopoly was never used in English law, except when there was a royal grant authorizing some one or more persons only to deal in or sell a certain commodity or article. If a number of individuals were to unite for the purpose of producing any particular article or commodity, and if they should succeed in selling such article very extensively, and almost solely, such individuals in popular language would be said to have a monopoly. Now, as these individuals have no advantage given them by the law over other persons, it is clear they can only sell more of their commodity than other persons by producing the commodity cheaper and better.

Even today, most important enduring monopolies or near monopolies in the United States rest on government policies. The government's support is responsible for fixing agricultural prices above competitive levels, for the exclusive ownership of cable television operating systems in most markets, for the exclusive franchises of public utilities and radio and TV channels, for the single postal service—the list goes on and on. Monopolies that exist independent of government support are likely to be due to smallness of markets (the only druggist in town) or to rest on temporary leadership in **innovation** (the Aluminum Company of America until World War II).

Why do economists object to monopoly? The purely "economic" argument against monopoly is very different from what noneconomists might expect. Successful monopolists charge prices

above what they would be with competition so that customers pay more and the monopolists (and perhaps their employees) gain. It may seem strange, but economists see no reason to criticize monopolies simply because they transfer wealth from customers to monopoly producers. That is because economists have no way of knowing who is the more worthy of the two parties—the producer or the customer. Of course, people (including economists) may object to the wealth transfer on other grounds, including moral ones. But the transfer itself does not present an "economic" problem.

Rather, the purely "economic" case against monopoly is that it reduces aggregate economic welfare (as opposed to simply making some people worse off and others better off by an equal amount). When the monopolist raises prices above the competitive level in order to reap his monopoly **profits**, customers buy less of the product, less is produced, and society as a whole is worse off. In short, monopoly reduces society's income. The following is a simplified example.

Consider the case of a monopolist who produces his product at a fixed cost (where "cost" includes a competitive rate of return on his **investment**) of $5 per unit. The cost is $5 no matter how many units the monopolist makes. The number of units he sells, however, depends on the price he charges. The number of units he sells at a given price depends on the "**demand**" schedule shown in **Table 1**.

The monopolist is best off when he limits production to 200 units, which he sells for $7 each. He then earns monopoly profits (what economists call "economic rent") of $2 per unit ($7 minus his $5 cost, which, again, includes a competitive rate of return on investment) times 200, or $400 a year. If he makes and sells 300 units at $6 each, he earns a monopoly profit of only $300 ($1 per unit times 300 units). If he makes and sells 420 units at $5 each, he earns no monopoly profit—just a fair return on the capital invested in the business. Thus, the monopolist is $400 richer because of his monopoly position at the $7 price.

Table 1 Demand Schedule

Price	Quantity Demanded(units per year)
$7	200
$6	300
$5	420

Society, however, is worse off.

Customers would be delighted to buy 220 more units if the price were $5: the demand schedule tells us they value the extra 220 units at prices that do not fall to $5 until they have 420 units.

Let us assume these additional 220 units have an average value of $6 for consumers. These additional 220 units would cost only $5 each, so the consumer would gain 220 × $1 of satisfaction if the competitive price of $5 were set. Because the monopolist would cover his costs of producing the extra 220 units, he would lose nothing. Producing the extra 220 units, therefore, would benefit society to the tune of $220. But the monopolist chooses not to produce the extra 220 units because to sell them at $5 apiece he would have to cut the price on the other 200 units from $7 to $5. The monopolist would lose $400 (200 units times the $2 per unit reduction in price), but consumers would gain the same $400. In other words, selling at a competitive price would transfer $400 from the monopolist to consumers and create an added $220 of value for society.

The desire of economists to have the state combat or control monopolies has undergone a long cycle. As late as 1890, when the Sherman **antitrust** law was passed, most economists believed that the only antimonopoly policy needed was to restrain government's impulse to grant exclusive privileges, such as that given to the British East India Company to trade with India. They thought that other sources of market dominance, such as superior **efficiency**, should be allowed to operate freely, to the benefit of consumers, since consumers would ultimately be protected from excessive prices by potential or actual rivals.

Traditionally, monopoly was identified with a single seller, and competition with the existence of even a few rivals. But economists became much more favorable toward antitrust policies as their view of monopoly and competition changed. With the development of the concept of perfect competition, which requires a vast number of rivals making the identical commodity, many industries became classified as oligopolies (i.e., ones with just a few sellers). And oligopolies, economists believed, surely often had market power—the power to control prices, alone or in collusion.

More recently, and at the risk of being called fickle, many economists (I am among them) have lost both our enthusiasm for antitrust policy and much of our fear of oligopolies. The declining support for antitrust policy has been due to the often objectionable uses to which that policy has been put. The Robinson-Patman Act, ostensibly designed to prevent price discrimination (i.e., companies charging different prices to different buyers for the same good) has often been used to limit rivalry instead of increase it. Antitrust laws have prevented many useful mergers, especially vertical ones. (A vertical merger is one in which company A buys another company that supplies A's inputs or sells A's output.) A favorite tool of legal buccaneers is the private antitrust suit in which successful plaintiffs are awarded triple damages.

How dangerous are monopolies and oligopolies? How much can they reap in excessive profits? Several kinds of evidence suggest that monopolies and small-number oligopolies have limited power to earn much more than competitive rates of return on capital. A large number of

studies have compared the rate of return on investment with the degree to which industries are concentrated (measured by share of the industry sales made by, say, the four largest firms). The relationship between profitability and concentration is almost invariably loose: less than 25 percent of the variation in profit rates across industries can be attributed to concentration.

A more specific illustration of the effect the number of rivals has on price can be found in Reuben Kessel's study of the underwriting of state and local government **bonds**. Syndicates of investment bankers bid for the right to sell an issue of bonds by, say, the state of California. The successful bidder might bid 98.5 (or $985 for a $1,000 bond) and, in turn, seek to sell the issue to investors at 100 ($1,000 for a $1,000 bond). In this case the underwriter "spread" would be 1.5 (or $15 per $1,000 bond).

In a study of thousands of bond issues, after correcting for size and safety and other characteristics of each issue, Kessel found the pattern of underwriter spreads to be as shown in**Table 2**.

For twenty or more bidders—which is, effectively, perfect competition—the spread was ten dollars. Merely increasing the number of bidders from one to two was sufficient to halve the excess spread over what it would be at the ten-dollar competitive level. Thus, even a small number of rivals may bring prices down close to the competitive level. Kessel's results, more than any other single study, convinced me that competition is a tough weed, not a delicate flower.

Table 2 Number of Bidders and Underwriter Spread

No. of Bidders	Underwriter Spread
1	$15.74
2	$12.64
3	$12.36
6	$10.71
10	$10.23

If a society wishes to control monopoly—at least those monopolies that were not created by its own government—it has three broad options. The first is an antitrust policy of the American variety; the second is public regulation; and the third is public ownership and operation. Like monopoly, none of these is ideal.

Antitrust policy is expensive to enforce: the Antitrust Division of the Department of Justice had a budget of $133 million in 2004, and the Federal Trade Commission's budget was $183 million. The defendants (who also face hundreds of private antitrust cases each year) probably spend

ten or twenty times as much. Moreover, antitrust is slow moving. It takes years before a monopoly practice is identified, and more years to reach a decision; the antitrust case that led to the breakup of the American Telephone and Telegraph Company began in 1974 and was under judicial administration until 1996.

Public regulation has been the preferred choice in America, beginning with the creation of the Interstate Commerce Commission in 1887 and extending down to municipal regulation of taxicabs and ice companies. Yet most public regulation has the effect of reducing or eliminating competition rather than eliminating monopoly. The limited competition—and resulting higher profits for owners of taxis—is the reason New York City taxi medallions sold for more than $150,000 in 1991 (at one point in the 1970s, a taxi medallion was worth more than a seat on the New York Stock Exchange). Moreover, regulation of "natural monopolies" (industries, usually utilities, in which the market can support only one firm at the most efficient size of operation) has mitigated some monopoly power but usually introduces serious inefficiencies in the design and operation of such utilities.

A famous theorem in economics states that a competitive enterprise economy will produce the largest possible income from a given stock of resources. No real economy meets the exact conditions of the theorem, and all real economies will fall short of the ideal economy—a difference called "market failure." In my view, however, the degree of "market failure" for the American economy is much smaller than the "political failure" arising from the imperfections of economic policies found in real political systems. The merits of laissez-faire rest less on its famous theoretical foundations than on its advantages over the actual performance of rival forms of economic organization.

George J. Stigler. "Monopoly." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Monopoly.html

Gross Domestic Product
by Lincoln Anderson

Gross domestic product, the official measure of total output of goods and services in the U.S. economy, represents the capstone and grand summary of the world's best system of economic statistics. The federal government organizes millions of pieces of monthly, quarterly, and annual data from government agencies, companies, and private individuals into hundreds of statistics, such as the consumer price index (CPI), the employment report, and summaries of corporate and individual tax returns. The U.S. Department of Commerce then marshals the source data into a complete set of statistics known as the National Income and Product Accounts. This set of double-entry accounts provides a consistent and detailed representation of production in the United States (GDP) and its associated income (national income).

In addition, the Commerce Department derives data on inputs to production (labor and capital) and tabulates them to form industry data on production; intermediate steps in production (input-output tables); detailed data on prices; and international and regional statistics. The theoretical development and construction of this accounting system was a major achievement requiring the services of a renowned group of accountants, business executives, economists, and statisticians. And because the economy continues to evolve, the conceptual and statistical work is never complete. Government agencies are continuously revising the data and occasionally find sizable errors in GDP or GDP components. Keeping GDP current and accurate is no mean feat.

For the United States, GDP replaces gross national product (GNP) as the main measure of production. GDP measures the output of all labor and capital within the U.S. geographical boundary regardless of the residence of that labor or owner of capital. GNP measures the output supplied by residents of the United States regardless of where they live and work or where they own capital. Conceptually, the GDP measure emphasizes production in the United States, while GNP emphasizes U.S. income resulting from production. The difference, called net factor income received from abroad, is trivial for the United States, amounting to only $13 billion (0.2 percent of GDP) in 1991. This shift in emphasis brings the United States into conformance with the international accounting convention.

GDP measures production, not exchange. If economists, policymakers, and news commentators kept this simple truth in mind, much confusion over the interpretation of economic statistics might be avoided. Many proposals to cut taxes, for example, are aimed at "stimulating consumer spending," which is expected to cause an increase in GDP. But consumer spending is

a *use* of GDP, not production. A rise in consumer demand could simply crowd out investment, not raise GDP.

Unfortunately, the GDP data are usually presented in a format that emphasizes exchange (the use of GDP) rather than production (the source of GDP). GDP is represented as the sum of consumer spending, housing and business investment, net exports, and government purchases. Behind this accounting facade lurks the truth: GDP is generated by individual labor combined with both proprietors' and business capital, raw materials, energy, and technology in a myriad of different industries. The Bureau of Economic Analysis (the agency within the Department of Commerce that is responsible for GDP statistics) does show these relationships in the input-output tables and in the GDP-by-industry data tables (now produced annually). But most economists and the press focus on the uses of GDP rather than these presentations of GDP as production.

For better or worse, the different formats do influence how people think about the sources of economic growth. Which, for example, is more of a driving force in the economy—retail sales or growth in the labor force? Are inventory levels a key factor at turning points in the business cycle, or is prospective return on investment the key? Does higher government spending increase GDP, or do lower marginal tax rates? Are higher net exports a positive or a negative factor? In answering these questions, Keynesians usually emphasize the first choice while supply-siders place more weight on the second.

In the short run, in business cycles the Keynesian emphasis on demand is relevant and alluring. But heavy-handed reliance on "demand management" policies can distort market prices, generate major inefficiencies, and destroy production incentives. India since its independence and Peru in the eighties are classic examples of the destruction that demand management can cause. Other less developed countries like South Korea, Mexico, and Argentina have shifted from an emphasis on government spending and demand management to freeing up markets, privatizing assets, and generally enhancing incentives to work and invest. Rapid growth of GDP has resulted (see **Third World Economic Development**).

In the United States the debate over the sources of economic growth can be informed by GDP statistics. Take three examples over the past decade. First, there has been a lot of handwringing over the supposed decline in U.S. manufacturing. Based on declining employment in manufacturing, many commentators asserted throughout the eighties that the United States was "deindustrializing." It certainly is true that employment in manufacturing fell from a peak of 21 million workers in 1979 to 19 million by 1990. But the GDP data show that the production of goods in the United States was rising rapidly after the 1982 recession and, by 1989, hit a ten-year high as a share of total GDP. The decline in manufacturing employment was more than offset by surging productivity. The rebuilding of U.S. manufacturing in the eighties occurred at

the same time that many politicians and some economists were convinced we had given up our competitive position in world markets. A cursory glance at the GDP production data would have revealed the error.

Second, many people have viewed the rise in imports in the eighties with similar alarm. I believe that fear is groundless and is based on accounting rather than economics. With all other components of GDP held constant, a one-dollar increase in imports necessarily means a one-dollar drop in GDP. But—and this is something that simple accounting cannot tell us but that economics does—all other things are not equal. Rapid growth in GDP is generally associated with a large rise in imports. The reason is that high demand for foreign products coupled with high rates of return on domestic investment tends to pull foreign investment into a country and increase imports. The eighties were no exception: imports and the trade deficit surged concurrently with fast growth in GDP. Despite the lack of historical support for the proposition that imports reduce GDP, and despite strong opposition from economists stretching back to Adam Smith, protectionist trade policies were advocated and to some degree implemented in the eighties to "solve" the "problem." A closer look at the correlations between GDP and imports might have dispelled some of the mercantilist myths that protectionists raised (see **Mercantilism**).

Third, there is the controversy over the cause of the federal budget deficit. In the eighties, when the budget deficit ballooned to over $200 billion, a prolonged debate ensued over whether the rise in the deficit was caused by spending growth or tax cuts. One way to cut through the haze of numbers and get at the simple truth is to look at total federal receipts and outlays as shares of GDP. Federal tax receipts as a share of GDP did dip from a high of 21 percent in 1981 to 19 percent in the mideighties, but they have since climbed back to about 20 percent. With current tax receipts now high as a share of GDP, it is clear that major tax "cuts" have not occurred and that higher government spending is largely responsible for the budget deficit.

So-called real GDP is real only in the economist's sense that it is adjusted for inflation. The government computes real GDP for, say, 1991 by valuing production in 1991 at the relative prices that existed in a "base year." The choice of the base year used to compute the real GDP index is important. Relative prices in the base year tend to reflect relative production costs at that time. As GDP and GDP components are computed for periods further away from the base year, the accuracy deteriorates. Going forward from a base year, estimates of real GDP growth tend to be biased upward, with the bias rising as time passes. This occurs because the relative price of goods that embody rapid technical innovations, such as computers, falls, while relative prices of low-tech goods like coffee cups rise. And production moves with relative prices. Computers are a rising share of GDP while coffee cups are a falling share. So using a fixed base

year that holds relative production technology constant results in an upward bias in the estimated production costs of high-tech goods in GDP.

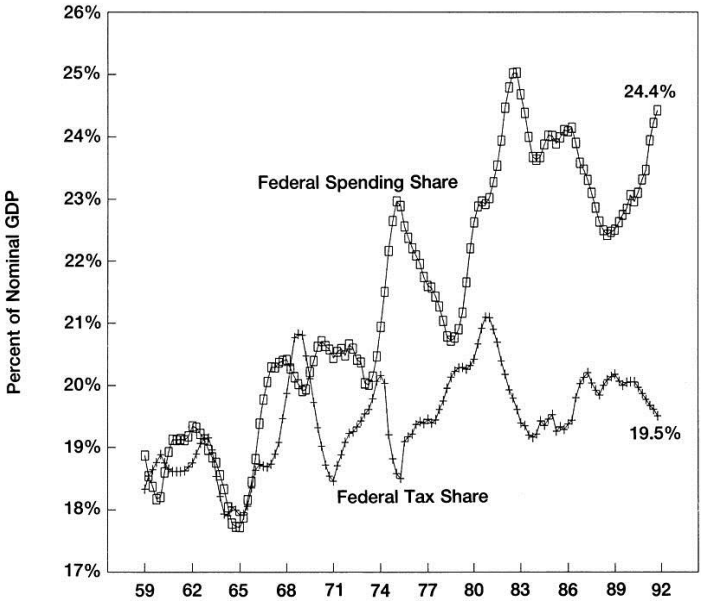


Chart 1. Federal Spending and Taxes as GDP Shares Four-Quarter Average: 1960 to 1992

SOURCE: *Bureau of Economic Analysis.*

The United States revises its base year about every five years. The base year for real GDP was recently moved up from 1982 to 1987. As a result "real" GDP growth over the eighties was revised down slightly. The Soviet Union took much longer to revise its base year. Until the sixties the Soviets used 1928 as the base year for computing "real" GDP. Therefore, published data on growth rates were biased upward by a large percentage, and the underlying weakness in the Soviet economy was obscured. The Bureau of Economic Analysis (BEA) plans to publish a measure of real GDP and major components using a shifting base year. This measure will provide a more accurate representation of growth in years far from the 1987 base period. I strongly recommend sliding base (or "chain") measures in studies using a decade or more of real GDP data.

In practice BEA first uses the raw data on production to make estimates of nominal GDP, or GDP in current dollars. It then adjusts these data for inflation to arrive at real GDP. But BEA also uses the nominal GDP figures to produce the "income side" of GDP in double-entry bookkeeping. For every dollar of GDP there is a dollar of income. The income numbers inform us about overall trends in the income of corporations and individuals. Other agencies and private sources report bits and pieces of the income data, but the income data associated with the GDP provide a comprehensive and consistent set of income figures for the United States.

These data can be used to address important and controversial issues such as the level and growth of disposable income per capita, the return on investment, and the level of saving.

In fact, just about all empirical issues in macroeconomics turn on the GDP data. The government uses the data to define emerging economic problems, devise appropriate policies, and judge results. Businesses use the data to forecast sales and adjust production and investment. Individuals watch GDP as an indicator of well-being and adjust their voting and investment decisions accordingly. This is not to say that the GDP data are always used or used wisely. Often they are not. Nor are the GDP data perfect. But ignoring the GDP data is as close as one can come in macroeconomics to ignoring the facts. And that is a perilous practice.

Lincoln Anderson. "Gross Domestic Product." *The Concise Encyclopedia of Economics.* 1993. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc1/GrossDomesticProduct.html

Unemployment
by Lawrence H. Summers

Few economic indicators are of more concern to Americans than unemployment statistics. Reports that unemployment rates are dropping make us happy; reports to the contrary make us anxious. But just what do unemployment figures tell us? Are they reliable measures? What influences joblessness?

How Is Unemployment Defined and Measured?

Each month, the federal government's Bureau of Labor Statistics randomly surveys sixty thousand individuals around the nation. If respondents say they are both out of work and seeking employment, they are counted as unemployed members of the labor force. Jobless respondents who have chosen not to continue looking for work are considered out of the labor force and therefore are not counted as unemployed. Almost half of all unemployment spells end because people leave the labor force. Ironically, those who drop out of the labor force—because they are discouraged, have household responsibilities, or are sick—actually make unemployment rates look better; the unemployment rate includes only people within the labor force who are out of work.

Not all unemployment is the same. Unemployment can be long term or short term. It can be frictional, meaning someone is between jobs; or it may be structural, as when someone's skills are no longer demanded because of a change in technology or an industry downturn.

Is Unemployment a Big Problem?

Some say there are reasons to think that unemployment in the United States is not a big problem. In June 2005, for example, 33.5 percent of all unemployed people were under the age of twenty-four, and presumably few of them were the main source of income for their families. One out of six of the unemployed are teenagers. Moreover, the average duration of a spell of unemployment is short. In June 2005 it was 16.3 weeks. And the median spell of unemployment is even shorter. In June 2005 it was 7.0 weeks, meaning that half of all spells last 7.0 weeks or less.

On the basis of numbers like the above, many economists have thought that unemployment is not a very large problem. A few weeks of unemployment seems to them like just enough time for people to move from one job to another. Yet these numbers, though accurate, are misleading. Much of the reason why unemployment spells appear short is that many workers drop out of the labor force at least temporarily because they cannot find attractive jobs. Often

two short spells of unemployment mean a long spell of joblessness because the person was unemployed for a short time, withdrew from the labor force, and then reentered the labor force.

And even if most unemployment spells are short, most weeks of unemployment are experienced by people who are out of work for a long time. To see why, consider the following example. Suppose that each week, twenty spells of unemployment lasting 1 week begin, and only one begins that lasts 20 weeks. Then the average duration of a completed spell of unemployment would be only 1.05 weeks. But half of all unemployment (half of the total of 40 weeks that the twenty-one people are out of work) would be accounted for by spells lasting 20 weeks.

Something like this example applies in the real world. In June 2005, for example, 42.9 percent of the unemployed had been unemployed for less than five weeks, but 16.9 percent had been unemployed for six or more months.

What Causes Long-Term Unemployment?

To fully understand unemployment, we must consider the causes of recorded long-term unemployment. Empirical evidence shows that two causes are **welfare** payments and unemployment **insurance**. These government assistance programs contribute to long-term unemployment in two ways.

First, government assistance increases the *measure* of unemployment by prompting people who are not working to claim that they are looking for work even when they are not. The work-registration requirement for welfare recipients, for example, compels people who otherwise would not be considered part of the labor force to register as if they were a part of it. This requirement effectively increases the measure of unemployed in the labor force even though these people are better described as nonemployed—that is, not actively looking for work.

In a study using state data on registrants in Aid to Families with Dependent Children and food stamp programs, my colleague Kim Clark and I found that the work-registration requirement actually increased measured unemployment by about 0.5 to 0.8 percentage points. If this same relationship holds in 2005, this requirement increases the measure of unemployment by 750,000 to 1.2 million people. Without the condition that they look for work, many of these people would not be counted as unemployed. Similarly, unemployment insurance increases the measure of unemployment by inducing people to say that they are job hunting in order to collect benefits.

The second way government assistance programs contribute to long-term unemployment is by providing an incentive, and the means, not to work. Each unemployed person has a

"reservation wage"—the minimum wage he or she insists on getting before accepting a job. Unemployment insurance and other social assistance programs increase that reservation wage, causing an unemployed person to remain unemployed longer.

Consider, for example, an unemployed person who is accustomed to making $15.00 an hour. On unemployment insurance this person receives about 55 percent of normal earnings, or $8.25 per lost work hour. If that person is in a 15 percent federal tax bracket and a 3 percent state tax bracket, he or she pays $1.49 in taxes per hour not worked and nets $6.76 per hour after taxes as compensation for not working. If that person took a job that paid $15.00 per hour, governments would take 18 percent for income taxes and 7.65 percent for **Social Security** taxes, netting him or her $11.15 per hour of work. Comparing the two payments, this person may decide that an hour of leisure is worth more than the extra $4.39 the job would pay. If so, this means that the unemployment insurance raises the person's reservation wage to above $15.00 per hour.

Unemployment, therefore, may not be as costly for the jobless person as previously imagined. But as Harvard economist Martin Feldstein pointed out in the 1970s, the costs of unemployment to taxpayers are very great indeed. Take the example above of the individual who could work for $15.00 an hour or collect unemployment insurance of $8.25 per hour. The cost of unemployment to this unemployed person was only $4.39 per hour, the difference between the net income from working and the net income from not working. And as compensation for this cost, the unemployed person gained leisure, whose value could well be above $4.39 per hour. But other taxpayers as a group paid $8.25 in unemployment benefits for every hour the person was unemployed, and got back in taxes only $1.49 on this benefit. Moreover, they gave up $3.85 in lost tax and Social Security revenue that this person would have paid per hour employed at a $15.00 wage. Net loss to other taxpayers: $10.61 ($8.25 − $1.49 + $3.85) per hour. Multiply this by millions of people collecting unemployment, each missing hundreds of hours of work, and you get a cost to taxpayers in the billions.

Unemployment insurance also extends the time a person stays off the job. Clark and I estimated that the existence of unemployment insurance almost doubles the number of unemployment spells lasting more than three months. If unemployment insurance were eliminated, the unemployment rate would drop by more than half a percentage point, which means that the number of unemployed people would fall by about 750,000. This is all the more significant in light of the fact that less than half of the unemployed receive insurance benefits, largely because many have not worked enough to qualify.

Another cause of long-term unemployment is unionization. High union wages that exceed the competitive market rate are likely to cause job losses in the unionized sector of the economy. Also, those who lose high-wage union jobs are often reluctant to accept alternative low-wage

employment. Between 1970 and 1985, for example, a state with a 20 percent unionization rate, approximately the average for the fifty states and the District of Columbia, experienced an unemployment rate that was 1.2 percentage points higher than that of a hypothetical state that had no unions. To put this in perspective, 1.2 percentage points is about 60 percent of the increase in normal unemployment between 1970 and 1985.

There is no question that some long-term unemployment is caused by government intervention and unions that interfere with the **supply** of labor. It is, however, a great mistake (made by some conservative economists) to attribute most unemployment to government interventions in the economy or to any lack of desire to work on the part of the unemployed. Unemployment was a serious economic problem in the late nineteenth and early twentieth centuries prior to the welfare state and widespread unionization. Unemployment then, as now, was closely linked to general macroeconomic conditions. The **great depression**, when unemployment in the United States reached 25 percent, is the classic example of the damage that collapses in credit can do. Since then, most economists have agreed that cyclical fluctuations in unemployment are caused by changes in the **demand** for labor, not by changes in workers' desires to work, and that unemployment in recessions is involuntary.

Even leaving aside cyclical fluctuations, a large part of unemployment is due to demand factors rather than supply. High unemployment in New England in the early 1990s, for example, was due to declines in computer and other industries in which New England specialized. High unemployment in northern California in the early 2000s was caused by the dot-com bust. The process of adjustment following shocks is long and painful, and recent research suggests that even temporary declines in demand can have permanent effects on unemployment, as workers who lose jobs are unable to sell their labor due to a loss of skills or for other reasons. Therefore, most economists who study unemployment support an active government role in training and retraining workers and in maintaining stable demand for labor.

The Natural Rate of Unemployment

Long before **Milton Friedman** and Edmund Phelps advanced the notion of the natural rate of unemployment (the lowest rate of unemployment tolerable without pushing up **inflation**), policymakers had contented themselves with striving for low, not zero, unemployment. Just what constitutes an acceptably low level of unemployment has been redefined over the decades. In the early 1960s an unemployment rate of 4 percent was both desirable and achievable. Over time, the unemployment rate drifted upward and, for the most part, has hovered around 7 percent. Lately, it has fallen to 5 percent. I suspect that some of the reduction in the apparent natural rate of unemployment in recent years has to do with reduced transitional unemployment, both because fewer people are between jobs and because they are between jobs for shorter periods. Union power has been eroded by domestic regulatory action

and inaction, as well as by international **competition**. More generally, international competition has restrained wage increases in high-wage industries. Another factor making unemployment lower is a decline in the fraction of the unemployed who are supported by unemployment insurance.

Lawrence H. Summers. "Unemployment." The Concise Encyclopedia of Economics. 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Unemployment.html

Business Cycles
by Christina D. Romer

The United States and all other modern industrial economies experience significant swings in economic activity. In some years, most industries are booming and **unemployment** is low; in other years, most industries are operating well below capacity and unemployment is high. Periods of economic prosperity are typically called expansions or booms; periods of economic decline are called recessions or depressions. The combination of expansions and recessions, the ebb and flow of economic activity, is called the business cycle.

Business cycles as we know them today were codified and analyzed by **Arthur Burns** and Wesley Mitchell in their 1946 book *Measuring Business Cycles.* One of Burns and Mitchell's key insights was that many economic indicators move together. During an expansion, not only does output rise, but also employment rises and unemployment falls. New construction also typically increases, and **inflation** may rise if the expansion is particularly brisk. Conversely, during a recession, the output of goods and services declines, employment falls, and unemployment rises; new construction also declines. In the era before World War II, prices also typically fell during a recession (i.e., inflation was negative); since the 1950s prices have continued to rise during downturns, though more slowly than during expansions (i.e., the rate of inflation falls). Burns and Mitchell defined a recession as a period when a broad range of economic indicators falls for a sustained period, roughly at least half a year.

Business cycles are dated according to when the direction of economic activity changes. The peak of the cycle refers to the last month before several key economic indicators—such as employment, output, and retail sales— begin to fall. The trough of the cycle refers to the last month before the same economic indicators begin to rise. Because key economic indicators often change direction at slightly different times, the dating of peaks and troughs is necessarily somewhat subjective. The National Bureau of Economic Research (NBER) is an independent research institution that dates the peaks and troughs of U.S. business cycles. **Table 1** shows the NBER monthly dates for peaks and troughs of U.S. business cycles since 1890. Recent research has shown that the NBER's reference dates for the period before World War I are not truly comparable with those for the modern era because they were determined using different methods and data. **Figure 1** shows the unemployment rate since 1948, with periods that the NBER classifies as recessions shaded in gray. Clearly, a key feature of recessions is that they are times of rising unemployment.

In many ways, the term "business cycle" is misleading. "Cycle" seems to imply that there is some regularity in the timing and duration of upswings and downswings in economic activity.

Most economists, however, do not think there is. As **Figure 1** shows, expansions and recessions occur at irregular intervals and last for varying lengths of time. For example, there were three recessions between 1973 and 1982, but, then the 1982 trough was followed by eight years of uninterrupted expansion. The 1980 recession lasted just six months, while the 1981 recession lasted sixteen months. For describing the swings in economic activity, therefore, many modern economists prefer the term "short-run economic fluctuations" to "business cycle."

Table 1 Business Cycle Peaks and Troughs in the United States, 1890-2004

Peak	Trough	Peak	Trough
July 1890	May 1891	May 1937	June 1938
Jan. 1893	June 1894	Feb. 1945	Oct. 1945
Dec. 1895	June 1897	Nov. 1948	Oct. 1949
June 1899	Dec. 1900	July 1953	May 1954
Sep. 1902	Aug. 1904	Aug. 1957	Apr. 1958
May 1907	June 1908	Apr. 1960	Feb. 1961
Jan. 1910	Jan. 1912	Dec. 1969	Nov. 1970
Jan. 1913	Dec. 1914	Nov. 1973	Mar. 1975
Aug. 1918	Mar. 1919	Jan. 1980	July 1980
Jan. 1920	July 1921	July 1981	Nov. 1982
May 1923	July 1924	July 1990	Mar. 1991
Oct. 1926	Nov. 1927	Mar. 2001	Nov. 2001
Aug. 1929	Mar. 1933		

Causes of Business Cycles

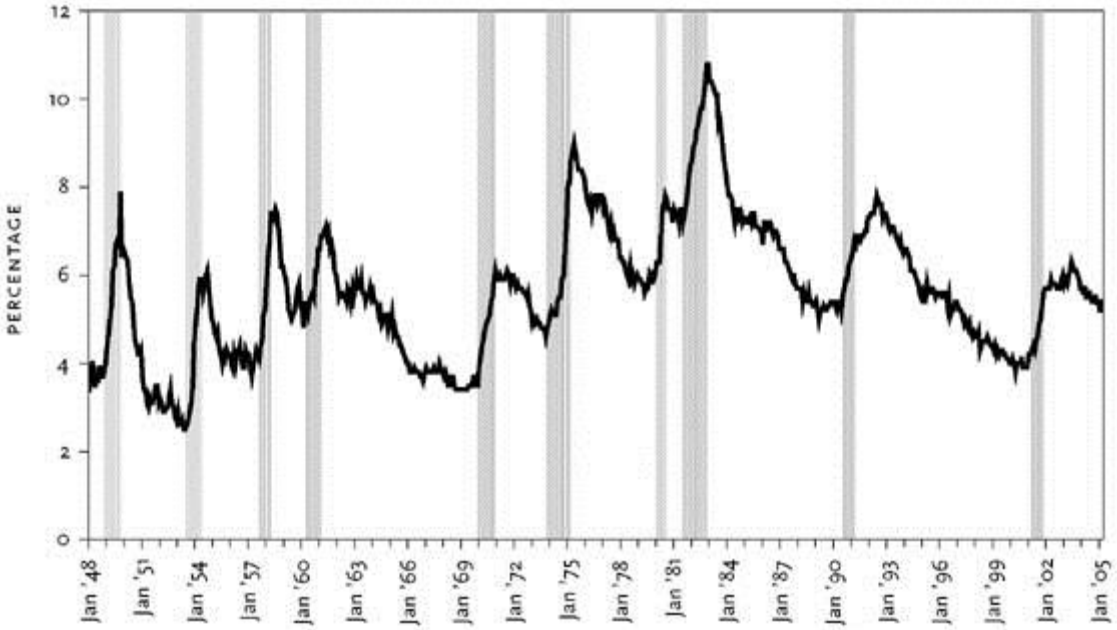
Just as there is no regularity in the timing of business cycles, there is no reason why cycles have to occur at all. The prevailing view among economists is that there is a level of economic activity, often referred to as full employment, at which the economy could stay forever. Full employment refers to a level of production in which all the inputs to the production process are being used, but not so intensively that they wear out, break down, or insist on higher wages and more vacations. When the economy is at full employment, inflation tends to remain constant; only if output moves above or below normal does the rate of inflation systematically tend to rise or fall. If nothing disturbs the economy, the full-employment level of output, which naturally tends to grow as the **population** increases and new technologies are discovered, can be maintained forever. There is no reason why a time of full employment has to give way to either an inflationary boom or a recession.

Business cycles do occur, however, because disturbances to the economy of one sort or another push the economy above or below full employment. Inflationary booms can be generated by surges in private or public spending. For example, if the government spends a lot to fight a war but does not raise taxes, the increased**demand** will cause not only an increase in the output of war matériel, but also an increase in the take-home pay of **defense** workers. The output of all the goods and services that these workers want to buy with their wages will also increase, and total production may surge above its normal, comfortable level. Similarly, a wave of optimism that causes consumers to spend more than usual and firms to build new factories may cause the economy to expand more rapidly than normal. Recessions or depressions can be caused by these same forces working in reverse. A substantial cut in government spending or a wave of pessimism among consumers and firms may cause the output of all types of goods to fall.

Another possible cause of recessions and booms is **monetary policy**. The **Federal Reserve System** strongly influences the size and growth rate of the money stock, and thus the level of**interest rates** in the economy. Interest rates, in turn, are a crucial determinant of how much firms and consumers want to spend. A firm faced with high interest rates may decide to postpone building a new factory because the cost of borrowing is so high. Conversely, a consumer may be lured into buying a new home if interest rates are low and mortgage payments are therefore more affordable. Thus, by raising or lowering interest rates, the Federal Reserve is able to generate recessions or booms.

This description of what causes business cycles reflects the Keynesian or new Keynesian view that cycles are the result of nominal rigidities. Only when prices and inflationary expectations are not fully flexible can fluctuations in overall demand cause large swings in real output. An alternative view, referred to as the new classical framework, holds that modern industrial economies are quite flexible. As a result, a change in spending does not necessarily affect real output and employment. For example, in the new classical view a change in the stock of money will change only prices; it will have no effect on real interest rates and thus on people's willingness to invest. In this alternative framework, business cycles are largely the result of disturbances in productivity and tastes, not of changes in aggregate demand.

Figure 1. *Unemployment Rate and Recessions*



Source: The data are from the Bureau of Labor Statistics. *Note:* The series graphed is the seasonally adjusted civilian unemployment rate for those age sixteen and over. The shaded areas indicate recessions.

The empirical evidence is strongly on the side of the view that deviations from full employment are often the result of spending shocks. Monetary policy, in particular, appears to have played a crucial role in causing business cycles in the United States since World War II. For example, the severe recessions of both the early 1970s and the early 1980s were directly attributable to decisions by the Federal Reserve to raise interest rates. On the expansionary side, the inflationary booms of the mid-1960s and the late 1970s were both at least partly due to monetary ease and low interest rates. The role of money in causing business cycles is even stronger if one considers the era before World War II. Many of the worst prewar depressions, including the recessions of 1908, 1921, and the **Great Depression** of the 1930s, were to a large extent the result of monetary contraction and high real interest rates. In this earlier era, however, most monetary swings were engendered not by deliberate monetary policy but by financial panics, policy mistakes, and international monetary developments.

Historical Record of Business Cycles

Table 2 shows the peak-to-trough decline in industrial production, a broad monthly measure of manufacturing and mining activity, in each recession since 1890. The industrial production series used was constructed to be comparable over time. Many other conventional macroeconomic indicators, such as the unemployment rate and real GDP, are not consistent over time. The prewar versions of these series were constructed using methods and data

sources that tended to exaggerate cyclical swings. As a result, these conventional indicators yield misleading estimates of the degree to which business cycles have moderated over time.

Table 2 Peak-to-Trough Decline in Industrial Production

Year of NBER Peak	% Decline	Year of NBER Peak	% Decline
1890	−5.3	1937	−32.5
1893	−17.3	1945	−35.5
1895	−10.8	1948	−10.1
1899	−10.0	1953	−9.5
1902	−9.5	1957	−13.6
1907	−20.1	1960	−8.6
1910	−9.1	1969	−7.0
1913	−12.1	1973	−13.1
1918	−6.2	1980	−6.6
1920	−32.5	1981	−9.4
1923	−18.0	1990	−4.1
1926	−6.0	2001	−6.2
1929	−53.6		

Source: The industrial production data for 1919–2004 are from the Board of Governors of the Federal Reserve System. The series before 1919 is an adjusted and smoothed version of the Miron-Romer index of industrial production. This series is described in the appendix to "Remeasuring Business Cycles" by Christina D. Romer.

Note: The peak-to-trough decline is calculated using the actual peaks and troughs in the industrial production series. These turning points often differ from the NBER dates by a few months, and occasionally by as much as a year.

The empirical record on the duration and severity of recessions over time reflects the evolution of economic policy. The recessions of the pre–World War I era were relatively frequent and quite variable in size. This is consistent with the fact that before World War I, the government had little influence on the economy. Prewar recessions stemmed from a wide range of private-sector-induced fluctuations in spending, such as **investment** busts and financial panics, that were left to run their course. As a result, recessions occurred frequently, and some were large and some were small.

After World War I the government became much more involved in managing the economy. Government spending and taxes as a fraction of GDP rose substantially in the 1920s and 1930s, and the Federal Reserve was established in 1914. **Table 2** makes clear that the period between the two world wars was one of extreme volatility. The declines in industrial production in the recessions of 1920, 1929, and 1937 were larger than in any recessions in the pre– World War I

and post–World War II periods. A key factor in these extreme fluctuations was the replacement, by the 1920s, of some of the private-sector institutions that had helped the U.S. economy weather prewar fluctuations with government institutions that were not yet fully functional. The history of the interwar era is perhaps best described as a painful learning period for the Federal Reserve. The downturn of the mid-1940s obviously reflects the effect of World War II. The war generated an incredible boom in economic activity, as production surged in response to massive government spending. The end of wartime spending led to an equally spectacular drop in industrial production as the economy returned to more normal levels of labor and capital utilization.

Recessions in the early postwar era were of roughly the same average severity as those before World War I, although they were somewhat less frequent than in the earlier period and were more consistently of moderate size. The decreasing frequency of downturns reflects progress in economic policymaking. The Great Depression brought about large strides in the understanding of the economy and the capacity of government to moderate cycles. The Employment Act of 1946 mandated that the government use the tools at its disposal to stabilize output and employment. And indeed, economic policy since World War II has almost certainly counteracted some shocks and hence prevented some recessions. In the early postwar era, however, policymakers tended to carry expansionary policy too far, and in the process caused inflation to rise. As a result, policymakers, particularly the Federal Reserve, felt compelled to adopt contractionary policies that led to moderate recessions in order to bring inflation down. This boom-bust cycle was a common feature of the 1950s, 1960s, and 1970s.

Recessions in the United States have become noticeably less frequent and severe since the mid-1980s. The nearly decade-long expansions of the 1980s and 1990s were interrupted by only very mild recessions in 1990 and 2001. Economists attribute this moderation of cycles to a number of factors, including the increasing importance of services (a traditionally stable sector of the economy) and a decline in adverse shocks, such as oil price increases and fluctuations in consumer and investor sentiment. Most economists believe that improvements in monetary policy, particularly the end of overexpansion followed by deliberate contraction, have been a significant factor as well. In addition to reductions in the frequency and severity of downturns over time, the effects of recessions on individuals in the United States and other industrialized countries almost surely have been lessened in recent decades. The advent of unemployment insurance and other social **welfare** programs means that recessions no longer wreak the havoc on individuals' standards of living that they once did.

Christina D. Romer. "Business Cycles." *The Concise Encyclopedia of Economics.*2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/BusinessCycles.html

Getting the Most Out of Life: The Concept of Opportunity Cost
by Russell Roberts

One of the challenges of being an economist is explaining what you do for a living. People understand that one of the things a professor of economics does is teach economics. But what is that, exactly? Most presume it has something to do with investing and financial management. When I once told my seatmate on an airline flight that I was an economist, she said, what a shame, my husband loves the stock market. Hmm. I didn't tell her that other than the advantages of investing in indexed mutual funds, I know next to nothing about the stock market.

My seatmate might have profited from reading **Alfred Marshall** who called economics "the study of mankind in the ordinary business of life." This was the enterprise of Marshall and **Adam Smith** and**Friedrich Hayek** and **Milton Friedman**: they tried to understand what people do and the implications of their behavior for the society at large.

But my favorite definition of economics is a variant of Marshall's. It comes from a student who heard it from another teacher of hers: economics is the study of how to get the most out of life. I like this because it strikes at the true heart of economics—the choices we make, given that we can't have everything we want. **Economics** is the study of infinite wants and finite means, the study of constrained choices. This is true for individuals and governments, families and nations. Thomas Sowell said it best: no solutions, only tradeoffs. To get the most out of life, to think like an economist, you have to be know what you're giving up in order to get something else. That's all opportunity cost is:

Opportunity cost is what you have to give up to get something.

What could be more straightforward? If you want something you have to give up something. The idea turns out to be a little subtler than it appears at first glance. Let's look a little more closely.

Milton Friedman used to say that economics is simple. All you have to remember is that demand slopes downward and that nothing's free. The hard part is applying those two simple ideas. When Friedman said that nothing was free, he meant that everything has a cost. Take the proverbial free lunch that Friedman delighted in pointing out didn't exist. Suppose I invite you to lunch and it's on me—I promise to pay and I keep that promise. Free, right? No, says the economist.

Economist: There's no monetary cost. Today. But there's an expectation that you'll return the favor and treat me to a future lunch.

You (believer in the free lunch): But you don't realize I'm not a nice person. I don't plan on reciprocating and I'm going to keep that promise to myself. Today's lunch is free.

Economist: No. Even if you don't plan to reciprocate, the guilt at being a moocher is a cost.

You: You don't realize just how not-nice I am. I have no conscience. So I *do* get a free lunch.

Economist: Alas, no. You have to listen to me talk while we're eating.

You: I won't be listening. I'm going to daydream about an upcoming vacation. I'm going to pretend to be pay attention.

Economist: Still not free. The cost of having lunch with me, even when I pay, even when you don't plan on reciprocating and even when I do all the talking that you ignore, is the pleasure you would have received doing something else instead. Whatever you gave up to have lunch with me. Not just the money. Not just the time. But the value or pleasure you would have received from doing something else.

So one of the keys to thinking like an economist is always remembering that everything has a cost. This may be one reason economists have fewer friends than they otherwise would. Sometimes people are very happy holding on to the naïve view that something is free. We like the idea of a bargain. We don't want to hear about the hidden or non-obvious costs. Thinking about foregone opportunities, the choices we didn't make, can lead to regret. Choosing this college means you can't go to that one. Marrying this person means not marrying that one. Choosing this desert (usually) means missing out on that one. Sometimes, people just want to eat their cake and have it, too, without being reminded that they missed out on a spectacular piece of pie.

All true. But if you want to get the most out of life, you have to take account of the opportunity cost, the foregone alternatives. Better to make good choices and learn how to live with them than make bad choices in blissful ignorance that lead to ruin. Here are some applications of how understanding opportunity costs helps you get the most out of life.

The real cost of college

What's the cost of college? The obvious part of the cost of college is tuition. It's not room and board because those would be incurred anyway. But the opportunity cost includes the foregone wages from the jobs you could have had if you hadn't gone to college. This is one of the reasons

we go to college when we're young without any experience in the workplace—our wages are relatively low so the foregone earnings from going to college are lower.

The return on your investments

Economists do know something about the stock market. If you tell me you have a great investment track record, I want to know: compared to what. A mutual fund manager who earned 12% last year for his investors seems to have had a banner year. But mutual funds indexed to the S&P 500 earned over 15%. If both funds had a similar level of risk, that mutual fund manager had a *negative* return of 3%. Similarly, holding your assets in the form of cash means foregoing the opportunity to invest them. The opportunity cost of cash is the return you could earn by investing it.

Home ownership and home improvements

Real estate agents like to tell you that a house is a great investment. Your house is appreciating and you get to live in it. Sometimes both are true statements. But appreciation of the house isn't enough to make it a good investment (or a reason to buy a particularly large house on the argument that if the investment is going to appreciate, it's better to have a bigger stake). Home owners like to savor how much they sold their house for above what they paid for it. When measuring the return, they rarely subtract the direct monetary costs—the repairs, the taxes, and the fees and commissions of lawyers, real estate agents and government agencies. But I've never known the proud Boston or Washington or L.A. house seller who calculates the foregone investment opportunities from tying up the down payment and the mortgage payments over the life of the time in the house.

Similarly, real estate agents (and contractors) like to tell you that re-doing your kitchen is a good idea because you'll get the money back in the form of a higher price when you sell your house. So the kitchen is free! And in the meanwhile, you get to enjoy the pleasures of the kitchen. That logic is fine as long as you get enough pleasure from the kitchen to offset the opportunity cost of tying your money up in cabinetry and granite and giving up the return you could have earned doing something else with the money.

One aspect of home ownership and opportunity cost is particularly tricky. Suppose your house appreciates. You could sell it and move to a smaller house or a house in a different neighborhood. But you decide to stay. The appreciation of your house means it has gotten more costly to live in it. But that increase in cost, being an opportunity cost rather than an out-of-pocket cost does not mean you are worse off. In fact, it is a sign that you are better off—an asset you own has appreciated and your wealth is higher at least as long as the appreciation stays in place. Opportunity cost is different from what we think of colloquially as cost, which

usually means a monetary payment. Opportunity cost guides rational decision-making. But an increase in costs doesn't necessarily mean that you are worse off than you were before.

Sunk costs are sunk, historical costs are history

Opportunity cost is a forward-looking concept. If my car breaks down and I fix it, and it breaks down again, the decision to fix it a second time is independent of the first repairs costs. It is irrational to think that I have to fix it because I've put so much money into the car already—if I don't fix it, I'll lose all the money I've already invested. I've already lost the money on the first repair. Now I should only ask whether the second set of repairs are worth it.

A variation on the "sunk cost" argument is the irrelevancy of historical costs. What the seller paid for a house twenty years ago has little effect on the market price today. Complaining that the seller is charging an exorbitant price compared to what the seller paid originally, only insures you will have trouble finding someone to sell you a house that meets your standards of a fair price. On the flip side, explaining to a prospective buyer in a housing market that has collapsed, that your price is high because after all, you paid a lot for it once and it's only fair that you get your money back plus a fair return, is unlikely to be a successful strategy for selling your house. Market prices ignore history.

Replacement costs are more relevant than historical costs. If a friend gives you a Van Gogh as a wedding present and a few years later, a drunken dinner guest plunges a carving knife through it after losing his balance, your guest wouldn't tell you to shrug it off because after all, it was a gift, you didn't pay anything for it.

Self-sufficiency vs. relying on others

Perhaps the most important application of opportunity cost is the decision to do things for yourself vs. hiring someone. Doing it yourself is often cheaper and can be fun. But the cost of doing it yourself is the value of the other things you could have done with your time. Those other things might include working a part-time job or doing consulting, which means you forego money. So doing it yourself can be costly in the monetary sense. But the non-monetary costs can dwarf the monetary costs. Time spent painting your house yourself is time you can't spend reading to your children or being with your spouse or volunteering at the local soup kitchen.

Ultimately, anything close to genuine self-sufficiency is the road to poverty. An avid do-it-yourselfer might change her own oil, bake her own bread and build a bookcase in her basement workshop. But she won't forge her own steel and the fashion her own car. She won't grow her own wheat or mill her own flour. She won't cut down a tree and plane the wood for that bookcase. And even if she did, she'll buy the saw. She won't make it for herself.

By specializing in a very small set of skills, selling those skills in the marketplace and relying on the skills of other specializing individuals we create much of what we call specialization. We specialize because the costs of self-sufficiency are so high.

Of all the constraints we face, the constraint of 24 hours in a day and a finite lifetime are ones we cannot escape. Getting the most out of life means using that precious time wisely. Using that time wisely means using and understanding opportunity cost.

Russell Roberts. "Getting the Most Out of Life: The Concept of Opportunity Cost." February 5, 2007. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Columns/y2007/Robertsopportunitycost.html

Treasure Island: The Power of Trade. Part I. The Seemingly Simple Story of Comparative Advantage

by Russell Roberts

We all have a good intuitive understanding of the power of trade. At the simplest level, if you have something I want and if I have something you want, and we trade we each other, we're both better off.

So if I can knit and you can't, and if you can grow corn and I can't, it obviously makes sense for me to swap one of my sweaters for some of your corn. You and I might argue about the "price"—how many ears of corn one of my gorgeous sweaters is worth—but once the deal is done, you're warmer and I'm on my way to being less hungry.

Trade seems simple.

Almost two hundred years ago, **David Ricardo** discovered something not so simple about trade that came to be called **comparative advantage**. Here is a story that will let us explore the mysteries of trade together.

Treasure Island

Once upon a time, Pete and Pamela Palmer of New York, NY were sailing alone on their South Seas honeymoon. Alarmed at a suddenly darkening sky, the Palmers tried to steer their small craft homeward, but it was too late. The Palmers found themselves in the middle of a terrible tropical storm. They were blown many miles from the marina at the resort where they were staying. The sailboat capsized and the couple barely made it to a island they somehow spied amid the sheets of rain and the surging waves.

The Palmers explored the island. Most of the island was surrounded by steep cliffs. Only the beach where they were washed ashore allowed easy access to the ocean. At the island's center was a spring of pure water. They found no sign of human habitation.

The Palmers slept near the beach so they could have all day to spear fish with a sharpened stick. They found broken coconut shells to carry fresh water from the spring at the center of the island. They spent their days fishing and bringing water from the spring, waiting to be rescued. But no help came.

The situation wasn't very promising. Pete was a graphic designer for a high-powered ad agency in New York City. Pam was in charge of information technology at the same firm. Neither was very skilled at island living.

Getting to the center of the island where the fresh water was located took a full day for the round trip. Neither Pete nor Pam was able to carry more than two coconut shells of water back to the shelter they made from palm fronds. And whether Pete or Pam did the fishing, either one in a full day of fishing could only catch two of the elusive fish that darted here and there in the shallow water.

The meager catch often left them hungry. If both of the Palmers fished, they could double their catch, but when they tried that, the lack of water led to dehydration and dizziness and their fish catch faltered. All they could do was to try and survive until they were rescued.

One night, a storm came up. The rain fell in torrents. A flash of lightning illuminated the beach and the ocean. Was that a person struggling in the water? There were two people! Another couple had been shipwrecked.

The Palmers helped the two young people out of the water. Fred and Felicia Fisher, from San Diego, California, also on their honeymoon, collapsed at the Palmers' feet, exhausted from their ordeal.

The next morning, the storm was over and the Palmers showed the Fishers the water hole, the improvised coconut shell canteens and the sharpened stick they used for fishing.

Before the week was out, it was clear that the Fishers were more prepared for island life than the Palmers. The Fishers were taller and bigger. The Palmers noticed that whether Fred or Felicia carried the coconut shells of fresh water from the middle of the island, they could carry three at a time, rather than the two that either Palmer could carry without spilling any. And they seemed a lot better at fishing, too.

Something else was clear, alas, to the Palmers. The Fishers didn't want to have anything to do with them. Any attempts at friendship or cooperation were quickly rejected. So the Palmers labored on, waiting for rescue and doing the best they could.

Weeks passed, then months. One night, the Fishers were grilling fish stuffed with herbs the Fishers had grown in the herb garden they were able to start because they had that extra coconut shell of water.

A breeze carried the delightful scent over to the Palmers. Pete did not enjoy it.

"One lousy fish," he said. "I think we're both losing weight," Pete answered. "Do I look gaunt?"

"No." Pam lied. But he did look thinner. She knew she was losing weight, too. Her clothes were much looser than when they had arrived, a giveaway.

"We have to get more food," Pete said. "More protein. I've been thinking about it for a few days now. It seems to me we have three options and none of them are very attractive."

Pete outlined the three options to his wife:

1. 1. Plunder—attack the Fishers and steal some of their fish
2. 2. Charity—beg the Fishers for some fish
3. 3. Invest—give up consumption today for consumption tomorrow—figure out a way to make a net or a better spear

They both agreed that plunder would never work. The Fishers were bigger and stronger. Charity was out of the question. The Fishers didn't seem very charitable. Investment wasn't feasible. By the time they figured out a way to make a net or a better spear, they'd be dead from hunger. What could they do?

"Funny, you mentioned 'plunder.' " Pam said. "It's such an old-fashioned word. I had an economics professor who actually talked a lot about plunder. He said until the birth of capitalism, plunder was the main way you got ahead. You knocked your neighbor over the head and took his stuff. Here's the interesting thing about plunder. Plunder looks like it merely rearranges the economic pie."

"That's right," Pete said, happy to forget their troubles for a moment and think about the impact of plunder. "Theft means more for me and less for my neighbor. The total amount doesn't change."

"That seems right but my teacher pointed out that theft actually makes the size of the pie, properly measured, smaller."

"What's 'properly measured' mean?" Pete asked.

"If your neighbor might bang you on the head, you build a fence, you lock your doors, you buy a gun. All of those things are part of the economic pie, but they're a kind of economic activity you don't get any real pleasure from. They're things you have to do in order to keep your hold on the part of the pie you actually enjoy. So the true pie, the part that makes you happy or gives you satisfaction, is actually smaller. Plus, if you think your neighbor might bop you on the head, you don't bother to try and make the pie bigger. It's like that fishing net you mentioned. Even if we could build one before we starved to death, the Fishers would just steal it from us. So why bother in the first place? Theft makes the pie smaller and keeps it that way."

"Great. So now you know why I'm depressed. We need a miracle. Someone has to find us soon and given how long we've been gone, the odds of that aren't very good."

"Wait a minute," Pam said, lost in thought.

"What?"

"Hang on." Pam stayed quiet for a moment. "There might be a fourth way."

"A fourth way? What do you mean?"

"Theft, begging, weaving a fishing net. That's three. But there's a fourth way. I learned it in my economics class."

"Oh, great," Pete said. "Let me guess. I've got it! Assume we have more fish!" Pete shook his head. He'd had an economics class in college. A bunch of theory and silly assumptions that had little to do with the real world. Economists were so unrealistic.

"You're close," Pam said. She took a stick and began making marks in the sand. She stared at the marks, then smudged them out and started over, making a new set.

Pete stared, too. The marks looked like fish and some circles. What did they mean? Something to Pam, evidently. Finally, she nodded. "It just might work," she said to herself.

"What kind of economics class, was it, Egyptian Economics? Those look like hieroglyphics."

"No, it was a principles of economics class. When you mentioned plunder, it reminded me of the coolest thing I learned in that class."

"What, assuming away all the unpleasant parts of reality?"

"Nope. Comparative advantage. David Ricardo's great contribution to economic theory."

"I've heard of that, Pam. But isn't that about trade?"

"It is. We're going to trade with the Fishers and it's going to save our lives."

She made some more marks in the sand and showed Pete what she had in mind. There were too many fractions and ratios for his taste, but he got the idea. She might be right, he thought. Maybe.

The next morning, Pam and Pete took the half-day journey to the water hole, filled up two coconut shells of water each and carried them back home, reaching the beach where they fished and slept at sunset, too late for either of them to go fishing. Pete couldn't help worrying

that they were committing suicide by skipping fishing. Especially when they needed more protein and not less. But Pete trusted his wife.

They stored two of shells of water near where they slept and carried two over to where the Fishers were hanging out on their stretch of beach, enjoying the sunset.

"Hello," Pam said. "Would you guys be interested in some extra water?"

"Sure," Felicia Fisher said. She thought about how nice it would be to have a little extra. She could grow a few more herbs. She could take a bath without having to trek to the water hole and getting back late.

"So what's the catch?" asked her husband.

"I'd like to swap. Two shells of water for four fish."

"Four fish!" Fred Fisher was furious. He stood up. "Four fish! We catch six fish a day. If we gave you four, then—"

"You catch six fish a day? That's wonderful. That means—"

"If we made that deal," Fred Fisher interrupted, "we'd end up with two fish a day. I'm still hungry after eating three fish a day. So beat it."

After the Palmers were out of earshot, Pam had an inspiration.

"Let's just leave the Fishers this water as a gift."

"Are you crazy?"

"No, I don't think so." And once again Pam explained what she had in mind. While the Fishers were enjoying the sunset, the Palmers left the water at the entrance of the Fisher's hut. The next day, they did the same thing. And the next day as well, though by the third time, it was dark. They had to walk slower than usual—they were weak with hunger.

But on the third day, as they left the water for the Fishers, they were met by Felicia Fisher.

"Here," she said, extending her arms. She handed Pam four fish, wrapped in cool leaves to keep them fresh. "Enjoy. You were wiser than we were."

The Fishers continued to make the deal every day, accepting two waters for four fish. It turned out to be a good deal for both families. The possibility of trade changed how the Fishers and Palmers spent their days.

Once the trade was in place, both of the Fishers went fishing and caught 12 fish. After giving four to the Palmers in exchange for two waters, they were left with 8 fish, two more than they had enjoyed when they were self-sufficient. They had one less water, but they could survive on two waters a day. Their herbs died. But eight plain fish each day were better than six tastier ones.

The Palmers both went for water every day. After giving two waters to the Fishers, they were able to have four fish, two more than they had enjoyed when they were self-sufficient.

Comparative Advantage

The textbook story of this transformation is that the Fishers have a comparative advantage in fishing. Though they are better than the Palmers at both water collecting and fishing, the Fishers have a comparative advantage at fishing. They are *relatively* better at fishing than they are at collecting water, *compared* to the Palmers. Notice that there are two senses of comparative in the previous sentence—we are comparing fishing to water collecting and the Fishers to the Palmers. Comparative advantage has no meaning in a one-good world or in a one-family economy.

But the tricky nature of the sense of "comparative advantage" leads to confusion when people say things like "the lesson of comparative advantage is to do what you do best" or "the lesson of comparative advantage is to do what you do 'relatively well.' " What do these statements mean exactly? How do they generalize to international trade in a world of many nations and many goods and services?

An easier way to understand the lesson of comparative advantage is to see that there are two ways the Palmers to get fish, the direct way and the roundabout way. The direct way is go fishing. The roundabout way is to collect water and trade it for fish. Which is better? It depends of which way is cheaper. If the Palmers fish, they must sacrifice four waters to get four fish. If the Palmers swap with the Fishers, it only costs them two waters in trade to acquire fish. The roundabout way is cheaper for the Palmers.

For the Fishers, the logic is the opposite. Even though they are better than the Palmers at gathering water, it is cheaper for the Fishers to gather water by catching fish and swapping it for water. And it is cheaper for the Fishers to get fish by catching fish themselves, the direct way. There is no way for the Fishers to get water and find a trade with the Palmers that can make both of them better off.

A visitor arriving on the island to rescue the two families would see one family that was good at fishing and another at collecting water. The picture would look like the one I told at the beginning of this essay—if you're good at growing corn and I'm good at knitting, we should

swap corn for a sweater. So the Fishers swap some of their fish for some of the Palmers water. But clearly the visitor is missing the real picture of what was going on. What the visitor sees masks what is really going on.

Even a visitor who discovers the history of the island might be misled about the power of specialization. We usually think of the gains from specialization as coming from getting better at something from doing the same thing over and over again. Yet no one on the island had gotten better at what they do.

So where did those extra fish come from? Even in the simplest of worlds, this world of Treasure Island where two families swap two goods among themselves, things are not so simple. And what are the lessons of comparative advantage in the real world, the world we live in where there are millions of us trading millions of goods and services across international borders, a world where jobs are destroyed and created rather than just rearranged as they are on Treasure Island, a world where the terms of trade are set by markets rather than a negotiation by two parties in desperate straits? Is the simple Ricardian lesson of comparative advantage anything more than a clever textbook example that yields tricky exam questions?

Russell Roberts. "Treasure Island: The Power of Trade. Part I. The Seemingly Simple Story of Comparative Advantage." November 6, 2006. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Columns/y2006/Robertscomparativeadvantage.html

Treasure Island: The Power of Trade. Part II. How Trade Transforms Our Standard of Living

by Russell Roberts

Trade, on the surface, seems simple. You have something I want and I have something you want. So we trade and both of us are better off. Yet, the deepest power of trade is hidden. The unseen side of trade is its impact on how we use our time and the wages we earn. Being able to trade with others, whether it's our neighbors across the street or our neighbors across the border, gives us the opportunity to rely on others for some or most of the goods and services we enjoy. And that reliance on others, in turn, allows even the poorest among us to have a standard of living that would be unimaginable under self-sufficiency. How does trade transform our standard of living?

To begin to answer that question in the **first part of this essay**, I told the story of the Fishers and the Palmers, two newly-wed families shipwrecked on a tropical island, desperately seeking food and water. The Palmers can barely gather enough fish and fresh water to survive. The Fishers are better at both. But even though the Palmers are inferior in both tasks to the Fishers, they still have something to offer in trade—their time. By collecting water for the Fishers, the Fishers have more time to fish. And by fishing for the Palmers, the Fishers create more time for the Palmers to collect water.

In the example I used, the Fishers have a comparative advantage in fishing. Even though they are better water collectors than the Palmers, collecting water means not fishing. It is better for the Fishers to produce water by what I call the roundabout way—by fishing and swapping the fish for water. Similarly, the Palmers have a comparative advantage in collecting water. While they are able to fish, fishing is costly—it means giving time up from water collecting. Better to get fish by collecting water and swapping it for fish.

The result is a higher standard of living for both families. How does this happen?

The Power of Specialization

The simple answer is specialization. When we think of the benefits of specialization, we think of learning-by-doing, the extra productivity that comes from doing one thing over and over. This effect of specialization can be very powerful. If you only grow cedar trees, you learn a lot about how they grow and how they die. You learn a lot about how to respond to an increase in the

price of cedar trees that's temporary and one that's permanent. You become a more effective user of land and human effort and equipment. So it can be productive to have someone specialize in growing cedar trees rather than having the maker of pencils, say, master not just the assembly of pencils, but the growing of the cedar necessary to make the wood of the pencil.

But learning by doing isn't the source of the increased productivity of the Fishers and Palmers. No one has actually become more productive. The source of the increased productivity is simply a better assignment of people to the various tasks. It is tempting to say that people have been assigned to what they do best, but that statement has no meaning. After all, the Fishers are the best water collectors and they have given up water collecting.

People have been assigned to the tasks that lead to the greatest output where "greatest" takes into account the importance of extra protein relative to diminished water. Trade has allowed the two families to use the one truly scarce resource on the island—the time of the families—as productively as possible.

In the first installment of this story, I portrayed the Fishers as cold, cruel and unfriendly. They traded with the Palmers out of the narrowest self-interest. What is remarkable about the post-trade assignment of tasks is that it is the assignment of tasks that the Fishers and Palmers would agree to if they were all members of one loving family. Yet the invisible hand of self-interest has induced the two families to create the same level of output they would create in a situation where they all cared about each other.

Trade, fundamentally, is about cooperation. Your skills allow me to leverage mine by specializing, making both of us better off. Notice that there is nothing constant about comparative advantage. If the Fishers manage to escape from the island and a new family arrives that is again better than the Palmers at each activity but in a different ratio, the Palmers could have a comparative advantage at fishing even though nothing about their skills has changed. The lesson is that the best use of your time in a world of trade depends on the skills of others. Our differences create the potential for specialization and the creation of wealth.

Trade based on our differences is one source of specialization. The other comes from Adam Smith's insight that the division of labor is limited by the extent of the market. Smithian specialization comes from what we might call economies of scale. When there are enough families collecting water or enough families fishing, then someone can make a living fabricating canteens or fishing nets. And when the markets for canteens or fishing nets grows large enough, they can be produced by workers as part of an assembly line or production process rather than by individual craftsmen. Both forms of specialization, from trade based on our differences and from economies of scale based on the expansion of the market, increase our opportunities beyond what they would be under self-sufficiency.

Self-sufficiency is the road to poverty. Trade creates wealth by letting me use your skills along with mine.

This story of how trade expands opportunities has nothing to do specifically with *international* trade—trade across human-created borders. There is nothing significant about the nationality or the birthplace or the accents or language of the people in the story who do the trading.

Specialization in a Modern Economy

What is the lesson of comparative advantage, specialization and the story of the Palmers and the Fishers for our lives?

The lesson of comparative advantage is that while anything we do is worth doing well, not everything we do well is worth doing. Not everything we do well is worth doing. A CEO who is a great cook still orders take-out, even take-out that isn't as good as what the CEO can make. The cost of cooking isn't just the grocery bill—it's the time taken away from managing the company.

Consider **Jane Galt**, the pseudonym of an accomplished journalist who blogs on economics and policy. Evidently, she loves to cook. She recently **blogged on the best kitchen gadgets**. Her descriptions made we want to buy all of them—Jane writes very well and her passion for cool stuff is contagious. A visitor to the site commented, perhaps tongue in cheek, that the failure of Jane to be hired as a copywriter for a kitchenware catalog was proof that markets don't work well. But of course, just the opposite is true. Jane remains a journalist precisely because markets do work well—as good as she is at writing catalog copy, she's even better at journalism. For Jane to become a copywriter for a catalog would be very costly even though she's very good at it. I presume the kitchenware makers can't pay her enough to bid her away from her day job as a journalist.

The same lesson applies to a country. Just because America could make fabulous televisions doesn't mean we should have a television industry. The cost of producing televisions means less of something else. It might be better to make that something else and trade with foreigners for televisions. Letting people outside the United States sell us televisions and cars and watches and steel and shoes frees up resources that allow us to make more of other things we value.

Or consider Bill Belichick, the coach of the New England Patriots who was an undergraduate economics major. He would probably make a fine economist. But he is also a fine football coach. It is tempting to say he's a better football coach than he is an economist. But that's not a meaningful statement. What can "better" possibly mean in the everyday sense of the word? Had Belichick lived in the 1930s, he might have chosen economics as his profession. But the productivity of coaching football in 2006 is much higher than it was in 1930. So he coaches. The

most productive use of one's time depends on the skills that others can provide. But it also depends on the value of those skills. When football is more popular as it is today compared to the 1930s, being an economist is too expensive a route for Mr. Belichick.

These real world examples help us understand the significance of trade in the real world where there are millions of people, millions of products and millions of ways to spend our time working in the marketplace. In what activities do I have a comparative advantage? How can I possibly make the calculations of the ratio of my productivity to yours and everyone else's? What is my comparative advantage?

The existence of prices and wages makes it possible to answer these impossible questions. Prices and wages emerge as we trade with one another. They are a by-product of trade. But the prices and wages are in turn what make trade so powerful in an economy with millions of people doing millions of tasks. Prices and wages help us decide what to produce via trade—the roundabout way—and what to produce on our own—the direct way. Suppose fish is $5 a pound and I can catch three pounds of fish in a day. Look at my lecturing wage. If I can earn more than $15 dollars a day lecturing, I lecture and visit the fish market at the end of the day. And so it is with most of the things we enjoy. We produce them the roundabout way by buying them with the money we earn working at the most productive activity the marketplace find for our time.

Money is not all that matters. I might still teach even if I earned less than $15 a day simply because I love teaching compared to fishing. And I might fish even if it is "inefficient" because I love to fish. Prices and wages allow us to choose how we spend our time in the most productive way possible, where "most productive" includes the non-monetary satisfactions we receive on the job alongside the money. Without prices and wages we would have no way of possibly figuring out the best ways to use our time, what we should specialize in and what we should let others make for us via trade.

Without prices and wages, how could Bill Belichick possibly know that football makes a good hobby in 1930 but a passionate 80-hour a week job in 2006?

The simple story of the Palmers and the Fishers captures many of the essential lessons of trade:

- Trade creates wealth. Self-sufficiency is the road to poverty.
- The specialization we see in the world around us is the result of trade. We would do very different tasks and be much poorer if we limited either foreign or domestic trade
- The truly scarce resource in our lives is time and trade allows us to leverage our time and productivity in extraordinary ways by cooperating with others
- Not everything we do well as individuals or as a nation is worth doing

- Whether what we do well is worth doing, depends on the skills and desires of those around us. What is wise and productive in one time and place may not be wise and productive in another.

Coping with Economic Change

What's the most important element missing from the simple story of the Fishers and the Palmers? In this simple story, everybody gains from trade all the time. In the real world, the distributional aspects of trade are the source of much of the concern some have about globalization and the expansion of trade. But even here, I think the simple story of the Fishers and the Palmers has something to teach us.

Let's go back to Treasure Island with the Fishers and the Palmers. Suppose the two families settle into their new life of trade where the Palmers spend their days specializing in water collecting and the Fishers spend their days fishing. They are surviving and decide to stay on the island and raise their families there. One day, something happens that benefits one family and harms the other. Which of the following scenarios would you tolerate and which would you try and stop if you were the ruler of the island:

- One day, a thirsty fisherman shows up on the island. He has dozens of fish in his boat. He is thrilled to swap many of them with the Palmers in return for a coconut shell of fresh water to quench his thirst on the way home. He promises to return the next day and the day after and make the same trade. The Fishers are despondent. Their skills are in lower demand than before.

- One day, a new family is shipwrecked on the island. This family is exactly twice as good as the Fishers at both fishing and water collecting. The Fishers are despondent. Their skills are in lower demand than before.

- One day, the Palmers discover a new cove on the island where the fishing is much easier. You simply have to reach down and pick up the fish. The Fishers are despondent. Their skills are in lower demand than before

- One day, the Palmers figure out a way to craft a net. The net lets them catch as many fish as they want. The Fishers are despondent. Their skills are in lower demand than before.

If you were in charge of this island, would you interfere with any of these changes that harm the Fishers? Would you ban imports of fish? Would you keep out immigrants who fish? Would you fence off the cove? Destroy the net? You might want to know if the fall in the Fisher's well-being is temporary or permanent. But would there be any logic to treating the first two

scenarios involving trade, differently from the last two scenarios involving increases in productivity from the cove or the net?

Our political system treats them very differently. Congress won't bail out Chrysler if Ford finds a way to make cheaper and better cars. But Congress might bail out Chrysler if Honda makes cheaper and better cars. Is there any fundamental difference between these two examples? Cheaper cars, whether they are from Ford or Honda, ultimately make America a richer country though not every American will benefit right away.

Even the Fishers can benefit from economic change. That change creates the opportunity for the Fishers to move away from fishing and do something else productive. There is more to life than fish and water. And the Fishers have other skills outside of fishing. They chose fishing because at the time, that was the most productive activity for them. But they can do other things. Now that cheap fish are available, something else is the best use of the Fisher's time. And if the Fishers struggle to adapt to the changes on Treasure Island, their children will surely inherit a richer range of choices.

Without an increase in productivity or the opportunity to trade beyond these two families, the Palmers and the Fishers will always live near subsistence. But if the families on the island can now acquire fish more easily, then the Fishers and their children can devote their time to doing other things that enrich their lives and the lives of those around them. The Palmers will have the ability to pay for those things now that fish are cheaper.

This is the story of American economic life in the 20th century. Innovation and expanded trade reduce the number of Americans necessary to produce what we want. Yet the number of jobs doesn't fall. The number of jobs grows steadily with population and the desire to work. As innovation and trade reduce the number of people working in agriculture or manufacturing, that frees up capital and human skills to make other things, things we couldn't have if we lived in a static world, the antibiotics and iPods and cell phones and heart valves and MRI machines and flat screen TVs. Banal things and glorious things. Things that entertain and things that extend our lifespan. Our skills and the skills of the next generation can turn to creating and making those things.

Not everything we do well is worth doing. And even the things worth doing now are not necessarily worth doing tomorrow. Self-sufficiency is the road to poverty. Innovation and trade are the road to prosperity.

Russell Roberts. "Treasure Island: The Power of Trade. Part II. How Trade Transforms Our Standard of Living." December 4, 2006. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Columns/y2006/Robertsstandardofliving.html

Balance of Payments
by Herbert Stein

Few subjects in economics have caused so much confusion—and so much groundless fear—in the past four hundred years as the thought that a country might have a deficit in its balance of payments. This fear is groundless for two reasons: (1) there never is a deficit, and (2) it would not necessarily hurt anything if there was one.

The balance-of-payments accounts of a country record the payments and receipts of the residents of the country in their transactions with residents of other countries. If all transactions are included, the payments and receipts of each country are, and must be, equal. Any apparent inequality simply leaves one country acquiring assets in the others. For example, if Americans buy automobiles from **Japan**, and have no other transactions with Japan, the Japanese must end up holding dollars, which they may hold in the form of bank deposits in the United States or in some other U.S. **investment**. The payments Americans make to Japan for automobiles are balanced by the payments Japanese make to U.S. individuals and institutions, including banks, for the acquisition of dollar assets. Put another way, Japan sold the United States automobiles, and the United States sold Japan dollars or dollar-denominated assets such as treasury bills and New York office buildings.

Although the totals of payments and receipts are necessarily equal, there will be inequalities—excesses of payments or receipts, called deficits or surpluses—in particular kinds of transactions. Thus, there can be a deficit or surplus in any of the following: merchandise trade (goods), services trade, foreign investment income, unilateral transfers (**foreign aid**), private investment, the flow of gold and money between central banks and treasuries, or any combination of these or other international transactions. The statement that a country has a deficit or surplus in its "balance of payments" must refer to some particular class of transactions. As**Table 1** shows, in 2004 the United States had a deficit in goods of $665.4 billion but a surplus in services of $48.8 billion.

Many different definitions of the balance-of-payments deficit or surplus have been used in the past. Each definition has different implications and purposes. Untilabout 1973 attention was focused on a definition of the balance of payments intended to measure a country's ability to meet its obligation to exchange its currency for other currencies or for gold at fixed exchange rates. To meet this obligation, countries maintained a stock of official reserves, in the form of gold or foreign currencies, that they could use to support their own currencies. A decline in this stock was considered an important balance-of-payments deficit because it threatened the ability of the country to meet its obligations. But that particular kind of deficit, by itself, was

never a good indicator of the country's financial position. The reason is that it ignored the likelihood that the country would be called on to meet its obligation and the willingness of foreign or international monetary institutions to provide support.

After 1973, interest in official reserve positions as a measure of balance of payments greatly diminished as the major countries gave up their commitment to convert their currencies at fixed exchange rates. This reduced the need for reserves and lessened concern about changes in the size of reserves. Since 1973, discussions of "the" balance-of-payments deficit or surplus usually refer to what is called the current account. This account contains trade in goods and services, investment income earned abroad, and unilateral transfers. It excludes the capital account, which includes the acquisition or sale of securities or other property.

Because the current account and the capital account add up to the total account, which is necessarily balanced, a deficit in the current account is always accompanied by an equal surplus in the capital account, and vice versa. A deficit or surplus in the current account cannot be explained or evaluated without simultaneous explanation and evaluation of an equal surplus or deficit in the capital account.

A country is more likely to have a deficit in its current account the higher its price level, the higher its gross national product, the higher its **interest rates**, the lower its barriers to imports, and the more attractive its investment opportunities—all compared with conditions in other countries—and the higher its exchange rate. The effects of a change in one of these factors on the current account balance cannot be predicted without considering the effect on the other causal factors. For example, if the U.S. government increases tariffs, Americans will buy fewer imports, thus reducing the current account deficit. But this reduction will occur only if one of the other factors changes to bring about a decrease in the capital account surplus. If none of these other factors changes, the reduced imports from the tariff increase will cause a decline in the **demand** for foreign currency (yen, deutsche marks, etc.), which in turn will raise the value of the U.S. dollar (see **foreign exchange**). The increase in the value of the dollar will make U.S. exports more expensive and imports cheaper, offsetting the effect of the tariff increase. The net result is that the tariff increase brings no change in the current account balance.

Contrary to the general perception, the existence of a current account deficit is not in itself a sign of bad economic policy or bad economic conditions. If the United States has a current account deficit, all this means is that the United States is importing capital. And importing capital is no more unnatural or dangerous than importing coffee. The deficit is a response to conditions in the country. It may be a response to excessive **inflation**, to low **productivity**, or to inadequate **saving**. It may just as easily occur because investments in the United States are secure and profitable. Furthermore, the conditions to which the deficit responds may be good

or bad and may be the results of good or bad policy; but if there is a problem, it is in the underlying conditions and not in the deficit per se.

Table 1 The U.S. Balance of Payments, 2004

*. Includes statistical discrepancy.

Goods	−665.4
Services	+48.8
Investment income	+30.4
Balance on goods, services, and income	−587.2
Unilateral transfers	−80.9
Balance on current account	−668.1
Nonofficial capital*	+270.6
Official reserve assets	+397.5
Balance on capital account	+668.1
Total balance	0

Source: U.S. Department of Commerce, *Survey of Current Business*.

Notes: Dollar amounts are in billions; += surplus; − = deficit.

During the 1980s there was a great deal of concern about the shift of the U.S. current account balance from a surplus of $5 billion in 1981 to a deficit of $161 billion in 1987. This shift was accompanied by an increase of about the same amount in the U.S. deficit in goods. Claims that this shift in the international position was causing a loss of employment in the United States were common, but that was not true. In fact, between 1981 and 1987, the number of people employed rose by more than twelve million, and employment as a percentage of **population** rose from 60 percent to 62.5 percent.

Many people were also anxious about the other side of the accounts—the inflow of foreign capital that accompanied the current account deficit—fearing that the United States was becoming owned by foreigners. The inflow of foreign capital did not, however, reduce the assets owned by Americans. Instead, it added to the capital within the country. In any event, the amount was small relative to the U.S. capital stock. Measurement of the net amount of foreign-owned assets in the United States (the excess of foreign assets in the United States over U.S. assets abroad) is very uncertain. At the end of 1988, however, it was surely much less than 4 percent of the U.S. capital stock and possibly even zero. Later, there was fear of what would happen when the capital inflow slowed down or stopped. But after 1987 it did slow down and the economy adjusted, just as it had adjusted to the big capital inflow earlier, by a decline in the current account and trade deficits.

These same concerns surfaced again in the late 1990s and early 2000s as the current account went from a surplus of $4 billion in 1991 to a deficit of $666 billion in 2004. The increase in the current account deficit account, just as in the 1980s, was accompanied by an almost equal increase in the deficit in goods. Interestingly, the current account surpluses of 1981 and 1991 both occurred in the midst of a U.S. recession, and the large deficits occurred during U.S. economic expansions. This makes sense because U.S. imports are highly sensitive to U.S. economic conditions, falling more than proportionally when U.S. GDP falls and rising more than proportionally when U.S. GDP rises. Just as in the 1980s, U.S. employment expanded, with the U.S. economy adding more than twenty-one million jobs between 1991 and 2004. Also, employment as a percentage of population rose from 61.7 percent in 1991 to 64.4 percent in 2000 and, although it fell to 62.3 percent in 2004, was still modestly above its 1991 level.

How about the issue of foreign ownership? By the end of 2003, Americans owned assets abroad valued at market prices of $7.86 trillion, while foreigners owned U.S. assets valued at market prices of $10.52 trillion. The net international investment position of the United States, therefore, was $2.66 trillion. This was only 8.5 percent of the U.S. capital stock.

Herbert Stein. "Balance of Payments." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/BalanceofPayments.html

Taxation
by Joseph J. Minarik

In recent years, taxation has been one of the most prominent and controversial topics in economic policy. Taxation has been a principal issue in every presidential election since 1980—with a large tax cut as a winning issue in 1980, a pledge of "Read my lips: no new taxes" in the 1988 campaign, and a statement that "It's your money" providing an enduring image of the 2000 campaign. Taxation was also the subject of major, and largely inconsistent, policy changes. It remains a source of ongoing debate.

Objectives

Economists specializing in public finance have long enumerated four objectives of tax policy: simplicity,**efficiency**, fairness, and revenue sufficiency. While these objectives are widely accepted, they often conflict, and different economists have different views of the appropriate balance among them.

Simplicity means that compliance by the taxpayer and enforcement by the revenue authorities should be as easy as possible. Further, the ultimate tax liability should be certain. A tax whose amount is easily manipulated through decisions in the private marketplace (by investing in "tax shelters," for example) can cause tremendous complexity for taxpayers, who attempt to reduce what they owe, and for revenue authorities, who attempt to maintain government receipts.

Efficiency means that taxation interferes as little as possible in the choices people make in the private marketplace. The tax law should not induce a businessman to invest in real estate instead of research and development—or vice versa. Further, tax policy should, as little as possible, discourage work or **investment**, as opposed to leisure or consumption. Issues of efficiency arise from the fact that taxes always affect behavior. Taxing an activity (such as earning a living) is similar to a price increase. With the tax in place, people will typically buy less of a good—or partake in less of an activity—than they would in the absence of the tax.

The most efficient tax system possible is one that few low-income people would want. That superefficient tax is a head tax, by which all individuals are taxed the same amount, regardless of income or any other individual characteristics. A head tax would not reduce the incentive to work, save, or invest. The problem with such a tax, however, is that it would take the same amount from a high-income person as from a low-income person. It could even take the entire income of low-income people. And even a head tax would distort people's choices somewhat,

by giving them an incentive to have fewer children, to live and work in the underground economy, or even to emigrate.

Within the realm of what is practical, the goal of efficiency is to minimize the ways in which taxes affect people's choices. A major philosophical issue among economists is whether tax policy should purposefully deviate from efficiency in order to encourage taxpayers to pursue positive economic objectives (such as **saving**) or to avoid harmful economic activities (such as smoking). Most economists would accept some role for taxation in so steering economic choices, but economists disagree on two important points: how well policymakers can presume to know which objectives we should pursue (e.g., is discouraging smoking an infringement on personal freedom?), and the extent of our ability to influence taxpayer choices without unwanted side effects (e.g., will tax breaks for saving merely reward those with the most discretionary income for actually saving little more than they would without a tax break?).

Fairness, to most people, requires that equally situated taxpayers pay equal taxes ("horizontal equity") and that better-off taxpayers pay more tax ("vertical equity"). Although these objectives seem clear enough, fairness is very much in the eye of the beholder. There is little agreement over how to judge whether two taxpayers are equally situated. For example, one taxpayer might receive income from working while another receives the same income from inherited wealth. And even if one taxpayer is clearly better off than another, there is little agreement about how much more the better-off person should pay. Most people believe that fairness dictates that taxes be "progressive," meaning that higher-income taxpayers pay not only more, but also proportionately more. However, a significant minority takes the position that tax rates should be flat, with everyone paying the same proportion of their taxable income. Moreover, the idea of vertical equity (i.e., the "proper" amount of progressivity) often directly contradicts another notion of fairness, the "benefit principle." According to this principle, those who benefit more from the operations of government should pay more tax.

Revenue sufficiency might seem a fairly obvious criterion of tax policy. Yet the federal government's budget has gone from enormous deficit to large surplus, and back again, in just ten years. Part of the reason for the deficit is that revenue sufficiency may conflict with efficiency and fairness. Economists who believe that income taxes strongly reduce incentives to work or save, and economists who believe that typical families already are unfairly burdened by heavy taxes, might resist tax increases that would move the federal budget toward balance.

Likewise, other objectives of tax policy conflict with one another. High tax rates for upper-income households are inefficient but are judged by some to make the tax system fairer. Intricate legal provisions to prevent tax sheltering—and thus make taxes fairer—would also make the tax code more complex. Such conflicts among policy objectives are a constant constraint on the making of tax policy.

The U.S. Tax System

At the federal level, total tax collections have hovered in a fairly narrow range around 19 percent of the gross domestic product (GDP) since the end of the Korean War, though the percentage was down sharply in 2003 (see **Table 1**). The individual income tax has provided just under half of that revenue over the entire period. The corporation income tax was the source of almost a third of total revenue at the beginning of the period, but it has declined dramatically to under 10 percent today. In mirror image, the payroll tax for**Social Security** began at just under 10 percent of total revenue but increased sharply to about 40 percent as the elderly **population** and **inflation**-adjusted Social Security benefits grew and as the Medicare program was added to the system. The relative contribution of excise taxes (primarily on alcohol, tobacco, gasoline, and telephone services) has declined significantly.

One little-recognized aspect of the development of federal taxes is the gradual decline of revenues other than those earmarked for the Social Security and Medicare programs. Although total federal taxes are a roughly constant percentage of GDP, the Social Security payroll tax has increased significantly while other taxes have been cut in approximately equal measure. The result has been that federal revenues available for programs other than Social Security and Medicare have been squeezed from almost 17 percent of GDP in 1954 to as little as 10 percent in 2003.

States rely primarily on sales taxes, but income taxes are becoming increasingly important. Local governments rely most heavily on property taxes. Contrary to what many believe, any explosion in taxation has been at the state and local levels. Unlike federal taxes, state and local taxes have increased substantially—from about 6 percent of GDP in 1954 to 9 percent in 2002 (see **Table 2**).

Thus, although the level of federal taxes has been relatively constant for nearly thirty years, total taxes have increased because state and local taxes have increased. (The data in**Tables 1** and **2** are computed on different accounting years and procedures, and thus cannot be added together; the general picture they suggest is, however, accurate.) The increase in state and local taxes has added to the taxpayers' burden and has limited the federal government's ability to cut the federal deficit and to increase spending. It is true, though, that the federal government requires state and local governments to provide various government services.

Table 1 Federal Tax Revenues by Type of Tax, Percentages of GDP for Selected Fiscal Years

Year	Individual Income	Corporate Income	Social Security	Excise	Other	Total
1954	7.8	5.6	1.9	2.6	0.5	18.5
1959	7.5	3.5	2.4	2.2	0.6	16.2
1964	7.6	3.7	3.4	2.1	0.7	17.6
1969	9.2	3.9	4.1	1.6	0.9	19.7
1974	8.3	2.7	5.2	1.2	1.0	18.3
1979	8.7	2.6	5.6	0.7	0.9	18.5
1984	7.8	1.5	6.2	1.0	0.9	17.3
1989	8.3	1.9	6.7	0.6	0.9	18.3
1994	7.8	2.0	6.6	0.8	0.8	18.1
1999	9.6	2.0	6.7	0.8	0.9	20.0
2003	7.3	1.2	6.6	0.6	0.7	16.5

Source: Office of Management and Budget.

Table 2 State and Local Tax Revenues by Type of Tax, Percentages of GDP

Year	Individual Income	Corporate Income	Property	Sales	Other	Total
1954	0.3	0.2	2.5	1.7	1.1	5.8
1959	0.4	0.2	2.9	2.2	0.9	6.7
1964	0.6	0.3	3.3	2.5	0.9	7.5
1969	1.0	0.4	3.3	2.9	0.8	8.4
1974	1.4	0.4	3.3	3.2	0.8	9.1
1979	1.5	0.5	2.5	3.0	0.7	8.3
1984	1.7	0.5	2.5	3.1	0.8	8.6
1989	1.9	0.4	2.7	3.1	0.7	8.9
1994	1.9	0.4	2.8	3.3	0.7	9.1
1999	2.1	0.4	2.6	3.3	0.7	9.1
2003	1.9	0.3	2.8	3.1	0.7	8.8

Source: Department of Commerce, Bureau of Economic Analysis.

Note: Data are not comparable to those in Table 1.

Recent Tax Policy Changes

Much of the recent interest in tax policy has focused on the federal individual and corporate income taxes. Advocates of "**supply-side economics**" (most prominently, Arthur Laffer) believed that income taxes had severely blunted incentives to work, save, and invest and that

the income tax burden had become excessive. Congress passed substantial income tax cuts in 1981, 2001, and 2003, which provided for substantial cuts in income tax rates along with significant tax inducements for business investment. In the face of a rapidly rising budget deficit, some of the 1981 tax cuts were partially repealed in 1982, 1990, and 1993.

An even more radical tax restructuring was passed in 1986. This law, like the 1981 law, also significantly reduced income tax rates. It was, however, radically different from the 1981 tax cuts in a more meaningful sense, in that all of the tax rate cuts were "paid for" by the elimination of tax incentives—including the remaining business investment inducements from 1981. While this tax "reform" simplified the tax law in some respects, it also included complicated provisions designed to prevent tax sheltering and provided significant tax relief for low-income taxpayers, especially families with children.

Tax scholars observed the experience of the 1980s closely to learn more about how taxes affect economic choices. While much controversy remains, certain results seem clear. First, as many economists expected, the two reductions of tax rates over the 1980s apparently did induce greater work effort, especially by married women. In 1988, according to Brookings Institute economists Barry Bosworth and Gary Burtless, men between the ages of twenty-five and sixty-four worked 5.2 percent more hours than they would have under the pre-1981 tax code; women aged twenty-five to sixty-four worked 5.8 percent more; and married women worked 8.8 percent more. These increased hours would translate into the equivalent of almost five million full-time jobs.

Second, household saving fell in the face of tax rate cuts and substantial targeted tax incentives for saving, strongly suggesting that taxes have a limited impact, at best, on saving. Studies by economists Steven F. Venti and David Wise (1987) suggest that individual retirement accounts (IRAs) were successful in encouraging new saving, but a study by William G. Gale and John Karl Scholz (1994) indicates that much of the IRA deposits came from households that had already accumulated considerable wealth and could simply transfer it into the tax-favored accounts. Subsequent papers by James Poterba, Venti, and Wise (1996) and by Eric Engen, Gale, and Scholz (1996) reinforced these contrary positions, while more recent work by Orazio Attanasio and Thomas DeLeire (2002) found very little positive impact of IRAs on saving. And finally, while business investment did increase after the 1981–1982 recession (as documented by Harvard's Martin S. Feldstein), other economists (notably Barry P. Bosworth of Brookings) argue that this increase came primarily in assets (such as computers) that were not highly favored by the tax law. In fact, investment in equipment increased to a record percentage of GDP in the 1990s after the incentives were repealed in the 1986 tax reform, though Alan Auerbach and Kevin Hassett (1991) argue that it would have increased even more strongly if investment incentives had been continued.

Distribution of the Tax Burden

Many economists judge the fairness of the tax system largely on how the tax burden is distributed among different income groups. Further, some economists use the distribution of the tax burden as a major criterion of the success or failure of the tax changes of recent years. Despite considerable effort and innovative methods, however, estimates of the distribution of the tax burden are still limited by imperfect data and the differing perspectives of investigators.

Economists with the Congressional Budget Office have attempted to measure what percentage of overall income is paid in federal taxes of all kinds by various income groups. They assumed that all the corporate income tax is borne by owners of business capital and that the employer's share of the Social Security payroll tax is borne by workers, through lower wages. With these assumptions, they reached two important findings, both summarized in **Table 3**. First, the higher a family's income, the higher the percentage of income that family pays in federal taxes. In other words, the federal tax system as a whole is highly progressive. Second, between 1980 and 2000, the percentage of income paid in federal taxes of all forms decreased for the 80 percent of families with the lowest incomes taken as a group, and increased for the 20 percent with the highest incomes (see **Table 3**). The increases were small, with no identified group paying as much as one percentage point of their income more. Likewise, the declines among lower-income households were no more than two percentage points of income. Since 2000, there have been substantial new tax cuts, providing relatively more relief for upper-income households.

Although upper-income families paid a larger percentage of their income in tax in 2000 than they did in 1980, they received a much larger share of total taxable income by the end of the period. One reason the taxable income of upper-income families is higher is that changes in the tax law, particularly in 1986, caused many upper-income families to reallocate their portfolios from nontaxable instruments like municipal **bonds** to assets that yield taxable income. But there also is evidence that the **distribution of income** simply became less equal. The net result is that upper-income families now pay a larger share of the total tax burden, but also have much higher after-tax incomes. So, for example, the 1 percent of households with the highest incomes paid 14.2 percent of all federal taxes in 1980 and 25.6 percent in 2000—and still saw their share of after-tax income more than double, from 7.7 percent in 1980 to 15.5 percent in 2000.

Current Tax Issues

Tax policy remains controversial, and some economists continue to argue for large-scale revision of the federal tax system. Princeton's David F. Bradford and Stanford's Robert E. Hall have advocated slightly different forms of a flat-rate tax on labor income coupled with

immediate deduction ("expensing") of the cost of all investment for the corporate income tax. Some conservative economists, such as Charles E. McLure Jr., and some liberal ones, such as Alice M. Rivlin, argue for a broad-based federal tax on consumption, like the sales taxes imposed by the states or the value-added tax (VAT) widely used in Europe. A key issue to consumption-tax advocates is how the proceeds of the tax would be used. Some would insist that the money go to increase federal spending; some would demand that it be used to cut federal income taxes; and some would require that it reduce the deficit. Advocates argue that a tax on consumption would encourage saving; opponents claim that such a tax would unfairly burden low-income families.

In past years, some economists, including Princeton's Alan Blinder, argued that the income tax should provide a comprehensive adjustment ("indexation") for inflation to eliminate the inflationary mismeasurement of interest income and expense, depreciation of business investment, and capital gains. A few economists would maintain that indexation should be pursued today. However, an adjustment for inflation would be quite complex; and with inflation as low as 2 percent now, and with little short-term prospect of a substantial increase in inflation, many economists contend that the costs in complexity would exceed the benefits in precise measurement of income.

Some economists, including Martin S. Feldstein and R. Glenn Hubbard, argue for targeted tax cuts for capital gains (the profit from the sale of assets such as corporate stock or real estate) and dividends paid on corporate stock (to reduce or eliminate the so-called double tax on dividends, in which**profits** are taxed under the corporate income tax and then again when distributed to shareholders as dividends). Such initiatives are typically claimed to add to fairness (through attenuating "double taxation") and to increase **economic growth**. Opponents, such as Brookings's Henry J. Aaron, believe that they would be ineffective and would unduly benefit upper-income groups, who own the most capital assets and have the most discretionary income to save. The 2003 tax law cut the already reduced tax rates on capital gains and established similar reduced individual income tax rates for corporate dividend income. Because these provisions were both controversial and temporary, they will remain the subject of debate. Likewise, the general tax rate cuts enacted in 2001 and accelerated in 2003 remain temporary, expiring at the end of 2010.

Other, more conservative economists advocate greater incentives for household saving, such as allowing withdrawals of nondeductible deposits into designated savings accounts to be tax free. Advocates, such as Eric M. Engen, argue that greater freedom with respect to withdrawals from tax-favored savings accounts would encourage even people with modest incomes, who cannot risk "locking up" their limited funds until retirement, to save. Opponents, including Leonard E. Burman, William G. Gale, and Peter R. Orszag, fear that wealthy people would be able to shield

past savings from taxation in perpetuity, thus increasing the federal deficit without undertaking any new saving.

The estate tax will be phased down until it is totally eliminated in 2010, only to return under its pre-2001 configuration in 2011. This provision has proved particularlycontroversial. Advocates of repeal, such as Council of Economic Advisers Chair N. Gregory Mankiw, argue that the estate tax, whose highest pre-2001 rate, at 55 percent, was significantly higher than the income tax, constituted double taxation and both discouraged effort and increased consumption on the part of older wealthy people. Advocates contend that successful small businesses and farms could be forced to shut down because of insufficient liquidity to pay the tax. Opponents, including William G. Gale, argue that efficiency concerns about the estate tax, whose exemptions were already so high as to excuse 98 percent of all decedents from any tax, were exaggerated. They maintain that much accumulated wealth (such as unrealized capital gains) might not be taxed at all upon death, that policies were already in place to postpone tax for estates with small businesses or farms that might have liquidity problems, and that the new law's phase-down, repeal, and reinstatement of the estate tax would make sound financial planning virtually impossible.

With taxpayers enjoying tax reductions today that are scheduled to fade away entirely in 2011—and with a sizable and possibly enduring budget deficit—these tax issues will surely remain prominent in the public-policy debate.

Joseph J. Minarik. "Taxation." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Taxation.html

Social Security
by Thomas R. Saving

Social Security, or, to be precise, Old Age, Survivors and Disability Insurance (OASDI), is the U.S. government program that pays benefits to workers after retirement, to spouses and children of deceased workers, and to workers who become disabled before they retire. In 2003, the program had 47 million recipients, of whom 32.6 million were retired workers and their dependent family members, 6.8 million were survivors of deceased workers, and 7.6 million were disabled former workers and their dependent family members. Social Security is financed through a payroll deduction (FICA) tax that is more than adequate now, but soon will be less than the amount needed to pay benefits.

The first social security program originated in Germany in 1889 under Chancellor Otto von Bismarck. By 1935, when President Franklin Delano Roosevelt signed the U.S. Social Security law, thirty-four European nations operated some form of old-age retirement plan based on transfers from workers to retirees. The U.S. Social Security system remained a retirement and survivor benefit program until 1957, when Congress began changing it significantly. The only previous changes had been increases in benefits and in taxes. In 1957, Congress broadened the program to include disability**Insurance** benefits for severely disabled workers. In 1972, Congress approved automatic cost-of-living adjustments (COLAs) and in 1977 changed the benefit formula to provide a constant percentage of work income. Then, in 1983, in response to a funding crisis, Congress raised the payroll tax rate to its current level, increased the retirement age, and started to tax benefits.

In spite of and, in some cases because of, these changes, the system faces serious challenges in the future. In 1945, the United States had more than forty workers per retiree, so a minimal tax on workers could support all retirees. However, the system that began with few receiving benefits had to mature, and this maturation process meant that more and more individuals would become eligible for benefits. Thus, this idyllic world could not last. The combination of increased life expectancy from sixty-one years for those born in 1935 to seventy-six for those born in 2004, increased benefits, and falling birthrates has reduced the number of workers per retiree to three. By 2030, only two workers will be available to support each retiree.

U.S. Social Security comprises two distinct programs, each covering a separate **population** and each with its own method of financing. Old Age and Survivor Insurance (OASI) provides two types of benefits: retirement benefits for retired workers and benefits to the spouses and children of deceased workers. Disability Insurance (DI) provides benefits for disabled workers and their dependents on the same basis as retirement benefits are determined.

Social Security retirement benefits are based on average indexed monthly earnings for the thirty-five highest earnings years prior to retirement. The benefit formula is set up to favor lower-income workers. For example, in 2004, someone with average monthly earnings of $624 received a benefit that replaced 90 percent of earnings. Someone whose average monthly earnings were $3,760 received a benefit that replaced 42 percent of earnings, while someone with monthly earnings at the then-taxable maximum of $7,325 received a benefit that replaced only 28 percent of earnings. Early retirement—retirement between age sixty-two and the full-benefit age—results in a deduction from full benefits based on the actuarial assumption that early retirees will collect benefits for a longer period of time. The full-benefit age was sixty-five until 2000, when it began a two-month-a-year rise. It reached sixty-six in 2005, where it will remain until 2017; it will then rise by two months each year until it reaches sixty-seven in 2022.

Social Security's survivors' benefits are granted to the children and spouses of individuals who worked for at least ten years. Children and surviving spouses with children under sixteen years of age each receive an amount equivalent to 75 percent of the deceased's benefits, subject to a family maximum. Older surviving spouses are also eligible for benefits.

Disability benefits are granted to individuals who worked for at least ten years prior to disability, although younger workers with fewer than ten years of work may qualify for some benefits. Benefits are determined by a worker's earnings, ability to work in previous employment, ability to adjust to another job, and the expected duration of the disability. Children and spouses of disabled workers may also be eligible for benefits.

Many people believe that the FICA taxes they pay are placed in an account in their name at the Social Security Administration. In fact, these funds arrive at the U.S. Treasury and are used for current retirees' benefits and other government expenditures. If, at the end of the year, revenue from FICA taxes exceeds total benefits paid, which it has every year since 1983, the Treasury issues special government **bonds** to the Social Security Administration. These bonds prove that the Treasury used Social Security's money for other purposes and promise that when FICA revenues are too small to pay benefits, the Treasury will redeem the bonds. These bonds are, in essence, an IOU from the federal government to itself. It matters little whether the IOUs amount to zero, $100 billion, or $10 trillion.

The OASDI's revenues are expected to be relatively stable, growing from 12.71 percent of payroll in 2004 to 13.39 percent in 2080, with the modest rise attributable to increased revenues from the **taxation** of Social Security benefits. Costs will rise rapidly from 10.8 percent of payroll, when the first of the baby boomers become eligible for early retirement in 2008, to 17 percent in 2031, when the last of the baby boomers reach normal retirement age. Even after the last baby boomer retires, costs will continue to rise steadily for the indefinite future. While the program's current tax revenues are expected to exceed its costs until 2018, in every

subsequent year thereafter, the program will face a funding deficit that will continue to grow in dollar terms and as a percentage of payroll.

Traditionally, media reports have summarized Social Security's financial health by reporting two numbers, the seventy-five-year actuarial deficit and the year of Trust Fund exhaustion. For 2004, these two numbers were 1.89 and 2042. The 1.89 actuarial deficit means that if the OASDI tax rate were raised in 2004 from its 2004 level of 12.4 percent of payroll to 14.29 percent of payroll, Trust Fund exhaustion would occur exactly seventy-five years later—in this case, 2078. Even if this payroll tax increase were enacted immediately, however, the system would go into deficit in 2023, just five years later than is currently forecast. Furthermore, there would be large deficits after 2078. The last time the Social Security system was brought back into actuarial balance was 1983, when a combination of an increased tax rate, gradual increase in full retirement age, and partial taxation of benefits reduced the actuarial deficit from 1.82 to −0.02. However, the government anticipated in 1983 that the actuarial deficit would be high again twenty years later.

The relevance of the 2042 Trust Fund exhaustion date is that the Treasury is not legally obligated to fund benefit payments that exceed Social Security revenues once there are no Trust Fund bonds to redeem. That date is artificial, though. Starting in 2018, paying benefits will require transfers from the rest of the federal budget. While the Trust Fund is an asset to Social Security, it is a Treasury obligation, not a Treasury asset, and provides no revenue to the Treasury for the payment of benefits. Thus, the redemption of Trust Fund assets will require some combination of increased federal taxes, reduced federal expenditures on other programs, or increased debt sales to the public.

Because Social Security is popular, it is difficult to change; without change, however, the program is financially doomed. As the Social Security trustees repeatedly point out, by 2018, Social Security will no longer be able to contribute to the Treasury revenue that, in 2003, equaled 7 percent of total income tax revenues. In fact, by 2024, the payment of Social Security benefits will require a transfer from the Treasury of more than 7.5 percent of total income tax revenues; by 2042, this transfer will grow to more than 15 percent of total income tax revenues.

Further, if Congress chooses to cover the looming deficits by raising the existing payroll tax, the tax rate required to pay benefits will grow from its current level of 12.4 percent of payroll to 17.8 percent of payroll by 2042 and to 19.4 percent by 2080, the end of the trustees' normal seventy-five-year horizon. Given that current Social Security replaces on average 42 percent of earned income, if in the long run there are two workers per retiree—the level expected by 2030—the required tax rate will be 21 percent. To the extent people view payroll taxes as pure taxes rather than as generating future benefits, such taxes reduce the **supply** of labor and result

in a deadweight loss to the economy. At best, the current tax rate, if invested at the 3 percent rate assumed by the trustees, would just yield the benefits currently promised. Thus, the current payroll tax could be viewed by participants as buying them their promised benefits. However, the ultimate 21 percent payroll tax could not be so viewed and would result in a real reduction in the nation's output.

If currently scheduled Social Security benefits are paid, other government spending will have to be reduced or income taxes increased by almost 15 percent of projected income tax revenue. The Medicare program faces similar financial shortfalls. By 2030, maintaining currently scheduled Social Security and Medicare benefits would require all the payroll taxes and other revenues earmarked for these programs, plus more than 50 percent of all projected income tax revenues. This burden would fall on future workers, who would have to pay much higher payroll taxes.

To put the Social Security problem in perspective, the trustees calculated that the debt the system owed its current participants (those fifteen years old and older) at the close of 2003 was thirteen trillion dollars. If the government continued paying scheduled benefits and collecting only scheduled taxes from current participants, all new entrants to the workforce would have to pay off this thirteen-trillion-dollar debt in their lifetime. This is the equivalent of saddling each newborn with a substantial mortgage for which he will receive nothing in return.

With the Medicare debt added to the Social Security debt, new entrants to the workforce owe current participants almost forty-two trillion dollars. Because these debts are so enormous, they cannot and will not be honored. If the government solves the problem well and soon, the solution will be less painful. The required changes will cost something, but doing nothing will cost even more and will pass that cost on to future generations.

Even if benefits currently scheduled for the future are paid, the participants in Social Security will have received a rate of return on their taxes that is near zero. This low rate of return has formed the basis for increasing calls for reform. In 2001, President George W. Bush established the President's Commission to Strengthen Social Security (CSSS), of which I was a member. The CSSS considered alternative ways of dealing with the thirteen-trillion-dollar debt and suggested adjusting the benefit formula and allowing workers to invest part of their FICA taxes in individual retirement accounts. Thus, part of each worker's FICA would be deposited to an account in his or her name and would not become part of general Treasury revenue.

Currently, benefits are scheduled to increase with the increase in real wages. The CSSS benefit formula adjustment would fix the real purchasing power of benefits at the level that would be achieved in 2009. The individual accounts would replace future benefit increases, so that the benefit structure would remain virtually unchanged. These changes would pay off about $4.4

trillion of the $13 trillion Social Security debt, largely through a significant reduction in the level of future promised benefits. Even with this reform, however, future generations would be saddled with $8.6 trillion in extra debt. Several other reforms are being considered, ranging from retaining much of the current pay-as-you-go financing to completely privatizing the system. To the extent that we replace a system in which individuals depend on future generations to pay for their retirement with one in which each generation saves for its own retirement, the U.S. capital stock will grow. Further, contributions to private accounts, even if equal to current tax rates, would correctly be viewed by participants as buying direct benefits and would have little negative effect on labor supply. Thus, the reform path that is ultimately chosen will have long-run implications for capital growth and income growth, and, ultimately, will determine which generation bears the burden of financing retirement.

Thomas R. Saving. "Social Security." *The Concise Encyclopedia of Economics.*2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/SocialSecurity.html

Fiscal Policy
by David N. Weil

Fiscal policy is the use of government spending and **taxation** to influence the economy. When the government decides on the goods and services it purchases, the transfer payments it distributes, or the taxes it collects, it is engaging in fiscal policy. The primary economic impact of any change in the government budget is felt by particular groups—a tax cut for families with children, for example, raises their disposable income. Discussions of fiscal policy, however, generally focus on the effect of changes in the government budget on the overall economy. Although changes in taxes or spending that are "revenue neutral" may be construed as fiscal policy—and may affect the aggregate level of output by changing the incentives that firms or individuals face—the term "fiscal policy" is usually used to describe the effect on the aggregate economy of the overall levels of spending and taxation, and more particularly, the gap between them.

Fiscal policy is said to be tight or contractionary when revenue is higher than spending (i.e., the government budget is in surplus) and loose or expansionary when spending is higher than revenue (i.e., the budget is in deficit). Often, the focus is not on the level of the deficit, but on the *change* in the deficit. Thus, a reduction of the deficit from $200 billion to $100 billion is said to be contractionary fiscal policy, even though the budget is still in deficit.

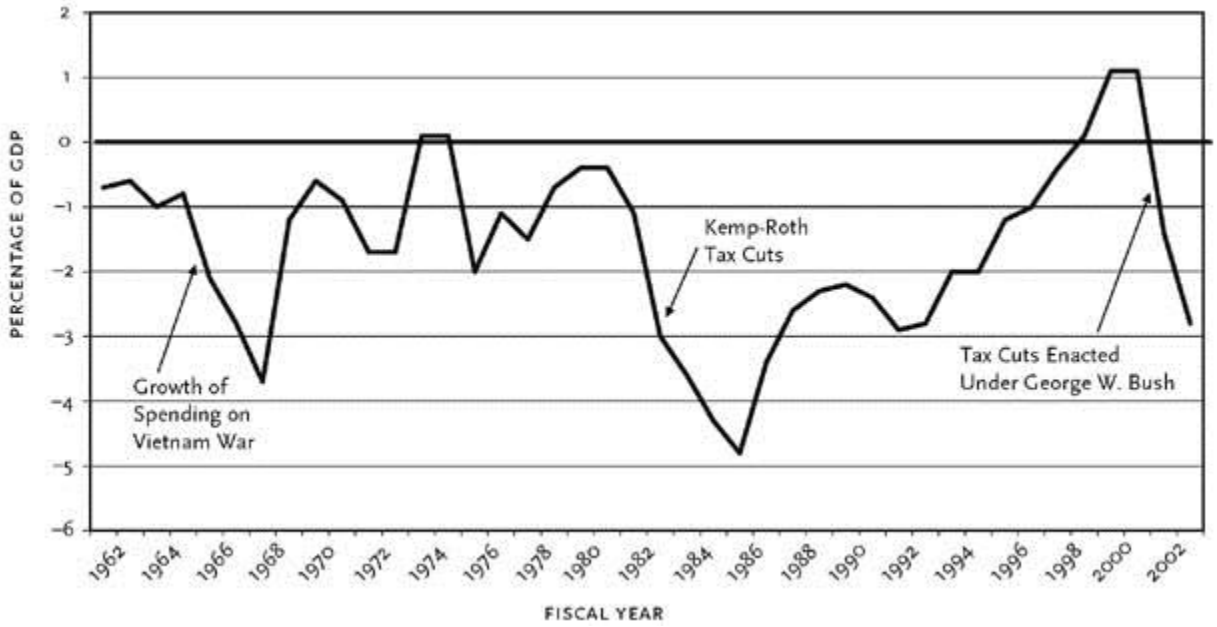
Figure 1 shows the federal budget surplus over the period 1962–2003. The data in the figure are corrected to remove the effects of business cycle conditions. For example, in fiscal year 2003, the actual budget deficit was $375 billion, of which an estimated $68 billion was due to the lingering effects of a recession, so that the cyclically adjusted deficit was $307 billion. The data are also "standardized" to eliminate the effects of **inflation** and the effects of quirks in the timing of revenues and outlays, such as the receipt of payments from Desert Storm allies that arrived in the fiscal years following the war itself. Notable on the figure are the fiscal stimulus of the Vietnam War, the Kemp-Roth tax cuts of the early 1980s, and the program of tax cuts enacted under George W. Bush.

The most immediate effect of fiscal policy is to change the aggregate demand for goods and services. A fiscal expansion, for example, raises aggregate demand through one of two channels. First, if the government increases its purchases but keeps taxes constant, it increases demand directly. Second, if the government cuts taxes or increases transfer payments, households' disposable income rises, and they will spend more on consumption. This rise in consumption will in turn raise aggregate demand.

Fiscal policy also changes the composition of aggregate demand. When the government runs a deficit, it meets some of its expenses by issuing **bonds**. In doing so, it competes with private borrowers for money loaned by savers. Holding other things constant, a fiscal expansion will raise **interest rates** and "crowd out" some private **investment**, thus reducing the fraction of output composed of private investment.

In an open economy, fiscal policy also affects the exchange rate and the trade balance. In the case of a fiscal expansion, the rise in interest rates due to government borrowing attracts foreign capital. In their attempt to get more dollars to invest, foreigners bid up the price of the dollar, causing an exchange-rate appreciation in the short run. This appreciation makes imported goods cheaper in the United States and exports more expensive abroad, leading to a decline of the merchandise trade balance. Foreigners sell more to the United States than they buy from it and, in return, acquire ownership of U.S. assets (including government debt). In the long run, however, the accumulation of external debt that results from persistent government deficits can lead foreigners to distrust U.S. assets and can cause a deprecation of the exchange rate.

Figure 1 Cyclically Adjusted and Standardized Budget Surplus as a Percentage of GDP: 1962-2003



Source: Congressional Budget Office, Washington, D.C.

Fiscal policy is an important tool for managing the economy because of its ability to affect the total amount of output produced—that is, gross domestic product. The first impact of a fiscal expansion is to raise the demand for goods and services. This greater demand leads to increases in both output and prices. The degree to which higher demand increases output and prices depends, in turn, on the state of the business cycle. If the economy is in recession, with

unused productive capacity and unemployed workers, then increases in demand will lead mostly to more output without changing the price level. If the economy is at full employment, by contrast, a fiscal expansion will have more effect on prices and less impact on total output.

This ability of fiscal policy to affect output by affecting aggregate demand makes it a potential tool for economic stabilization. In a recession, the government can run an expansionary fiscal policy, thus helping to restore output to its normal level and to put unemployed workers back to work. During a boom, when inflation is perceived to be a greater problem than **unemployment**, the government can run a budget surplus, helping to slow down the economy. Such a countercyclical policy would lead to a budget that was balanced on average.

Automatic stabilizers—programs that automatically expand fiscal policy during recessions and contract it during booms—are one form of countercyclical fiscal policy. Unemployment**insurance**, on which the government spends more during recessions (when the unemployment rate is high), is an example of an automatic stabilizer. Similarly, because taxes are roughly proportional to wages and **profits**, the amount of taxes collected is higher during a boom than during a recession. Thus, the tax code also acts as an automatic stabilizer.

But fiscal policy need not be automatic in order to play a stabilizing role in **business cycles**. Some economists recommend changes in fiscal policy in response to economic conditions—so-called discretionary fiscal policy—as a way to moderate business cycle swings. These suggestions are most frequently heard during recessions, when there are calls for tax cuts or new spending programs to "get the economy going again."

Unfortunately, discretionary fiscal policy is rarely able to deliver on its promise. Fiscal policy is especially difficult to use for stabilization because of the "inside lag"—the gap between the time when the need for fiscal policy arises and when the president and Congress implement it. If economists forecast well, then the lag would not matter because they could tell Congress the appropriate fiscal policy in advance. But economists do not forecast well. Absent accurate forecasts, attempts to use discretionary fiscal policy to counteract business cycle fluctuations are as likely to do harm as good. The case for using discretionary fiscal policy to stabilize business cycles is further weakened by the fact that another tool, **monetary policy**, is far more agile than fiscal policy.

Whether for good or for ill, fiscal policy's ability to affect the level of output via aggregate demand wears off over time. Higher aggregate demand due to a fiscal stimulus, for example, eventually shows up only in higher prices and does not increase output at all. That is because, over the long run, the level of output is determined not by demand but by the**supply** of factors of production (capital, labor, and technology). These factors of production determine a "natural rate" of output around which business cycles and macroeconomic policies can cause only

temporary fluctuations. An attempt to keep output above its natural rate by means of aggregate demand policies will lead only to ever-accelerating inflation.

The fact that output returns to its natural rate in the long run is not the end of the story, however. In addition to moving output in the short run, expansionary fiscal policy can change the natural rate, and, ironically, the long-run effects of fiscal expansion tend to be the opposite of the short-run effects. Expansionary fiscal policy will lead to higher output today, but will lower the natural rate of output below what it would have been in the future. Similarly, contractionary fiscal policy, though dampening the output level in the short run, will lead to higher output in the future.

A fiscal expansion affects the output level in the long run because it affects the country's **saving** rate. The country's total saving is composed of two parts: private saving (by individuals and **corporations**) and government saving (which is the same as the budget surplus). A fiscal expansion entails a decrease in government saving. Lower saving means, in turn, that the country will either invest less in new plants and equipment or increase the amount that it borrows from abroad, both of which lead to unpleasant consequences in the long term. Lower investment will lead to a lower capital stock and to a reduction in a country's ability to produce output in the future. Increased indebtedness to foreigners means that a higher fraction of a country's output will have to be sent abroad in the future rather than being consumed at home.

Fiscal policy also changes the burden of future taxes. When the government runs an expansionary fiscal policy, it adds to its stock of debt. Because the government will have to pay interest on this debt (or repay it) in future years, expansionary fiscal policy today imposes an additional burden on future taxpayers. Just as the government can use taxes to transfer income between different classes, it can run surpluses or deficits in order to transfer income between different generations.

Some economists have argued that this effect of fiscal policy on future taxes will lead consumers to change their saving. Recognizing that a tax cut today means higher taxes in the future, the argument goes, people will simply save the value of the tax cut they receive now in order to pay those future taxes. The extreme of this argument, known as Ricardian equivalence, holds that tax cuts will have no effect on national saving because changes in private saving will exactly offset changes in government saving. If these economists were right, then my earlier statement that budget deficits crowd out private investment would be wrong. But if consumers decide to spend some of the extra disposable income they receive from a tax cut (because they are myopic about future tax payments, for example), then Ricardian equivalence will not hold; a tax cut will lower national saving and raise aggregate demand. Most economists do not believe that Ricardian equivalence characterizes consumers' response to tax changes.

In addition to its effect on aggregate demand and saving, fiscal policy also affects the economy by changing incentives. Taxing an activity tends to discourage that activity. A high marginal tax rate on income reduces people's incentive to earn income. By reducing the level of taxation, or even by keeping the level the same but reducing **marginal tax rates**and reducing allowed deductions, the government can increase output. "Supply-side" economists argue that reductions in tax rates have a large effect on the amount of labor supplied, and thus on output (see **supply-side economics**). Incentive effects of taxes also play a role on the demand side. Policies such as investment tax credits, for example, can greatly influence the demand for capital goods.

The greatest obstacle to proper use of fiscal policy—both for its ability to stabilize fluctuations in the short run and for its long-run effect on the natural rate of output—is that changes in fiscal policy are necessarily bundled with other changes that please or displease various constituencies. A road in Congressman X's district is all the more likely to be built if it can be packaged as part of countercyclical fiscal policy. The same is true for a tax cut for some favored constituency. This naturally leads to an institutional enthusiasm for expansionary policies during recessions that is not matched by a taste for contractionary policies during booms. In addition, the benefits from expansionary policy are felt immediately, whereas its costs—higher future taxes and lower **economic growth**—are postponed until a later date. The problem of making good fiscal policy in the face of such obstacles is, in the final analysis, not economic but political.

David N. Weil. "Fiscal Policy." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/FiscalPolicy.html

Money Supply
by Anna J. Schwartz

What Is the Money Supply?

The U.S. money supply comprises currency—dollar bills and coins issued by the **Federal Reserve System** and the U.S. Treasury—and various kinds of deposits held by the public at commercial banks and other depository institutions such as thrifts and credit unions. On June 30, 2004, the money supply, measured as the sum of currency and checking account deposits, totaled $1,333 billion. Including some types of savings deposits, the money supply totaled $6,275 billion. An even broader measure totaled $9,275 billion.

These measures correspond to three definitions of money that the Federal Reserve uses: M1, a narrow measure of money's function as a medium of exchange; M2, a broader measure that also reflects money's function as a store of value; and M3, a still broader measure that covers items that many regard as close substitutes for money.

The definition of money has varied. For centuries, physical commodities, most commonly silver or gold, served as money. Later, when paper money and checkable deposits were introduced, they were convertible into commodity money. The abandonment of convertibility of money into a commodity since August 15, 1971, when President Richard M. Nixon discontinued converting U.S. dollars into gold at $35 per ounce, has made the monies of the United States and other countries into fiat money—money that national monetary authorities have the power to issue without legal constraints.

Why Is the Money Supply Important?

Because money is used in virtually all economic transactions, it has a powerful effect on economic activity. An increase in the supply of money works both through lowering **interest rates**, which spurs **investment**, and through putting more money in the hands of consumers, making them feel wealthier, and thus stimulating spending. Business firms respond to increased sales by ordering more raw materials and increasing production. The spread of business activity increases the demand for labor and raises the demand for capital goods. In a buoyant economy, **stock market** prices rise and firms issue equity and debt. If the money supply continues to expand, prices begin to rise, especially if output growth reaches capacity limits. As the public begins to expect**inflation**, lenders insist on higher interest rates to offset an expected decline in purchasing power over the life of their loans.

Opposite effects occur when the supply of money falls or when its rate of growth declines. Economic activity declines and either disinflation (reduced inflation) or deflation (falling prices) results.

What Determines the Money Supply?

Federal Reserve policy is the most important determinant of the money supply. The Federal Reserve affects the money supply by affecting its most important component, bank deposits.

Here is how it works. The Federal Reserve requires depository institutions (commercial banks and other financial institutions) to hold as reserves a fraction of specified deposit liabilities. Depository institutions hold these reserves as cash in their vaults or Automatic Teller Machines (ATMs) and as deposits at Federal Reserve banks. In turn, the Federal Reserve controls reserves by lending money to depository institutions and changing the Federal Reserve discount rate on these loans and by open-market operations. The Federal Reserve uses open-market operations to either increase or decrease reserves. To increase reserves, the Federal Reserve buys U.S. Treasury securities by writing a check drawn on itself. The seller of the treasury security deposits the check in a bank, increasing the seller's deposit. The bank, in turn, deposits the Federal Reserve check at its district Federal Reserve bank, thus increasing its reserves. The opposite sequence occurs when the Federal Reserve sells treasury securities: the purchaser's deposits fall, and, in turn, the bank's reserves fall.

If the Federal Reserve increases reserves, a single bank can make loans up to the amount of its excess reserves, creating an equal amount of deposits. The banking system, however, can create a multiple expansion of deposits. As each bank lends and creates a deposit, it loses reserves to other banks, which use them to increase their loans and thus create new deposits, until all excess reserves are used up.

If the required reserve ratio is 10 percent, then starting with new reserves of, say, $1,000, the most a bank can lend is $900, since it must keep $100 as reserves against the deposit it simultaneously sets up. When the borrower writes a check against this amount in his bank A, the payee deposits it in his bank B. Each new demand deposit that a bank receives creates an equal amount of new reserves. Bank B will now have additional reserves of $900, of which it must keep $90 in reserves, so it can lend out only $810. The total of new loans the banking system as a whole grants in this example will be ten times the initial amount of excess reserve, or $9,000: 900 + 810 + 729 + 656.1 + 590.5, and so on.

In a system with fractional reserve requirements, an increase in bank reserves can support a multiple expansion of deposits, and a decrease can result in a multiple contraction of deposits. The value of the multiplier depends on the required reserve ratio on deposits. A high required-

reserve ratio lowers the value of the multiplier. A low required-reserve ratio raises the value of the multiplier.

In 2004, banks with a total of $7 million in checkable deposits were exempt from reserve requirements. Those with more than $7 million but less than $47.6 million in checkable deposits were required to keep 3 percent of such accounts as reserves, while those with checkable accounts amounting to $47.6 million or more were required to keep 10 percent. No reserves were required to be held against time deposits.

Even if there were no legal reserve requirements for banks, they would still maintain required clearing balances as reserves with the Federal Reserve, whose ability to control the volume of deposits would not be impaired. Banks would continue to keep reserves to enable them to clear debits arising from transactions with other banks, to obtain currency to meet depositors' demands, and to avoid a deficit as a result of imbalances in clearings.

The currency component of the money supply, using the M2 definition of money, is far smaller than the deposit component. Currency includes both Federal Reserve notes and coins. The Board of Governors places an order with the U.S. Bureau of Engraving and Printing for Federal Reserve notes for all the Reserve Banks and then allocates the notes to each district Reserve Bank. Currently, the notes are no longer marked with the individual district seal. The Federal Reserve Banks typically hold the notes in their vaults until sold at face value to commercial banks, which pay private carriers to pick up the cash from their district Reserve Bank.

The Reserve Banks debit the commercial banks' reserve accounts as payment for the notes their customers demand. When the demand for notes falls, the Reserve Banks accept a return flow of the notes from the commercial banks and credit their reserves.

The U.S. mints design and manufacture U.S. coins for distribution to Federal Reserve Banks. The Board of Governors places orders with the appropriate mints. The system buys coin at its face value by crediting the U.S. Treasury's account at the Reserve Banks. The Federal Reserve System holds its coins in 190 coin terminals, which armored carrier companies own and operate. Commercial banks buy coins at face value from the Reserve Banks, which receive payment by debiting the commercial banks' reserve accounts. The commercial banks pay the full costs of shipping the coin.

In a fractional reserve banking system, drains of currency from banks reduce their reserves, and unless the Federal Reserve provides adequate additional amounts of currency and reserves, a multiple contraction of deposits results, reducing the quantity of money. Currency and bank reserves added together equal the monetary base, sometimes known as high-powered money. The Federal Reserve has the power to control the issue of both components. By adjusting the levels of banks' reserve balances, over several quarters it can achieve a desired rate of growth

of deposits and of the money supply. When the public and the banks change the ratio of their currency and reserves to deposits, the Federal Reserve can offset the effect on the money supply by changing reserves and/or currency.

If the Federal Reserve determines the magnitude of the money supply, what makes the nominal value of money in existence equal to the amount people want to hold? A change in interest rates is one way to make that correspondence happen. A fall in interest rates increases the amount of money people wish to hold, while a rise in interest rates decreases that amount. A change in prices is another way to make the money supply equal the amount demanded. When people hold more nominal dollars than they want, they spend them faster, causing prices to rise. These rising prices reduce the purchasing power of money until the amount people want equals the amount available. Conversely, when people hold less money than they want, they spend more slowly, causing prices to fall. As a result, the real value of money in existence just equals the amount people are willing to hold.

Changing Federal Reserve Techniques

The Federal Reserve's techniques for achieving its desired level of reserves—both borrowed reserves that banks obtain at the discount window and nonborrowed reserves that it provides by open-market purchases—have changed significantly over time. At first, the Federal Reserve controlled the volume of reserves and of borrowing by member banks mainly by changing the discount rate. It did so on the theory that borrowed reserves made member banks reluctant to extend loans because their desire to repay their own indebtedness to the Federal Reserve as soon as possible was supposed to inhibit their willingness to accommodate borrowers. In the 1920s, when the Federal Reserve discovered that open-market operations also created reserves, changing nonborrowed reserves offered a more effective way to offset undesired changes in borrowing by member banks. In the 1950s, the Federal Reserve sought to control what are called free reserves, or excess reserves minus member bank borrowing.

The Fed has interpreted a rise in interest rates as tighter**monetary policy** and a fall as easier monetary policy. But interest rates are an imperfect indicator of monetary policy. If easy monetary policy is expected to cause inflation, lenders demand a higher interest rate to compensate for this inflation, and borrowers are willing to pay a higher rate because inflation reduces the value of the dollars they repay. Thus, an increase in expected inflation increases interest rates. Between 1977 and 1979, for example, U.S. monetary policy was easy and interest rates rose. Similarly, if tight monetary policy is expected to reduce inflation, interest rates could fall.

From 1979 to 1982, when Paul Volcker was chairman of the Federal Reserve, the Fed tried to control nonborrowed reserves to achieve its monetary target. The procedure produced large

swings in both money growth and interest rates. Forcing nonborrowed reserves to decline when above target led borrowed reserves to rise because the Federal Reserve allowed banks access to the discount window when they sought this alternative source of reserves. Since then, the Federal Reserve has specified a narrow range for the federal funds rate, the interest rate on overnight loans from one bank to another, as the instrument to achieve its objectives. Although the Fed does not directly transact in the Fed funds market, when the Federal Reserve specifies a higher Fed funds rate, it makes this higher rate stick by reducing the reserves it provides the entire financial system. When it specifies a lower Fed funds rate, it makes this stick by providing increased reserves. The Fed funds market rate deviates minimally from the target rate. If the deviation is greater, that is a signal to the Fed that the reserves it has provided are not consistent with the funds rate it has announced. It will increase or reduce the reserves depending on the deviation.

The big change in Federal Reserve objectives under Alan Greenspan's chairmanship was the acknowledgment that its key responsibility is to control inflation. The Federal Reserve adopted an implicit target for projected future inflation. Its success in meeting its target has gained it credibility. The target has become the public's expected inflation rate.

History of the U.S. Money Supply

From the founding of the Federal Reserve in 1913 until the end of World War II, the money supply tended to grow at a higher rate than the growth of nominal GNP. This increase in the ratio of money supply to GNP shows an increase in the amount of money as a fraction of their income that people wanted to hold. From 1946 to 1980, nominal GNP tended to grow at a higher rate than the growth of the money supply, an indication that the public reduced its money balances relative to income. Until 1986, money balances grew relative to income; since then they have declined relative to income. Economists explain these movements by changes in price expectations, as well as by changes in interest rates that make money holding more or less expensive. If prices are expected to fall, the inducement to hold money balances rises since money will buy more if the expectations are realized; similarly, if interest rates fall, the cost of holding money balances rather than spending or investing them declines. If prices are expected to rise or interest rates rise, holding money rather than spending or investing it becomes more costly.

Since 1914 a sustained decline of the money supply has occurred during only three business cycle contractions, each of which was severe as judged by the decline in output and rise in **unemployment**: 1920–1921, 1929–1933, and 1937–1938. The severity of the economic decline in each of these cyclical downturns, it is widely accepted, was a consequence of the reduction in the quantity of money, particularly so for the downturn that began in 1929, when

the quantity of money fell by an unprecedented one-third. There have been no sustained declines in the quantity of money in the past six decades.

The United States has experienced three major price inflations since 1914, and each has been preceded and accompanied by a corresponding increase in the rate of growth of the money supply: 1914–1920, 1939–1948, and 1967–1980. An acceleration of money growth in excess of real output growth has invariably produced inflation—in these episodes and in many earlier examples in the United States and elsewhere in the world.

Until the Federal Reserve adopted an implicit inflation target in the 1990s, the money supply tended to rise more rapidly during business cycle expansions than during business cycle contractions. The rate of rise tended to fall before the peak in business and to increase before the trough. Prices rose during expansions and fell during contractions. This pattern is currently not observed. Growth rates of money aggregates tend to be moderate and stable, although the Federal Reserve, like most central banks, now ignores money aggregates in its framework and practice. A possibly unintended result of its success in controlling inflation is that money aggregates have no predictive power with respect to prices.

The lesson that the history of money supply teaches is that to ignore the magnitude of money supply changes is to court monetary disorder. Time will tell whether the current monetary nirvana is enduring and a challenge to that lesson.

Anna J. Schwartz. "Money Supply." *The Concise Encyclopedia of Economics.*2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/MoneySupply.html

Monetary Policy
by James Tobin

Paul Volcker, while chairman of the Board of Governors of the **federal reserve system** (1979–1987), was often called the second most powerful person in the United States. Volcker and company triggered the "double-dip" recessions of 1980 and 1981–1982, vanquishing the double-digit **inflation** of 1979–1980 and bringing the **unemployment** rate into double digits for the first time since 1940. Volcker then declared victory over inflation and piloted the economy through its long 1980s recovery, bringing unemployment below 5.5 percent, half a point lower than in the 1978–1979 boom.

Volcker was powerful because he was making monetary policy. His predecessors were powerful too. At least five of the previous eight postwar recessions can be attributed to their anti-inflationary policies. Likewise, Alan Greenspan's Federal Reserve bears the main responsibility for the 1990–1991 and 2001 recessions.

Central banks are powerful everywhere, although few are as independent of their governments as the Fed is of Congress and the White House. Central bank actions are the most important government policies affecting economic activity from quarter to quarter or year to year.

Monetary policy is the subject of a lively controversy between two schools of economics: **monetarist** and **keynesian**. Although they agree on goals, they disagree sharply on priorities, strategies, targets, and tactics. As I explain how monetary policy works, I shall discuss these disagreements. At the outset I disclose that I am a Keynesian.

Common Goals

Few monetarists or Keynesians would disagree with this dream scenario:

• First, no **business cycles**. Instead, production—as measured by real (inflation-corrected) gross national product—would grow steadily, in step with the capacity of the economy and its labor force.

• Second, a stable and low rate of price inflation, preferably zero.

• Third, the highest rates of capacity utilization and employment that are consistent with a stable trend of prices.

• Fourth, high trend growth of **productivity** and real GDP per worker.

Monetary policies are demand-side macroeconomic policies. They work by stimulating or discouraging spending on goods and services. Economy-wide recessions and booms reflect fluctuations in aggregate demand rather than in the economy's productive capacity. Monetary policy tries to damp, perhaps even eliminate, those fluctuations. It is not a supply-side instrument (see **supply-side economics**). Central banks have no handle on productivity and real **economic growth**.

Priorities

The second and third goals frequently conflict. Should policymakers give priority to price stability or to full employment? American and European monetary policies differed dramatically after the deep 1981–1982 recession. The Fed "fine-tuned" a six-year recovery and recouped the employment and production lost in the 1980 and 1981–1982 downturns. Keeping a watchful eye on employment and output, and on wages and prices, the Fed stepped on the gas when the economic engine faltered and on the brakes when it threatened to overheat. During this catch-up recovery the economy grew at a faster rate than it could sustain thereafter. The Fed sought to slow its growth to a sustainable pace as full employment was restored.

European central banks, led by the German Bundesbank, were more conservative. They did little to help their economies catch up. They regarded active monetary stimulus as dangerously inflationary, even when their economies were barely emerging from recession. They were determined never to finance more than sustainable noninflationary growth, even temporarily. Europe recovered much more slowly than America, and its unemployment rates have ratcheted up from the 1970s.

Priorities reflect national dreams and nightmares. German horror of inflation, for example, dates from the 1923**hyperinflation** and from a second bout of inflation after World War II. Priorities also reflect divergent views of how economies work. European monetary authorities were acting like monetarists, Americans like Keynesians, although both would disavow the labels.

Here is the crucial issue: Expansionary monetary policy, all agree, increases aggregate spending on goods and services—by consumers, businesses, governments, and foreigners. Will these new demands raise output and employment? Or will they just raise prices and speed up inflation?

Keynesians say the answers depend on circumstances. Full employment means that everyone (allowing for persons between jobs) who is productive enough to be worth the prevailing real wage and wants a job at that wage is employed. In these circumstances more spending just brings inflation. Frequently, however, qualified willing workers are involuntarily unemployed; there is no demand for the products they would produce. More spending will put them to

work.**Competition** from firms with excess capacity and from idle workers will keep extra spending from igniting inflation.

Monetarists answer that nature's remedy for excess supply in any market is price reduction. If wages do not adjust to unemployment, either government and union regulations are keeping them artificially high or the jobless prefer leisure and/or unemployment compensation to work at prevailing wages. Either way, the problem is not remediable by monetary policy. Injections of new spending would be futile and inflationary.

Experience, certainly in the Great Depression and also in subsequent recessions, indicates that downward adjustments of wages and prices cannot avoid damage to output and employment. [*Editor's note:* for another view, see **great depression**.] Moreover, wage and price cuts may actually reduce demand by generating expectations of further disinflation or deflation.

A. W. Phillips's famous curve (see **phillips curve**) showed wage inflation varying inversely with unemployment. Keynesians were tempted to interpret it as a policy trade-off: less unemployment at the cost of a finite boost in inflation.**Milton Friedman** convinced the economics profession in 1968 that if monetary policy persistently attempts to bring unemployment below "the natural rate of unemployment" (the rate corresponding to Keynes's "full employment"), it will only boost the inflation rate explosively. Friedman's further conclusion that monetary policy should never concern itself with unemployment, production, or other real variables has been very influential. But in situations of Keynesian slack, as recent American experience again confirms, demand expansion can improve real macroeconomic performance without accelerating prices.

Strategies

Here too the monetarist-Keynesian controversy is exemplified by Federal Reserve and Bundesbank policies in the 1980s. The issue is this: how actively and frequently should policymakers respond to observed and expected departures from their targets? Friedman wants them to follow the same routine regardless of the economic weather, increasing the **money supply** at a constant rate. In his view, trying to outguess the economy usually exacerbates fluctuations.

While not all monetarists endorse Friedman's rule, they do stress the importance of announced rules enabling the public to predict the central bank's behavior. In principle, announced rules need not blind policymakers to changing circumstances; they could specify in advance their responses to feedback**information**. But it is impossible to anticipate all contingencies. No central bank could have foreseen the **opec**shocks of the 1970s and decided its responses in advance. Any practicable rule is bound to be simple. Any reactive policy, like the Fed's fine-tuning after 1982, is bound to allow discretion.

Relation to Fiscal Policy

In monetarists' view, government budgets have important supply-side effects for good or ill but have no demand-side role unless they trigger changes in monetary policy. In Keynesian theory, **fiscal policy** is a distinct demand-side instrument. The government affects aggregate demand directly by its own expenditures and indirectly by its taxes.

Prior to 1981, presidents and Congresses in making annual budgets considered their macroeconomic effects. In the 1980s budget making became slow and cumbersome, and the explosion of deficits and debt made countercyclical fiscal policy very difficult. Since then, the burden of stabilization policy has fallen almost entirely on monetary policy. The one main exception, not necessarily intentional, is the timing of President George W. Bush's tax cuts, which were, in essence, activist fiscal policy after 2001.

Monetary and fiscal policies are distinct only in financially developed countries, where the government does not have to cover budget deficits by printing money but can sell obligations to pay money in the future, like U.S. Treasury bills, notes, and **bonds**. In the United States, Congress and the president decide on expenditure programs and tax codes and thus—subject to the vagaries of the economy—on the budget deficit (or surplus). This deficit (or surplus) adds to (or subtracts from) the federal debt accumulated from past budgets. The Federal Reserve decides how much, if any, of the debt is "monetized"—that is, takes the form of currency or its equivalent. The rest consists of interest-bearing treasury securities. Those central bank decisions are the essence of monetary policy.

Mechanics of Monetary Policy

A central bank is a "bankers' bank." The customers of the twelve Federal Reserve banks are not ordinary citizens but "banks" in the inclusive sense of all depository institutions—commercial banks, savings banks, savings and loan associations, and credit unions. They are eligible to hold deposits in and borrow from Federal Reserve banks and are subject to the Fed's reserve requirements and other regulations.

At year-end 2003, federal debt outstanding was $7,001 billion, of which only 11 percent, or $753 billion, was monetized. That is, the Federal Reserve banks owned $753 billion of claims on the U.S. Treasury, against which they had incurred liabilities in currency (Federal Reserve notes) or in deposits convertible into currency on demand. Total currency in public circulation outside banks was $664 billion at year-end 2003. Banks' reserves—the currency in their vaults plus their deposits in the Fed—were $89 billion. The two together constitute the monetary base (M0 or MB), $753 billion at year-end 2003.

Banks are required to hold reserves at least equal to prescribed percentages of their checkable deposits. Compliance with the requirements is regularly tested—every two weeks for banks accounting for the bulk of deposits. Reserve tests are the fulcrum of monetary policy. Banks need "federal funds" (currency or deposits at Federal Reserve banks) to pass the reserve tests, and the Fed controls the supply. When the Fed buys securities from banks or their depositors with base money, banks acquire reserve balances. Likewise the Fed extinguishes reserve balances by selling treasury securities. These are open-market operations, the primary modus operandi of monetary policy. These transactions are supervised by the Federal Open Market Committee (FOMC), the Fed's principal policymaking organ.

A bank in need of reserves can borrow reserve balances on deposit in the Fed from other banks. Loans are made for one day at a time in the "federal funds" market. **Interest rates** on these loans are quoted continuously. Central bank open-market operations are interventions in this market. When the Federal Reserve (or other central bank) conducts an open-market operation, it typically buys treasury bills, paying for them with reserves, or sells them, taking reserves in payment. Open-market operations thus amount to interventions in the federal funds market. Banks can also borrow from the Federal Reserve banks themselves, at their announced discount rates, which are in practice the same at all twelve banks. The setting of the discount rate is another instrument of central bank policy. Nowadays it is secondary to open-market operations, and the Fed generally keeps the discount rate close to the federal funds market rate. However, announcing a new discount rate is often a convenient way to send a message to the money markets. In addition to its responsibilities for macroeconomic stabilization, the central bank has a traditional safety-net role in temporarily assisting individual banks and in preventing or stemming systemic panics as "lender of last resort."

Tactics: Operating Procedures

Through open-market operations, the FOMC can set a target federal funds rate and instruct its trading desk at the Federal Reserve Bank of New York to enter the market as necessary to keep the funds rate on target. The target itself is temporary; the FOMC reconsiders it every six weeks or so at its regular meetings, or sooner if financial and economic surprises occur.

An alternative operating procedure is to target a funds quantity, letting the market move the funds interest rate to whatever level equates banks' demands to that quantity. This was the Fed's practice in 1979–1982, adopted in response to monetarist complaints that the Fed had been too slow to raise interest rates in booms to check money growth and inflation. The volatility of interest rates was much greater in this regime than in the interest-rate-target regime.

How is the Fed's control of money markets transmitted to other financial markets and to the economy? How does it influence spending on goods and services? To banks, money market rates are costs of funds they could lend to their customers or invest in securities. When these costs are raised, banks raise their lending rates and become more selective in advancing credit. Their customers borrow and spend less. The effects are widespread, affecting businesses dependent on commercial loans to finance inventories; developers seeking credit for shopping centers, office buildings, and **housing** complexes; home buyers needing mortgages; consumers purchasing automobiles and appliances; credit card holders; and municipalities constructing schools and sewers.

Banks compete with each other for both loans and deposits. Before 1980, legal ceilings on deposit interest restricted competition for deposits, but now interest rates on certificates of deposits, savings accounts, and even checkable deposits are unregulated. Because banks' profit margins depend on the difference between the interest they earn on their loans and other assets and what they pay for deposits, the two move together.

Banks compete with other financial institutions and with open financial markets. **Corporations** borrow not only from banks but also from other financial intermediaries: **insurance**companies, pension funds, and **investment** companies. They sell bonds, stocks, and commercial paper in open markets, where the buyers include individuals, nonprofit institutions, and mutual funds, as well as banks. Households and businesses compare the returns and advantages of bank deposits with those of money market funds, other mutual funds, open-market securities, and other assets.

Thanks to its control of money markets and banks, the Fed influences interest rates, asset prices, and credit flows throughout the financial system. Arbitrage and competition spread increases or decreases in interest rates under the Fed's direct control to other markets. Even stock prices are sensitive, falling when yields on bonds go up, and rising when they fall.

The Fed has less control over bond yields and other long-term rates than over money market and short-term rates. Long rates depend heavily on expectations of future short rates, and thus on expectations of future Fed policies. For example, heightened expectations of future inflation or of higher federal budget deficits will raise long rates relative to short rates because the Fed has created expectations that it will tighten monetary policy in those circumstances.

Another mechanism for transmitting monetary policy to the demand for goods and services became increasingly important after 1973. Since 1973 **foreign exchange** rates have been allowed to float, and obstacles to international movements of funds have steadily disappeared. An increase in U.S. interest rates relative to those in Tokyo, London, and Frankfurt draws funds into dollar assets and raises the value of the dollar in terms of yen, pounds sterling, and

deutsche marks. American goods become more expensive relative to foreign goods, for buyers both at home and abroad. Declines in exports and increases in imports reduce aggregate demand for domestic production. High interest rates and exchange appreciation created a large and stubborn U.S. trade deficit in 1981–1985. Since 1985, as the interest advantage of dollar assets was reduced or reversed, the dollar depreciated and the U.S. trade deficit slowly fell. A similar pattern recurred between 1995 and 2002 as the exchange rate appreciated and the trade deficit widened as a proportion of GDP by more than 50 percent compared with its 1980s nadir. As of the end of 2004, two years of depreciation of the dollar have yet to reverse the trade deficit.

Targets: Monetary Aggregates or Macroeconomic Performance?

People hold dollar currency because it is the means of payment in many transactions. But checkable deposits are usually more convenient. They are not confined to particular denominations, cannot be lost or stolen, pay interest, and generate records most of us find useful.

The use of deposits in place of currency greatly economizes on base money. The $89 billion of bank reserves at year-end 2003 supported about $629 billion in checkable deposits. (The $572 billion of other assets behind those deposits were banks' loans and investments. In this sense banks "monetize" debts of all kinds.) These deposits plus the $664 billion in circulating currency provided a stock of transactions money (M1) of $1,293 billion. But time deposits and deposit certificates, though not checkable, are close substitutes for transactions deposits in many respects. So are money market funds and other assets outside banks altogether. Consequently the Fed keeps track of a spectrum of monetary aggregates, M1, M2, M3, each more inclusive than the preceding one.

The same open-market operations that move the monetary base up and down and interest rates down and up change the quantities of M1 and other monetary aggregates. Operations that reduce federal funds rates and related short-term interest rates add to bank reserves, thus also to bank loans and deposits. In 2003 reserve requirements averaged about 10 percent of checkable deposits. Thus a one-dollar increase in the bank reserves component of the monetary base meant roughly a ten-dollar increase in the deposit component of M1. In contrast, a one-dollar increase in the currency component of the monetary base is always just a one-dollar increase in M1.

If there were no change in the ratio of deposits to currency that the public preferred in 2003, a $1.00 increase in the monetary base would mean a $1.70 increase in M1. This is the "money multiplier." It does not stay constant, for several reasons. The Fed occasionally changes the required reserve ratio. Banks sometimes hold excess reserves, and sometimes borrow reserves

from the Fed. The public's demand for currency relative to deposits varies seasonally, cyclically, and randomly. In fact, the public's demand for currency relative to demand deposits has increased significantly over the past fifteen years. In 1990, the money multiplier was $2.71 per new dollar of monetary base. In 2003, it was about 40 percent smaller. This reflects developments in transactions technology and financial institutions that allow people and firms to keep more of their liquid funds in forms other than checkable deposits and still pay their bills easily. Thus, the Fed's control of M1 is imprecise, and its control of broader aggregates is still looser.

Monetarists urge the Fed to gear its operations to steady growth of a monetary aggregate, M1 or M2. Under congressional mandate the Fed twice a year announces target ranges for growth of monetary aggregates several quarters ahead. In the 1970s the FOMC tried to stay within these ranges but often missed. Monetarist criticism became especially insistent when money growth exceeded Fed targets during the oil shocks. In October 1979 Chairman Volcker warned the public that the Fed would stick to its restrictive targets for monetary aggregates until inflation was conquered. Three years later, however, the Fed stopped taking the monetary aggregates seriously.

Monetary aggregates are not important in themselves. What matters is macroeconomic performance as indicated by GDP, employment, and prices. Monetarist policies are premised on a tight linkage between the stock of money in dollars—say, MI—and the flow of spending, GDP in dollars per year. The connection between them is the velocity of money, the number of times per year an average dollar travels around the circuit and is spent on GDP. By definition of velocity, GDP equals the stock of money times its velocity. The velocity of MI was 8.5 in 2003. If it were predictable, control of MI would control dollar GDP too. But MI velocity is quite volatile. For the years from 1961 to 1990, average annual velocity growth was 2.2 percent, with a standard deviation of 3.6 percent. That is, the chance was about one in three in any year that velocity would either rise by more than 5.8 percent or decline by more than 1.4 percent. For the 1991–2003 period, the average annual growth of velocity was 1.6 percent, with a standard deviation of 5.9 percent. (M2 velocity is less volatile, but M2 itself is less controllable.)

Velocity depends on the money management practices of households and businesses throughout the economy. As transactions technologies and financial institutions have evolved and an increasing array of money substitutes has arisen, velocity has become less stable and monetary aggregates have become less reliable proxies for aggregate spending and economic activity. The 1981–1982 recession was deeper than the Fed intended because the FOMC stuck stubbornly to its monetary aggregates targets while velocity was precipitously falling.

Accounting for aggregate demand as the product of a money stock and its velocity is inadequate shorthand for the complex processes by which monetary policies are transmitted—

via interest rates, banks, and asset markets—to spending on GDP by households, businesses, and foreigners. The Fed does better by aiming directly at desired macroeconomic performance than by binding itself to intermediate targets.

James Tobin. "Monetary Policy." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/MonetaryPolicy.html

Creative Destruction
by W. Michael Cox and Richard Alm

Joseph Schumpeter (1883–1950) coined the seemingly paradoxical term "creative destruction," and generations of economists have adopted it as a shorthand description of the **free market**'s messy way of delivering progress. In *Capitalism, Socialism, and Democracy* (1942), the Austrian economist wrote:

The opening up of new markets, foreign or domestic, and the organizational development from the craft shop to such concerns as U.S. Steel illustrate the same process of industrial mutation—if I may use that biological term—that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. (p. 83)

Although Schumpeter devoted a mere six-page chapter to "The Process of Creative Destruction," in which he described **capitalism** as "the perennial gale of creative destruction," it has become the centerpiece for modern thinking on how economies evolve.

Schumpeter and the economists who adopt his succinct summary of the free market's ceaseless churning echo capitalism's critics in acknowledging that lost jobs, ruined companies, and vanishing industries are inherent parts of the growth system. The saving grace comes from recognizing the good that comes from the turmoil. Over time, societies that allow creative destruction to operate grow more productive and richer; their citizens see the benefits of new and better products, shorter work weeks, better jobs, and higher living standards.

Herein lies the paradox of progress. A society cannot reap the rewards of creative destruction without accepting that some individuals might be worse off, not just in the short term, but perhaps forever. At the same time, attempts to soften the harsher aspects of creative destruction by trying to preserve jobs or protect industries will lead to stagnation and decline, short-circuiting the march of progress. Schumpeter's enduring term reminds us that capitalism's pain and gain are inextricably linked. The process of creating new industries does not go forward without sweeping away the preexisting order.

Transportation provides a dramatic, ongoing example of creative destruction at work. With the arrival of steam power in the nineteenth century, railroads swept across the United States, enlarging markets, reducing shipping costs, building new industries, and providing millions of new productive jobs. The internal combustion engine paved the way for the automobile early in the next century. The rush to put America on wheels spawned new enterprises; at one point in

the 1920s, the industry had swelled to more than 260 car makers. The automobile's ripples spilled into oil, tourism, entertainment, retailing, and other industries. On the heels of the automobile, the airplane flew into our world, setting off its own burst of new businesses and jobs.

Americans benefited as horses and mules gave way to cars and airplanes, but all this creation did not come without destruction. Each new mode of transportation took a toll on existing jobs and industries. In 1900, the peak year for the occupation, the country employed 109,000 carriage and harness makers. In 1910, 238,000 Americans worked as blacksmiths. Today, those jobs are largely obsolete. After eclipsing canals and other forms of transport, railroads lost out in **competition** with cars, long-haul trucks, and airplanes. In 1920, 2.1 million Americans earned their paychecks working for railroads, compared with fewer than 200,000 today.

What occurred in the transportation sector has been repeated in one industry after another—in many cases, several times in the same industry. Creative destruction recognizes change as the one constant in capitalism. Sawyers, masons, and miners were among the top thirty American occupations in 1900. A century later, they no longer rank among the top thirty; they have been replaced by medical technicians, engineers, computer scientists, and others.

Technology roils job markets, as Schumpeter conveyed in coining the phrase "technological unemployment" (**Table 1**). E-mail, word processors, answering machines, and other modern office technology have cut the number of secretaries but raised the ranks of programmers. The birth of the **Internet** spawned a need for hundreds of thousands of webmasters, an occupation that did not exist as recently as 1990. LASIK surgery often lets consumers throw away their glasses, reducing visits to optometrists and opticians but increasing the need for ophthalmologists. Digital cameras translate to fewer photo clerks.

Companies show the same pattern of destruction and rebirth. Only five of today's hundred largest public companies were among the top hundred in 1917. Half of the top hundred of 1970 had been replaced in the rankings by 2000.

"The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process," Schumpeter wrote (p. 82).

The Power of Productivity

Entrepreneurship and competition fuel creative destruction. Schumpeter summed it up as follows:

The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates. (p. 83)

Entrepreneurs introduce new products and technologies with an eye toward making themselves better off—the profit motive. New goods and services, new firms, and new industries compete with existing ones in the marketplace, taking customers by offering lower prices, better performance, new features, catchier styling, faster service, more convenient locations, higher status, more aggressive marketing, or more attractive packaging. In another seemingly contradictory aspect of creative destruction, the pursuit of self-interest ignites the progress that makes *others* better off.

Producers survive by streamlining production with newer and better tools that make workers more productive. Companies that no longer deliver what consumers want at competitive prices lose customers, and eventually wither and die. The market's "invisible hand"—a phrase owing not to Schumpeter but to **Adam Smith**—shifts resources from declining sectors to more valuable uses as workers, inputs, and financial capital seek their highest returns.

Through this constant roiling of the status quo, creative destruction provides a powerful force for making societies wealthier. It does so by making scarce resources more productive. The telephone industry employed 421,000 switchboard operators in 1970, when Americans made 9.8 billion long-distance calls. With advances in switching technology over the next three decades, the **telecommunications** sector could reduce the number of operators to 156,000 but still ring up 106 billion calls. An average operator handled only 64 calls a day in 1970. By 2000, that figure had increased to 1,861, a staggering gain in **productivity**. If they had to handle today's volume of calls with 1970s technology, the telephone companies would need more than 4.5 million operators, or 3 percent of the labor force. Without the productivity gains, a long-distance call would cost six times as much.

The telephone industry is not an isolated example of creative destruction at work. In 1900, nearly forty of every hundred Americans worked in farming to feed a country of ninety million people. A century later, it takes just two out of every hundred workers. Despite one of history's most thorough downsizings, the country has not gone hungry. The United States enjoys agricultural plenty, producing more meat, grain, vegetables, and dairy products than ever, thanks largely to huge advances in agricultural productivity.

Table 1 Technological Unemployment

New Product	Labor Needed	Old Product	Labor Released
Automobile	Assemblers	Horse/carriage	Blacksmiths
	Designers	Train	Wainwrights
	Road builders	Boat	Drovers
	Petrochemists		Teamsters
	Mechanics		RR workers
	Truck drivers		Canalmen
Airplane	Pilots	Train	RR workers
	Mechanics	Ocean liner	Sawyers
	Flight attendants		Mechanics
	Travel agents		Ship hands
			Boilermakers
Plastics	Petrochemists	Steel	Miners
		Aluminum	Founders
		Barrels/tubs	Metalworkers
		Pottery/glass	Coopers
			Potters
			Colliers
Computer	Programmers	Adding machine	Assemblers
	Computer engineers	Slide rule	Millwrights
	Electrical engineers	Filing cabinet	Clerks
	Software designers	Paper	Tinsmiths
			Lumberjacks
Fax machine	Programmers	Express mail	Mail sorters
Email	Electricians	Teletype	Truck drivers
	Software designers		Typists
Telephone	Electronic engineers	Mail	Postal workers
	Operators	Telegraph	Telegraph operators
	Optical engineers	Overnight coach	Coach drivers
	Cellular technicians		
Polio vaccine	Chemists	Iron lung	Manufacturers
	Lab technicians		Attendants
	Pharmacists		
Internet	Programmers	Shopping malls	Retail salespersons
	Network operators	Libraries	Librarians
	Optical goods workers	Reference books	Encyclopedia
	Webmasters		salespersons

Resources no longer needed to feed the nation have been freed to meet other consumer demands. Over the decades, workers no longer required in agriculture moved to the cities, where they became available to produce other goods and services. They started out in foundries, meatpacking plants, and loading docks in the early days of the Industrial Age. Their grandsons and granddaughters, living in an economy refashioned by creative destruction into the **Information** Age, are less likely to work in those jobs. They are making computers, movies, and financial decisions and providing a modern economy's myriad other goods and services (**Table 2**).

Table 2 The Churn: Recycling America's Labor

*. Fewer than 5,000.

Job Destruction	Now (2002)	Then	Year
Railroad employees	111,000	2,076,000	1920
Carriage and harness makers	*	109,000	1900
Telegraph operators	*	75,000	1920
Boilermakers	*	74,000	1920
Milliners	*	100,000	1910
Cobblers	*	102,000	1900
Blacksmiths	*	238,000	1910
Watchmakers	*	101,000	1920
Switchboard (telephone) operators	119,000	421,000	1970
Farm workers	716,000	11,533,000	1910
Secretaries	2,302,000	3,871,000	1980
Metal & plastic working machine operators	286,000	715,000	1980
Optometrists	33,000	43,000	1998
Job Creation	Now (2002)	Then	Year
Airplane pilots and mechanics	255,000	0	1900
Auto mechanics	867,000	0	1900
Engineers	2,028,000	38,000	1900
Medical technicians	1,879,000	0	1910
Truck, bus, and taxi drivers	4,171,000	0	1900
Electricians	882,000	*	1900
Professional athletes	95,000	*	1920
Computer programmers/operators/scientists	2,648,000	160,613	1970
Actors and directors	155,000	34,643	1970
Editors and reporters	280,000	150,715	1970
Medical scientists	89,000	3,589	1970
Dietitians	74,000	42,349	1970

Special education teachers	374,000	1,563	1970
Physicians	825,000	295,803	1970
Pharmacists	231,000	114,590	1970
Authors	139,000	26,677	1970
TV, stereo, and appliance salespersons	309,000	111,842	1970
Webmasters	500,000	0	1990

Over the past two centuries, the Western nations that embraced capitalism have achieved tremendous economic progress as new industries supplanted old ones. Even with the higher living standards, however, the constant flux of free enterprise is not always welcome. The disruption of lost jobs and shuttered businesses is immediate, while the payoff from creative destruction comes mainly in the long term. As a result, societies will always be tempted to block the process of creative destruction, implementing policies to resist economic change.

Attempts to save jobs almost always backfire. Instead of going out of business, inefficient producers hang on, at a high cost to consumers or taxpayers. The tinkering shortcircuits market signals that shift resources to emerging industries. It saps the incentives to introduce new products and production methods, leading to stagnation, layoffs, and bankruptcies. The ironic point of Schumpeter's iconic phrase is this: societies that try to reap the gain of creative destruction without the pain find themselves enduring the pain but not the gain.

W. Michael Cox and Richard Alm. "Creative Destruction." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/CreativeDestruction.html

Property Rights
by Armen A. Alchian

One of the most fundamental requirements of a capitalist economic system—and one of the most misunderstood concepts—is a strong system of property rights. For decades social critics in the United States and throughout the Western world have complained that "property" rights too often take precedence over "human" rights, with the result that people are treated unequally and have unequal opportunities. Inequality exists in any society. But the purported conflict between property rights and human rights is a mirage. Property rights are human rights.

The definition, allocation, and protection of property rights comprise one of the most complex and difficult sets of issues that any society has to resolve, but one that must be resolved in some fashion. For the most part, social critics of "property" rights do not want to abolish those rights. Rather, they want to transfer them from private ownership to government ownership. Some transfers to public ownership (or control, which is similar) make an economy more effective. Others make it less effective. The worst outcome by far occurs when property rights really are abolished (see **tragedy of the commons**).

A property right is the exclusive authority to determine how a resource is used, whether that resource is owned by government or by individuals. Society approves the uses selected by the holder of the property right with governmental administered force and with social ostracism. If the resource is owned by the government, the agent who determines its use has to operate under a set of rules determined, in the United States, by Congress or by executive agencies it has charged with that role.

Private property rights have two other attributes in addition to determining the use of a resource. One is the exclusive right to the services of the resource. Thus, for example, the owner of an apartment with complete property rights to the apartment has the right to determine whether to rent it out and, if so, which tenant to rent to; to live in it himself; or to use it in any other peaceful way. That is the right to determine the use. If the owner rents out the apartment, he also has the right to all the rental income from the property. That is the right to the services of the resources (the rent).

Finally, a private property right includes the right to delegate, rent, or sell any portion of the rights by exchange or gift at whatever price the owner determines (provided someone is willing to pay that price). If I am not allowed to buy some rights from you and you therefore are not allowed to sell rights to me, private property rights are reduced. Thus, the three basic elements

of private property are (1) exclusivity of rights to choose the use of a resource, (2) exclusivity of rights to the services of a resource, and (3) rights to exchange the resource at mutually agreeable terms.

The U.S. Supreme Court has vacillated about this third aspect of property rights. But no matter what words the justices use to rationalize such decisions, the fact is that such limitations as **price controls** and restrictions on the right to sell at mutually agreeable terms are reductions of private property rights. Many economists (myself included) believe that most such restrictions on property rights are detrimental to society. Here are some of the reasons why.

Under a private property system the market values of property reflect the preferences and demands of the rest of society. No matter who the owner is, the use of the resource is influenced by what the rest of the public thinks is the most valuable use. The reason is that an owner who chooses some other use must forsake that highest-valued use—and the price others would pay him for the resource or for the use of it. This creates an interesting paradox: although property is called "private," private decisions are based on public, or social, evaluation.

The fundamental purpose of property rights, and their fundamental accomplishment, is that they eliminate destructive **competition** for control of economic resources. Well-defined and well-protected property rights replace competition by violence with competition by peaceful means.

The extent and degree of private property rights fundamentally affect the ways people compete for control of resources. With more complete private property rights, market exchange values become more influential. The personal status and personal attributes of people competing for a resource matter less because their influence can be offset by adjusting the price. In other words, more complete property rights make **discrimination** more costly. Consider the case of a black woman who wants to rent an apartment from a white landlord. She is better able to do so when the landlord has the right to set the rent at whatever level he wants. Even if the landlord would prefer a white tenant, the black woman can offset her disadvantage by offering a higher rent. A landlord who takes the white tenant at a lower rent anyway pays for discriminating.

But if the government imposes rent controls that keep the rent below the free-market level, the price the landlord pays to discriminate falls, possibly to zero. The **rent control** does not magically reduce the **demand** for apartments. Instead, it reduces every potential tenant's ability to compete by offering more money. The landlord, now unable to receive the full money price, will discriminate in favor of tenants whose personal characteristics—such as age, sex,

ethnicity, and religion—he favors. Now the black woman seeking an apartment cannot offset the disadvantage of her skin color by offering to pay a higher rent.

Competition for apartments is not eliminated by rent controls. What changes is the "coinage" of competition. The restriction on private property rights reduces competition based on monetary exchanges for goods and services and increases competition based on personal characteristics. More generally, weakening private property rights increases the role of personal characteristics in inducing sellers to discriminate among competing buyers and buyers to discriminate among sellers.

The two extremes in weakened private property rights are**socialism** and "commonly owned" resources. Under socialism, government agents—those whom the government assigns—exercise control over resources. The rights of these agents to make decisions about the property they control are highly restricted. People who think they can put the resources to more valuable uses cannot do so by purchasing the rights because the rights are not for sale at any price. Because socialist managers do not gain when the values of the resources they manage increase, and do not lose when the values fall, they have little incentive to heed changes in market-revealed values. The uses of resources are therefore more influenced by the personal characteristics and features of the officials who control them. Consider the socialist manager of a collective farm under the old Soviet communist system. By working every night for one week, he could have made, say, one million rubles of additional profit for the farm by arranging to transport the farm's wheat to Moscow before it rotted. But because neither the manager nor those who worked on the farm were entitled to keep even a portion of this additional profit, the manager was more likely than the manager of a capitalist farm to go home early and let the crops rot.

Similarly, common ownership of resources—whether in the former Soviet Union or in the United States—gives no one a strong incentive to preserve the resource. A fishery that no one owns, for example, will be overfished. The reason is that a fisherman who throws back small fish to wait until they grow is unlikely to get any benefit from his waiting. Instead, some other fisherman will catch the fish. The same holds true for other common resources whether they be herds of buffalo, oil in the ground, or clean air. All will be overused.

Indeed, a main reason for the spectacular failure of the 1980s and early 1990s economic reforms in the former Soviet Union is that resources were shifted from ownership by government to de facto common ownership. How? By making the Soviet government's revenues de facto into a common resource. Harvard economist Jeffrey Sachs, who advised the Soviet government, once pointed out that when Soviet managers of socialist enterprises were allowed to open their own businesses but still were left as managers of the government's businesses, they siphoned out the **profits** of the government's business into their

private **corporations**. Thousands of managers doing this caused a large budget deficit for the Soviet government. In this case the resource that no manager had an incentive to conserve was the Soviet government's revenues. Similarly, improperly set premiums for U.S. deposit **insurance** gave banks and S&Ls (see **savings and loan crisis**) an incentive to make excessively risky loans and to treat the deposit insurance fund as a "common" resource.

Private property rights to a resource need not be held by a single person. They can be shared, with each person sharing in a specified fraction of the market value while decisions about uses are made in whatever process the sharing group deems desirable. A major example of such shared property rights is the corporation. In a limited **liability** corporation, shares are specified and the rights to decide how to use the corporation's resources are delegated to its management. Each shareholder has the unrestrained right to sell his or her share. Limited liability insulates each shareholder's wealth from the liabilities of other shareholders, and thereby facilitates anonymous sale and purchase of shares.

In other types of enterprises, especially where each member's wealth will become uniquely dependent on each other member's behavior, property rights in the group endeavor are usually salable only if existing members approve of the buyer. This is typical for what are often called joint ventures, "mutuals," and partnerships.

While more complete property rights are preferable to less complete rights, any system of property rights entails considerable complexity and many issues that are difficult to resolve. If I operate a factory that emits smoke, foul smells, or airborne acids over your land, am I using your land without your permission? This is difficult to answer.

The cost of establishing private property rights—so that I could pay you a mutually agreeable price to pollute your air—may be too high. Air, underground water, and electromagnetic radiation, for example, are expensive to monitor and control. Therefore, a person does not effectively have enforceable private property rights to the quality and condition of some parcel of air. The inability to cost-effectively monitor and police uses of your resources means "your" property rights over "your" land are not as extensive and strong as they are over some other resources such as furniture, shoes, or automobiles. When private property rights are unavailable or too costly to establish and enforce, substitute means of control are sought. Government authority, expressed by government agents, is one very common such means. Hence the creation of environmental laws.

Depending on circumstances, certain actions may be considered invasions of privacy, trespass, or torts. If I seek refuge and safety for my boat at your dock during a sudden severe storm on a lake, have I invaded "your" property rights, or do your rights not include the right to prevent

that use? The complexities and varieties of circumstances render impossible a bright-line definition of a person's set of property rights with respect to resources.

Similarly, the set of resources over which property rights may be held is not well defined and demarcated. Ideas, melodies, and procedures, for example, are almost costless to replicate explicitly (near-zero cost of production) and implicitly (no forsaken other uses of the inputs). As a result, they typically are not protected as private property except for a fixed term of years under a patent or copyright.

Private property rights are not absolute. The rule against the "dead hand," or perpetuities, is an example. I cannot specify how resources that I own will be used in the indefinitely distant future. Under our legal system, I can specify the use only for a limited number of years after my death or the deaths of currently living people. I cannot insulate a resource's use from the influence of market values of all future generations. Society recognizes market prices as measures of the relative desirability of resource uses. Only to the extent that rights are salable are those values most fully revealed.

Accompanying and conflicting with the desire to secure private property rights for oneself is the desire to acquire more wealth by "taking" from others. This is done by military conquest and by forcible reallocation of rights to resources (also known as stealing). But such coercion is antithetical to—rather than characteristic of—a system of private property rights. Forcible reallocation means that the existing rights have not been adequately protected.

Private property rights do not conflict with human rights. They are human rights. Private property rights are the rights of humans to use specified goods and to exchange them. Any restraint on private property rights shifts the balance of power from impersonal attributes toward personal attributes and toward behavior that political authorities approve. That is a fundamental reason for preference of a system of strong private property rights: private property rights protect individual liberty.

Armen A. Alchian. "Property Rights." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/PropertyRights.html

Economic Growth
by Paul M. Romer

Compound Rates of Growth

In the modern version of an old legend, an investment banker asks to be paid by placing one penny on the first square of a chessboard, two pennies on the second square, four on the third, etc. If the banker had asked that only the white squares be used, the initial penny would have doubled in value thirty-one times, leaving $21.5 million on the last square. Using both the black and the white squares would have made the penny grow to $92 million billion.

People are reasonably good at forming estimates based on addition, but for operations such as compounding that depend on repeated multiplication, we systematically underestimate how quickly things grow. As a result, we often lose sight of how important the average rate of growth is for an economy. For an investment banker, the choice between a payment that doubles with every square on the chessboard and one that doubles with every other square is more important than any other part of the contract. Who cares whether the payment is in pennies, pounds, or pesos? For a nation, the choices that determine whether income doubles with every generation, or instead with every other generation, dwarf all other economic policy concerns.

Growth in Income per Capita

You can figure out how long it takes for something to double by dividing the growth rate into the number 72. In the twenty-five years between 1950 and 1975, income per capita in India grew at the rate of 1.8 percent per year. At this rate, income doubles every forty years because 72 divided by 1.8 equals 40. In the twenty-five years between 1975 and 2000, income per capita in China grew at almost 6 percent per year. At this rate, income doubles every twelve years.

These differences in doubling times have huge effects for a nation, just as they do for our banker. In the same forty-year time span that it would take the Indian economy to double at its slower growth rate, income would double three times—to eight times its initial level—at China's faster growth rate.

From 1950 to 2000, growth in income per capita in the United States lay between these two extremes, averaging 2.3 percent per year. From 1950 to 1975, India, which started at a level of income per capita that was less than 7 percent of that in the United States, was falling even farther behind. Between 1975 and 2000, China, which started at an even lower level, was catching up.

China grew so quickly partly because it started so far behind. Rapid growth could be achieved in large part by letting firms bring in ideas about how to create value that were already in use in the rest of the world. The interesting question is why India could not manage the same trick, at least between 1950 and 1975.

Growth and Recipes

Economic growth occurs whenever people take resources and rearrange them in ways that make them more valuable. A useful metaphor for production in an economy comes from the kitchen. To create valuable final products, we mix inexpensive ingredients together according to a recipe. The cooking one can do is limited by the **supply** of ingredients, and most cooking in the economy produces undesirable side effects. If economic growth could be achieved only by doing more and more of the same kind of cooking, we would eventually run out of raw materials and suffer from unacceptable levels of pollution and nuisance. Human history teaches us, however, that economic growth springs from better recipes, not just from more cooking. New recipes generally produce fewer unpleasant side effects and generate more economic value per unit of raw material (see **natural resources**).

Take one small example. In most coffee shops, you can now use the same size lid for small, medium, and large cups of coffee. That was not true as recently as 1995. That small change in the geometry of the cups means that a coffee shop can serve customers at lower cost. Store owners need to manage the inventory for only one type of lid. Employees can replenish supplies more quickly throughout the day. Customers can get their coffee just a bit faster. Although big discoveries such as the transistor, antibiotics, and the electric motor attract most of the attention, it takes millions of little discoveries like the new design for the cup and lid to double a nation's average income.

Every generation has perceived the limits to growth that finite resources and undesirable side effects would pose if no new recipes or ideas were discovered. And every generation has underestimated the potential for finding new recipes and ideas. We consistently fail to grasp how many ideas remain to be discovered. The difficulty is the same one we have with compounding: possibilities do not merely add up; they multiply.

In a branch of physical chemistry known as exploratory synthesis, chemists try mixing selected elements together at different temperatures and pressures to see what comes out. About a decade ago, one of the hundreds of compoundsdiscovered this way—a mixture of copper, yttrium, barium, and oxygen—was found to be a superconductor at temperatures far higher than anyone had previously thought possible. This discovery may ultimately have far-reaching implications for the storage and transmission of electrical**energy**.

To get some sense of how much scope there is for more such discoveries, we can calculate as follows. The periodic table contains about a hundred different types of atoms, which means that the number of combinations made up of four different elements is about 100 × 99 × 98 × 97 = 94,000,000. A list of numbers like 6, 2, 1, 7 can represent the proportions for using the four elements in a recipe. To keep things simple, assume that the numbers in the list must lie between 1 and 10, that no fractions are allowed, and that the smallest number must always be 1. Then there are about 3,500 different sets of proportions for each choice of four elements, and 3,500 × 94,000,000 (or 330,000,000,000) different recipes in total. If laboratories around the world evaluated one thousand recipes each day, it would take nearly a million years to go through them all. (If you like these combinatorial calculations, try to figure out how many different coffee drinks it is possible to order at your local shop. Instead of moving around stacks of cup lids, baristas now spend their time tailoring drinks to individual palates.)

In fact, the previous calculation vastly underestimates the amount of exploration that remains to be done because mixtures can be made of more than four elements, fractional proportions can be selected, and a wide variety of pressures and temperatures can be used during mixing.

Even after correcting for these additional factors, this kind of calculation only begins to suggest the range of possibilities. Instead of just mixing elements together in a disorganized fashion, we can use chemical reactions to combine elements such as hydrogen and carbon into ordered structures like polymers or proteins. To see how far this kind of process can take us, imagine the ideal chemical refinery. It would convert abundant, renewable resources into a product that humans value. It would be smaller than a car, mobile so that it could search out its own inputs, capable of maintaining the temperature necessary for its reactions within narrow bounds, and able to automatically heal most system failures. It would build replicas of itself for use after it wears out, and it would do all of this with little human supervision. All we would have to do is get it to stay still periodically so that we could hook up some pipes and drain off the final product.

This refinery already exists. It is the milk cow. And if nature can produce this structured collection of hydrogen, carbon, and miscellaneous other atoms by meandering along one particular evolutionary path of trial and error (albeit one that took hundreds of millions of years), there must be an unimaginably large number of valuable structures and recipes for combining atoms that we have yet to discover.

Objects and Ideas

Thinking about ideas and recipes changes how one thinks about economic policy (and cows). A traditional explanation for the persistent poverty of many less-developed countries is that they lack objects such as natural resources or capital goods. But Taiwan started with little of either

and still grew rapidly. Something else must be involved. Increasingly, emphasis is shifting to the notion that it is ideas, not objects, that poor countries lack. The knowledge needed to provide citizens of the poorest countries with a vastly improved standard of living already exists in the advanced countries (see **standards of livingand modern economic growth**). If a poor nation invests in **education** and does not destroy the incentives for its citizens to acquire ideas from the rest of the world, it can rapidly take advantage of the publicly available part of the worldwide stock of knowledge. If, in addition, it offers incentives for privately held ideas to be put to use within its borders—for example, by protecting foreign patents, copyrights, and licenses; by permitting direct **investment** by foreign firms; by protecting **property rights**; and by avoiding heavy **regulation** and high **marginal tax rates**—its citizens can soon work in state-of-the-art productive activities.

Some ideas such as insights about public health are rapidly adopted by less-developed countries. As a result, life expectancy in poor countries is catching up with that in the leaders faster than income per capita. Yet governments in poor countries continue to impede the flow of many other ideas, especially those with commercial value. Automobile producers in North America clearly recognize that they can learn from ideas developed in the rest of the world. But for decades, car firms in India operated in a government-created protective time warp. The Hillman and Austin cars produced in England in the 1950s continued to roll off production lines in India through the 1980s. After independence, India's commitment to closing itself off and striving for self-sufficiency was as strong as Taiwan's commitment to acquiring foreign ideas and participating fully in world markets. The outcomes—grinding poverty in India and opulence in Taiwan—could hardly be more disparate.

A poor country like India can achieve enormous increases in standards of living merely by letting in the ideas held by companies from industrialized nations. With a series of economic reforms that started in the 1980s and deepened in the early 1990s, India has begun to open itself up to these opportunities. For some of its citizens, such as the software developers who now work for firms located in the rest of the world, these improvements in standards of living have become a reality. This same type of opening up is causing a spectacular transformation of life in China. Its growth in the last twenty-five years of the twentieth century was driven to a very large extent by foreign investment by multinational firms.

Leading countries like the United States, Canada, and the members of the **European Union** cannot stay ahead merely by adopting ideas developed elsewhere. They must offer strong incentives for discovering new ideas at home, and this is not easy to do. The same characteristic that makes an idea so valuable—everybody can use it at the same time—also means that it is hard to earn an appropriate rate of return on investments in ideas. The many people who benefit from a new idea can too easily free ride on the efforts of others.

After the transistor was invented at Bell Laboratories, many applied ideas had to be developed before this basic science discovery yielded any commercial value. By now, private firms have developed improved recipes that have brought the cost of a transistor down to less than a millionth of its former level. Yet most of the benefits from those discoveries have been reaped not by the innovating firms, but by the users of the transistors. In 1985, I paid a thousand dollars per million transistors for memory in my computer. In 2005, I paid less than ten dollars per million, and yet I did nothing to deserve or help pay for this windfall. If the government confiscated most of the oil from major discoveries and gave it to consumers, oil companies would do much less exploration. Some oil would still be found serendipitously, but many promising opportunities for exploration would be bypassed. Both oil companies and consumers would be worse off. The leakage of benefits such as those from improvements in the transistor acts just like this kind of confiscatory tax and has the same effect on incentives for exploration. For this reason, most economists support government funding for basic scientific research. They also recognize, however, that basic research grants by themselves will not provide the incentives to discover the many small applied ideas needed to transform basic ideas such as the transistor or Web search into valuable products and services.

It takes more than scientists in universities to generate progress and growth. Such seemingly mundane forms of discovery as product and process engineering or the development of new business models can have huge benefits for society as a whole. There are, to be sure, some benefits for the firms that make these discoveries, but not enough to generate **innovation** at the ideal rate. Giving firms tighter patents and copyrights over new ideas would increase the incentives to make new discoveries, but might also make it much more expensive to build on previous discoveries. Tighter**intellectual property** rights could therefore be counterproductive and might slow growth.

The one safe measure governments have used to great advantage has been subsidies for education to increase the supply of talented young scientists and engineers. They are the basic input into the discovery process, the fuel that fires the innovation engine. No one can know where newly trained young people will end up working, but nations that are willing to educate more of them and let them follow their instincts can be confident that they will accomplish amazing things.

Meta-ideas

Perhaps the most important ideas of all are meta-ideas—ideas about how to support the production and transmission of other ideas. In the seventeenth century, the British invented the modern concept of a patent that protects an invention. North Americans invented the modern research university and the agricultural extension service in the nineteenth century, and peer-reviewed competitive grants for basic research in the twentieth. The challenge now

facing all of the industrialized countries is to invent new institutions that encourage a higher level of applied, commercially relevant research and development in the private sector.

As national markets for talent and education merge into unified global markets, opportunities for important policy innovation will surely emerge. In basic research, the United States is still the undisputed leader, but in key areas of education, other countries are surging ahead. Many of them have already discovered how to train a larger fraction of their young people as scientists and engineers.

We do not know what the next major idea about how to support ideas will be. Nor do we know where it will emerge. There are, however, two safe predictions. First, the country that takes the lead in the twenty-first century will be the one that implements an innovation that more effectively supports the production of new ideas in the private sector. Second, new meta-ideas of this kind will be found.

Only a failure of imagination—the same failure that leads the man on the street to suppose that everything has already been invented—leads us to believe that all of the relevant institutions have been designed and all of the policy levers have been found. For social scientists, every bit as much as for physical scientists, there are vast regions to explore and wonderful surprises to discover.

Paul M. Romer. "Economic Growth." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/EconomicGrowth.html

Unintended Consequences
by Rob Norton

The law of unintended consequences, often cited but rarely defined, is that actions of people—and especially of government—always have effects that are unanticipated or unintended. Economists and other social scientists have heeded its power for centuries; for just as long, politicians and popular opinion have largely ignored it.

The concept of unintended consequences is one of the building blocks of economics. **Adam Smith**'s "invisible hand," the most famous metaphor in social science, is an example of a positive unintended consequence. Smith maintained that each individual, seeking only his own gain, "is led by an invisible hand to promote an end which was no part of his intention," that end being the public interest. "It is not from the benevolence of the butcher, or the baker, that we expect our dinner," Smith wrote, "but from regard to their own self interest."

Most often, however, the law of unintended consequences illuminates the perverse unanticipated effects of legislation and **regulation**. In 1692 the English philosopher **John Locke**, a forerunner of modern economists, urged the defeat of a parliamentary bill designed to cut the maximum permissible rate of interest from 6 percent to 4 percent. Locke argued that instead of benefiting borrowers, as intended, it would hurt them. People would find ways to circumvent the law, with the costs of circumvention borne by borrowers. To the extent the law was obeyed, Locke concluded, the chief results would be less available credit and a **redistribution** of income away from "widows, orphans and all those who have their estates in money."

In the first half of the nineteenth century, the famous French economic journalist **Frédéric Bastiat** often distinguished in his writing between the "seen" and the "unseen." The seen were the obvious visible consequences of an action or policy. The unseen were the less obvious, and often unintended, consequences. In his famous essay **"What Is Seen and What Is Not Seen,"** Bastiat wrote:

There is only one difference between a bad economist and a good one: the bad economist confines himself to the *visible*effect; the good economist takes into account both the effect that can be seen and those effects that must be *foreseen.*1

Bastiat applied his analysis to a wide range of issues, including trade barriers, taxes, and government spending.

The first and most complete analysis of the concept of unintended consequences was done in 1936 by the American sociologist Robert K. Merton. In an influential article titled "The Unanticipated Consequences of Purposive Social Action," Merton identified five sources of unanticipated consequences. The first two—and the most pervasive—were "ignorance" and "error."

Merton labeled the third source the "imperious immediacy of interest." By that he was referring to instances in which someone wants the intended consequence of an action so much that he purposefully chooses to ignore any unintended effects. (That type of willful ignorance is very different from true ignorance.) The Food and Drug Administration, for example, creates enormously destructive unintendedconsequences with its regulation of pharmaceutical drugs. By requiring that drugs be not only safe but efficacious for a particular use, as it has done since 1962, the FDA has slowed down by years the introduction of each drug. An unintended consequence is that many people die or suffer who would have been able to live or thrive. This consequence, however, has been so well documented that the regulators and legislators now foresee it but accept it.

"Basic values" was Merton's fourth source of unintended consequences. The Protestant ethic of hard work and asceticism, he wrote, "paradoxically leads to its own decline through the accumulation of wealth and possessions." His final case was the "self-defeating prediction." Here he was referring to the instances when the public prediction of a social development proves false precisely because the prediction changes the course of history. For example, the warnings earlier in this century that **population** growth would lead to mass starvation helped spur scientific breakthroughs in agricultural **productivity** that have since made it unlikely that the gloomy prophecy will come true. Merton later developed the flip side of this idea, coining the phrase "the self-fulfilling prophecy." In a footnote to the 1936 article, he vowed to write a book devoted to the history and analysis of unanticipated consequences. Although Merton worked on the book over the next sixty years, it remained uncompleted when he died in 2003 at age ninety-two.

The law of unintended consequences provides the basis for many criticisms of government programs. As the critics see it, unintended consequences can add so much to the costs of some programs that they make the programs unwise even if they achieve their stated goals. For instance, the U.S. government has imposed quotas on imports of steel in order to protect steel companies and steelworkers from lower-priced**competition**. The quotas do help steel companies. But they also make less of the cheap steel available to U.S. automakers. As a result, the automakers have to pay more for steel than their foreign competitors do. So a policy that protects one industry from foreign competition makes it harder for another industry to compete with imports.

Similarly, **Social Security** has helped alleviate poverty among senior citizens. Many economists argue, however, that it has carried a cost that goes beyond the payroll taxes levied on workers and employers. Martin Feldstein and others maintain that today's workers save less for their old age because they know they will receive Social Security checks when they retire. If Feldstein and the others are correct, it means that less**saving**s are available, less **investment** takes place, and the economy and wages grow more slowly than they would without Social Security.

The law of unintended consequences is at work always and everywhere. People outraged about high prices of plywood in areas devastated by hurricanes, for example, may advocate**price controls** to keep the prices closer to usual levels. An unintended consequence is that suppliers of plywood from outside the region, who would have been willing to **supply**plywood quickly at the higher market price, are less willing to do so at the government-controlled price. Thus results a shortage of a good where it is badly needed. Government licensing of electricians, to take another example, keeps the supply of electricians below what it would otherwise be, and thus keeps the price of electricians' services higher than otherwise. One unintended consequence is that people sometimes do their own electrical work, and, occasionally, one of these amateurs is electrocuted.

One final sobering example is the case of the *Exxon Valdez*oil spill in 1989. Afterward, many coastal states enacted laws placing unlimited **liability** on tanker operators. As a result, the Royal Dutch/Shell group, one of the world's biggest oil companies, began hiring independent ships to deliver oil to the United States instead of using its own forty-six-tanker fleet. Oil specialists fretted that other reputable shippers would flee as well rather than face such unquantifiable risk, leaving the field to fly-by-night tanker operators with leaky ships and iffy **insurance**. Thus, the probability of spills probably increased and the likelihood of collecting damages probably decreased as a consequence of the new laws.

Rob Norton. "Unintended Consequences." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/UnintendedConsequences.html

Information and Prices
by Donald J. Boudreaux

Modern economists excel at identifying theoretical reasons why markets might fail. While these theories may temper uncritical views of the market, it is important to note that markets do, in fact, work incredibly well. Indeed, markets work so thoroughly and quietly that their success too often goes unnoticed.

Consider that the number of different ways to arrange, even in a single dimension, a mere twenty items is far greater than the number of seconds in ten billion years. Now consider that the world contains *trillions* of different resources: my labor, iron ore, Hong Kong harbor, the stage at the Met, countless stands of pine trees, fertile Russian plains, orbiting satellites, automobile factories—the list is endless. The number of different ways to use, combine, and recombine these resources is unimaginably colossal.

And almost all of these ways are useless.

It would be a mistake, for example, to combine Arnold Schwarzenegger with medical equipment and have him perform brain surgery. Likewise, it would be a genuine shame to use the fruit of Chateau Petrus's vines to make grape juice.

Only a tiny fraction of all the possible ways to allocate resources is useful. How can we discover these ways?

Random chance clearly will not work. Nor will central planning—which is really just a camouflaged method of relying on random chance. It is impossible for a central planning body even to survey the full set of possible resource arrangements, much less to rank these according to how well each will serve human purposes.

That citizens of modern market societies eat and bathe regularly; wear clean clothes; drive automobiles; fly to Rome, Italy, or Branson, Missouri, for holidays; and chat routinely on cell phones is powerful evidence that our economy is amazingly well arranged. An effective means must be at work to ensure that some of the relatively very few patterns of resource use that are beneficial are actually used (rather than any of the 99.9999999+ percent of resource-use patterns that would be either useless or calamitous).

The decentralized price system is that means. Critical to its functioning is the institution of private property with its associated duties and rights, including the duty to avoid physically

harming and taking other people's property, and the right to exchange property and its fruits at terms agreed on voluntarily.

Each person seeks to use every parcel of his property in ways that yield him maximum benefit, either by consuming it most effectively according to his own subjective judgment or by employing it most effectively ("profitably") in production. Market prices are vital to making such decisions.

Vital Role of Prices

Market prices are vital because they condense, in as objective a form as possible, **information** on the value of alternative uses of each parcel of property. Nearly every parcel of property has alternative uses. For example, a plot of land can be used to site a pumpkin patch, a restaurant, a suite of physicians' offices, or any of many other things.

If this plot of land is to be used beneficially rather than wastefully, those responsible for deciding how it will be used must be able to determine the likely worth of each possible alternative. Making such determinations requires reliable information. And market prices are a marvelously compact and reliable source of such information.

Offers on the land from potential buyers or renters combine with the current owner's assessment of the value of the land to him to create a price for the land. Each potential user values the land by at least as much as he is willing to bid. The more intense the bidding, the more likely that each bid will reflect the maximum value each bidder places on the land. Of course, the market prices of goods or services that can be produced with the land are an especially important source of information exploited by potential users of the land to determine how much each will bid.

If the land's current owner cannot use it in a way that promises him as much value as he can get by selling it, he will sell to the buyer offering the highest price. If a commercial developer purchases the land as a site for doctors' offices, it is because this buyer observed that the rents for office space currently paid by physicians are sufficiently high to justify his purchase of the land, construction of the buildings, and purchase and assembly of all other inputs necessary to create a suite of medical offices.

The fact that the developer outbid pumpkin farmers, restaurateurs, and all other potential users of the land shows that this particular piece of land is now best used as a site for medical offices—or at least this is the best bet in an inherently uncertain world. Existing, actual prices guided him to this decision and guided others to avoid bidding more for the land than it is likely to be worth to each of them.

If consumers valued pumpkins with sufficiently greater intensity, the market price of pumpkins would have been high enough to inform pumpkin farmers that it was worthwhile to outbid any other potential user. Similarly, if, in the future, consumers come to value pumpkins more highly—or if, say, a remarkable new cure-all pill is invented that significantly reduces people's **demand** for physician services—pumpkin farmers might then find it worthwhile to buy the land, raze the medical offices, and plant pumpkins.

Equilibrium Prices Unnecessary

Nothing about market prices requires that they be "correct" in the sense of being the prices that would exist in general competitive equilibrium. All that is required for the best achievable economic outcomes is that actual prices give producers and consumers sufficiently reliable information and incentives to help them to coordinate their actions—to use resources in ways that are mutually beneficial relative to all other possible ways currently within human purview.

Mistakes will be made and changes will occur that continually reveal some uses of resources to be less desirable than other perceived possible uses. Producers and consumers continually respond to this information by adjusting their decisions at the margin. Prices change accordingly. Each adjustment tends to improve resource use. Such decentralized, local adjustments that improve resource use are the best that humans can achieve. Comparing this ongoing market process of adjustment, mutual accommodation, and improvement in resource use to a hypothetical "perfect" equilibrium state of allocation only courts misunderstanding. The fact that real-world markets do not achieve all imaginable gains and eradicate all vestiges of human ignorance and error is simply irrelevant, for no set of actual institutions can achieve such a fantastical outcome.

Of course, for this process to work, prices must reflect the relevant costs and benefits. If people do not take account of substantial costs of their actions, they will act in inappropriate ways. They will either engage in too much of an action (if the ignored effects are costs imposed on third parties) or too little of it (if the ignored effects are benefits enjoyed by third parties). The well-recognized existence of**externalities** creates, at least in theory, a situation that can be remedied by wise government **regulation**, **taxation**, or subsidization.

Even in the face of significant externalities, however, one method of government intervention remains especially suspect—namely, **price controls**. Any arbitrary floors or ceilings placed by government on prices will either prevent better prices from emerging or—if the market is infected by significant externalities—mask the problems that can be solved only by changing the underlying demand or **supply**conditions (see, e.g., **rent control**).

By far the most important way to ensure that the forces of demand and supply result in prices that encourage useful coordination of economic plans is to keep property private, divisible, and

transferable. The actual result of this ongoing series of decentralized resource-use decisions guided by actual market prices is a commercial economy of enormous **productivity** and prosperity for nearly every human touched by it.

Donald J. Boudreaux. "Information and Prices." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/InformationandPrices.html

New Keynesian Economics
by N. Gregory Mankiw

New **Keynesian economics** is the school of thought in modern macroeconomics that evolved from the ideas of **John Maynard Keynes**. Keynes wrote *The General Theory of Employment, Interest, and Money* in the 1930s, and his influence among academics and policymakers increased through the 1960s. In the 1970s, however, new classical economists such as **Robert Lucas**, Thomas J. Sargent, and Robert Barro called into question many of the precepts of the Keynesian revolution. The label "new Keynesian" describes those economists who, in the 1980s, responded to this new classical critique with adjustments to the original Keynesian tenets.

The primary disagreement between new classical and new Keynesian economists is over how quickly wages and prices adjust. New classical economists build their macroeconomic theories on the assumption that wages and prices are flexible. They believe that prices "clear" markets—balance**supply** and **demand**—by adjusting quickly. New Keynesian economists, however, believe that market-clearing models cannot explain short-run economic fluctuations, and so they advocate models with "sticky" wages and prices. New Keynesian theories rely on this stickiness of wages and prices to explain why involuntary **unemployment** exists and why**monetary policy** has such a strong influence on economic activity.

A long tradition in macroeconomics (including both Keynesian and monetarist perspectives) emphasizes that monetary policy affects employment and production in the short run because prices respond sluggishly to changes in the **money supply**. According to this view, if the money supply falls, people spend less money and the demand for goods falls. Because prices and wages are inflexible and do not fall immediately, the decreased spending causes a drop in production and layoffs of workers. New classical economists criticized this tradition because it lacks a coherent theoretical explanation for the sluggish behavior of prices. Much new Keynesian research attempts to remedy this omission.

Menu Costs and Aggregate-Demand Externalities

One reason prices do not adjust immediately to clear markets is that adjusting prices is costly. To change its prices, a firm may need to send out a new catalog to customers, distribute new price lists to its sales staff, or, in the case of a restaurant, print new menus. These costs of price adjustment, called "menu costs," cause firms to adjust prices intermittently rather than continuously.

Economists disagree about whether menu costs can help explain short-run economic fluctuations. Skeptics point out that menu costs usually are very small. They argue that these small costs are unlikely to help explain recessions, which are very costly for society. Proponents reply that "small" does not mean "inconsequential." Even though menu costs are small for the individual firm, they could have large effects on the economy as a whole.

Proponents of the menu-cost hypothesis describe the situation as follows. To understand why prices adjust slowly, one must acknowledge that changes in prices have**externalities**—that is, effects that go beyond the firm and its customers. For instance, a price reduction by one firm benefits other firms in the economy. When a firm lowers the price it charges, it lowers the average price level slightly and thereby raises real income. (Nominal income is determined by the money supply.) The stimulus from higher income, in turn, raises the demand for the products of all firms. This macroeconomic impact of one firm's price adjustment on the demand for all other firms' products is called an "aggregate-demand externality."

In the presence of this aggregate-demand externality, small menu costs can make prices sticky, and this stickiness can have a large cost to society. Suppose General Motors announces its prices and then, after a fall in the money supply, must decide whether to cut prices. If it did so, car buyers would have a higher real income and would therefore buy more products from other companies as well. But the benefits to other companies are not what General Motors cares about. Therefore, General Motors would sometimes fail to pay the menu cost and cut its price, even though the price cut is socially desirable. This is an example in which sticky prices are undesirable for the economy as a whole, even though they may be optimal for those setting prices.

The Staggering of Prices

New Keynesian explanations of sticky prices often emphasize that not everyone in the economy sets prices at the same time. Instead, the adjustment of prices throughout the economy is staggered. Staggering complicates the setting of prices because firms care about their prices relative to those charged by other firms. Staggering can make the overall level of prices adjust slowly, even when individual prices change frequently.

Consider the following example. Suppose, first, that price setting is synchronized: every firm adjusts its price on the first of every month. If the money supply and aggregate demand rise on May 10, output will be higher from May 10 to June 1 because prices are fixed during this interval. But on June 1 all firms will raise their prices in response to the higher demand, ending the three-week boom.

Now suppose that price setting is staggered: half the firms set prices on the first of each month and half on the fifteenth. If the money supply rises on May 10, then half of the firms can raise

their prices on May 15. Yet because half of the firms will not be changing their prices on the fifteenth, a price increase by any firm will raise that firm's relative price, which will cause it to lose customers. Therefore, these firms will probably not raise their prices very much. (In contrast, if all firms are synchronized, all firms can raise prices together, leaving relative prices unaffected.) If the May 15 price setters make little adjustment in their prices, then the other firms will make little adjustment when their turn comes on June 1, because they also want to avoid relative price changes. And so on. The price level rises slowly as the result of small price increases on the first and the fifteenth of each month. Hence, staggering makes the price level sluggish, because no firm wishes to be the first to post a substantial price increase.

Coordination Failure

Some new Keynesian economists suggest that recessions result from a failure of coordination. Coordination problems can arise in the setting of wages and prices because those who set them must anticipate the actions of other wage and price setters. Union leaders negotiating wages are concerned about the concessions other unions will win. Firms setting prices are mindful of the prices other firms will charge.

To see how a recession could arise as a failure of coordination, consider the following parable. The economy is made up of two firms. After a fall in the money supply, each firm must decide whether to cut its price. Each firm wants to maximize its profit, but its profit depends not only on its pricing decision but also on the decision made by the other firm.

If neither firm cuts its price, the amount of real money (the amount of money divided by the price level) is low, a recession ensues, and each firm makes a profit of only fifteen dollars.

If both firms cut their price, real money balances are high, a recession is avoided, and each firm makes a profit of thirty dollars. Although both firms prefer to avoid a recession, neither can do so by its own actions. If one firm cuts its price while the other does not, a recession follows. The firm making the price cut makes only five dollars, while the other firm makes fifteen dollars.

The essence of this parable is that each firm's decision influences the set of outcomes available to the other firm. When one firm cuts its price, it improves the opportunities available to the other firm, because the other firm can then avoid the recession by cutting its price. This positive impact of one firm's price cut on the other firm's profit opportunities might arise because of an aggregate-demand externality.

What outcome should one expect in this economy? On the one hand, if each firm expects the other to cut its price, both will cut prices, resulting in the preferred outcome in which each makes thirty dollars. On the other hand, if each firm expects the other to maintain its price,

both will maintain their prices, resulting in the inferior solution, in which each makes fifteen dollars. Hence, either of these outcomes is possible: there are multiple equilibria.

The inferior outcome, in which each firm makes fifteen dollars, is an example of a coordination failure. If the two firms could coordinate, they would both cut their price and reach the preferred outcome. In the real world, unlike in this parable, coordination is often difficult because the number of firms setting prices is large. The moral of the story is that even though sticky prices are in no one's interest, prices can be sticky simply because price setters expect them to be.

Efficiency Wages

Another important part of new Keynesian economics has been the development of new theories of unemployment. Persistent unemployment is a puzzle for economic theory. Normally, economists presume that an excess supply of labor would exert a downward pressure on wages. A reduction in wages would in turn reduce unemployment by raising the quantity of labor demanded. Hence, according to standard economic theory, unemployment is a self-correcting problem.

New Keynesian economists often turn to theories of what they call efficiency wages to explain why this market-clearing mechanism may fail. These theories hold that high wages make workers more productive. The influence of wages on worker efficiency may explain the failure of firms to cut wages despite an excess supply of labor. Even though a wage reduction would lower a firm's wage bill, it would also—if the theories are correct—cause worker **productivity** and the firm's**profits** to decline.

There are various theories about how wages affect worker productivity. One efficiency-wage theory holds that high wages reduce labor turnover. Workers quit jobs for many reasons—to accept better positions at other firms, to change careers, or to move to other parts of the country. The more a firm pays its workers, the greater their incentive to stay with the firm. By paying a high wage, a firm reduces the frequency of quits, thereby decreasing the time spent hiring and training new workers.

A second efficiency-wage theory holds that the average quality of a firm's workforce depends on the wage it pays its employees. If a firm reduces wages, the best employees may take jobs elsewhere, leaving the firm with less-productive employees who have fewer alternative opportunities. By paying a wage above the equilibrium level, the firm may avoid this adverse selection, improve the average quality of its workforce, and thereby increase productivity.

A third efficiency-wage theory holds that a high wage improves worker effort. This theory posits that firms cannot perfectly monitor the work effort of their employees and that employees

must themselves decide how hard to work. Workers can choose to work hard, or they can choose to shirk and risk getting caught and fired. The firm can raise worker effort by paying a high wage. The higher the wage, the greater is the cost to the worker of getting fired. By paying a higher wage, a firm induces more of its employees not to shirk, and thus increases their productivity.

A New Synthesis

During the 1990s, the debate between new classical and new Keynesian economists led to the emergence of a new synthesis among macroeconomists about the best way to explain short-run economic fluctuations and the role of monetary and fiscal policies. The new synthesis attempts to merge the strengths of the competing approaches that preceded it. From the new classical models it takes a variety of modeling tools that shed light on how households and firms make decisions over time. From the new Keynesian models it takes price rigidities and uses them to explain why monetary policy affects employment and production in the short run. The most common approach is to assume monopolistically competitive firms (firms that have market power but compete with other firms) that change prices only intermittently.The heart of the new synthesis is the view that the economy is a dynamic general equilibrium system that deviates from an efficient allocation of resources in the short run because of sticky prices and perhaps a variety of other market imperfections. In many ways, this new synthesis forms the intellectual foundation for the analysis of monetary policy at the Federal Reserve and other central banks around the world.

Policy Implications

Because new Keynesian economics is a school of thought regarding macroeconomic theory, its adherents do not necessarily share a single view about economic policy. At the broadest level, new Keynesian economics suggests—in contrast to some new classical theories—that recessions are departures from the normal efficient functioning of markets. The elements of new Keynesian economics—such as menu costs, staggered prices, coordination failures, and efficiency wages—represent substantial deviations from the assumptions of classical economics, which provides the intellectual basis for economists' usual justification of laissez-faire. In new Keynesian theories recessions are caused by some economy-wide market failure. Thus, new Keynesian economics provides a rationale for government intervention in the economy, such as countercyclical monetary or **fiscal policy**. This part of new Keynesian economics has been incorporated into the new synthesis that has emerged among macroeconomists. Whether policymakers should intervene in practice, however, is a more difficult question that entails various political as well as economic judgments.

N. Gregory Mankiw. "New Keynesian Economics." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/NewKeynesianEconomics.html

New Classical Macroeconomics
by Kevin D. Hoover

After Keynesian Macroeconomics

The new classical macroeconomics is a school of economic thought that originated in the early 1970s in the work of economists centered at the Universities of Chicago and Minnesota—particularly, Robert Lucas (recipient of the Nobel Prize in 1995), Thomas Sargent, Neil Wallace, and Edward Prescott (corecipient of the Nobel Prize in 2004). The name draws on John Maynard Keynes's evocative contrast between his own macroeconomics and that of his intellectual forebears. Keynes had knowingly stretched a point by lumping his contemporaries, a. c. pigou and Alfred Marshall, in with the older classical political economists, such as David Ricardo, and calling them all "classical."

According to Keynes, the classics saw the price system in a free economy as efficiently guiding the mutual adjustment of supply and demand in all markets, including the labor market.Unemployment could arise only because of a market imperfection—the intervention of the government or the action of labor unions—and could be eliminated through removing the imperfection. In contrast, Keynes shifted the focus of his analysis away from individual markets to the whole economy. He argued that even without market imperfections, aggregate demand (equal, in a closed economy, to consumption plus investment plus government expenditure) might fall short of the aggregate productive capacity of its labor and capital (plant, equipment, raw material, and infrastructure). In such a situation, unemployment is largely involuntary—that is, workers may be unemployed even though they are willing to work at a wage lower than the wage the firms pay their current workers.

Later Keynesian economists achieved a measure of reconciliation with the classics. paul samuelson argued for a "neoclassical synthesis" in which classical economics was viewed as governing resource allocation when the economy was kept, through judicious government policy, at full employment. Other Keynesian economists sought to explain consumption, investment, the demand for money, and other key elements of the aggregate Keynesian model in a manner consistent with the assumption that individuals behave optimally. This was the program of "microfoundations for macroeconomics."

Origins of the New Classical Macroeconomics

Although its name suggests a rejection of Keynesian economicsand a revival of classical economics, the new classical macroeconomics began with Lucas's and Leonard Rapping's

attempt to provide microfoundations for the Keynesian labor market. Lucas and Rapping applied the rule that equilibrium in a market occurs when quantity supplied equals quantity demanded. This turned out to be a radical step. Because involuntary unemployment is exactly the situation in which the amount of labor supplied exceeds the amount demanded, their analysis leaves no room at all for involuntary unemployment.

Keynes's view was that recessions occur when aggregate demand falls—largely as the result of a fall in private investment—causing firms to produce below their capacity. Producing less, firms need fewer workers, and thus employment falls. Firms, for reasons that Keynesian economists continue to debate, fail to cut wages to as low a level as job seekers will accept, and so involuntary unemployment rises. The new classicals reject this step as irrational. Involuntary unemployment would present firms with an opportunity to raise profits by paying workers a lower wage. If firms failed to take the opportunity, then they would not be optimizing. Employed workers should not be able to resist such wage cuts effectively since the unemployed stand ready to take their places at the lower wage. Keynesian economics would appear, then, to rest either on market imperfections or on irrationality, both of which Keynes denied.

These criticisms of Keynesian economics illustrate the two fundamental tenets of the new classical macroeconomics. First, individuals are viewed as optimizers: given the prices, including wage rates, they face and the assets they hold, including their education and training (or "human capital"), they choose the best options available. Firms maximize profits; people maximize utility. Second, to a first approximation, prices adjust, changing the incentives to individuals, and thereby their choices, to align quantities supplied and demanded.

Business Cycles

business cycles pose a special challenge for new classical economists: How are large fluctuations in output compatible with the two fundamental tenets of their doctrine? Here is how. The economy, they believe, is often buffeted by unexpected shocks. Shocks to aggregate demand are typically unanticipated changes in monetary or fiscal policy. Shocks to aggregate supply are typically changes in productivity that may result, for example, from transient changes to technology, prices of raw materials, or the organization of production. Ideally, firms would choose to produce more and to pay their workers more when the economy has been hit by favorable shocks and less when hit by unfavorable shocks. Similarly, workers would be willing to work more when productivity and wage rates are higher and to take more leisure when their rewards are lower. For both, the rule is "make hay while the sun shines."

Employment, like output, would clearly rise with favorable shocks and fall with unfavorable shocks. But having rejected the very notion of involuntary unemployment, why do new classicals think that the unemployment rate would fall in the boom and rise in the slump?

When a worker is laid off, he must seek a new job. He weighs the value of taking a lower-paid job that might be easily available (a machinist might become a day laborer) against the value of a better-paid, more suitable job that is harder to find. The new classicals do not argue that the unemployed job searcher is happy with his choice: being laid off was a bad draw, and, like everyone, he prefers good luck to bad. Rather, they argue that the worker chooses what he regards as the best available option, even when the options are poor. To remain unemployed (and to show up in the unemployment statistics) is something that he chooses based on his judgment that the benefits of the search outweigh the costs; this is not an exception to the rule that amount supplied equals amount demanded.

The fact that the economy experiences good and bad shocks is not enough to explain business cycles. An adequate theory must account for persistence—the fact that business cycles typically display long runs of good times followed by shorter, but still significant, runs of bad times. Those new classicals who regard demand shocks as dominant argue that the shocks are propagated slowly. It is always costly to adjust production levels quickly. Similarly, when higher production requires new capital, it takes time to build it up. And when lower production renders existing capital redundant, it takes time to wear it out or use it up. New classicals of the "real-business-cycle school" (led by edward prescott and finn kydland, corecipients of the 2004 Nobel Prize) regard changes in productivity as the driving force in business cycles. Because changes in technology may also come in waves, runs of favorable or unfavorable productivity (or technology) shocks may account for some of the persistence characteristic of business cycles.

Rational Expectations and Policy Ineffectiveness

Most economic decisions are forward looking. To know whether today is a day for work or for leisure, we need to decide whether tomorrow will be more or less productive than today; in short, we must have an expectation of the future. How should economists analyze expectations? The new classicals adopted John Muth's "rational-expectations hypothesis" (see rational expectations). Muth argued that an economic model in which people's expectations differ from the outcomes predicted by the model itself is poorly formulated. If the predictions of the model were correct—and therefore people's expectations were wrong—then they could use the model to correct their own expectations. To fail to do so would result in economic losses and would be irrational. At one level, Muth's hypothesis is just a technical consistency criterion for models. At another level, it appeals to the economic insight that people will not persist in easily correctable, systematic, and costly errors. The new classicals appeal implicitly (and sometimes explicitly) to Lincoln's well-known adage: "You can fool some of the people all of the time, and all of the people some of the time, but you cannot fool all of

the people all of the time." They warn policymakers that a policy that depends on the assumption that the public systematically misunderstands its own interest is likely to fail.

Keynesian economists of the 1960s often appealed to thephillips curve, taking it to imply that monetary or fiscal policy that lowered the unemployment rate also caused a higherinflation rate. The interesting policy question was the trade-off: How much extra inflation was a one-point fall in the unemployment rate worth? The new classicals rejected the idea that there was any useful trade-off. They argued that an expansion of aggregate demand lowered unemployment only because the acceleration in prices was not anticipated. Firms that mistook higher market prices for higher real returns would be willing to produce more. Workers who mistook higher market wages for higher purchasing power would be willing, if unemployed, to take a job sooner. Increased output and lower unemployment would, however, be temporary because neither the returns to firms nor the purchasing power of workers was, corrected for inflation, really higher. As soon as they realized the mistake, firms and workers would return to old levels of production and labor supply.

What is more, having made the mistake once, they would not be easily fooled again by the same policy. The combination of rational expectations and the central tenet of new classical analysis that quantity supplied equals quantity demanded ensures that *systematic, pure* aggregate-demand policies do not have real effects on the economy. The Phillips curve trade-off can be observed in the data because some part of policy is always unanticipated. But policymakers cannot exploit it because the public will see through any systematic policy. Because it rejected the prevailing Keynesian view thatmonetary policy could offset a recession, this "policy-ineffectiveness proposition" became the most startling and controversial conclusion of the early new classical macroeconomics.

The policy-ineffectiveness proposition is frequently misunderstood. It is not a claim that no government policy affects the economy. Policies on government spending, for example, represent changes in the real claims the government makes on GDP and may affect output and employment. Rather, the proposition is limited to the effects of changes in government liabilities (the monetary base and the government debt) that may affect the rate of inflation. In this respect, the policy-ineffectiveness proposition is related to another new classical proposition: Ricardian equivalence (see government debt and deficits). Ricardian equivalence is the claim that whether a given path of government expenditure is financed through taxes or debt is unimportant: substituting debt for taxes appears to increase disposable income today. But since the debt must be repaid with interest, a rational taxpayer would save the entire windfall in order to afford the future tax bill, leaving his expenditure unchanged. Ricardian equivalence remains controversial because it depends on assumptions about the public's

foresight and grasp of the fiscal system closely related to the rational-expectations hypothesis and on debatable assumptions about the incidence of taxes and expenditure.

The Lucas Critique

Unanticipated policy has real effects, but, because it is unanticipated, it cannot be systematic—and therefore it cannot be used to direct the economy. The systematic element of policy can be viewed, implicitly at least, as a policy rule. Consider the Phillips curve again. How much does unemployment fall for a one-percentage-point increase in the price level? Lucas argued that the answer depends on the policy rule. If the rule had been one that held the inflation rate to zero (prices are constant), then the increase would be unanticipated and unemployment would fall. If the rule had been one that maintained a steady 1 percent rate of inflation (each year prices grow by 1 percent), then the increase would be just what systematic policy implied, the inflation would be perfectly anticipated, and unemployment would not change. And if the rule had been one that maintained a steady 2 percent rate of inflation, then a one-percentage-point increase would fall short of what had been anticipated, and unemployment would rise. These different trade-offs suggest that there is a different Phillips curve for each policy rule. A Phillips curve estimated under one policy regime would not predict accurately what would happen under a different regime.

Lucas argued that what is true of the Phillips curve in this example is true of the most important relationships in the econometric macroeconomic models used to evaluate economic policy. His analysis has come to be known as the "policy non-invariance" or "Lucas" critique.

The Legacy of the New Classical Macroeconomics

The new classicals profoundly changed the technical underpinnings of modern macroeconomics. Economists now widely accept the Lucas critique. To avoid it, economists sought ways to predict exactly how estimated relationships would change with the policy regime by integrating rational expectations and the public's response to policy rules into their models. Because rational expectations depend on the structure of the whole economy, the program of microfoundations is no longer content to look at different markets separately, but concentrates on general equilibrium among them. Dynamic models have replaced static models: policy actions cannot be evaluated merely for what they do today, but for how they change people's judgments about the future.

While few economists want to assume that the government can fool the public systematically, many remain skeptical of the rational-expectations hypothesis as a description of people's actual expectations. Some, including founding new classicals such as Sargent, have explored models of learning that emphasize that overcoming expectational errors is a process that may take some time.

Most economists, even among the new classicals, no longer accept the policy-ineffectiveness proposition. It is widely agreed that wages and prices do not move quickly and smoothly to the values needed for long-run equilibrium between quantities supplied and demanded. Consequently, even if monetary policy is ineffective in the long run, it may be of considerable use in the short run.

While optimal search and voluntary changes in labor supply may explain a large portion of routine unemployment rates, many economists question whether they explain high unemployment in recessions. Was the 25 percent unemployment rate of the Great Depression the result of a mass decision to take a vacation? New Keynesian critics typically maintain that unemployment is, in fact,characterized by wages above the level needed to clear the labor market. But what, exactly, prevents firms from taking profitable advantage of the situation remains controversial.

Kevin D. Hoover. "New Classical Macroeconomics." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/NewClassicalMacroeconomics.html

Externalities
by Bryan Caplan

Positive externalities are benefits that are infeasible to charge to provide; negative externalities are costs that are infeasible to charge to not provide. Ordinarily, as **Adam Smith** explained, selfishness leads markets to produce whatever people want; to get rich, you have to sell what the public is eager to buy. Externalities undermine the social benefits of individual selfishness. If selfish consumers do not *have* to pay producers for benefits, they will not pay; and if selfish producers are not paid, they will not produce. A valuable product fails to appear. The problem, as David Friedman aptly explains, "is not that one person pays for what someone else gets but that nobody pays and nobody gets, even though the good is worth more than it would cost to produce" (Friedman 1996, p. 278).

Admittedly, the real world is rarely so stark. Most people are not perfectly selfish, and it is usually feasible to charge consumers for a fraction of the benefit they receive. Due to piracy, for example, many people who enjoy a CD fail to pay the artist, which reduces the incentive to record new CDs. But*some* incentive to record remains, because many find piracy inconvenient and others refrain from piracy because they believe it is wrong. The problem, then, is that externalities lead to what economists call *underproduction* of CDs rather than the nonexistence of CDs.

Research and development is a standard example of a positive externality, air pollution of a negative externality. Ultimately, however, the distinction is semantic. It is equivalent to say "clean air has positive externalities and so clean air is underproduced" or "dirty air has negative externalities and so dirty air is overproduced."

Economists measure externalities the same way they measure everything else: according to human beings' willingness to pay. If one thousand people would pay ten dollars each for cleaner air, there is a ten-thousand-dollar externality of pollution. If no one *minds* dirty air, conversely, no externality exists. If someone likes dirty air, this unusual person's willingness to pay for smog must be subtracted from the rest of the **population**'s willingness to pay to curtail it.

Externalities are probably the argument for government intervention that economists most respect. Externalities are frequently used to justify the government's ownership of industries with positive externalities and prohibition of products with negative externalities. Economically speaking, however, this is overkill. If laissez-faire—that is, no government intervention—provides too little **education**, the straightforward solution is some form of subsidy to schooling,

not government production of education. Similarly, if laissez-faire provides too much cocaine, a measured response is to tax it, not ban it completely.

Especially when faced with environmental externalities, economists have almost universally objected to government regulations that mandate specific technologies (especially "best-available technology") or business practices. These approaches make environmental cleanup much more expensive than it has to be because the cost of reducing pollution varies widely from firm to firm and from industry to industry. A more efficient solution is to issue tradable "pollution permits" that add up to the target level of emissions. Sources able to cheaply curtail their negative externalities would drastically cut back, selling their permits to less flexible polluters (Blinder 1987).1

While the concept of externalities is not very controversial in economics, its application is. Defenders of free markets usually argue that externalities are manageably small; critics of free markets see externalities as widespread, even ubiquitous. The most accepted examples of activities with large externalities are probably air pollution, violent and property crimes, and national **defense**.2

Other common candidates include **health care**, education, and the environment, but claims that these are externalities are much less tenable. Prevention and treatment of contagious disease has clear externalities, but most health care does not. Educated workers are more productive, but this benefit is hardly "external"; markets reward education with higher wages. The externalities of many environmentalist measures, including national parks, recycling, and conservation, are hard to discern. The people who enjoy national parks are visitors, who can easily be charged for admission. If the price of aluminum cans fails to spark **recycling**, that suggests that the cost of recycling—including human effort—is less than the benefit. Similarly, as long as resources are privately owned, firms balance their current **profits** of logging and drilling against their future profits. If an oil driller knows that the price of oil will rise sharply in ten years, he has an incentive to conserve oil instead of selling it today.

Externalities are often blamed for "market failure," but they are also a source of government failure. Many economists who study politics decry the large negative externalities of voter ignorance. An economic illiterate who votes for **protectionism**hurts not just himself but also his fellow citizens (Caplan 2003; Downs 1957). Other economists believe externalities in the budget process lead to wasteful spending. A congressman who lobbies for federal funds for his district improves his chances of reelection but hurts the financial health of the rest of the nation.

Putative externalities have been found in unlikely places. Some argue that wealth itself has an externality: inflaming envy. Others maintain that there are externalities of altruism—when I give money to help the poor, everyone else who cares about the needy is better off. Defenders

of Prohibition and the war on drugs emphasize the externalities of drunkenness and drug addiction, though they typically lump private costs, such as low earnings and **unemployment**, in with the external costs of drunk driving and violent **crime**. In the Big Tobacco class action suit, one of the plaintiffs' main arguments was that, given government's role in medical care, smoking costs taxpayers money.3

In principle, externalities could be used to rationalize censorship, persecution of religious minorities, forced veiling of women, and even South Africa's **apartheid**. If most people were to find Darwinism offensive, the logic of externalities would recommend a tax on Darwinian expression. Few economists have pursued such possibilities, probably out of a tacit sense that, in extreme cases, individual rights override economic **efficiency**.

Even from a strictly economic point of view, however, some externalities are not worth correcting. One reason is that many activities have positive and negative externalities that roughly cancel out. For example, mowing your lawn has the positive externality of improving the appearance of your neighborhood and the negative externality of creating a loud noise. A subsidy or a tax would alleviate one problem but amplify the other. To take a more controversial example, some economists question efforts to prevent **global warming**, calculating that the benefits for people in cold climates more than balance out the costs for people in warm climates.

Another economic rationale for government inaction is as follows: sometimes an externality is large at low levels of production but rapidly fades out as the quantity increases. As long as output is high enough, such externalities can be safely ignored. For example, during a famine, doubling the**supply** of food has large positive externalities because starvation leads to robbery, hunger riots, and even cannibalism. During times of plenty, however, doubling the food supply would probably have no noticeable effect on crime.

Yet, it is to Nobel laureate **Ronald Coase** that we owe the most influential argument for letting externalities solve themselves. In "The Problem of Social Cost" (1960), Coase bypasses the earlier view that it is literally impossible to charge for some benefits. Instead, he observes that every exchange has some *transactions costs,* which vary from negligible—such as putting coins into a vending machine—to enormous—such as negotiating a contract with six billion signatories to improve air quality.

Coase drew strong implications from his commonsense observation. Instead of arguing about whether or not something is an "externality," it is more productive to ask about transactions costs. If transactions costs are reasonably low, then the affected parties negotiate tolerably efficient solutions without government intervention.

To take Coase's classic example, suppose that a railroad emits sparks on a farmer's crops. As long as transactions costs are low, the railroad and the farmer will work out a solution. Coase was particularly clever to emphasize that, in terms of economic efficiency, it does not matter whether the law sides with the railroad or the farmer. Suppose that it costs one thousand dollars to control the sparks and the lost crops are worth two thousand dollars. Even if the law sides with the railroad, the farmer will pay the railroad to control the sparks. Alternately, suppose that it costs two thousand dollars to control the sparks, the lost crops are worth only one thousand, and the law sides with the farmer. Then the railroad pays the farmer for permission to continue sparking.

Coase's argument was initially controversial. As **George Stigler** recounts in his autobiography, when Coase first presented his idea to a group of twenty-one colleagues, none agreed. After an evening's argument, however, Coase convinced them all. Coase's approach subsequently spread widely in both economics and law. Faced with externalities, modern analysts almost immediately inquire about transactions costs. For example, in the early 1950s, J. E. Meade advocated subsidizing apple orchards to correct for the positive externalities they provide to beekeepers. Inspired by Coase, however, Steven Cheung (1973) wrote a careful case study of the bee-apple nexus. In the real world, beekeepers and apple orchard owners do not wait for government to solve their problem. They can and do negotiate detailed contracts to deal with externalities.

Coase's approach is probably the main reason economists are skeptical of antismoking legislation. While it is costly for smokers and nonsmokers to directly negotiate with each other, the owners of bars, restaurants, and workplaces can cheaply balance their conflicting interests. If nonsmokers are willing to pay more to avoid the smell of tobacco than smokers are willing to pay to smoke, restaurants will disallow smoking—and charge a premium for their smoke-free atmosphere. If unregulated markets fail to deliver a smoke-free world, Coasean logic suggests that smokers value smoking more than nonsmokers value not being subjected to cigarette smoke.

Bryan Caplan. "Externalities." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved June 13, 2014 from the World Wide Web: http://www.econlib.org/library/Enc/Externalities.html