

1

Property Is Monopoly

CREATING A COMPETITIVE MARKET IN USES THROUGH PARTIAL COMMON OWNERSHIP

As a child fascinated by Elon Musk's Hyperloop, Alejandro Espinosa often pictured himself in the cab of the first supersonic train, sitting side by side with the conductor. It never occurred to him that these trains would have no conductors. Yet the topographic and economic maps displayed in the holographs he was peering at clashed even more powerfully with his childish dreams.

Espinosa grew up to be the head of OpenTrac, a new venture that would fulfill his lifelong ambition. The company was making plans for its supersonic train to run between Los Angeles and San Francisco, but before tubes could be installed, magnets laid down, and vacuums prepared, a route through the Central Valley had to be

selected. The other sections of the train's full route, those through the East Bay and the San Fernando Valley, offered very limited choices, but there was a wide range of potential ways through the Central Valley.

Espinosa wanted to move fast. If landholders in the Central Valley heard about the project, some of them might be tempted to raise the price of their property. Doing so, however, would be a risky gamble: a price increase would impose a higher tax burden on the owner, while the probability of being on the selected route would be low.

Narrowing down the large number of possible routes was a headache, even with the Cadappster app displaying the listed value of each plot—every plot's value is posted there for anyone to see. It made Espinosa's head spin to imagine what planning a project like his must have been like before the institution of the common ownership self-assessed tax. He would have had to choose a route before he had any idea what landowners along it would be willing to accept as payment, and then he probably would have had to endure years of negotiations and court fights to obtain all the property. He knew he was lucky that finally there was a transparent, liquid, and honestly priced market for property. He would not have to endure the guilt and the public relations disaster of having to force an elderly woman off land that had been in her family for generations. These days any such resident could post a high price and deter the purchase, or sell and be richly compensated.

To find feasible routes, OpenTrac's computer scientists used many approximations. They focused on the number of topographical obstacles that would confront the

engineers, such as the rockiness of the area and the heights and depths of its hills, mountains, or gorges, and used simple rules of thumb to narrow the selection. Espinosa instructed them to generate the five most promising routes.

All five selections had roughly similar land prices and offered reasonable tradeoffs in engineering cost and speed. Back when trains ran at slower speeds, the views along each route might have influenced the decision, but nowadays, even if the tubes were transparent, passengers would see only a blur. After a meeting with several of his top engineers and one marketing expert, the group settled on the route with the cheapest land costs, and felt confident that they made the best choice.

Espinosa's treasurer immediately opened Cadappster and confirmed OpenTrac's willingness to purchase each property along the route at its posted price. This automatically secured OpenTrac's ownership: having just raised a new venture round, OpenTrac was flush with cash and made all payments on the spot. With residents scheduled to move out within three months, ground-breaking could begin by the end of the year. As the new holder of the land, Espinosa merged the whole route into one plot and posted a value several times the sum of the purchase prices to ensure the security of the route.

Developers today face great challenges. When asked what the largest barrier is to implementing Hyperloop One, co-founder Josh Giegel replied, "We really need a right of way." The interviewer responded, "Some constituencies, such as private landowners . . . could see holding this up for quite some time."¹ There is an obvious incentive for a landowner to hold

out for a high price when such a valuable project is coming through.

Suppose that each of 2,000 landowners along the route would normally be willing to accept \$100,000 (\$200 million in total) to cede right of way. Giegel believes that, net of other costs, Hyperloop can yield \$500 million of operating profit. Now suppose that after the developer has bought the right of way on 1,999 pieces of land, the two-thousandth landowner learns of his plan. Rather than sell for \$100,000, that homeowner might insist on a much higher price. Giegel would have no choice but to pay up: if he does not buy, he has lost his \$199.9 million investment in the first 1,999 pieces of land. In principle, the landowner could hold out for nearly the entire \$500 million. Even if she set the price at \$400 million, the developer would do better by accepting the offer than by turning it down since \$100 million is better than nothing. But if the developer anticipates holdout, he would not embark on the development in the first place. And remember that the developer has to contend with all 2,000 individual landowners, any of whom might decide to hold out for a high price. Several holdouts would quickly squash the project.

At present, developers minimize the holdout risk by taking costly precautions when they buy up land—for example, by acting secretly through shell corporations. But they still must engage in lengthy and expensive negotiations with individual sellers, which can cause delays and increase risk to intolerable levels. That is why governments often take the lead, using the power of eminent domain to create new commercial or residential districts. But eminent domain is often unfair and always politically controversial.

Large-scale land development controversies receive public attention, but bargaining problems like those faced by devel-

opers affect ordinary people and small businesses every day and cause trillions of dollars per year of losses that are hidden from public view. This challenge—which we dub the “monopoly problem”—turns out to be inherent in private property. It has preoccupied economists and philosophers since the birth of the modern economy.

Capitalism and Freedom, or Capitalism and Monopoly?

Modern capitalism evolved out of a system of feudal land ownership, which put significant restrictions on people’s freedom to sell land and labor. As Adam Smith explained, a defining feature of capitalism is the right to trade. Capitalism advanced in tandem with the scientific and technological innovations that made trade a valuable and significant part of the economy. A fiefdom in a valley in, say, thirteenth-century Europe, might have occasionally traded with itinerant merchants. But most goods—including foodstuffs and textiles—were produced in the community for community members. When improvements in navigation made long-distance trade cheaper, it became more efficient for the community to specialize in one commodity (say, wheat or textiles) while buying the goods it needed from other communities. It was the harnessing of steam and electric power in the late eighteenth and nineteenth centuries that allowed for a massive expansion in trade.²

Making the system more efficient also required adapting communities to serve the broader market by allowing extensive trade within communities and local areas as well. For example, a lord could sell his game park to an entrepreneur, who might use it for more modern intensive farming or for the

premises of a factory. A lone craftsman makes far fewer pins per person than a factory where workers are assigned to specialized tasks. To set up a factory, however, an entrepreneur might have to acquire land from several feudal estates and hire a large number of workers who were bound as serfs to different feudal lords. Industry thus depended on ending the system of entailments, which kept land in the hands of a single family, and on peasants freeing themselves from bonds of fealty. At the same time, a great deal of property was held communally, such as common pastures where peasants grazed their flocks. Peasants could not buy or sell rights to graze and could not acquire plots of this shared land.

Smith and other Radical reformers in Britain (such as Jeremy Bentham and James Mill) saw these privileges and traditions as barriers to achieving the most efficient use of property, or what came to be known as *allocative efficiency*. To support such allocative efficiency, Radicals promoted clearer and freer property rights and the enclosure of common areas (including pastures and forests), which turned them into private property. These changes are closely associated with the rise of capitalism. In the American West, the conversion of open pastureland into family farms was a first step to industrialization.

Yet the justification for private property goes back well before capitalism, at least to Aristotle, who realized that people care best for things they own. If you own a plot of land, which no one can take from you without your permission, you will be compensated for any investment you make by either your enjoyment of that land or the high price that you can charge a future buyer. In contrast, a common pasture will be overgrazed, a shared kitchen neglected, and a group project usually put on the back burner. We will refer to this beneficial feature of private property as *investment efficiency*.

When put into practice, however, the Radicals' vision of capitalism did not run as smoothly as they had hoped. At first, events seemed to bear out their optimism. The nineteenth century saw an unprecedented period of economic development. Previously, economic growth was largely in line with population growth, which in turn proceeded slowly. Income per person, an important measure of social progress, had been stagnant for nearly all of human history. The nineteenth century was the first time that national productive capacity steadily grew. The fruits of invention and development abounded. Factories opened in enormous numbers. Steam carried passengers across continents. Goods from around the world became available in many countries.

However, these gains were concentrated among the *bourgeoisie*, a small class of rich city-dwellers. The former peasants who became the working class lived under miserable conditions like those depicted by Charles Dickens. Despite the early industrial revolution, workers' wages in Britain remained flat from 1750 to 1850.³

Nor did the new capitalist order even seem to be as productive as hoped. Some aristocrats allowed large swaths of their lands to lie idle or be used unproductively. The "Long Depression" of the 1870s in the United States inspired self-trained political economist Henry George to write his 1879 masterpiece *Progress and Poverty*. In that book, George summed up the paradoxes of nineteenth-century capitalism:

The nineteenth century saw an enormous increase in the ability to produce wealth. Steam and electricity, mechanization, specialization, and new business methods greatly increased the power of labor . . . Surely, these new powers would elevate society from its foundations, lifting the poor-

est above worry for the material needs of life . . . Yet we must now face facts we cannot mistake. All over the world we hear complaints of . . . labor condemned to involuntary idleness; capital going to waste . . . Where do we find the deepest poverty, the hardest struggle for existence, the greatest enforced idleness? Why, wherever material progress is most advanced . . . This relation of poverty to progress is the great question of our time.⁴

George's concerns echoed a growing chorus of socialist critics. They shared Smith's aims of efficiency but doubted that private property would achieve it.⁵

It is useful to remember that many people in nineteenth-century Britain inherited their land. Rather than investing in it or selling it, they would lazily collect rental payments from tenant farmers. Even after early reformers succeeded in eliminating many feudal restrictions on property, owners often refused to sell their land to people who wanted to put it to more productive use except at absurd prices, thus impeding industrialization.⁶ Aristocrats gave scant attention to their properties, preferring to spend their time in high society or in politics. Many depictions of this period focus on the social lives of the aristocracy; little attention is given, or was given by the aristocrats, to the hard work of managing their properties. Even those who did sell them would waste the money they raised on the indulgent entertainments depicted in Jane Austen's novels rather than investing the money in new ventures.

Caring for the land was left to the peasants, slaves, and tenant farmers. Yet even the most fortunate of these, the tenants, had little reason to invest in land because it could be expropriated by their shiftless landlords. So farmers allowed it to decay, with poor results for output. As the population grew

and productivity increased, aristocrats charged ever more for their land, inhibiting further progress and leaving even less to tenant farmers. Land lay idle and neglected, and the growth of cities was stunted.

The wealthy were rewarded for doing nothing. Poor people who needed land had to pay vast prices to obtain it or else starve. Critics attacked these circumstances as perverse, and portrayed the rich, in fiction and nonfiction alike, as parasites (sometimes literally, as in Bram Stoker's *Dracula*).

The problem critics identified we label the monopoly problem (as did many of them), though our use is somewhat broader than is common these days for reasons we discuss later. We normally think of a monopolist as a person or company that owns all of a good and can charge a price higher than the normal market price by withholding some of the supply. However, a landowner can also be regarded as a monopolist because land is so often unique in its character and location.

Like a monopolist, the landowner can earn higher returns on the sale of her land by holding out for a generous offer (effectively withholding supply from the market) rather than selling to the first person who offers a fair price. In the meantime, the land is unused or underused. Thus, private ownership may actually hamper allocative efficiency. And this is the case not just for private ownership of land: private ownership of any asset, except homogenous commodities, may hamper allocative efficiency. Think of business equipment, automobiles, art, furniture, airplanes, intellectual property. The amount of money we are talking about is not small. Because of the ubiquity of private property in our economy, empirical research suggests that the misallocation of resources due to monopoly and related problems we discuss below may be reducing output by 25% or more annually—trillions of dollars per year in the United States alone.⁷

The capitalist system created by Radical reforms, it thus seemed, had loosened the restrictions inhibiting the free flow of land and labor in order for them to be put to their best uses, but had not eliminated them. Monopoly power blocked the path of progress.

Central Planning, Corporate Planning

Some socialist critics imagined that this “irrationality” of capitalism could be solved through state ownership and central planning. After all, they reasoned, if the government owns all the land and employs all citizens, it can simply order the land to be improved and used in the best way. So long as the government is benevolent and operated by well-informed experts, there can be no monopoly problem because no private person enjoys the right to exclude others from the land. This central planning approach is closely identified with the ideas of Karl Marx, though Marx ultimately soured on centralized planning, seeing it as too open to abuse.⁸

Yet planning wound up being as important to capitalism as it was to any dream of a socialist utopia. Social critics were not the only ones increasingly frustrated with the way landowners, small-business people, and other property owners stood in the way of economically valuable projects. As many economists have pointed out, creating large-scale enterprises consistently requires putting together a variety of moving parts, each controlled by a local monopolist.⁹ Entrepreneurs were frustrated by monopoly problems at every turn. If they tried to expand their factories, a landowner would hold out. If they tried to build a railroad, thousands of local politicians tried to extract a pound of flesh. Every small supplier of oil, coal, or parts would waste endless hours bargaining with them or trying to take advantage of them.

Nobel Laureate Ronald Coase called these frustrations the “transaction costs of the market.”¹⁰ He explained that to avoid this chaos, business people formed large corporations that would own many assets, such as factories and parcels of land, and employed many workers whom the head of the corporation could centrally direct to accomplish its goals without constant negotiation. Corporations rapidly took over the business landscape during the nineteenth and early twentieth century. Standard Oil, for example, came to dominate oil production and the railroads were managed by similarly large corporations.

Yet corporations eventually reached their limits, becoming unwieldy and decaying as they overextended themselves, like a restaurant chain whose quality peters out as it builds more and more outlets. Corporate managers were often insensitive to local conditions and new opportunities, and were constantly threatened by new entrants to the market. As we will discuss in chapter 4, corporations did overcome some monopoly problems, but their large accumulations of wealth and power also allowed them to hold down wages, raise prices, and retard economic development, causing political and social backlash. So, while corporate planning played an important role in the economy, and helped overcome many local monopoly problems, it never supplanted markets as the primary means of organization.

Markets without Property

Political economists concerned about the monopoly power created by private property therefore continued to search for alternatives to central planning. One formulation was for the government to own land and other “gifts of nature,” but to

allow them to be competitively managed. “Artificial capital”—useful things produced by humans—would remain privately owned to reward those who create it.

The government would rent out the land to those it deems most likely to use it productively and could terminate the lease when it finds someone who is willing to pay more to use the land than the current tenant. In these schemes, people rent land but do not own it; private property in land is abolished.

This idea came to be called competitive common ownership and was a core dogma for many of the figures who shaped twentieth-century economic thought. Two of the three fathers of the great advance in economic thought known as the “marginal revolution” (William Stanley Jevons, Léon Walras, and Karl Menger) were deeply skeptical of private property. Jevons wrote, “Property is only another name for monopoly.”¹¹ In his treatise on the social economy, Walras stated, “Declaring individual land ownership . . . means . . . thwarting the beneficial effects of free competition by preventing the land from being used as is most advantageous for society.”¹² Walras believed that land should be owned by the state and the rents it generated should be returned to the public as a “social dividend,” either directly or through the provision of public goods.¹³ By ending “individual landownership and monopolies” he aimed to “suppress” the “true causes . . . of . . . feudality.”¹⁴

Walras described his approach as a form of socialism, what he called “synthetic socialism.” However, Walras was hostile to central planning, fearing that planners would themselves become monopolistic feudal lords. He wanted landed property to be controlled by society through a process of competition and wanted returns on that property to be enjoyed by society. As these widely divergent ideas of socialism indicate, “society” can manage resources it controls in many ways. In the late

nineteenth century, socialism was a rather amorphous term and was not always associated with central planning. Socialists agreed on only one point: that traditional private property and the inequality of its ownership posed significant challenges to prosperity, well-being, and political order.

Henry George, whom we met earlier, proposed what was perhaps the most prominent idea among economists for solving the monopoly problem. He argued that the “simpler, easier and quieter way” to achieve common ownership than state ownership would be to “appropriate land rent for public use, by taxation.”¹⁵

George’s land tax differed from today’s property taxes, which are charged at a low rate, usually 1–2%, but take as a base the full value of a home, which is usually determined by a government appraiser. On the one hand, George’s land tax would have been much higher: the full value of the rent one would have to pay to occupy the land. On the other hand, it would have completely exempted the value of structures built on the land. Assessors would have to determine how much of the house’s value arose from the unimproved land lying beneath the house (that is, how much the property would be worth if the house were knocked down) based on recent sales of nearby vacant lots. This full land value would be taxed away, but the homeowners would keep any extra value created by the structures on the land.

Taxing away all such “land rent” would mean that while owners could enjoy the full value of anything they built on the land, they would have to pay to the government any value of the land itself, just as someone who leased the land would. “Land monopolization would no longer pay. Millions of acres, where others are now shut out by high prices, would be abandoned or sold at trivial prices.”¹⁶ If the government imposes a

tax on ownership of land, then people who can use their land productively will do so and be able to pay the tax, while those who would otherwise be happy to let it sit vacant will sell the land in order to avoid the tax.

George's proposals quickly captured the public imagination (see figure 1.1). Monopoly, perhaps the most popular board game ever, was originally titled *The Landlord's Game*. Elizabeth Magie designed it in 1904 as a way to educate the public about George's ideas. According to the rules we are now familiar with, each player tries to monopolize properties in order to bankrupt the other players and drive them out of the game. However, the original game (which one can purchase from Folkopoly Press on eBay) had different rules under which a tax on land rents (though not on the houses built upon them) funds public works, giving players free access to the utilities and railroads, and paying out a social dividend that augments the wages earned when passing what is now called "Go."¹⁷ These rules make domination by one player impossible and ensure that as every player develops her properties, all players benefit.

By 1933, American philosopher John Dewey estimated that George's *Progress and Poverty* "had a wider distribution than almost all other books on political economy put together."¹⁸ Many eminent politicians and thinkers were Georgists, including the aristocratic Winston Churchill, the radical progressive Dewey, and the Zionist visionary Theodore Herzl.

Yet Georgism had some serious defects. Because the tax would expropriate all the value of land lying beneath any structure, it provided no incentive for possessors to invest in, or even care for, the land. This is the problem of investment inefficiency. At the time, investment inefficiency for land was not considered a problem, because people thought that land did

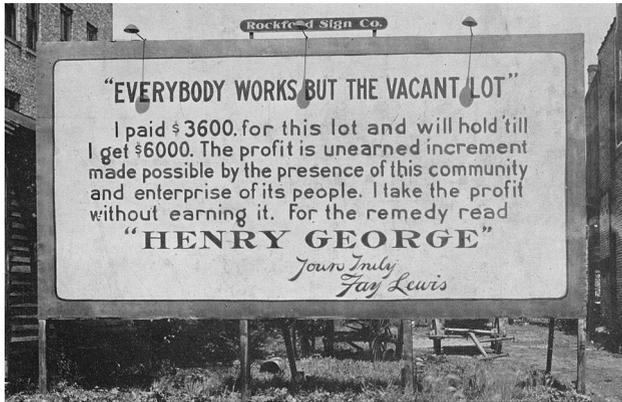


FIGURE 1.1: Billboard promoting Henry George's ideas. The New York Public Library, <https://digitalcollections.nypl.org/items/510d47de-036a-a3d9-e040-e00a18064a99>.

not need maintenance and the only value that could be added to land was through above-ground structures like houses. But these assumptions ignored environmental damage. As ecologist Garrett Hardin observed many years later, land without a single owner often becomes overgrazed, eroded, and polluted in what he labeled the “tragedy of the commons.”¹⁹ George's scheme ran into even greater problems with natural resources that can be depleted, like metal from mines or oil from wells. If all the value of land is taxed away, the possessor of such a resource will remove the oil or ore as quickly as possible, leading to waste.

In addition, George's scheme would have been an administrative nightmare. George distinguished between naturally occurring land, which should be taxed, and everything built on top of it or using it—what he called artificial capital—which should not be taxed. This distinction was, well, artificial. Factories are built from metal drawn from mines and, once built, may be monopolized just as much as land may be. Also, a fac-

tory cannot be easily moved about, and it may help develop a neighborhood, which increases the value of the land. This would have made it fiendishly difficult to distinguish between the value arising from the land and the value of the structures built on top of it.

Consider, for example, the Empire State Building. What is the pure value of the land beneath it? One could try to infer its value by comparing it to the value of adjoining land. But the building itself defines the neighborhood around it; removing the building would almost certainly change the value of the surrounding land. The land and the building, even the neighborhood, are so tied together, it would be hard to figure out a separate value for each of them. The same would hold true for many neighborhoods, defined less by their purely physical location than by many other factors, such as the look and feel of their architecture and the relationship among buildings, streets, parks, and paths.

The Battle for the Soul of “Socialism”

George’s ideas gained popularity in the early twentieth century, a period of social upheaval and intellectual ferment. Growing inequality and industrial tensions strained the social fabric of wealthy countries. The Social Democratic party in Germany, the Labor Party in England, the Progressive movement in the United States, and the French Section of the Workers International rose to prominence. Colonies increasingly chafed under the domination of the empires. Two world wars threw the established social order into question and destabilized many governments. In the 1930s, the first truly global depression undermined confidence in traditional laissez-faire capitalism.

Revolutions erupted. In 1911, Chinese Nationalist forces led by Sun Yat-sen overthrew the Qing Dynasty and worked to establish a new republican government free from foreign control. While Sun's ideas drew on many sources, George's philosophy was the economic pillar of his *Three Principles of the People*. Sun wrote, "The teachings of . . . Henry George . . . will be the basis of our program of reform."²⁰ Yet Sun failed to form a coherent government as China disintegrated into warring fiefdoms.

In Russia, Vladimir Lenin learned from Sun's mistakes and ruthlessly suppressed dissent. He was inspired by early Marxist dreams of central planning, the zeal of the French Revolution, and the rising power of bureaucratic corporations. Wielding an iron fist, Lenin formed a powerful government, which not only controlled Russian territory, but also exported revolution to other countries, including to China. There, with Russian assistance, Mao Tse-tung's Chinese Communist Party eventually defeated Chiang Kai-shek, who had taken over the anti-Communist branch of Sun's Nationalist organization. Chiang fled to Taiwan. However, by this time the world was largely divided into capitalist and communist camps. The Georgist ideas of the Nationalist revolution withered under anti-communist dictatorship. Soon, two major economic systems subsequently vied for dominance—capitalism in the West, now moderated by regulation, redistribution, and anti-monopoly laws, and Communist state planning in the Soviet Union and its allies.

Although the eventual victory of capitalism makes it hard for us to imagine the allure of central planning, during the Great Depression and even well after World War II, capitalism was on the defensive. In 1942, the prominent conservative

economist Joseph Schumpeter predicted that socialism would ultimately replace capitalism.²¹ His view was that most economic activity in capitalist economies took place in corporations and that a corporation is just a bureaucracy in which “management” at the center issues orders to various workers. From this vantage point, it was a small step to an economy in which each industry was dominated by one or two gigantic corporations, with government regulation to ensure that they do not abuse their monopoly power, an outcome not much different from the central planning of socialism.

Many economists, inspired by the success of large corporations and of wartime planning, went further and embraced the Soviet system. One of the most extreme cases was Oskar Lange, a Polish economist who taught at the University of Chicago in the 1930s and '40s. After a trip to Soviet-occupied Poland, he renounced his US citizenship, and became the ambassador to the United States of the Soviet-aligned Polish communist government. For the next two decades he served in leading roles in Polish government. Our epilogue describes his case for central planning in greater detail.²²

Ludwig von Mises and Friedrich Hayek, who were students of the third marginal revolutionary, Carl Menger, pointed out the flaw in central planning: those who undertake it lack the information and analytical capacity to make the best allocative decisions.²³ People’s valuations are private information; the genius of the market is its capacity for disseminating this information from consumers to producers through the price system. Central planning, in contrast, results in massive misallocation of resources—the production of goods no one wanted—that was characteristic of real-world socialist economies like that of the Soviet Union.²⁴ Moreover, centralization

of the economy opened the way to political abuse, which Hayek memorably called the “road to serfdom.”²⁵

Reacting to these horrors of central planning, Western liberals concluded that capitalism, whatever its limitations, was the superior method of economic organization. The best approach to monopoly was antitrust law (see chapter 4), regulation, and limited state ownership in the most important industries. In the United States, the government subjected “natural monopolies” like electricity to price regulation, and in Europe, major utilities and other large companies were often owned by the government. Amid the postwar economic boom, the fundamental problems with private property faded from view.

The intellectual deep freeze into which the monopoly problem had been placed was sealed by the misinterpretation of Coase’s classic 1960 article, “The Problem of Social Cost.” Coase argued that if transaction (that is, bargaining) costs are low, the allocation of property rights is irrelevant from the standpoint of efficiency, because property will be transferred from lower-valued to higher-valued uses through bargaining.²⁶ Imagine that a quiet doctor’s office and a noisy music teacher’s office are separated by a thin wall in an office building. The doctor is disturbed by the noise and wants the teacher to leave or install soundproofing. One legal rule would give the music teacher the right to make as much noise as he wants. Another would give the doctor the right to be free of noise.

Coase argued that under ideal conditions, the bargain the two sides would reach would be the same: in one scenario the doctor would pay the music teacher to be a bit quieter, and in the other the music teacher would pay the doctor to accept some noise. If bargaining is perfect, the law does not determine the level of noise; it affects only who pays whom.

Coase's point was more complex than is often understood, but the subtlety was lost in the hands of zealous defenders of capitalism, such as the University of Chicago Nobel Laureate George Stigler.²⁷ In his 1966 edition of *The Theory of Price*, he promoted the "Coase Theorem" as a justification for the simplistic idea that private bargaining that takes place under any set of strong and clearly defined property rights will usually lead to efficient outcomes. This misinterpretation assumes away the monopoly problem, implying the superiority of private property because it enhances investment efficiency.²⁸ Most mainstream economists even today continue to assume that bargaining eliminates the monopoly problem.

Competitive by Design

Not all thinkers followed Stigler's lead, however. Vickrey recognized the monopoly problem, admired George's vision of common ownership, and offered as his own solution the ideal of the auction. We laid out a fanciful version of this approach in our preface: an auction where all property—every factory, house, and car—is held in common and the right to rent and use it is constantly auctioned. The citizen who offers the highest bid (in the form of a rental payment) possesses the object until outbid by another citizen. Each factory, house, or car would have a standing highest bid placed on it, representing the rent that the current possessor agreed to pay to the government for using the asset. Anyone could beat this bid and claim the object. The money collected from rents is used to finance public goods (see chapter 2) and fund a social dividend. While Vickrey never directly spelled out this utopian vision, it connects so many of his ideas that we imagine it was part of the

sweeping vision he hoped to bring to the world just prior to his death. We thus label it the *Vickrey Commons*.

Most novel concepts initially seem farfetched. A decade ago, renting out an apartment online to strangers seemed a very odd idea. Later in this chapter, we will address an objection that surely has already occurred to you—that the stability of everyday life would be upended by the Vickrey Commons. Yet bear in mind that his idea is already used to assign the advertising slots of Web and Facebook pages all of us visit every day. Every few seconds, these slots are reallocated to the highest current bidder via an auction design proposed by Vickrey.²⁹

Governments also use auctions. Coase persuaded the Federal Communications Commission (FCC) to auction off the rights to use the broadcast spectrum instead of giving it away or selling it at a price determined by the government.³⁰ In response, economists Robert Wilson, Paul Milgrom, and Preston McAfee developed Vickrey's work into an auction design to sell off the spectrum.³¹ But this design only temporarily solved the monopoly problem. Spectrum auctions occurred infrequently and gave winners the chance to hold onto the spectrum for years or even decades at a time. A company that won an auction for a portion of the spectrum years ago might no longer be its highest-valued owner. If a new company would like to buy that portion, its owner may decide to hold out for an excessively high price, which is precisely what has happened, as we discuss below.

Vickrey's most prominent followers, Roger Myerson (who also won the Nobel Prize for his work on the topic) and Mark Satterthwaite, used his ideas to deepen Jevons and Walras's insight about the monopolistic nature of property.³² They showed mathematically that the simplistic interpretation of

Coase's results will never hold except in the unusual case that the buyer and seller are both absolutely certain that the buyer values the asset more than the seller does. Otherwise there is no way for bargaining to overcome the monopoly problem and ensure that assets consistently flow to their best (highest-value) users. This work helped explain why spectrum markets had so stubbornly failed to reallocate spectrum to new uses and why auctions for Internet advertising slots worked so much better. Only a true, continuous auction in uses can solve the monopoly problem and hence produce allocative efficiency.

But continual auctions also may create a problem—for investment efficiency. If possessors know that their possessions can be taken by others at any time and that they will not receive the proceeds of any bid, they will be discouraged from taking care of and improving their property. In this situation, you might well let your house fall into disrepair. Like George's tax proposal, the Vickrey Commons does not give people good investment incentives.

A response could be to use private property rights where investment incentives are more important than allocative efficiency (George's "artificial capital"), and common property (with uses distributed through auctions) where allocative efficiency is more important than investment efficiency (George's "land"). Indeed, the current system of ownership in the United States vaguely echoes this formulation. The private property system prevails in most cases, but the government owns vast resources—including a huge fraction of the nation's land—which it rents out, allows people to use for free, or occasionally auctions, as in the case of spectrum. But forcing every form of property into one of these extreme molds is wasteful, as it always leads to extreme inefficiency along either

the investment or allocative dimension. Most types of property benefit from investment, and most types of property will, and should, move from one person to another over the course of their useful life.

A better approach is to find a way to balance the demands of investment efficiency and allocative efficiency. We will call this approach “partial common ownership”—a halfway house between common ownership and traditional private property. Partial common ownership optimizes allocative efficiency and investment efficiency within a single property regime, as the common ownership can deter monopoly power while the private ownership encourages investment. In the late 1980s, economists Peter Cramton, Robert Gibbons, and Paul Klemperer presented a way to share property rights, which was refined by Ilya Segal and Michael Whinston, among others.³³

Consider a start-up company whose two founders got into an argument and now want to go their separate ways. Dissolution of a partnership is normally a messy business. Each partner must give her consent to break up, but they inevitably disagree about who should get the larger share, or how valuable the partnership is, leading to impasse—just another version of the monopoly problem. Under the Cramton et al. proposal, also known in legal circles as a Texas shootout, each person submits a bid for the value of the company and the higher bid wins. The winner must buy out the share of the other partner at the average of the two prices.

This scheme works best when the shares owned by each partner exactly equal the chance that she is the best eventual owner for the company.³⁴ Let’s consider why, in this case, both partners will find it in their interest to bid their true value for keeping the company.

Let's say partner A owns 60% of the partnership and B owns 40% of it. They agree to use a Texas shootout to determine which partner will become sole owner. Each partner makes a bid; the partner who makes the higher bid wins the partnership; and the value of the partnership is set by the average of the two bids. The winner must then buy the loser's share based on that value. So, if A wins, A gains B's 40% share but must pay B 40% of the average of the two bids. Because of our assumption that shares are proportioned to the chance of each partner being the best owner of the company, if each bidder is truthful about her bid, A will win 60% of the time and B 40%.

Now suppose that A considers raising her bid above her true value. If she wins, which happens roughly 60% of the time, she will now have to pay more for the 40% share of the company she is forced to buy from B. Thus, whatever amount she increases the price by, she will have to pay on average 60% times 40% equals 24% of that amount on average. On the other hand, in the roughly 40% chance she loses, B will have to pay more to her for her 60% stake, so she will gain 24% of this amount on average. It is no coincidence that these two numbers cancel out: this says, precisely, that A has no incentive at all to raise her bid. The same goes for lowering her bid.

However, A does have an incentive to keep her bid honest for two reasons. First, if she raises her bid above her true value, there is a chance B will have bid above her true value, but below her new bid, and thus that she will end up having to buy the company while paying above her true value. This is bad news for A. On the other hand, if she lowers her bid below its true level, there is a chance that B has bid below A's true value but above A's bid. This would lead to B winning but paying A

less than the company is worth to A. Again, this is bad news for A! To reinforce this point, when A raises her bid, this increases the chances of her winning and paying the new higher price she has created, while if she lowers it she increases the chance she will lose and be paid less. All these forces mean that A has a very strong incentive to honestly bid her value and an analogous logic applies to B.

Even if the shares do not perfectly line up with the chances of each party winning, any degree of shared ownership will dampen each partner's incentive to either exaggerate or understate her value. Each partner knows that either overbidding or underbidding runs the risk of putting her on the wrong side of the deal. If she overbids in the hope of being paid more, she will risk winning and overpaying, but if she underbids to pay less, she risks being bought out below her value.

An important advantage of this system over the Vickrey Commons was suggested by one of us in research with Anthony Lee Zhang: it largely preserves investment incentives.³⁵ An individual with a 90% ownership stake in a partnership still has 90% of the incentive to invest that an individual with a 100% stake does. If she ends up winning the bidding process, she retains the good (and thus the return on the investment) and must pay only 10% of it to her partner for the right to enjoy this value. If she loses the process, her partner pays her 90% of the value of the investment as a settlement. Thus, while the Vickrey Commons gives no one any incentive to invest in the asset, the Cramton et al. procedure gives all individuals an incentive to invest in proportion to their ownership shares.

Partnerships are a form of common ownership that people undertake voluntarily. This means that they can arrange by contract the most efficient method for dissolving them. For

that reason, the Cramton et al. scheme cannot be applied to land and other everyday assets that are held privately. However, a simple idea with ancient roots makes it possible to extend this logic to a wide range of settings.

Name Your Price—and Your Tax

Most of us think of the *liturgy* as the words chanted by members of a religious community. But the term originated in ancient Athens where it meant roughly “public works” and referred to the responsibility of the roughly 1,000 wealthiest citizens to fund the operations of the state, particularly the army and navy. How did the Athenians determine which citizens were the wealthiest? According to Demosthenes, any member of the liturgical class could challenge any other citizen he believed was wealthier to *antidosis* or “exchange.”³⁶ The person being challenged would have to either assume the liturgical responsibility or exchange all possessions with the challenger. The system gives everyone an incentive to be honest despite the burdens of the liturgy. If you falsely claimed to be poorer than the top 1,000 so as to avoid the liturgical burdens, then you could end up being forced to exchange your possessions with someone who is poorer than you are.

This is the first historical example we know of a “self-assessment” system. In such a system, individuals (rather than a bureaucratic authority) are required to declare the value of their possessions for the purpose of a transaction or public project, but also must stand ready to “prove” that the declared value is correct. Self-assessment systems are still in use. In the type of horse race called “claiming stakes,” you can put forward a horse for any race, even one for which the horse might

be overqualified, but you must stand ready to sell the horse for the cost of the prize (the “stakes”) for winning the race to anyone willing to buy (or “claim”) it at that price.³⁷ This deters owners of extremely fast horses from putting them up for races against much slower horses, where the stakes are usually low. Instead, an owner would put up a fast horse only for a race valuable enough for him to be willing to lose his horse for the prize.

In an Andorran mutual fire insurance arrangement, *la crema*, individuals declare how valuable their property is. If a house burns down, this is the amount the owner will be paid by the other members of the group, who are charged according to their own self-assessments. Owners of very valuable houses pay a correspondingly large share of the compensation if someone else in the community is affected by a fire.³⁸ This burden deters people from declaring a value for their house that is higher than it is actually worth.

To enforce Georgist land taxation, China’s Sun proposed self-assessment.³⁹ Normally, a homeowner pays a property tax equal to a percentage of the assessed value of his home, which is determined by officials known as appraisers. Under Sun’s system, individuals self-declare the value of their land and pay a tax equal to a percentage of that self-declared valuation, but the state could at any time take the land at the self-assessed price. When Chiang’s government, which saw Sun as the “Father of the Nation,” retreated to Taiwan, it implemented Sun’s scheme. Unfortunately, the government was rarely willing or able to take possession of undervalued land and the scheme largely failed.⁴⁰

In a 1962 speech in Santiago, Chile, University of Chicago economist Arnold Harberger proposed an ingenious variant of Sun’s scheme as a solution to the problem of enforcing prop-

erty taxes in corruption-ridden Latin America. Following up on Vickrey's concerns about the Venezuelan fiscal system, Harberger worried that appraisers were frequently bribed by homeowners to understate the value of property so as to minimize the tax burden. While he was apparently unaware of the historical precedents, his solution has a timeless elegance:

If taxes are to be levied . . . on . . . the value of . . . properties . . . it is important that assessment procedures be adopted which estimate the true economic value . . . The economist's answer . . . is simple and essentially fool-proof: allow each . . . owner . . . to declare the value of his own property, make the declared values . . . public, and require that an owner sell his property to any bidder . . . willing to pay . . . the declared value. This system is simple, self-enforcing, allows no scope for corruption, has negligible cost of administration, and creates incentives, in addition to those already present in the market, for each property to be put to that use in which it has the highest economic productivity.⁴¹

While Harberger designed his scheme as a way to raise government revenue, it offers an inspired solution to the monopoly problem we highlighted above. Harberger's tax, later also proposed by the Nobel Prize-winning economist Maurice Alais, makes it costly to declare a high valuation and thus deter the purchase of assets. Therefore, it penalizes any attempt to exercise monopoly power over an asset.⁴² The higher the price the possessor demands, the more tax she must pay.

Harberger's tax closely resembles the partnership scheme of Cramton et al. Suppose that the annual tax rate is set equal to the probability that a buyer who values the asset more than the seller materializes within a period of, say, a year. Anastasia

owns a house, and likes it. But there is a certain probability that someone else will show up who likes the house more than Ana does, and is willing to pay more for it than Ana's valuation or reservation price (we call this probability the "turnover rate," meaning the rate at which assets of this sort typically move into another person's hands). Suppose that the tax rate and the turnover rate are both 30%. If Ana raises her sale price above her reservation (that is, actual) value, she benefits from the higher sale price 30% of the time—when those higher-value buyers turn up. Her benefit from raising the price would thus be $.3\Delta P$, where ΔP is the increment in the sale price. On the other hand, as long as she remains in possession of the house she must pay the tax of 30%, which, applied to this incremental value, forces her to pay an additional $.3\Delta P$. Thus, the benefit from increasing the price above the reservation price is exactly offset by the cost. This stops owners from holding out for a high sale price by setting a price higher than their reservation value.

At the same time, Ana also wants to ensure that the asset is not taken from her at less than her reservation value. So, she will, of course, not declare a price below her actual valuation. This means that she can do only one thing: set a price exactly equal to her reservation value, ensuring that exactly the buyers willing to pay more than her reservation value will end up taking the asset. Full allocative efficiency is achieved: every asset passes to the hands of the person best able to use it and invest in it.

For any tax rate below the turnover rate, the possessor will always set a price above the amount she is willing to accept.⁴³ When the tax rate is zero, the possessor is free to set any price she wishes at no cost and thus would set the monopoly price.

When the tax rate equals the turnover rate, she has to reveal her true value. For intermediate tax rates, she will still be discouraged by the tax from setting a very high price, but she will not have a full incentive to report her exact value. Instead, she will set a price intermediate between her true value and the monopoly price that she expects a buyer to be willing to pay. As the tax rises from zero to the turnover rate, the price she quotes will gradually fall from the monopoly price to her true value.

What of investment efficiency? Remember that George's original proposal failed because of the concern that people would not invest in their property if they must pay confiscatory taxes on the rents it produces. At first glance, Harberger's tax also seems vulnerable to this problem. Suppose that the asset (which, for the sake of simplicity, let us suppose lasts only this year, like a machine that wears down from use) is currently worth \$100,000 to its possessor, and that by investing \$75,000 she can increase its value for her to \$200,000 and also increase the value that any potential future buyer will place on it by \$100,000 as well. Assuming the same turnover rate of 30%, our logic above indicates that she may as well, after the investment, declare the property to have a value of \$200,000. However, this increases her tax bill by \$30,000 (30% tax on the increased value of \$100,000). The investment is not worth it. Although the value she gains from the asset regardless of whether the buyer acquires it has now increased by \$100,000, she is forced to pay \$30,000 of this amount to the government, which comes on top of the \$75,000 investment. She loses \$5,000 rather than making a profit.

But the investment can be improved by adjusting the tax. If a lower tax rate were charged, say 10%, then the possessor

would still be able to capture \$90,000 of the benefit from the investment (\$100,000 minus the 10% tax payment). Now the possessor will profit from a \$75,000 investment, or even a larger investment.

But if we lower the tax to improve incentive efficiency, then won't we also harm allocative efficiency? At a 10% tax rate, by increasing the price beginning at her reservation value, the possessor could still capture $.3\Delta P$ of value from a potential buyer, but she would now be forced to pay only $.1\Delta P$ to the tax authority. She would thus have an incentive to raise the price, which would block transactions with buyers who value the property only a little more than the possessor does.

One might assume that the loss in allocative efficiency would offset the gain in investment efficiency. However—and this is a key point—the opposite happens. When the tax is reduced incrementally to improve investment efficiency, the loss in allocative efficiency is less than the gain in investment efficiency. The reason is that the most valuable sales are ones where the buyer is willing to pay significantly more than the seller is willing to accept. These transactions are the first ones enabled by a reduction in the price as even a small price reduction will avoid blocking these most valuable transactions. In fact, it can be shown that the size of the social loss from monopoly power grows quadratically to the extent of this power. Thus, reducing the markup by a third eliminates close to $5/9 = (3^2 - 2^2)/(3^2)$ of the allocative harm from private ownership. Furthermore, in this example the distortion to investment is eliminated.

More generally, if we considered all scenarios in which an investment could raise the value of the asset to \$100,000, the only investments that would be deterred by a 10% tax are those that cost more than \$90,000 to make. These investments are

both rare and not terribly valuable, as the net value they create is small. By the same reasoning as above, it can be shown that only roughly one-ninth of the total distortion to investment from the 30% tax is caused by a 10% tax. Such a policy achieves five-ninths of the allocative benefit of the 30% tax at only one-ninth of its cost to investment.⁴⁴ Furthermore, because different possessors often differ in their willingness and ability to invest to improve land (like the feudal lord and peasant farmer), allowing land to flow into the hands of the person best able to use it may also encourage investment.

Because of this quadratic structure, it is always optimal to have at least a very small tax. For example, a 1% tax will hardly distort investment at all but can still significantly improve allocative incentives. The owner will self-assess with reasonable accuracy to minimize her tax bill, but she will not be deterred from making valuable investments in the property. It is typically optimal to set a moderate tax rate, below turnover rate, that balances these two forces.

We refer to this tax as a “common ownership self-assessed tax” (COST) on wealth. The COST on wealth is also the cost of (holding) wealth. “Common ownership” refers to the way in which the tax modifies traditional private property. The two most important “sticks” in the bundle of rights that compose private property are the “right to use” and the “right to exclude.”⁴⁵ With a COST, both rights are partly transferred from the possessor to the public at large.

First, take the right to use. In the popular image of private property, all benefits from use accrue to the owner. Under a COST, on the other hand, a fraction of this use value is revealed and transferred to the public through the tax; the higher the tax, the greater the fraction of use value transferred.⁴⁶ Second, and of far greater significance, consider the right to

exclude. In the private property system, the owner keeps her property—which means keeping other people *off* her property—until she voluntarily sells it or gives it away (with some marginal exceptions). With a COST, the “owner” does not enjoy this right to exclude vis-à-vis anyone who offers to buy at the self-assessed price. In fact, any member of the public may exclude the current owner in exchange for this price. The lower the price, therefore, the greater is the extent to which the exclusion right is held by the public at large rather than the “owner.” The price falls as the tax rises, so raising the COST also gradually shifts the exclusion right to the public at large, any member of whom can pay a price to claim the property.

We can conceptualize a COST as sharing ownership between society and the possessor. Possessors become lessees from society. Their lease terminates when a higher-value user appears, whereupon the lease is automatically transferred to that user. Yet this is not central planning. The government does not set prices, allocate resources, or assign people jobs. Indeed, as we will argue below, the government’s role would be more limited than it is today because there would be no need for discretionary interventions, like eminent domain or public ownership of property in the conventional sense, to solve holdout and other monopoly-related problems. There would also be much less need for distortionary and discretionary government taxes to raise revenue for the state. Furthermore, control of everything would be radically decentralized; a COST thus combines extreme decentralization of power with partial socialization of ownership, showing that they are, perhaps surprisingly, two sides of the same coin. Far from creating a form of centralized planning, the COST creates a new kind of market—a flexible market in uses, to replace the old market based on permanent ownership.

Brass Tacks

Imagine that you want to develop gas resources through hydraulic fracturing. A large swath of land deep in the Canadian Rockies looks promising. You open an app on your cell phone and enter your requirements: the desired size of the territory, the spots within it that research has indicated will be most productive, their proximity to roads, and their topographic characteristics. In an instant, the app displays a map of the area you are interested in with spots numbered in order of how well they meet your criteria—a process like searching for restaurants on Yelp. On the app you can see detailed satellite images of each piece of land and its topographic characteristics. When you circle around a group of tracts of land on the map with your finger, the app displays the total price you would have to pay to the people who currently possess this area. You find your ideal stretch of land, composed of four tracts currently possessed by four different people. You click a button on your app and funds are transferred from your bank account to the accounts of the current possessors. The following week you send a team to begin prospecting.

Along with our opening vignette, this scenario gives you a sense of how a COST would work in practice.⁴⁷ Every individual and business would have to list each of their possessions in a public register hosted on an online application and enter valuations for each item—or accept default valuations based on the original purchase price or on a database of prices of used goods (like today’s Blue Book for used cars)—and would pay an annual tax based on the time-average price they listed over the course of the year. These lessees could change their valuations at any time, a process that could be automated by using general preferences or past behavior.

Anyone interested in acquiring (“possessing”) a specific good would search the database to find local items of interest. Barcode scanning or photographic recognition software would display the price of something in front of you. By clicking on the item, you transfer funds from your bank account into escrow, and the funds would then be deposited to the current possessor’s account on delivery of the asset. Nondelivery would be penalized as theft.

Actual implementation of the system would require working out countless details. Here we summarize some important features.⁴⁸

1. Possessors would be allowed to group their assets into clusters and to pull them apart, as they choose. That way, they would not be at risk of having their right shoe taken and being left with a useless left shoe.
2. Depending on the asset type, the possessor would have a reasonable period of time to surrender it to the purchaser and the purchaser would bear the cost of picking up and transporting it. In the case of assets like a house that are costly to surrender, the possessor could, at some cost, extend the surrender period.
3. For assets that require some inspection prior to purchase, such as a house, the purchaser could freeze the listed price and pay the possessor a small percentage of the listed value to be able to inspect the property before deciding whether to proceed with the purchase.
4. Because tax rates would, ideally, be adapted to assets based on turnover rates, some assets unlikely to turn over often (family heirlooms and photographs, diaries) would be taxed at very low rates, while others (such as trendy gadgets) would be taxed at high rates. When tax

- rates are very low, the possessor can prevent others from taking an item by paying a small tax. For typical assets, we estimate that turnover once every fourteen years is reasonable and thus (combined with other factors below) a 7% tax annually is a good target.
5. To avoid double taxation, the possessor could deduct the cost of any mortgages or other liabilities from her tax bill. However, she would have to stand ready to pay the amount against which this deduction is granted to anyone willing to relieve her of her mortgage. Thus, the tax would be calculated based on the net worth of the asset to its possessor, not on the value of the asset itself. For example, a person who possesses a \$200,000 house with a \$180,000 mortgage would be taxed on his \$20,000 equity, not on the \$200,000 house. The possessor would have to stand ready to sell the house for \$200,000, but also to pay \$180,000 to anyone who comes along and offers to take on the burden of the mortgage payments (effectively refinancing the house).⁴⁹ Possessors who cannot raise such cash (who do not have the credit to refinance) could tie their mortgage obligations to the house as a cluster so that anyone offering to discharge the mortgage would also have to purchase the house so no possessor could be forced to refinance (without selling the house) unless she chose to separate the asset from the liability.
 6. For some assets, where maintenance is clearly required and easily monitored, possessors would have to take care of them, in the same way that a renter cannot trash an apartment, lessees of public lands must not pollute them, and homeowners are required to clear snow from their walkways. Maintenance could be monitored either

by inspections or by embedded technology. If possessors make improvements that can be verified technologically using, for example, image analysis, they could receive a subsidy for this investment to offset the COST's tendency to discourage investment.⁵⁰

7. A number of technologies and institutions would have to be built to make the system easily navigable. Digital pricing systems could enable people to determine an appropriate valuation for items that they would feel they had to replace if they were taken by another citizen. In case people are temporarily short of money to pay for an item they really need, a financial institution could arrange a mortgage-like scheme to pay part of the cost in exchange for part of the value if a sale occurs.

Killing a Flock of Birds with One Tax

We have loosely referred to every problem that inhibits privately owned assets from flowing to their best use as the “monopoly problem.” This is how George, Jevons, and Walras used the term, but contemporary usage in economics breaks the problem into many components. We highlighted one emphasized by Myerson and Satterthwaite, but other economists have given other reasons why assets are not passed on to their best use. As we will see, a COST alleviates all these problems simultaneously.

One such problem is what economists call “signaling” or “adverse selection,” concepts for which economists George Akerlof and A. Michael Spence were awarded the Nobel Prize.⁵¹ The possessor of an asset, such as a used car, often knows the quality of the asset better than a potential purchaser. The pos-

essor may thus demand a high price for the car not only because she guesses the buyer may be willing to pay it, but also because a high price signals she is reluctant to part with it, a ploy to convince the buyer the car must be valuable. Such signaling is one of the oldest tricks in the bargaining book. Anyone who has haggled in a marketplace is familiar with the elaborate stories a seller tells to illustrate an item's supposed value. By taxing signaling, a COST minimizes its harms.

Another barrier to trade, highlighted by another Nobel Laureate, Richard Thaler, is the "endowment effect."⁵² Thaler found that people's minimum willingness to pay to buy an object is usually lower than their minimum willingness to accept to part with it, even if they have never actually touched or used it. Even just owning an object in the abstract seems to make a person value it more. Some recent evidence shows that the endowment effect is less a fundamental psychological attachment and more a heuristic used to jockey for position in bargaining. If it appears you really love a possession, people are likely to think it is valuable and thus offer you a lot for it. The endowment effect does not appear with experienced traders, and it does not appear in societies where bargaining and strategic trade are uncommon.⁵³ The endowment effect seems to be a characteristic of people who lack the time and ability to navigate the complex pricing decisions required in a market society. If high prices are discouraged, and property becomes more like renting, the costly barrier to trade created by the endowment effect would dissipate.

Barriers to borrowing are another obstacle to trade and efficient use of resources. Many assets, from houses to factories, can be fully used only if owned (at least partially) rather than rented because a renter cannot undertake the customization and investment required. An example would be a disused fac-

tory that could be transformed into lofts. Yet in the current system of private property, buying assets outright is very expensive and thus often requires large reserves of cash or the capacity to borrow. Barriers to borrowing include lack of trust, bad incentives created by loans, and the risk created in the lending relationship. Enormous resources have been spent by governments to help low-income people borrow to buy homes, in many cases saddling them with debt that they cannot pay.⁵⁴

A COST would mitigate this problem. Because possessors anticipate the taxes they will pay in the future, the price they will set on an asset will fall dramatically, as it would be discounted by the amount of the future COST payments. Furthermore, people will lower prices they charge to minimize their COST payment on those assets. At the tax rate we advocate, asset prices would fall by between a third and two-thirds from their current level. In popular and congested areas like San Francisco and Boston, where very modest houses sell for \$600,000 or more, their price could fall to as low as \$200,000. This would reduce the need for borrowing and allow many more people without the necessary cash on hand to start businesses or (partially) own a house without taking on massive debt. This benefit of the COST would be especially important for low-income people.

Economists tend to neglect three other impediments to trade: laziness, incompetence, and malice. Private property allows lazy or misanthropic owners to hoard assets and to do so not for gain, but out of sloth. This problem seems to have been particularly prevalent under feudalism, when landowners were not accustomed to prudence, thrift, or hard work. Nobel Laureate John Hicks once wrote, “The best of all monopoly profits is a quiet life.”⁵⁵ A COST disrupts the quiet life of a lazy

monopolist by forcing her to generate the income to sustain a high valuation or turn her assets over to someone who can better use them.

Beyond alleviating all these barriers to trade, a COST would render unnecessary all the hassles and work-arounds presently used to deal with the problem of bargaining. Gone would be long bargaining sessions with an auto dealer to negotiate the price of a new car, followed by the realization that we will be gouged for the automobile financing and paid a pittance for our trade-in. The buying and selling of houses is so stressful that most people hire real estate agents and lawyers, who often overcharge them. These and many other hassles would be avoided with a COST, a transparent, liquid, low-capital system of asset exchange.

This would add up to a very large total benefit. One of us along with Zhang estimated that alleviating only the problem identified by Myerson and Satterthwaite using COST would increase the value of assets in the economy by 4% or output by roughly 1%.⁵⁶ However, with all the other benefits we highlight here and the reduction in other inefficient taxes a COST could fund (see below), we estimate a 5% increase in output. Given that the total loss from misallocation of assets in the economy has been estimated at 25%, we think our estimate is reasonable.⁵⁷

Optimizing Public Leases

It would be imprudent to leap head first into a system that would change the texture of markets and the economy in such basic ways. People might not know how to assess their possessions accurately. How would they feel if they lost something important to them because they underpriced it out of igno-

rance? Would people be willing to attach prices to items they don't really want to sell, or rely on technology to do that for them? Wouldn't a COST disrupt daily life if items you own are suddenly taken from you, even if you receive a bundle of money at the same time?

Certain aspects of a COST are familiar. Most people already take the risk of forced sales without even realizing it. That's what could happen to your house or car if you miss your mortgage or car loan payments. You might wake up to find your car has been repossessed and is gone. Renting carries with it the risk that you will be evicted if you miss a number of rental payments or cannot afford your rent after it has been increased by the landlord. People "self-assess" valuations in difficult circumstances whenever they buy insurance and are required, even if only implicitly, to decide how much money they would need if their house or car is destroyed. The sharing economy—exemplified by Zipcar, Uber, and Airbnb—is helping to accustom us to temporary "possessing" rather than "owning," and simultaneously consuming and selling (and hence setting a price on) the same product. However, a COST would change life radically, which is why it should be tested in limited public and commercial markets before being applied more broadly.

The most promising near-term application of a COST is to assets currently owned by governments and that have been or may soon be either sold off or leased to private citizens or businesses. Rather than sell off these assets permanently or lease them for fixed terms, governments could partially sell them under a license that included a COST-based license fee. The government would start by auctioning off the asset. The winning bidder would self-assess a price and pay a tax on that price. Anyone else could subsequently force a sale of the asset at the stated price.

Consider the radio spectrum. Since the early 1990s, long-term spectrum licenses have been auctioned off by governments around the world.⁵⁸ But the monopoly problem has emerged in secondary markets: the companies that acquired the licenses at auction have been reluctant to sell them to higher-valued users. New uses often require a repackaging of the licenses, creating holdout problems like those that inhibit the building of railroads or shopping malls. Huge swaths of spectrum now held by broadcast television stations with low viewership could be put to better use for wireless Internet.

In response, the US Congress passed legislation authorizing the FCC to buy back and repackage large parts of the spectrum, a process that has taken eight years. During that time the United States has fallen behind technological leaders like Israel, Korea, and Taiwan. In joint work with Milgrom and Zhang, one of us has recently argued that redesigning spectrum licenses to include a COST-based license fee would solve this problem and could be implemented in a variety of ways consistent with existing FCC rules.⁵⁹ This approach, which they call “depreciating licenses,” would address many recent complaints about license design for the newly available 3.5 GHz bands of the spectrum; their small geographic scope and short durations under current plans were intended to maximize flexibility but may undermine investment incentives. A COST-based design would further enhance flexibility but provide greater stability for investment, helping to satisfy both the demands of high-tech companies who prize innovation and flexibility and those of telecommunications companies who need to make large investments to deploy 5G wireless technologies.

Assigning Internet domain names and addresses is another natural application for such licenses. At present, a person who

purchases a domain name has a right to hang on to it indefinitely, as long as he pays an annual fee and is not blatantly violating someone else's trademark. This creates dramatic distortions to allocations during their terms, with cybersquatters sitting on domain names in a sort of ransom scheme. They are betting that someone who has a pressing reason for using the name will someday offer a lot of money for it.⁶⁰ For example, during the 2016 presidential cycle in the United States, clicking on the domain address <http://www.clintonkaine.com> led to an empty page; a cybersquatter had held out for a price the Clinton-Kaine campaign was unwilling to pay. The owner ended up selling instead to a group affiliated with the rival campaign.⁶¹ A COST could help address holdout in this and other forms of intellectual property, such as those created by patent trolls who buy up patents and refuse to sell them to technology companies except at exorbitant prices that many companies refuse to pay.⁶²

A COST would be useful for handling many other public assets. For example, ranchers lease grazing rights from the government, which often doesn't know how to price those rights. A COST, in which ranchers would effectively "buy" grazing rights from each other at self-assessed prices, would work more smoothly. A COST could also be used for leases on mineral, fishery, farming, and other natural resource leases, which are frequently sold off at arbitrary prices.

A True Market Economy

These experiments will provide increased economic value, but if eventually a COST is applied broadly throughout the economy, improvements will be much more dramatic. As we noted above, the economy underperforms by as much as 25% an-

nally because of the misallocation of resources to low-productivity firms. A fully implemented COST could increase social wealth by trillions of dollars every year.

Moreover, a COST would raise substantial revenue. At the rate of roughly 7% annually that we imagine being near-optimal, a COST would raise roughly 20% of national income. About half of that money would suffice to eliminate all existing taxes on capital, corporations, property, and inheritance, which economists agree are highly inefficient; to encourage investment in the way we described above; and to wipe out the budget deficit and significantly reduce debt, further stimulating investment.

The other half of COST revenue would be roughly \$5,300 per person in the United States under present capital valuations and almost certainly would skyrocket under our proposal because of the more efficient allocation of assets, the revelation of capital income hidden at present, and the growth of the economy our proposal would ignite. These funds could be used to finance government services, public goods (such as investment in basic research), or social welfare programs for the poor. One could also imagine a system in which the revenue generated by the COST is simply sent back to the population on a per capita basis as a social dividend— akin to the universal basic income, which is currently being touted by leading commentators.⁶³ In this form, a COST would also serve as a much more effective way to collect a tax on wealth, which some economists have recently advocated for other reasons, because it has a built-in self-enforcement mechanism in the form of a buyer's right to force a sale. This would avoid establishing an elaborate and ineffectual government monitoring apparatus as exists for other attempts to collect taxes on capital income and wealth.⁶⁴

To envision the egalitarian potential of a COST, consider how it would affect a typical American family. Let's assume that half the revenue the COST generates is used to reduce other taxes on capital and thus has no effect on asset values, while the other half is sent back to the population on a per capita basis. According to the US Census, the median household of four headed by someone between the ages 45 and 54 has about \$60,000 of home equity and \$25,000 of other assets. With a 7% COST, the value of these assets would fall by roughly a third, to \$40,000 and \$14,000, respectively. At these reduced values, a 3% COST net of reductions in other (existing) capital taxes would be roughly \$1,400 a year, and the family would receive a social dividend of more than \$20,000 annually. Thus, even if family members were so deeply attached to their property to the extent that they valued it at twice the market price, they would still benefit on net by \$17,000 annually from the COST. A median household in the top 20% of the income distribution in the same age range has \$650,000 of net worth. A similar calculation yields that such a family would pay roughly \$14,000 in COST and thus would still benefit by \$6,000 a year because of the \$20,000 social dividend. The rich would be hardest hit. The average wealth of the top 1% of households is \$14 million. Each household in this group would pay a COST of about \$280,000 annually.

For families in weak financial situations, such as those with negative equity in their homes or who are burdened with credit card or student debt, a COST would actually be a subsidy. Because the liability would be worth more than the asset, the individual would receive a net tax refund on her private assets, even before the social dividend. Effectively, a third of their net debt would be immediately forgiven.

Consider a family that owns a house worth \$300,000 and with a mortgage of \$420,000. As noted above, the capitalized

value of a 7% COST payment would reduce the value of assets, as well as liabilities, by about a third, accounting for future tax payments for the assets and future subsidies associated with liabilities. Thus, the value of the home would fall to \$200,000 and the mortgage to \$280,000.⁶⁵ The family would then receive a subsidy of 3% (again, relative to existing taxes) of its negative net worth of \$80,000 (\$2,400) annually to defray the cost of servicing the mortgage in addition to the \$20,000 annual social dividend they receive.

Adding these benefits implies a significant redistribution of income from a COST. Estimates based on current measured returns on capital imply that capital's share of income in the United States is 30%, and that 40% of this wealth is held by the top 1%.⁶⁶ As previously noted, our proposal would redistribute roughly one-third of the return on capital and thus would reduce the income share of the top 1% by 4 percentage points, or roughly half the difference between recent levels and the low points in the 1970s.

The most persistent distributive conflict in capitalist economies arises from the concentration of wealth. Because most of the returns to capital flow to the very wealthy, a broad distinction exists between those who live primarily off the returns to capital and those who live off their labor. A COST would make most of the return to capital flow to the public, making it more equally distributed than wages. The COST would thus end the conflict between capital and labor, making differences in labor income the leading source of inequality.

Optimal Buddhism and a Just Commonwealth

A COST might change our relationship to property. You may treasure a certain pen because it reminds you of the person who gave it to you, or you might love your car because you

have gone on adventures in it. You know there is always a chance that you will lose a pen, or your car will be destroyed in an accident. We tolerate these risks all the time, and we manage them by taking precautions. With a COST, if you want to minimize the risk of loss through a forced sale, you can easily do so—by setting a high price. This means that people must pay a tax on things in proportion to how much they value them. And while we doubt that the tax is in practice going to be very high—how much will a stranger pay for a used pen, or an old car?—the notion of taxing things that we invest with personal value can strike people as offensive.

Our design of the COST deals with items that have such great personal meaning that it never makes sense to sell them. When the natural turnover rate of an item is low, the tax rate is also low, so that the “price” (in the form of tax payment) to protect it from potential sales is also low. Family heirlooms are almost always valued more by their possessors than by strangers, so in practice it would not cost much to protect them. Or it may well make sense to exclude family heirlooms and other personal items, within reason (to avoid creating a tax haven), from the COST system altogether. The aggregate value of these things is just not very large, so the economic impact of incorporating them into the COST system would also not be large. In the United States, all states have laws known as exemption statutes that identify personal items that cannot be taken by creditors when a person files for bankruptcy (clothes, Bibles, a limited amount of furniture, even guns). The “heirloom” problem is as much a problem in the regular system of private property as in the COST system, and our legal system makes accommodations to handle it. The items listed in these statutes might be excluded from the COST as well.

The COST could also make us think about property in a different and healthier way. A COST taxes objects, not per-

sonal relationships. Wouldn't it be better if people invested less of their emotional energy in objects and more in their personal relationships? The tradition of car-loving in countries like the United States and Germany has been eroding as fewer people develop mechanical skills and car companies now manufacture automobiles so that they can be repaired only by professionals. Thus, the process by which an owner develops an attachment to an object by incorporating her labor into it has been undermined. People have also quickly made the transition to services like Zipcar and Uber. Now, rather than own a car, one either rents it (Zipcar) or rents a ride (Uber). RelayRides enables the owner of a car to rent it while he is not using it, almost as if the COST were already in place. One cannot develop an attachment to a car that one uses for a few hours, and no one seems the worse for this. Fetishistic attachment to a privately owned automobile—an extremely expensive durable asset, which even enthusiasts seldom drive for more than an hour or two per day—is, thankfully, becoming a thing of the past. Increasing economic evidence suggests that excessive attachment to homes is inhibiting employment and dynamism in the US economy, a problem a COST would greatly reduce.⁶⁷

Young people in wealthy countries increasingly invest their time and energy in having experiences (taking a special trip, eating out) rather than in amassing possessions. Because a COST both penalizes excessive attachment to objects and lowers their prices, it would give people, especially lower-income people, greater access to diverse goods than they enjoy today—just as a public museum makes fine art available to the masses by buying it up (albeit at considerable expense) from private collections where it sat unobserved, and accessible to only a handful of wealthy people, most of the time. Opportunity and dynamism would flourish, while obsessions with material possessions would diminish.

It is hardly a new notion that people invest unhealthy amounts of time and resources collecting things that they hardly ever use and don't really need. Every major religion (Buddhism especially, in popular imagination) and quite a few secular philosophies encourage people to put their energies elsewhere. Common intuition and psychological research tell us that the accumulation of goods beyond a basic threshold does not lead to a happier life and that experiences are more fulfilling than possessions.⁶⁸ Even economists have gotten into the act. And not just Karl Marx, who railed against "commodity fetishism." Since Thorstein Veblen's 1899 *Theory of the Leisure Class*—which argued that people often buy goods for "conspicuous consumption" (to show that they are wealthier than other people), and not because these goods directly contribute to their well-being—a dissident strain of economics has emphasized the pathologies of private property in the market system.⁶⁹

A COST would also encourage attachment to communities and civic engagement, which have sometimes been damaged by capitalism. A COST would not just broadly distribute present wealth, but also the increases in wealth that economic progress creates. As the economy grows, the revenues generated by the COST would be redistributed back to citizens, just as employees who own stock in their employers benefit when the employer's profits increase. From Friedrich Engels to George W. Bush, commentators and politicians have argued that owning a share in the national capital stock, usually through the stock market or a home, could help stabilize politics and enhance support for policies that raise the value of the capital stock, a position supported by some research.⁷⁰

A world in which everyone benefits from the prosperity of others would likely foster higher social trust, a factor essential

to the smooth operation of the market economy and political cooperation.⁷¹ The sharing of wealth would be in accord with many commonsense notions of justice. Wealth is rarely created solely by the actions of the people who are paid for it under capitalism. They normally benefit from the help of friends, colleagues, neighbors, teachers, and many other people who are not fully compensated for their contributions. A COST would better proportion the distribution of wealth to the labor that created it.

A social policy based on a COST would strengthen support among workers for our political system, help ease the flow of commerce among strangers, and provide citizens with a sense of having been justly rewarded for their social contributions. The COST would create a Radical Market in property, one that emphasized use over ownership. It would be a Radical Market because the root market principles of exchange and competition would be extended far beyond their current institutional embodiment; because the new system would transform economic relations; and because human well-being would be greatly advanced through the reduction of inequality and the advance of prosperity.