What Did We Learn from the Financial Crisis, the Great Recession, and the Pathetic Recovery?

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This paper comes in three parts. Part 1 reviews a few pertinent facts about the stunning economic events that have occurred in the United States (and elsewhere) since 2007. I choose these particular facts from among many for their relevance to the rest of the paper. The next two parts take up, first, some of the key lessons that we professional economists should have learned from the crisis and its aftermath and, second, some important lessons for teaching economics--especially but not exclusively macroeconomics. The two categories of lessons overlap a bit. But is it perhaps surprising how different they are.

1. A few pertinent facts

The Great Recession that began, according to NBER dating,[1] in the final month of 2007 was the worst in this nation's history since the 1930s.[2] The peak-to-trough decline in real GDP was 4¼ percent, compared to less than 2½ percent for the deep 1981-1982 recession. The corresponding peak-to-trough decline in payroll employment was even larger: a heart-rending 6.3 percent, versus just 3.1 percent in 1981-1982.

Furthermore, in sharp contrast to the notion that severe recessions are followed by sharp recoveries, the recovery that started in mid-2009 has been one of the most anemic on record, with an average compound growth rate (through 2014:3) of just 2.2 percent. It wasn't until 2011:2 that real GDP returned to its 2007:4 level, and it wasn't until May 2014 (the month of the AEA conference) that payroll employment re-attained its January 2008 peak. At the time of the conference, the CBO was estimating a GDP gap of 4.5 percent of real GDP in 2013. All in all, it's been a miserable performance.

But it would have been much worse had Congress, the US Treasury, and the Federal Reserve not taken a series of extraordinary actions.[3] After much prodding and a Munchian scream from the stock market in 2008, Congress held its collective nose and passed the much-reviled Troubled Assets Relief

[1] I prefer to date this recession from September 15, 2008, the day Lehman Brothers filed for bankruptcy protection. But I'm not a bureau.

[2] Official quarterly GDP data are not available for the 1930s, but from what we know, the 1937-1938 recession was far worse than the 2007-2009 recession. The latest recession is noticeably worse than any other post-World War II recession.

[3] Mark Zandi and I (2010) estimated that, without these actions, real GDP in 2011 would have been $1.8 trillion lower and the unemployment rate would have been 6.5 points higher.

Program (TARP), which was quickly labeled a "$700 billion bank bailout" although it was neither.[4] Months later, under the Obama administration, Congress passed a huge fiscal stimulus over almost unanimous Republican opposition.

The Federal Reserve put a lot of taxpayer money on the line to rescue Bear Stearns and AIG (but not Lehman Brothers). It created an alphabet soup of lending facilities to extend credit to banks and nonbanks alike in ways previously thought unimaginable—and to bring the moribund markets for commercial paper and mortgage-backed securities back to life. It expanded its balance sheet from under $1 trillion to about $4.5 trillion through a variety of programs known as "quantitative easing" (QE). And it led innovative, multi-agency "stress tests" of the nation's largest (and, in a few cases, shakiest) financial institutions in the spring of 2009.

The Treasury put Fannie Mae and Freddie Mac into conservatorship, lobbied for and administered the TARP and the GM and Chrysler bailouts, creatively (also legally?) used the Exchange Stabilization Fund to guarantee assets in money market mutual funds (which were experiencing runs), announced the bank stress tests, and more.[5] The FDIC took the amazing step of guaranteeing certain long-term *non-deposit* liabilities of banks *and nonbanks*.

This flurry of activity constituted the most interventionist set of economic policies in the U.S. since mobilization for total war in the 1940s. And it worked. There was no Great Depression 2.0; we did not have to nationalize the banks; once the dust settled, the government turned a sizable profit on its rescue operations.[6] Yet here is what I call the policy paradox:[7] Most if not all of these policies, though successful, have been vilified; they helped create an anti-government backlash with which we are still living.

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[4] Outstandings under TARP never topped about $425 billion, and the bank "bailout" consisted of loans that were and stock purchases of stock that turned a profit.

[5] One example: the mostly-unsuccessful and, I would argue, half-hearted attempts to reduce home mortgage foreclosures.

[6] It is frequently objected that this profit calculation is bogus because an *actuarial cost* should be recorded for possible losses to taxpayers. That's true, and CBO scored TARP that way originally. A January 2009 CBO estimate placed the average subsidy value at 26% of the (early) outlays. See CBO (2009). But the actions themselves prevented losses from occurring—or at least reduced the odds severely. Besides, had substantial taxpayer money been lost, do you think anyone would be arguing that we should count only the actuarial expectation of loss?

[7] See Blinder (2013), especially Chapter 13.

An *anti-government* backlash? Yes, but it was more particularly a backlash against the Democratic Party. Once Barack Obama became president, Republicans opposed virtually every anti-recession measure, attacked the Fed, and called for fiscal austerity. Then they swept to impressive electoral victories in the 2010 and 2014 midterm elections. (In between, President Obama somehow won reelection.) The Tea Party, in particular, had its origins in the famous "Rick Santelli rant" against the Obama administration's (weak) foreclosure mitigation program. The hated TARP, which was suggested by and passed under President George W. Bush, became, in the public eye, an Obama policy.[8]

One piece of this backlash was directed at Keynesian economics—not at any of the fancy stuff, but at the most elementary ideas. Keynesian teaching in textbooks since the 1940s has held that both monetary stimulus (lower interest rates, more money creation) and fiscal stimulus (tax cuts, government spending) *can* mitigate recessions. Many Keynesian economists, including me, go on to the normative position that central banks and governments *should* use monetary and fiscal policies for this purpose. And in this particular mega-recession, countries all over the world did stimulate their economies, to good effect.

Focusing on the United States, Congress enacted a modest-sized tax cut (about 1 percent of GDP) in 2008 and a massive stimulus package (about 5 percent of GDP) early in 2009. Roughly a third of that package was tax cuts. Some true Keynesians, such as my colleague Paul Krugman, criticized the 2009 stimulus as inadequate. But it was large by any historical standard.[9] Because of the stimulus and the huge recession, the federal fiscal deficit rocketed to about 10 percent of GDP—a shockingly large number for the USA. And largely because of that huge deficit, a severe political backlash against "deficit spending" (but perhaps not against tax cuts) developed and, more or less, took over the fiscal policy debate in the U.S.—which by 2010 was focused on reducing the deficit. By 2013, the fiscal drag was extreme, perhaps in the range of 2 percentage points of GDP growth.

[8] For example, a Pew (2010) poll in 2010 found that only 34% of Americans (34%) said the TARP was enacted under President Bush administration; 47% said it was passed under President Obama.
[9] Krugman's point is that the *need* was huge. The stimulus was not large enough to fill the entire GDP gap.

The Fed, for its part, pulled out all the stops. After some initial hesitancy, it dropped the federal funds rate to near zero by December 2008 and then turned to a variety of "unconventional" monetary policies like massive lending, quantitative easing, and explicit forward guidance. As noted, the size of the Fed's balance sheet rose by about a factor of five. Even more stunningly, banks' holdings of excess reserves—which, textbooks teach, are normally zero—skyrocketed from about zero when Lehman failed to about $800 billion soon thereafter and eventually to an astounding $2.6 trillion.

As all this was happening, critics began warning—even while the crisis was still white hot—that such hyper-expansionary monetary policies sowed the seeds of future inflation. Some of the criticisms reflected abysmal ignorance. For example, strident objectors to "big government" seemed just to discover that the Fed had enormous discretionary power to "create money"--and they didn't like that. But other criticisms, such as those from Allan Meltzer (2009) and John Taylor (2009), hardly reflected ignorance. These and other experts urged the Fed to cease and desist from its extraordinary efforts to fight the Great Recession.

All of this adds up to a *very big deal*--indeed, to several very big deals: earth-shattering economic events, stupendously large and sometimes innovative policy responses, and a severe backlash that altered the US political landscape for years to come. Hmm. Sounds a bit like the Great Depression and the New Deal. But while the Depression led to both a revolution in economic thinking and a host of huge institutional and legal changes (the FDIC, the SEC, Glass-Steagall...), the Great Recession has not.

It would be unfair (and inaccurate) to say that economics hasn't changed at all. There have been, for example, more papers on bank crises, credit constrictions, moral hazard, a shortage of safe assets, too big to fail, and the like. The insightful work of Hyman Minsky, long forgotten, has been remembered. On the policy and institutional front, we now have a Financial Stability Oversight Council to guard against systemic risk and the Consumer Financial Protection Board to protect consumers from financial chicanery—plus many other changes in the Dodd Frank Act of 2010. Yet this all seems like small beer compared to the intellectual ferment and policy revolution that followed 1929.

2. Some lessons for economists

Any manageable list of lessons that have been or should have been learned from the crisis and its aftermath must by necessity be both selective and subjective. Mine is no exception. For the sake of tidiness, I break it into two parts, starting with intellectual lessons for professional economists (this section), and then proceeding to lessons for teaching economics (Section 3).

Lesson # 1: It *can* happen here.

My macroeconomic childhood began with the New Frontier, and with assurances (in Paul Samuelson's textbook and elsewhere) that institutional changes like deposit insurance and automatic stabilizers, plus the new-found Keynesian wisdom, meant that nothing remotely close to the Great Depression would ever happen again. Recessions sure, but relatively mild and relatively brief ones—nothing like the Great Contraction (1929-1933). Would that it were so. The U.S. unemployment rate has reached or topped 10 percent twice since 1980; we narrowly escaped Great Depression 2.0 in 2008-2009; and several presumably "advanced" nations (e.g., Spain, Greece,...) have experienced depression-sized GDP contractions and increases in unemployment.

Other "impossible" things have also happened. Sharp housing bubbles and crashes were supposed to be only local-market events, but in the 2000s we suffered through a nationwide boom-bust cycle. Financial system meltdowns were supposed to happen only in less-developed countries with weak financial institutions and inadequate regulation, yet the US narrowly escaped experiencing one in 2008. Deep recessions are supposed to presage sharp recoveries, but that didn't happen after 2009. As noted earlier, the U.S. federal budget deficit reached heights (10 percent of GDP) reminiscent of Argentina. And, of course, the Federal Reserve not only hit the zero lower bound on nominal interest rates (in December 2008), but has been stuck there ever since.

Whatever "it" is, it seems to have happened here. Who can now say such things can't happen again?

Lesson # 2: Minsky was basically right.

For decades, equilibrium paradigms and, especially, rational expectations (RE) and the efficient markets hypothesis (EMH) dominated economists' thinking about financial markets. The burden of proof

was always on those who sought to deviate from this paradigm—or to regulate finance. ("Where's the market failure?") In some quarters, that burden was set so high that it could not possibly be overcome. The Great Moderation helped such Panglossian attitudes take root, though economists' predilections also played a role.

Hyman Minsky, who was relegated to a dark and almost uninhabited corner of the profession while he lived, held starkly different views. In his paradigm, financial fragility and recurring cycles of boom and bust, not equilibrium, are the central concepts. People forget the past and go to extremes. Market failures abound. The financial system is a zoo that needs zookeepers, lest the wilder animals escape and wreak havoc upon the rest of us.

I want to emphasize how profoundly anti-rational-expectations the Minsky view is. Under RE, which swept the profession in the 1970s, people don't forget. Cycles of asset price bubbles followed by crashes are not the norm; random walks don't behave that way. If such cycles were predictable (though perhaps not their exact timing), investors would use that information rationally—by, for example, reducing their exposure to risk as the boom proceeds. Such actions would dampen the amplitude of both bubbles and crashes.

The financial world envisioned by Minsky is different in every respect from the EMH paradigm. While the good times are rolling, people forget the bitter lessons of the past. ("This time is different.") So financial excesses grow more, not less, severe as the bubble progresses—creating greater vulnerability to shocks and more damage when the crash comes. The crash itself always seems to come as a surprise; and after it, sentiment swings radically in the other direction. People shun risk, pessimism rules, and the economy struggles.

Which of these two world views sounds more descriptive of what happened in the United States and elsewhere between, say, 2000 and 2010?

Lesson # 3: Reinhart-Rogoff recessions are worse than Keynesian recessions.

In a Keynesian recession, one or more components of spending (say, homebuilding) sags, perhaps because the Federal Reserve raises interest rates to fight inflation. Once inflation is back under control,

the Fed reverses course, interest rates fall, the housing market recovers, and the economy grows again. Even the monstrous recession of 1981-1982, which was called the Great Recession in its day, followed this pattern.

But what I now call a "Reinhart-Rogoff recession" seems to be a creature of a different sort.[10] In addition to being deeper and longer, Reinhart-Rogoff recessions destroy parts of the financial system and leave much of the rest reeling—and needing to deleverage. All of that stunts and delays recovery. Reinhart-Rogoff recessions also leave large buildups of debt--financial sector debt, corporate debt, household debt, and public debt—in their wake. Some private debts get extinguished by default—which, of course, reduces someone else's wealth and is another reason for a slow recovery.

Reinhart and Rogoff emphasize the sharp buildup of public debt from, e.g., the bank bailout and the recession, which may (depending on the country and the circumstances) drive up interest rates, limit or end the ability to use fiscal stimulus, turn fiscal policy procyclical, or even threaten sovereign default. If fiscal expansion is blocked by a large public debt, and monetary expansion is blocked by zero interest rates, recovery from a Reinhart-Rogoff recession (unlike a Keynesian recession) may require debt-reducing policies such as explicit debt forgiveness or implicit repudiation through inflation. Not your father's recovery policies.

Lesson # 4: Self-regulation is oxymoronic.

I mean this both literally and figuratively. "Self-regulating organization" is a legal term under U.S. law; it's a private (but presumably public-spirited) institution (e.g., FINRA, the Financial Industry Regulatory Authority) to which a government regulatory agency (e.g., the SEC) delegates authority for detailed rulemaking and enforcement.[11] At its best, such delegation brings great technical expertise and perhaps even insiders' knowledge to bear on issues. At its worst, SROs can resemble foxes guarding chicken coops. Where was FINRA, you might ask, when the Wall Street shenanigans of the mid-2000s

[10] Reinhart and Rogoff (2009) make no mention of Minsky, which seems odd--unless you've paid attention to modern macroeconomics.

[11] Notably, FINRA was created by a merger of two other SROs: the regulatory and enforcement arms of the NYSE and the NASD.

were going on? (Where, indeed, was the SEC?) I have long been skeptical of SROs due to their inherent conflicts of interest. That skepticism was deepened by the events leading up to the crisis.

But the oxymoron is also metaphoric. Alan Greenspan, as close to a *laissez-faire* Randian as you are ever likely to find in a key regulatory position, famously expressed "shocked disbelief" that the leaders of top financial firms could have been so cavalier about their risk management systems.[12] After all, their firms' lives were at stake—not to mention their own personal wealth. Presumably, in their minds, "it" couldn't happen here. Not with all those Masters of the Universe running around the place. Not with all that money pouring in the doors.

The lessons here are painfully simple. Regulators must regulate, not delegate. Financial firms must upgrade their risk management systems and have them examined by regulators. We didn't know this beforehand?

Lesson # 5: Fraud and near-fraud can rise to attain macroeconomic significance.

Economists, like other people, have always known there are crooks and tricksters on the loose, preying on the innocent and gullible. Nations have never relied on self-regulation to control con artists. Instead, we have watchdog agencies like the SEC and law enforcement. Fraud is a *legal* term, and it's hard to prove. What I call "near-fraud" is a *moral* term, and near-frauds were rife in the booming US mortgage market of 2004-2006. All this was bad, but I think most of us thought that fraud and near-fraud were in the rounding error—not something that could have consequences on a macroeconomic scale.

We were wrong. A veritable epidemic of deception in the home mortgage market, especially in the subprime part, helped fuel the housing bubble, as disgracefully bad mortgages pumped up the demand for, especially, low- and medium-priced houses.[13] Wall Street then turned these awful mortgages into horrible securities (MBS, CDOs,...), many of which were then blessed with triple-A ratings by the rating agencies. Derivative bets on these dodgy securities, some of which were apparently designed to be shorted, added to the unsavory mix.

[12] See Andrews (2008).
[13] Gary Gorton (2010), who saw things up close and personal as a consultant to AIG, has referred to mortgages that were "designed to default."

As I said, fraud is a criminal act and hard to prove. Foolish decisions and honest mistakes are not criminal. But the unhealthy blend of dodgy mortgages, risky securities, and complex "over the counter" (OTC) derivatives was laced with near-frauds. And, to the point of this lesson, there was so much of it that, when the house of cards finally crumbled, the whole economy shook. Who knew?

Lesson # 6: Excessive complexity is not just anti-competitive, it's dangerous.

I slipped the word "complex" into that last paragraph for a reason. *Homimes economici* never worry about complexity; they are efficient, dispassionate, rational calculating machines. *Homo sapiens* are an entirely different breed, however. We are subject to fads and fancies—and passions. Our "calculations" are biased by many systematic errors.[14] When we buy financial instruments, we can be (and are!) fooled.

So, in particular, extreme complexity can translate into less effective competition by impairing the ability of buyers of financial instruments to do comparative shopping for the best price (or other terms). In the context of the crisis, I am thinking especially about customized OTC derivatives. If you ask your broker to buy a call option on Google stock at a strike price of $1,100, the market price of the option is a matter of public record and the broker's margin will be thin. But if you ask him to arrange a swap of orange juice for jet fuel in the future, getting a comparable competing quote from another broker may be next to impossible. Profit margins on such unique trades may be extremely high.

That's bad enough. But the greater hazard may come from opacity. When investors don't understand the risks that inhere in the securities they buy (examples: the mezzanine tranche of a CDO-squared; a CDS on a synthetic CDO,...), big mistakes can be made--especially if rating agencies tell you they are triple-A, to wit, safe enough for grandma. When the crash comes, losses may therefore be much larger than investors dreamed imaginable. Markets may dry up as no one knows what these securities are really worth. Panic may set in. Thus complexity *per se* is a source of risk.

Lesson # 7: Go-for-broke incentives will induce traders to go for broke.

We had to learn this? Apparently so.

[14] This idea is central to the field of behavioral economics.

In the years prior to the crisis, banks, investment banks, and hedge funds often compensated their traders in ways that offered fabulous riches for success but comparative slaps on the wrist for failure. That compensation system created huge incentives to take huge risks; it was "heads I win a fortune, tails I lose a comparative pittance." To make the dangerous brew even worse, many traders were smart, young, and risk-loving—not to mention avaricious. Given go-for-broke incentives, they eagerly (and rationally) went for broke. While the boom lasted, successful traders became rich as Croesus. But when the bust came, the traders themselves bore little of the losses; the rest of us bore the brunt.

The skewed nature of the incentives and their possible downsides should have been obvious to anyone who paused to think about them. Apparently, few people did. I remember vividly a conversation on this topic with a famous principal of a hedge fund (who shall remain nameless) in the 1990s. I asked why his company offered its traders such crazy incentives. He understood the issue perfectly, and replied, "because everyone else does it." That sent a shiver up my spine.

The good news is that compensation practices have changed quite a lot since the crisis. I hope those changes are permanent. But, like Minsky, I worry about what happens as people forget.

Lesson # 8: Illiquidity closely resembles insolvency.

We are accustomed to thinking about—and teaching—the sharp distinction between *illiquidity* (experiencing a cash squeeze) and *insolvency* (having negative net worth). If you're a household or a business, illiquidity is a (mild or severe) flu. A truckload of borrowed cash (nowadays, figuratively) will probably get you over it--and probably quickly. Just ask Walter Bagehot. But insolvency is fatal; you are headed to bankruptcy court. Not only are the nature and severity of the two financial ailments different, so are the classic remedies. As just noted, illiquidity calls for a cash infusion. Insolvency calls for liquidation.

But is the distinction really so clear in practice, especially in a crisis? Conceptually, the two notions are different, for sure. But I think we've learned recently that, practically, they may not be, especially in a panic. Rumors (not to mention facts) that a financial institution might have suffered large losses (and hence be in danger of *insolvency*) can create a *liquidity* squeeze by precipitating a run. In the other

direction, a run on a bank (or on a money market mutual fund for that matter) with positive net worth can destroy the institution unless someone comes to the rescue. If no such rescuer is on hand (and the time frame may be short), the firm may be forced to raise cash via fire sales of "good assets."[15] Such fire sales fetch low prices, which can turn positive net worth into negative net worth. Thus *illiquidity* can lead to *insolvency*.

The starkly different decisions made by the Fed and the Treasury in the Bear Stearns and Lehman Brothers cases illustrate both the importance of the distinction and why it is hard to make during a crisis.

Bear Stearns was bleeding cash in March 2008, owing largely to rumors (based on facts!) of large losses in its mortgage businesses. In the fateful days before its shotgun marriage to J.P. Morgan Chase, Bear was about to run out of cash. Had that happened, the firm was dead, just as if it had gone bankrupt. But the Fed prevented that from happening—first with a loan, and then by arranging for J.P. Morgan to absorb Bear (at a fire-sale price, by the way). To make the sale work, the Fed had to take almost $30 billion worth of dodgy assets onto its books—via a SIV no less! The central bank justified its unorthodox actions by invoking Bagehot--arguing that Bear was illiquid, not insolvent, thereby making emergency lending under Section 13(3) of the Federal Reserve Act legal.

Six months later, Lehman Brothers showed remarkably similar symptoms: a liquidity squeeze brought on by rumors (truths?) of large losses in real estate and mortgage-backed securities. Same problem, same solution, right? Wrong. This time, the Fed judged that Lehman was not just *illiquid* but also *insolvent*. Lehman did not even have enough good collateral to cover what might have been a short-term bridge loan to a purchase by Barclays. Notice that the stated problem was *not* that Lehman lacked any assets to post as collateral. Rather, it was that the Fed judged those assets, whose values were uncertain, not to be *good* collateral. So it could not justify a Section 13(3) loan, and Lehman was packed off to bankruptcy court.

But was the Lehman situation really so radically different from the Bear situation, in which the Fed accepted assets that even J.P. Morgan wouldn't take? I do not question the Fed's judgment that Lehman

[15] According to an old market adage, when panic strikes, you sell what you *can*, not what you *want*.

was in worse shape than Bear. But, especially given the consequences of a Lehman bankruptcy, was it really *that much* worse? Was Bear a clear case of illiquidity without insolvency while Lehman was a clear case of insolvency, with illiquidity a mere detail? I doubt it.

Regardless of where you come down on the Bear Stearns and Lehman Brothers decisions, I think the two cases, viewed as a pair, deal a fatal blow to the sharp distinction between illiquidity and insolvency. Here's one thing we can *stop* teaching our students!

Lesson # 9: Moral hazard isn't a show-stopper, it's a tradeoff.

The moral hazard issue has been around a long time. It's not like we just learned about it during the last crisis. But, while this lesson remains extremely controversial, I believe we learned (at least) two important things.

First, I believe we must stop viewing moral hazard as a *constraint* and start viewing it as part of a *tradeoff*. The mere fact that some policy creates moral hazard is not a reason to reject it out of hand; maybe it accomplishes some other good things. To be sure, creating or exacerbating moral hazard should count as a cost. But we must also inquire about the benefits. One well-known example is deposit insurance, which clearly creates some moral hazard but also prevents bank runs. So we accept it, albeit with limits.[16] The financial crisis provided several examples of "bailouts" in which it seemed sensible to swallow some moral hazard in order to prevent or limit a financial catastrophe (e.g., Bear Stearns, AIG, and others).

Second, timing matters. Features of a financial system that either create or limit moral hazard are mainly *long-run, design* issues—such as the parameters of and conditions on deposit insurance, the Dodd-Frank requirement for "living wills," or Dodd-Frank's "orderly liquidation authority." As just noted, such design decisions should balance moral hazard costs against the gains from reducing runs and contagion. But in the midst of a crisis, with the house on fire, it may be imperative to douse the fire first and try to persuade the occupant not to smoke later—time inconsistency notwithstanding. Yes, bailouts set bad

[16] During the crisis, the US considered, but rejected, the idea of applying 100% deposit insurance to all bank deposits—maybe to all bank liabilities, as Ireland had done.

precedents, but letting a crisis spin out of control may be far worse. We can revisit the moral hazard problem later, with new laws or regulations.[17] As Scarlett O'Hara famously put it, "I can't think about that right now... I'll think about that tomorrow."

Lesson # 10: Economic illiteracy can really hurt.

While I would not underestimate the power of wishful thinking (Lesson # 2), rampant financial illiteracy was a key enabler of the frauds and near-frauds discussed in Lesson # 5. People who do not understand compound interest, amortization, or the reset on an adjustable-rate mortgage can too easily be persuaded to sign up for mortgages they cannot afford. And they were. And it hurt.

But the damages traceable to *economic* illiteracy, a broader concept than *financial* illiteracy, went even further. Indeed, I have come to believe that economic illiteracy may be the single biggest impediment to sound national economic policy—certainly bigger than any inadequacies in economic science (though there are many) and maybe even bigger than political lobbying (though that one is a close call). Here are a few examples from the policy responses to the crisis:

- Political fur flew when the Obama administration proposed a large fiscal stimulus, roughly at the low point of the worst recession since the 1930s. Obviously, even the simplest Keynesian ideas, now almost 80 years old, are not understood by the body politic.
- Misconceptions are rife in the debate over the budget deficit. People don't understand the natural cyclicality of the deficit, the foolishness of trying to fight that cyclicality, the difference between policies that raise or lower the deficit temporarily versus permanently, and certainly not the notion that it's natural to have *some* deficit in a growing economy.
- As mentioned earlier, most people do not understand how or why the Federal Reserve "creates money," what that means, or how the Fed does it. In fact, most Americans don't understand the Fed at all.

[17] Yes, I realize that bailouts set precedents. But the authorities can over-rule precedents with new laws or new decisions.

It's easy to get economists to agree that economic literacy is rampant and that reducing it is important. But nominating it as "the single biggest impediment to sound national economic policy" sets a high bar. Why do I claim that? Because economic illiteracy virtually destroys what should be one of democracy's most important balance wheels. Politicians who advocate and/or promulgate nonsense should pay a price at the polls. That's how electoral Darwinism is supposed to lead—slowly and grudgingly—to better policies over time. But if voters can't tell good sense from nonsense or, worse yet, support the nonsense, this equilibrating mechanism won't work. In such a world—which regrettably resembles our own--politicians who spout nonsense pay no price at the polls.

3. Some lessons for teaching economics

The importance of combating economic illiteracy is a perfect segue to the last section of this paper: How should the crisis change the way we teach economics to college students? A logical place to start is with the abysmal understanding of rudimentary Keynesian economics.

Lesson # 1: We need to teach basic Keynesian economics better.

While there are certainly exceptions, I think it is fair to say that most teachers of macro principles teach their students the basics of Keynesian economics. We've been doing that since Samuelson's first edition (1948), a time span that now covers two to three *generations*. Yet the message clearly has not gotten through to the public. How else can you explain House Speaker John Boehner getting away with repeatedly referring to "job-killing government spending," which became a kind of mantra for him in the years 2009-2011 (if not still)?

I am not talking about subtleties here. It's not important that the public understand the intellectual debates that figure prominently in advanced macro classes—not to mention the arcania that fill graduate curricula. I mean very basic notions such as that the government spending multiplier is *positive*, at least when there is high unemployment. If mass public opinion understood at least that, Mr. Boehner could not have gotten away with claiming that more government spending somehow "kills jobs." (How is that supposed to happen?)

Now, I realize that college (and even high school) economics teachers are not responsible for mass public opinion. But more than half of U.S. adults have been to college, and many took at least one economics course while they were there. Students who take just one biology course absorb the basic principles of Darwinism. (Well, most of them do.) Why, then, don't more students come away from college with a rudimentary understanding of Keynesian economics? At least part of the blame must fall on our shoulders.

One reason, I believe, for this massive pedagogical failure is mixing up economics with politics. For not very good reasons, the label "Keynesian" has gotten associated with liberalism in modern America, leading many conservatives to shun the doctrine—and the stabilizing fiscal policy that goes with it. This misconception is something we should be able to "teach out" of our students. Using fiscal stimulus to make recessions shorter and shallower is not something Democrats should embrace and Republicans oppose. First, stimulus does not require larger government. Congress can use tax cuts instead—or the Fed can chip in with monetary policy. Indeed, both Ronald Reagan and George W. Bush were big Keynesians—in deeds, if not in words. Second, you can argue against many forms of government spending, as conservatives are wont to do, without adopting the nonsense claim that more public spending kills jobs. If you are not teaching your students that "Keynesianism" is neither conservative nor liberal, you should be.

Lesson # 2: Models with one interest rate won't do any longer.

For decades, it seemed a harmless simplification to teach macro models with just a single interest rate. And that's what we did. In macro principles, the "I" in C+I+G depended on r, which is how monetary policy worked. In intermediate macro, some model similar to (even if not called) IS-LM utilized just one r, though more advanced treatments would draw a distinction between the *nominal* interest rate (for the LM curve) and the *real* interest rate (for the IS curve). The models taught to graduate students--whether New Keynesian, real business cycle, or whatever—also typically relied on a single interest rate. Even the vast majority of macroeconomic models found in scholarly journals had just one

interest rate. "*The* interest rate," we called it, justifying the simplification (in the rare instances in which we bothered) by the notion that all interest rates tend to rise or fall together.

Although I put this summary in the past tense, it is pretty much still true today. It shouldn't be. After all, in the 2000s we saw several dramatic instances of risk spreads first narrowing dangerously, then skyrocketing once fear took over from greed, and then narrowing again as calm returned. At times, yields on safe (e.g., Treasury) instruments went *down* while those on risky instruments went *up*. So how can we still speak with a straight face about "the" interest rate? How can we explain the financial crisis in a one-interest-rate world?

Dealing correctly with multiple interest rates, taking spreads as endogenous variables that depend on the state of the business cycle and other things, is pedagogically demanding (not to mention unfamiliar territory). But in revising my principles textbook after the crisis,[18] I found that it was not unduly difficult to distinguish among the federal funds rate (the Fed's instrument), risk-free Treasury rates, and risky private sector interest rates (such as those on mortgages and bonds)—treating rising risk spreads as *exogenous* events. Doing so does require some discussion of how spreads reflect perceived risk of default. But that is a pretty intuitive idea, even for beginners, and can easily be added to the macro model without any new equations or graphs.

Lesson # 3: We must deal with unconventional monetary policies.

Once upon a time, this part of the pedagogical toolkit was easy. We could teach beginning students quite a lot about monetary policy by fleshing out the linkages from, say, Federal Reserve open market operations, to the (transitory) creation of excess reserves, to banks getting rid of those excess reserves by making more loans and creating more money (the "money multiplier" process), and then finally on to lower interest rates and higher aggregate demand. One important component of that chain was the short-term interest rate, that is, the federal funds rate.

But what made good sense when excess reserves were *always* close to zero and the federal funds rate was *never* close to zero sounds—and is—rather ludicrous when excess reserves top $2.6 trillion and the

[18] Alan Blinder and William Baumol, *Economics: Principles and Policy* (12th Edition, 2012).

funds rate has been stuck near zero for six years. These days, the mechanical link between the creation of new bank reserves and the creation of more aggregate demand misses reality by a country mile. And the last time monetary policy meant changing the federal funds rate was December 2008! So unless we want to sound both anachronistic and foolish, we simply *must* teach our students something about *unconventional* monetary policy. But what?

Different teachers will have different views on this question, of course. But I want to suggest one approach. At least in the U.S., unconventional monetary policy takes two main forms: quantitative easing (QE) and forward guidance. I'm sympathetic to the notion that forward guidance may be the more important of the two, except when markets are chaotic (example: when QE1 started). But it's also far more difficult to teach. After all, forward guidance is presumed to work via the expectations theory of the term structure (probably with rational expectations), which is (a) beyond the curriculum of virtually all principles courses (and many intermediate courses as well) and (b) one of the worst theories in all of economics. (I hate to teach students things that are embarrassingly incorrect).

So I barely mention forward guidance in Economics 101 and concentrate instead on QE. Teaching QE is easy since it's nothing more than open-market purchases of *unconventional* assets (e.g., MBS and long Treasuries) rather than *conventional* assets (e.g., T-bills). So the standard T-accounts for open-market operations need little if any change, and all you have to do is point out that, by buying more of a certain type of asset (e.g., a 10-year Treasury or an MBS), the Fed drives the asset's price *up* and its interest rate *down*. Simple—and basically accurate, too, since few introductory students will detain you with questions about arbitrage and perfect substitutability.

Lesson # 4: Bubbles can cause trouble.

For decades, I didn't feel bad about leaving asset market bubbles out of my course. I spent a small amount of time on the tech-stock bubble after it burst in 2000, but that was about it. No more. Today's undergraduates have heard about the Internet stock bubble (which spawned, among others, Amazon and Google), lived through (albeit as children) the house-price bubble that burst in 2006 and the fixed-income

bubble that burst in 2007-2008, and may be living through yet another tech-stock bubble today. (Who knows?)

So it seems to me that we should now be teaching something about bubbles, even in the principles course. Fortunately, when you are dealing with a cadre of undergraduates who have not yet been burdened by the efficient markets hypothesis, it's not too hard. Even their limited life experiences have demonstrated that asset valuations sometimes lose touch with reality.

Lesson # 5: Leverage is a double-edged sword.

Unfortunately, if students are to gain even the most elementary understanding of what happened in the financial crisis, they probably must also learn a bit about leverage. And that's harder. It is rarely within the realm of experience of a 19-year-old.

Rather than hammer home basic principles or, worse yet, use equations, I generally teach students. about leverage via a simple numerical example or two. Here is a table I've been showing to my Economics 101 students at Princeton for years. It represents the results of purchasing $10,000 worth of common stock with 5-to-1 leverage--that is, with $2000 of the investor's own money and $8000 borrowed at 10% interest (hence the "Repayment of Loan" column always shows $8800)—and selling it one year later. The table illustrates that, as the change in the underlying stock price ranges from +20% to -20%, the returns on the leveraged investment range from +60% (a lot better than +20%) to -140% (a lot worse than -20%). Students get the point.

Return on Stock	Assets at End	Repayment of Loan	Net Receipts	Rate of Return
20%	$12,000	$8,800	$3,200	60%
10%	11,000	$8,800	2,200	10%
0%	10,000	$8,800	1,200	−40%
−10%	9,000	$8,800	200	−90%
−20%	8,000	$8,800	−800	−140%

My last two "lessons" come more in the form of questions than answers. They require thought, plus recognition that time is severely limited in a one-semester (not to mention a one-quarter) course.

Lesson # 6: How much financial complexity?

Start with financial complexity. There is a lot of it; it played a significant role in making the crisis much worse than it needed to be; and it's clear than even the principles course must now include more material on banking and the financial system than in the past. But how much more? I am fond of quoting the Einsteinian wisdom that says that everything should be made as simple as possible—*but not more so*. The question is: Where do you draw the line?

The answer is not obvious. In the context of the financial crisis, I think it is essential that students at least hear about MBS—and certainly, as just noted, learn about leverage. But I don't think they need any exposure to the mezzanine tranches of CDOs. But what about the notion of "tranching" at all? (Without that, it is hard to understand the harm done by the rating agencies.) Or credit default swaps? (There goes the AIG saga.) These gray areas are definitely gray; there are many of them; and they all require judgment calls.

For myself, as a principles teacher, I tend to draw the line tightly, including as few of the gory financial details as I can. But I can well understand why other teachers might want to cover more.

Lesson # 7: Systemic risk, too big to fail, and moral hazard?

I have saved the hardest for last: What should be said about the interrelated issues of systemic risk, too big to fail, and moral hazard? These are serious and important issues, to be sure--and relevant to policy debates, too. There simply must be a place for them in more advanced courses in banking, finance, and macroeconomics. But what about in the principles course? There, I have my doubts.

To begin with, there is no agreed-upon definition of systemic risk—and certainly no standard measurements. Second, economics seems to be miles away from anything resembling a consensus on how to deal with too-big-to-fail institutions—or even if there should be any such thing. Third, even the basic notion that there is a *tradeoff* between the *costs* of moral hazard and the *benefits* of reducing systemic risk—something I keenly believe--is far from being a part of the accepted catechism. All of this (and more) says to me that the issues are not yet "ready" for inclusion in the principles course which, in my

view, should concentrate on received wisdom as much as possible. But I can see why some instructors might reach a different judgment.

4. Conclusion

We economists have learned quite a lot from the financial crisis, the Great Recession that followed it, and the pathetic recovery we've had since. Some of this material needs to seep into our curricula, including at the principles level. But as we grapple with what to add, we must be mindful of both Einstein's dictum—everything should be made as simple as possible, but not more so—and the law of conservation of teaching weeks: We don't have any more than we used to.

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