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Is our financial system serving us well?

In 1772, at the height of Scotland's worst banking crisis in two generations, David Hume wrote to his close friend Adam Smith. After recounting the bank closures, industrial bankruptcies, spreading unemployment, and even growing "Suspicion" of the soundness of the Bank of England, Hume asked Smith, "Do these Events any-wise affect your Theory?"

They certainly did. Smith's analysis of the role of banking in *The Wealth of Nations*, published just four years later, clearly reflected the lessons he took away from the 1772 crisis. In contrast to the doctrinaire antiregulatory ideology with which he is usually associated by today's economists, Smith favored such measures as usury laws – specifically, no lending at interest rates above 5 percent – and restrictions on the obligations that banks could issue.[1]

Large-scale and unusual events, especially when they bring unwanted consequences, provide an opportunity to ask basic questions. Even if no one is at fault for causing an event (an earthquake, for example), it is only natural to ask what might be done differently to mitigate the consequences should a similar catastrophe recur. When disaster is the result of human action, the question at issue is not merely about containment; it is also a question of prevention. It is no surprise, therefore, that the recent financial crisis has prompted a flood of proposals to reform the regulation of financial markets and financial institutions in the United States and elsewhere. The Dodd-Frank Wall Street Reform and Consumer Protection Act, which Congress passed in July, made some of them into U.S. law.

What is missing from this conversation, however, is any significant probing of the more fundamental aspects of how well our financial system is serving us, and at what cost. To date, the discussion has focused on the specific symptoms of this particular episode of financial malfunction: the losses incurred by investors, the need for taxpayer-financed bailouts, the disruptions triggered by Lehman Brothers' failure, and the like. Most people are aware, too, that the associated loss of jobs, incomes, and profits was a result of what went wrong in the financial sphere. But no one seems to be relating these costly manifestations to the role that financial markets should play in our economy in the first place or asking how well the markets are performing that role.

The crucial function of the financial markets in an economy like that of the

United States is to allocate scarce investment resources. Typically, about one-fifth of what the U.S. economy produces (in recent years the fraction has been somewhat smaller) is devoted to investment of all kinds: factories and machinery that allow our firms to produce physical goods, office buildings and computers to house and equip a vast service sector, homes for a population of more than three hundred million, and inventories on the shelves of supermarkets and clothing stores. No one simply decrees that one-fifth of our nation's total output is the ideal share to invest for all these purposes. That outcome is the result of countless decisions made every day by individual businesses and homeowners as they interact with the banks, insurance companies, stock buyers, mortgage lenders, and other providers of the funds they need to carry out their desired investment programs. Similarly, no central agency dictates that such-and-such a percentage of the overall investment should go into the computer industry, some percentage into opening new restaurants, and another percentage into putting up new apartment buildings. That allocation is also the result of countless individual-level market interactions.

What guides these interactions and, therefore, what determines both the total amount of investment our economy undertakes and the allocation of this total among different potential applications is the combination of signals and incentives created by the prices set in the financial markets. Is the price of computer company stocks high? Then firms in that industry have both the incentive and the ability to issue more new shares and use the funds for further expansion. Is the interest rate on mortgages low? Then home buyers have the incentive and the ability to take out more loans and buy more houses. Conversely, when the price of GM and Chrysler stock fell to near zero, and the interest rates on their bonds rose to record highs, in the months before those companies declared bankruptcy, these firms had neither the incentive nor the ability to expand; without the government's rescue they would have contracted – maybe all the way to nonexistence.

To be sure, modern financial institutions perform other important functions as well. They provide checking accounts and other elements of the economy's payments mechanism, vehicles for families to keep their rainy-day funds and to save for retirement, and group and individual life insurance, for example. But while those services are essential to have, they are not essential to the make-up of a free-enterprise economy. In fact, there are numerous models for providing them as a public utility.

By contrast, the function of allocating investment capital – determining the economy's aggregate amount invested, as well as the allocation of that investment across different industries, among different firms, between business installations and homebuilding – *is* essential to the make-up of a free-enterprise economy. This is what our financial system is supposed to be doing. We are therefore entitled to ask how well or poorly it is performing this role, and at what cost.

By now the main outlines of the recent financial crisis and the economic downturn that it caused are well known. Beginning in the late 1990s, and then more so once the relatively mild 2001 recession had ended, house prices rose rapidly. Increasingly lax mortgage underwriting standards – high loan-to-value ratios, back-loaded repayment schemes, little if any documentation – were both a cause and a consequence of the rise in prices. Less onerous lending conditions spurred demand for houses while the rising value

of the underlying collateral lessened concerns for borrowers' creditworthiness. Securitization of a large fraction of the newly issued loans further diminished the originators' interest in borrowers' integrity. In turn, investors that purchased the created securities either deluded themselves (for example, by counting on rising housing prices to nullify the implications of borrowers' lack of creditworthiness) or were misled by rating agencies that carried out shoddy analysis while also facing serious conflicts of interest. Importantly, many of the investors that bought these ill-supported securities were non-U.S. entities.

Three additional developments contributed to the vulnerability of the U.S. financial system. First, within the banking system, the distinction between banking and trading had for the most part disappeared. This development was not simply a consequence of the formal repeal of the Glass-Steagall Act in 1999; the Depression-era separation between commercial banking and investment banking had largely eroded long before. Most of the big commercial banks, seeking to raise their own capital in speculative securities markets, increasingly relied on trading profits to enhance their returns, in effect turning themselves into hedge funds (otherwise they would have had little reason to retain, on their own balance sheets, shares of the mortgage-backed securities that they earned a fee from packaging and selling). Meanwhile, most of the big investment banks, which already had significant trading operations, increasingly funded themselves by rolling over short-term obligations.

Second, the pressure to boost the returns they provided to their shareowners led many of the largest institutions to increase their leverage – the amount of assets they held compared to the base of invested capital that supported those assets – to record levels. Leverage of twelve- or fifteen-to-one was not uncommon among the big U.S. commercial banks, and many investment banks had ratios of twenty-five- or even thirty-to-one. As a result, these firms had little cushion with which to absorb whatever losses they incurred on their trading operations.

Third, the ongoing development of the market for financial derivatives – instruments based on the value of other financial instruments, which in many cases themselves depended on the value of still other financial instruments – moved beyond the role of enabling financial institutions and other investors to hedge their existing risk exposures; instead, the market provided vehicles for investors to take on new, unrelated risks. As a result, many of the risks to which investors of all kinds became exposed bore little or no connection to fluctuations in any component of the economy's actual wealth, such as housing prices or the value of companies issuing shares. More and more, the risks borne were merely one side or the other of zero-sum bets.

In light of these vulnerabilities, it is not surprising that some catalyst would set off a widespread crisis. The turnaround in housing prices – declines at nearly 20 percent per annum on average across the country, and far more in some states and in many local residential markets – provided that catalyst. (Because what matters for any individual mortgage is the specific house collateralizing that one loan, greater dispersion of house-price changes around a given average rate of decline exacerbates the frequency of default.) Delinquencies and defaults increased rapidly, especially in the market for "subprime" mortgages. The value of securities backed by packages of these mortgages declined. Leveraged derivative

claims against these securities declined even more. The investors that held these instruments took losses. Highly leveraged financial institutions saw their capital erode, in many cases to the point of probable failure in the absence of government assistance. Banks stopped lending; the market in which many companies regularly issued commercial paper shut down. Unable to borrow, businesses and families cut their spending.

Public discussion of the economic fallout from these unfortunate events has focused on four components: the losses that homeowners suffered on their houses, the losses booked by investors in mortgages and mortgage-backed securities, the recession that the financial crisis triggered, and the money put up by government on behalf of the taxpayers. All are important. From year-end 2006 to year-end 2009, U.S. households saw the value of their real estate fall from $23 trillion to $17 trillion (and the value of their holdings of corporate stock, including mutual funds, fall from $14 trillion to $12 trillion) – in all, a 13 percent reduction in their total net worth. Banks and other institutional investors suffered more than $4 trillion in losses on their holdings of mortgages and mortgage-backed securities alone (roughly half of that total outside the United States), not to mention another $6 trillion in losses from declining stock prices and further losses that they have not yet tabulated on their non-mortgage loans. The recession held the expansion of total economic output in the United States to just 0.4 percent in 2008, followed by a 2.4 percent *decline* in 2009; compared to a more normal economic trajectory with even modest growth of 2.5 percent per annum, the loss of production – and therefore of incomes and profits – was $1.3 trillion for just those two years. The U.S. Treasury and the Federal Reserve System together put nearly $2 trillion into either rescuing individual institutions ($182 billion for just one firm, insurance company AIG) or buying private-sector obligations in order to support troubled markets. With some luck, the government will get most of that money back when the loans are repaid and it sells off the assets that it bought; any remaining losses will come out of taxpayers' pockets.

Important though these losses are, however, what this discussion has failed to address is the misallocation of the economy's resources that led to the crisis in the first place. The lax mortgage underwriting standards and unsustainable expectations for ever-increasing housing prices encouraged interest rates on many forms of mortgage lending to be unrealistically low. Once housing prices started to decline, and borrowers ran late with their payments and even began to default on their loans, the interest rates on those loans rose. This upward adjustment of mortgage interest rates, and the decline in the prices of mortgage-backed securities that produced the losses suffered by banks and other investors, were, in effect, the same phenomenon. (For an instrument such as a bond that promises a fixed annual payment, whether it is backed by mortgages or not, the price and the effective interest rate vary inversely. If a security promises to pay $60 per year, the rate of return earned by the investor who buys it for $1,000 is 6 percent; if the price falls to $800, the effective interest rate for a buyer at that price rises to 7.5 percent.)

But the problem is not that the interest rates on these loans rose so much as that they were too low to begin with. The prices set in financial markets provide signals and incentives for investment behavior whether or not they are right, and even whether or not they are sensible. In

this case, because mortgage rates were so low, and mortgage loans so accessible even to noncreditworthy borrowers, Americans bought and built far more houses than they otherwise would have. On average, during the 1980s and 1990s, the U.S. construction industry built 1.4 million new homes per year. Although the rate of new family formation remained roughly unchanged, by 2003 the industry was building 1.8 million new houses; in 2004, 2 million; in 2005, 2.1 million; in the first half of 2006, still 2 million at an annual rate.

Building all these extra houses used resources in two parallel senses. First, the physical activity of constructing them absorbed labor and materials, both of which are expensive. (Despite the industry's depressed state, last year weekly earnings in construction averaged $852 versus $726 in manufacturing and only $389 for retail jobs.) Second, like any investment, homebuilding absorbs saving. If the prevailing low interest rates on mortgages had not steered so much labor and material and so much of the economy's scarce saving into homebuilding, the United States could have deployed those resources for some other purpose – new manufacturing plants, perhaps, or new gasoline refineries, airports, or school buildings. Furthermore, the allocation of too many resources to homebuilding had consequences beyond the forgone uses to which they could have been put at the time. Once the turnaround came, the presence of all those extra houses on the market pushed housing prices down lower than they otherwise would have fallen. It also depressed new home construction – to only five hundred thousand in 2009 – with a further consequent loss of jobs and lower sales of associated products such as furniture and appliances.

This misallocation of resources, because of what in retrospect were clearly incorrect prices set in financial markets, is hardly unique to the recent housing bubble. In the stock market boom of the late 1990s – which lifted the Standard and Poor's 500 index from 542 on average in 1995 to a high of 1,553 in August 2000 and the Nasdaq index from 925 to 5,132 – one of the hottest areas was telecommunications. This surge in stock prices did not apply just to highly speculative new companies but to large, well-established ones, too. AT&T stock, for example, rose from 21 at the beginning of 1995 to 60 in 2000. Not surprisingly, once the market turned, those same stocks suffered some of the largest declines. By late 2002, AT&T had returned to 21. As of mid-2010, it remained at 25; the anomaly was the run up to 60, not the subsequent fall.

The ensuing public discussion primarily focused on the losses that investors in these stocks had incurred. But in that episode as well, no less than in the recent housing boom, losses on financial assets were a reflection of wasted resources and misallocated saving. In retrospect, $60 per share was not the right price for AT&T; other telecom stock prices were too high as well. But the fact that the stock prices were too high meant that the cost of capital to the firms issuing the shares was too low. Those firms therefore had the incentive and the ability to issue more shares than they should have. And they used the proceeds to expand more than they should have: in the 1990s, telecom firms laid hundreds of millions of miles of fiber-optic cable that have never been lit and probably never will be.

As with any device that performs a useful function – a car, for example, or a dishwasher or clothes dryer – the performance of the mechanism that allocates

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our economy's investment capital is best assessed against some notion of what it costs. Everyone understands that a Chevy Aveo provides neither the pickup nor the comfort, not to mention the styling, of a Ferrari. But few people are willing to pay what it costs to buy a Ferrari and then keep it running. Cost considered, the cheaper option suits many people very well.

In the case of a mechanism for allocating investment capital – where the whole point is that the capital, once allocated, be productive in the usual economic sense – there is a built-in benchmark against which to compare the associated cost: the return on the invested capital itself. If a new fertilizer or irrigation system offers a farmer the prospect of a higher crop yield, it is only common sense for the farmer to compare the economic return from the enhanced harvest to the cost of achieving it. If what it costs to buy, transport, and spread the fertilizer exceeds the sale price of the additional crops it helps to produce, then it's a poor investment for the farmer – despite the enhanced technical efficiency. A financial system that allocates investment capital is no different. Even if it allocates the economy's capital more efficiently than some alternative, if it costs more to run than what the superior allocation produces, it's only so much overpriced manure.

In recent decades, the U.S. economy's mechanism for allocating its capital has been getting a lot more expensive, even compared to the total returns earned on the capital being allocated. From the 1950s through the 1980s, profits earned by financial firms (not counting insurance companies and firms in the real estate business) represented 10 percent of all profits earned in the U.S. economy – hardly an excessive charge as long as this capital allocation system delivered modest benefits. In the 1990s, however, financial firms' share of total profits rose to 22 percent. During the years 2001 to 2005 – that is, until just before the surge in borrowing, securitization, and derivatives finance began to transform itself into a world-class crisis – these firms' share of all U.S. profits reached 34 percent.

Although this astonishing drain on the profits earned by U.S. business received a fair amount of attention at the time, it is far from the total cost of running the economy's financial system. That cost also includes the salaries financial firms pay to their workforce and the rents they pay for their office space (including the rental equivalent for firms that own their own buildings), as well as more mundane elements – the associated utility bills, travel tickets, and advertising budgets, for instance.

The large salaries and bonuses paid to U.S. financial executives have recently attracted ample public attention, especially once so many major firms found themselves floundering during the crisis. But the phenomenon extends beyond the outsized incomes of a few individuals at the top, which arouse public anger but count for little in the aggregate. Like its share of economy-wide profits earned, the finance industry's share of all U.S. wages and salaries paid has also been rising in recent decades. Fifty years ago it was 3 percent; more recently it has been 7 percent. The standard argument is that high salaries (including the eight-figure bonuses for those at the top) are necessary to attract the talent that enables these firms to do their job. If this argument is true, it means that the economy's capital allocation mechanism is inherently all the more expensive to operate. The same principle applies to the financial sector's other expenses. It may be true that without lavishly furnished offices in choice locations, or lots of prime-time television advertis-

ing, the capital allocation mechanism would not be able to serve its function. If so, the necessary cost of running it is that much greater.

Here as well, the basic principle of a market economy holds: expenses paid are the counterpart of resources used. The fact that financial firms pay more than other companies do (not to mention the government and the nonprofit sector) means that, on average, they attract the most talented and energetic workers. Workers in the financial sector have long been more likely to have a college education than those elsewhere in the U.S. economy. In pace with the widening wage differentials, the extent to which financial-sector workers are more likely to be college-educated has more than tripled over the last thirty years. The changing pattern is easily visible in our colleges and universities. At Harvard (where I teach), more than one-fourth of the graduates in recent classes have gone to work at investment banks, hedge funds, private equity firms, and the like.

At the individual level, no one can blame any of these graduates. They are responding to the incentives presented to them. Furthermore, these incentives are not merely a matter of how the for-profit economy works. These young people are observant enough to understand that despite their university presidents' pious pronouncements about the value of humanitarian and other less-well-paid careers, even their universities will shower them with attention, and in time be more eager to admit their own children, if they earn enough to become sizable donors. That so many top students, acting individually, respond to such incentives can only be expected.

The question, rather, is whether *in the aggregate* the direction of such a large fraction of our most skilled, best educated, and most highly motivated young citizens to the financial sector constitutes the best use of what is surely one of our nation's most valuable resources. These young people could of course be doing something else. If they are not really needed in the financial firms that employ so many of them – if what they do there actually adds little or no economic value – then something is seriously wrong with yet another market that allocates our economy's resources (in particular, the labor market). But if the financial sector *is* the best place to use their talents and energies, that need is yet another part of what makes our economy's capital allocation mechanism so expensive to run.

What makes these matters so perplexing, and potentially of such huge practical importance, is that the respective cost and efficiency trends in capital allocation in the United States seem to be moving in opposite directions. Over a long enough period of time – since World War II, say, or even longer – the U.S. economy's growth and the rising living standards this growth has brought certainly suggest that a dynamic enough system exists. The important role played by start-up companies in that growth is further evidence that whatever mechanism has been allocating the economy's capital must have been doing a pretty good job. Apple, Microsoft, and Google are only a few of the new entrants that over the years have not only generated substantial profits for their owners, and incomes for their employees, but also changed how the majority of Americans go about their daily activities.

More recent trends have been less reassuring, however. At the same time that the financial sector has been growing more expensive to operate – absorbing a larger fraction of the economy's total profits, claiming a larger share of the most talented workers, and so on –

the economy's performance has been disappointing. Even apart from the recent housing bubble and all the economic costs associated with its demise (costs that must be subtracted from the economic gains the financial sector delivers), there is less to cheer about in the gains accruing to capital investment.

In the first quarter-century following the restoration of a post–World War II peacetime economy (1948 to 1973), the total output of U.S. nonfarm businesses increased, on average, 2.8 percent per annum faster than the growth of labor input. During the next twenty years (1973 to 1993), productivity growth in the nonfarm business sector slowed to just 1.4 percent. Developments in the mid-1990s stirred hope that the spread of electronic technology had brought a new era of rapid productivity growth, but, more recently, the gains have been only mediocre. For 1993 to 2007 overall – that is, even omitting the effects of the recession brought on by the financial crisis – productivity growth averaged 2.3 percent. Although the correspondence is far from exact, over time, movements in productivity roughly correspond to movements in wages and, therefore, in living standards. Allowing for price inflation, the average wage in the economy's nonfarm business sector increased by 2.7 percent per annum during 1948 to 1973 but only 0.8 percent during 1973 to 1993 and 1.4 percent during 1993 to 2007.

No one believes that the performance of the economy's capital allocation mechanism is responsible for all of this variation. Indeed, a major part of the problem is that no one knows what part of this variation to attribute to the performance of the financial sector. Shifting trends in technology, in the education and training of U.S. workers, in the regulation of business, and in tax and other government policies affecting the overall volume of investment: all presumably play an important role. So, too, do influences from abroad, especially the often wide fluctuation in the price of oil and other commodities (recall the years of chaos following the OPEC cartel's 1973 and 1979 price hikes) and the intensity of competition from foreign producers (such as Japan in the 1970s and China since the early 1990s).

But our inability to know what part of the deterioration over time in the growth of productivity and living standards to attribute to the performance of the U.S. economy's capital allocation mechanism does not imply that the capital allocation mechanism is doing its job just as well as it always has. It does not mean that all of the deterioration in final outcomes can be attributed to other causes. Not knowing means not knowing.

To determine the adequacy of our current financial system, the first task is to gain a well-grounded quantitative understanding of how successfully the financial sector is allocating our economy's investment capital and how much that allocation of resources costs. The more straightforward task – although no one (to my knowledge) has done it – is to measure the all-in costs of running the capital allocation mechanism. Again, those costs include not just the profits earned and the wages and salaries paid but also the building rents and all other costs of doing business in the U.S. financial sector. (They exclude, however, costs associated with providing other services such as running the payments mechanism.) Just how large does this all-in cost bulk in relation to the total profitability of capital of all kinds invested in the U.S. economy? What fraction of the overall return to our invested capital are we paying for the mechanism that allocates it? Knowing the answer would be a useful

first step. The calculation would require time and painstaking effort. But, conceptually at least, the task is clear-cut. Someone – some part of the Commerce Department's statistical apparatus perhaps, or a team of university-based researchers – should be commissioned to provide an answer.

A somewhat more challenging task is to include in the overall cost estimate the risk of the occasional meltdowns to which our modern financial system exposes us. Imagine that we wanted to buy insurance against the kind of losses – not just losses of paper wealth but forgone output and therefore incomes and profit – that the recent financial crisis and its aftermath have entailed. How much would we be willing to pay for that insurance? Here, too, the quantitative assessment would require serious work, but the idea behind it is conceptually straightforward.

The most challenging assignment is to evaluate the performance side of the relationship: how well is the financial sector allocating our economy's investment capital? The challenges to this task are not just computational but conceptual. The chief problem is the absence of an obvious counterfactual: how well is the financial sector allocating our economy's capital *compared to what*? If we did not rely on our banks, other private lenders, and stock and bond markets to allocate our capital, with all the costs that they entail, how else would we perform this function?

In this respect, today's protracted debate over how to reform our creaky and increasingly accident-prone financial system is eerily reminiscent of Cold War–era laments about the politics of many European countries. In some countries, even supporters of the then-dominant center-right parties readily acknowledged these groups' sclerotic character, empty programs, and chronically corrupt office holders. But, so the argument went, what was the alternative? Only the Communists, and that was no alterative at all.

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In the wake of the recent financial crisis, everyone is now keenly aware of many of the shortcomings of our current financial system. But most people also recognize the important role that the financial system plays and the credit it can rightly claim for fostering the dynamic, technologically ever-evolving economy that we have so highly valued during much of our nation's past. What, then, is the alternative? Even within the highly limited confines of the recent debate over financial regulatory reform, the usual argument is that genuinely binding regulation would stifle the markets' ability to do their job, while softer attempts at new regulation could drive our vital institutions to relocate in more lightly policed jurisdictions offshore.

The more fundamental task of positing an alternative against which to assess how well our financial markets are allocating our economy's scarce capital is a far greater challenge. Surely no one wants to contemplate central planning. The technological stagnation and grand-scale dissipation of resources in economies that have tried that route are all too familiar. The resulting conceptual challenge is to measure the efficiency of our system for allocating investment capital in the absence of a clearly specified alternative. Suppose, for example, that the U.S. financial sector had been smaller, and in some specific ways. What if some specific market, or some financial instrument – say, mortgage-backed collateralized debt obligations (CDOs) – did not exist? What would have been different – other than the wages and salaries and rents saved? Would the total amount of capital we invested in our economy have been different? Would

the allocation of our capital among the multitude of competing uses, and therefore the performance of U.S. industry, have differed? The questions may seem relatively straightforward; the route to shedding quantitative light on them is highly complex.

Yet another way to approach this challenging assignment is historical comparison (pertaining to recent history, that is): how has the result of the U.S. economy's allocation of capital over, say, the most recent twenty years stacked up against that of the prior twenty-year period? We know that our capital allocation process has become much more expensive over the more recent period. But has it become more efficient, too? Might it even have become less efficient? Without the necessary research, the only honest answer is that no one knows.

There are, however, at least a few concrete steps we can take in the meanwhile, in the absence of new empirical measurement and new conceptual thinking that may provide sufficient basis for some more fundamental reassessment. First, we can move the liability for the damage banks and other institutions incur when their bets go wrong away from the taxpayer and onto the financial sector's account. Several recent proposals (alas, none included in the recently enacted financial reform legislation) have this aim. For example, one proposal would require financial firms to issue at least some fraction of the liabilities with which they fund themselves in a form that would automatically be converted into equity shares in the event of a specified erosion in the firm's capital position. Presumably, these liabilities would be more expensive for firms to issue than ordinary bonds or commercial paper. The cost difference would be a form of insurance premium; in effect, the issuing firm would be buying its "rescue insurance" from the market rather than receiving it free from taxpayers.

Critics of this proposal object that some firms might not be able to make ends meet if they had to finance themselves to some extent in this way. But this argument is just another way of saying that a firm would be unable to survive without the subsidy provided by taxpayers in the form of the rescue insurance that it now receives for free. In this case, perhaps the firm should not be in business. Alternatively, if the service the firm provides is sufficiently essential that the taxpayers *should* subsidize it, the fact that they are doing so bears potential implications for such matters as how the firm is allowed to price its product, how the firm and the taxpayers share the returns when its bets go right, and how the operators of a publicly subsidized activity are paid.

A second familiar proposal that does not hinge on any profound new thinking or even any new measurements of costs and benefits is to discourage some forms of trading activity that absorb large amounts of resources, and expose the economy to serious risks, but clearly serve little economic function. Perversely, at the same time that the costs of running the financial sector have mounted in recent years – costs that include the absorption of ever more of the economy's best young talent – the highest rewards, and therefore the greatest attraction for this scarce human resource, have been in some of the areas of financial activity that contribute the least. The leading example in recent years is high-speed trading that exploits computer-based technologies to earn profits from small and fleeting departures of securities prices from normal patterns.

Given the salaries and bonuses that firms in this line of business pay, it is no surprise that many of our country's best young mathematicians and physicists – graduates whose education has been paid for mostly by either government funds or university endowments – flock to them. Yet the activity of resolving micro-departures of securities prices within a nanosecond time frame adds little to the financial system's ability to perform any of its economic functions. At the same time, should one of these firms fall into major difficulty, the financial markets as a whole are then exposed to substantial risk. (In 1998, when Long-Term Capital Management was unable to meet its obligations, the Federal Reserve ended up organizing a consortium of banks to take over the firm; unlike in the more recent crisis, that rescue involved no direct use of taxpayer money.)

One strategy for reducing this form of economically useless activity, proposed years ago by Yale University economist James Tobin, would be to impose a tiny tax either on all transactions that are reversed within some stated period of time or, more simply, on all financial transactions. For an investor buying a stock in the hope that its price will move significantly higher over some period of time, the tax would be a trivial subtraction from the return to be earned. For a firm operating a computerized trading system that moves in and out of thousands of companies' shares many times per day, the tax would be a significant impediment. Further, the tax revenue could be used to reduce the tax rate on long-term capital gains (under current law, "long-term" means more than one year), thereby discouraging economically unproductive trading while at the same time decreasing the burden of taxation on the kind of investment activity that presumably does help allocate the economy's capital.

As is the case for many such regulations, a transactions tax of this form would be difficult to implement unless other countries followed suit; no one wants to see U.S. firms merely move offshore. But many other countries now face these same problems, and therefore have similar incentives to act. International coordination presents a challenge, but it need not be a decisive impediment.

Third, public policy could distinguish between losses incurred that are the financial counterpart of genuine losses of wealth to the economy and losses that are merely the losing side of zero-sum bets (in which for every dollar lost by one institution, someone else has won a dollar). This distinction could be reflected in financial firms' accounting and capital requirements, in how these firms are taxed, and even in deciding which ones to rescue in the event of a crisis.

The U.S. economy's total physical wealth, $57 trillion ($186,000 per person) at year-end 2008, consisted of the houses, apartment buildings, factories, office buildings, machines, inventories, computers, software, automobiles, and other durable goods owned by all families and businesses combined, as well as the offices, school buildings, hospitals, military installations, and the military and civilian equipment owned by government at all levels. Buildings, both private and government (excluding only the land value of government buildings), made up $44 trillion of this total. Equipment and software totaled $7 trillion, consumer durables of all kinds $5 trillion, and business inventories another $2 trillion. Intangible assets, such as the education that makes the U.S. workforce so productive, scientific patents, and other aspects of business know-how, are probably just as important but are nearly impossible to measure in dollar terms. The value of a corporation's intangible assets

is presumably built into its share price, but separating this component from the rest of what a firm is worth – including the factories and machines that it owns – is problematic not just practically but conceptually as well.

In addition, of course, U.S. households, businesses, and governments all own lots of financial instruments – as of year-end 2008, $140 trillion of them. The $16 trillion of corporate stock outstanding (down from $26 trillion just two years earlier) represented ownership of the underlying firms' assets and earnings and thus constituted a claim against one key component of the economy's overall wealth. But most other financial instruments traded in U.S. markets are not part of our overall wealth. The great majority are debt instruments, representing one party's asset but another's liability. They are wealth in the eyes of whoever owns them, but for the economy as a whole, the owner's wealth is offset by the debtor's obligation. Even bank deposits are not wealth for the economy as a whole: they are assets to the depositors, to be sure, but liabilities to the bank.

Following the events of the recent crisis, the most obvious example of a loss that constitutes a genuine loss of wealth to the economy is a fall in the price of an individual's house. When the value of a house falls, that is a loss of wealth to the economy as a whole. If the homeowner continues to service the mortgage (or owned the house free and clear), he or she bears the entire loss; the person's net worth is diminished by the full amount of the price decline. If the homeowner defaults on the loan, then someone else – either the bank that originally lent the money or some investor to which the bank has by now sold the loan – also bears part of the loss. If the government steps in and reimburses the bank or investor, then taxpayers bear part of it, too. Much of the debate surrounding the recent crisis is about how these losses should be divided among homeowners, banks, loan-purchasing investors, and the taxpayers. But however the losses are divided, someone must bear them, and the U.S. economy is poorer because of it.

By contrast, many of the largest losses that U.S. financial institutions sustained in the recent crisis had nothing to do with losses of wealth to the economy. They were merely the losing side of zero-sum bets, in which one side turned out to be right and the other wrong, and the amount the winner won was identical to what the loser lost. The most transparent example of this phenomenon, and the most important in the crisis, is credit default swaps.

A credit default swap is a contract that pays off if a designated company (neither of the two parties entering into the contract) defaults on its debt. When a bank that has lent money to a company uses a credit default swap to protect itself from the loss that it would incur if the company were to default on its loan, the loss that the other party to the contract incurs if the company defaults *is* a reflection of a loss of wealth to the economy – the creditors' share of the decline in the company's overall value. But in the case of most credit default swaps traded in the United States today, the volume outstanding far exceeds the amount of debt being insured. As of 2009, the value of credit swaps outstanding in U.S. markets was $36 trillion – three times the entire amount of bonds issued by all U.S. corporations combined and a far larger multiple of the indebtedness of the specific companies against which the swap contracts were written. The vast majority of these swaps, therefore, had nothing to do with how participants in the financial markets spread the risk of genuine losses of wealth. Instead, their purpose was

simply to create gains for the firms that bet correctly on how the contracts' prices would move, exactly matched by losses for whoever bet incorrectly on the other side.

The distinction between losses that reflect actual declines in the economy's wealth and what are instead merely the losing side of zero-sum bets has a number of potentially important policy implications. There is no reason that either financial accounting or the tax code need treat the two in the same way. (Individual taxpayers, for example, do not get the same deduction for their Las Vegas gambling losses that they do for losses on their stock portfolios.) The distinction should also matter for regulatory purposes. In particular, firms that might be eligible for taxpayer rescue if they get into trouble should be restricted in how much exposure to this kind of loss they are allowed to take on. Finally, once a financial institution does become impaired, whether it has done so as a result of sharing in genuine losses to the economy or merely from having chosen the losing side of a zero-sum bet should matter in deciding whether its situation merits a taxpayer bailout.

These measures, and others like them, would discourage the financial activities that seem least likely to contribute to the economic function we look to the financial sector to perform. They would also make the financial sector less costly to operate, in that some parts of what our financial firms currently do – parts that add little or no economic value – would be curtailed. Some of these measures would also help reduce the risk of events, like the current crisis, that impose costs in the form of either the incomes and profits lost during a resulting downturn or the burden imposed on taxpayers.

The more fundamental need, however, is to assess how well our financial system is performing its most basic function – allocating our scarce investment capital – and at what cost. Without that information, neither a defense of the status quo nor the consideration of potential alternatives has much basis.

ENDNOTES

[1] For an analysis of Smith's views, see Hugh Rockoff, "Upon Daedalian Wings of Paper Money: Adam Smith and the Crisis of 1772," NBER working paper no. 15594 (National Bureau of Economic Research, December 2009). I first became aware of Hume's letter to Smith by reading Rockoff's paper.