Innovation in the New Financial Regulatory Environment
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I am pleased to be here today to discuss a topic – financial innovation – that I think is of great importance as we learn more about what caused the financial crisis and shape the future of financial regulation. Currently, many people are hostile to the very thought of financial innovation. After all, wasn't it new financial products and instruments – subprime mortgages and complex derivatives, for example – that got us into trouble in the first place? The answer here, as with many things in economics, is *yes* and *no*. In my view, the question is not whether financial innovation is *inherently* good or bad. Instead, we should think about whether or not particular financial innovations are improving people's wellbeing. And that, I think, is largely dependent upon the structure of the regulations and policies under which financial firms operate.

Innovations in financial arrangements, like innovations in any sector, are shaped by the incentives that firms face. In many cases, those incentives align the interests of innovators with those of society as a whole. New goods or services, or new ways of organizing production, are often profitable only to the extent that they provide something that consumers value, or reduce the real costs of production. Indeed, this is why the innovations that have been the engine of economic growth for the last several centuries have resulted in such profound improvements in wellbeing.

The financial world is heavily regulated, however, and as a result, incentives are heavily influenced by the regulatory policy regime. In many instances, financial innovation is aimed at "regulatory bypass," where firms adapt to the rules they face and create instruments to effectively work around those constraints. Some cases of regulatory bypass, as I will discuss, have had beneficial effects. Some have had negative effects. And some have had both.

One of the most conspicuous features of the environment faced by the financial market participants is the presence of the federal financial safety net – that is, the explicit and implied commitments to rescue creditors of distressed financial firms in order to limit what is called "financial instability." This safety net often influences the direction of financial innovation. Firms that benefit from a government backstop are willing to forgo costly measures to protect themselves against runs or liquidity pressures that would elicit government protection, just as property owners overinvest in flood plains knowing that they will be reimbursed in the event of a disaster. The precedents set in the recent financial crisis extended government support more broadly than before, and thus have dramatically expanded the implicit safety net – to nearly two-thirds of the financial sector according to some estimates. Ideally, the extent of implied government support would be matched by the scope of prudential regulation to contain the moral hazard that would otherwise encourage excessive risk taking. That was not the case leading up to this crisis, and it is not clear that recent reforms have succeeded at closing the gap or limiting the safety net. As a result, I believe there is a substantial risk that much future financial innovation will be directed at by-passing regulations and exploiting the safety net, rather than improving people's wellbeing. Before I begin, I should note that the views expressed today are my own and do not represent those of my colleagues on the Federal Open Market Committee.[1]

Financial Innovation as Regulatory Bypass

There are some innovations in the broader economy that I would agree have greatly benefited society. One example, which is particularly salient here in Roanoke, is the development of railroads to move commercial goods long distances. Railroads were less costly and more efficient than previous modes of transport and made our country's economy much less regional. This was an innovation that led to significant gains for most people. Firms have since found other ways to move goods cross-country, such as large-scale trucking, for example. But both the development of the rail system and, subsequently, commercial trucking are examples of innovations that were not driven by a desire to bypass regulations. They simply met the needs of an industrializing nation.

Similar examples occur in the financial sector. One involves the use of advances in computing and communication technologies to improve the rating of risks associated with potential borrowers.[2] This was a particularly powerful force in the evolution of the market for unsecured consumer credit from the 1980s on. It allowed lenders to make finer distinctions among borrowers, which in turn allowed lenders to extend credit profitably at lower spreads to some consumers. For example, virtually all credit cards charged a single rate near 20 percent in the early 1980s, but improvements in underwriting allowed lenders to charge lower rates to less-risky consumers, and to find creditworthy borrowers among the group of consumers that were formerly unable to qualify for credit at all. The greatly expanded access to credit gave households greater flexibility in managing their household finances, adjusting to temporary financial shocks, such as unexpected car repair or medical expenses, and in accumulating durable goods. The expansion of access to unsecured credit also brought along with it an increase in the frequency of adverse outcomes for households, in which they run up high debt burdens, and perhaps default on payment obligations. I believe the evidence is fairly strong, however, that the net effect has been beneficial for consumers.[3]

There are other examples where regulations did play a significant role in financial innovation. Consider the development of money market mutual funds ("money funds" for short), which invest in short term commercial paper and Treasury securities and provide investors with daily access to their funds. Money funds provide a close substitute for bank deposits, but circumvent the prohibition of interest on demand deposits held by corporations.[4] This was a clear case of financial innovation driven by regulation – and one that brought clear benefits to investors, including many consumers.

Money market mutual funds were also a source of instability during the recent financial crisis, however. When Lehman Brothers filed for bankruptcy, their commercial paper became locked up in bankruptcy court and the market value of commercial paper issued by other financial institutions fell. One MMMF was forced to "break the buck" because its underlying valuations moved too far below $1. This led to a "run" by institutional investors on money funds that held commercial paper to avoid being stuck with capital losses. (As an aside, a Securities and Exchange Commission rule actually enhances investors' incentives to run money funds if they expect capital losses.) Policymakers then intervened with an insurance program for pre-existing balances in money funds and Federal Reserve lending programs to support commercial paper prices. It was not clear, prior to the crisis, that these firms were inside the financial safety net – yet many fund managers and investors may have perceived that to be the case, given historic episodes such as the collapse of Penn Central, during which the Federal Reserve provided extra liquidity to support these markets.[5] The precedents set by intervention during this most recent crisis led to a significant increase in the scope of the safety net.[6]

Prior to the crisis, policymakers pursued a strategy of "constructive ambiguity" about the boundaries of the safety net. The belief was that such a strategy would lead firms to believe they might not receive safety net support, but would allow policymakers to preserve the option to bail out institutions, if they deemed it necessary. Instead of reducing expectations about the likelihood of bailouts, constructive ambiguity, as I argued recently in congressional testimony, did exactly the opposite. Policymakers tend to rescue the creditors of failing financial firms more often than they would have those creditors believe, with the inevitable result that market expectations about the likelihood of bailouts increased.[7]

The ultimate result of constructive ambiguity was that the implicit safety net grew to include much of the so-called "shadow banking" system, which I will discuss shortly. Researchers at the Richmond Fed have estimated that at the end of 2009, the implicit safety net covered as much as 40 percent of all financial sector liabilities. When combined with explicit protection for depository institutions and some other firms, the overall federal financial safety net covered 62 percent of the financial sector, up from an earlier estimate of 45 percent in 1999.[8]

Overall, then, I think it is fair to say that the policy of constructive ambiguity has failed. If we learn one thing about the financial crisis, it should be that we must establish a credible commitment regarding which assets will benefit from the government safety net and which do not; otherwise, the boundaries of the safety net will continually expand. Establishing such credibility is going to be a challenge. It may require policymakers to let an institution fail even if creditors believe that it is implicitly guaranteed. Doing so, to be sure, could cause some short-run disruptions to the financial sector as investor expectations revise their expectations about future intervention. But in the long run, establishing credibility about which firms are going to receive protection and which are not will be key to avoiding the type of financial instability that we observed in 2008.

It should be fairly obvious that financial firms whose creditors benefit from the prospect of official support should be subject to prudential regulation in order to contain the moral hazard that arises in the presence of such third-party guarantees. The critical weakness of an ambiguous safety net is the mismatch between regulation and safety net scope. Some firms will benefit from support but not be subject to prudential regulation to prevent excessive risk taking. The mismatch problem could conceivably be resolved by expanding prudential regulation until it encompasses all institutions that policymakers might want to support. Regulation is not foolproof, however, and what's more, it imposes significant burdens of its own. While these burdens are difficult to quantify, I find it hard to believe that the most appropriate size of the government financial safety net is anything close to nearly two-thirds of the financial sector.

Shadow Banking Sector

The mismatch associated with an ambiguous financial safety net provides a powerful impetus to the growth of the so-called "shadow banking" sector over time. The term shadow banking refers to activities that resemble traditional banking, in that they involve maturity transformation – that is, issuing very short term or demandable instruments, such as deposits, to fund longer-term or less-liquid assets. Such activities were often structured so as to avoid regulations and capital requirements imposed on banks. Any firm that performs maturity transformation, however, exposes itself to the risk of financial distress if their creditors lose confidence in their ability to repay and withdraw their funds, or refuse to roll over their investments. Creditor runs are exactly the kind of events that typically elicit official support, because if no government support is forthcoming, the creditors of other similar firms are likely to run as well. Intervention in the event of a run outside the banking system is attractive to policymakers because it can stabilize creditors' expectations regarding future intervention. The precedents set by intervening outside the formal banking system thus provide a further stimulus to the growth of fragility-prone maturity transformation in the shadow banking system, beyond the incentive to avoid the burden of prudential regulation. Measuring the size of the shadow banking system is difficult, but some have estimated that shadow banking liabilities exceeded $20 trillion at its peak, roughly twice as large as the traditional, regulated banking system.[9]

An instructive case in point is the market for repurchase agreements, often referred to as "repos." A repo is essentially a short-term collateralized loan, structured as a purchase of the collateral by the lender today, followed by a repurchase with interest by the borrower at a subsequent date (the maturity of the loan). A "haircut" is typically applied to provide the lender with a buffer in case the borrower cannot repay the loan and the collateral is hard to sell. While many repos are often mature in just one day, they are typically rolled over. In the most common form of repo, settlement takes place on the books of one of the two government securities clearing banks, who lend money to borrowers each morning to allow them to reacquire their collateral to use in trading during the day. The repo market is now about $2 trillion in size.

This type of transaction can have many benefits. Lenders are often institutional investors, money funds or corporations that are prohibited from earning interest on bank deposits; repos provide them with an attractive rate of return on an investment that is as liquid as a bank deposit. Borrowers are able to finance a broad range of assets at much less cost than an equivalent amount of traditional debt or equity issuance. But repo financing exposes the borrower to tremendous risks if lenders refuse to roll-over their repo positions and the borrower has a hard time selling their assets. This was the essence of the situation facing Bear Stearns in the days leading up to JP Morgan Chase's unwillingness to extend credit the morning of March 14, 2008, to fund the return of collateral to Bear Stearns' repo lenders. Without government support, the fear was that repo lenders also would pull back from other large investment banks out of a belief that they, too, were now less likely to receive government support. Intervention stabilized markets by implying a commitment to intervene to prevent other investment banks from defaulting.

As with money funds, the repo market represents a financial innovation that escaped the regulatory burden imposed on traditional bank deposits. It is important to recognize, however, that the implicit safety net tilts the playing field toward such inherently fragile arrangements.

The breakdown of the repo market in 2008 was due in large measure to the deterioration in the value of the collateral at weak firms – and much of that collateral was in the form of housing debt. This brings me to the next portion of my talk, which has to do with innovation in home mortgage lending: Why did housing prices rise and drop so sharply, and what should we do to reform housing finance policy?

Toward a New Housing Finance Policy

While there is need for continued research into the precise causes of the housing boom and bust that sparked the recent crisis, I believe a broad narrative is reasonably clear. Financial institutions that benefited from implicit government guarantees – notably the government-sponsored housing enterprises Fannie Mae and Freddie Mac, plus several large U.S. and European banking institutions – fueled the demand for securities backed by risky subprime mortgages. These institutions were widely viewed by market participants as likely to benefit from government support in the event of financial distress. The implied backstop led them, and their creditors, to underweight the risk of a broad nationwide downturn in housing markets, since that would be most likely to elicit official support to protect creditors. Their biased risk preferences had the effect of distorting the incentives of a broad range of other participants in the mortgage distribution chain, from credit rating agencies to securitizers to originators to loan brokers. The resulting oversupply of subprime mortgage lending increased the demand for housing, which drove up home prices in regions like California and Florida, where the supply of buildable lots was inelastic. The resulting price surge made subprime lending look profitably for a time, because troubled borrowers could refinance using the rising equity in their own home. When demand expansion reached natural limits, price appreciation slowed and then ceased, raising the cost of home ownership and increasing defaults among overextended borrowers. The rest, as they say, is history.

Why did Fannie and Freddie guarantee so many loans that became troubled, ultimately resulting in those agencies being put into conservatorship? I have alluded to one very important reason: Those institutions were widely perceived, correctly as it turned out, as being inside the safety net. As a result, they had much less incentive to provide sufficient scrutiny when evaluating many of the loans they guaranteed or securities they purchased. Others have argued that affordable housing mandates also encouraged Fannie and Freddie to acquire large amounts of securities backed by poorly-underwritten mortgage loans. Those mandates, I would argue, were a by-product of their perceived status as government supported.

Fannie and Freddie, to a large extent, represented government-sponsored regulatory by-pass. They were chartered explicitly to provide a secondary market for mortgages which otherwise would have been held on the books of banks. As a result, the funding for those mortgages went around the banking system, and thus escaped the associated regulatory burden. In addition, the two GSEs have been especially active in making 30-year loans requiring relatively small down payments. A nontrivial share of houses financed in that manner eventually went into foreclosure or were put up for short-sale. It is worth noting that the commonly held belief that the GSEs effectively invented the 30-year, low-down payment, no-prepayment penalty mortgage is incorrect. During the 1980s, private mortgage issuers began providing such loans.[10] After Fannie and Freddie, with their implicit government guarantee, got into that business on a large scale, the private market for such loans dried up, as private issuers found it increasingly hard to compete with the terms provided by the GSEs. Thus the implicit safety net tilted the playing field significantly in favor of the GSEs.

A consensus has emerged that Fannie and Freddie need to be wound down in some fashion. One way to do this would be to shut them down immediately. While this has some appeal, I don't think it is politically feasible, or economically desirable. Such an approach would require overly rapid adjustments in housing finance arrangements, as the housing market is still coping with the aftermath of the bust. In February, the Department of Treasury and the Department of Housing and Urban Development issued a report to Congress outlining some ways to "wind down both institutions, creating the conditions for private capital to play the predominant role in housing finance."[11] Among their proposals are: increase guarantee fees to bring in more private capital; increase private capital ahead of Fannie Mae and Freddie Mac guarantees; reduce conforming loan limits; and wind down Fannie Mae and Freddie Mac's investment portfolio. As the agencies' report states, Fannie and Freddie "were allowed to behave like government-backed hedge funds, managing large investment portfolios for the profit of their shareholders with the risk ultimately falling largely on taxpayers." I agree wholeheartedly with that assessment, and I believe it was a mistake that must not be repeated.

Through their various activities, all backed by implicit government support, Fannie and Freddie introduced distortions into the housing market and put the taxpayer on the hook for billions of dollars. But as I have noted, they are not the only institutions that were culpable in the housing crisis. Many private sector financial institutions also took imprudent risks that contributed to the financial crisis. What these institutions had in common, however, is that they all enjoyed, or were thought to enjoy, the protection of the federal financial safety net.

Winding down Fannie and Freddie is a vital first step, in my view, but the more contentious question concerns the future of housing finance policy. For decades, the government has promoted homeownership by subsidizing debt, through both the unpriced, implied guarantees for Fannie Mae and Freddie Mac and the home mortgage interest deduction. That created an environment that accelerated innovations in the provision and packaging of such debt but discouraged prudent safeguards against the risk of large shocks to housing markets. It should not be surprising, then, that we actually experienced a large shock to housing finance markets that led to a broader crisis in financial markets, largely as a result of financial innovations that circumvented banking regulations and exploited the implicit safety net.

Other countries have demonstrated ways in which the government can promote homeownership by subsidizing equity instead, such as through tax-preferred treatment of savings vehicles that can be used for down payments. More fundamentally, though, we ought to rethink whether the government should be in the business of subsidizing homeownership at all. It may be true that homeownership yields some positive externalities. For instance, on the margin, homeowners probably do take better care of their dwellings and contribute more to civic vibrancy than non-homeowners. But it’s not clear how large those differences are, nor is it clear how much those differences are worth. We must remember that foreclosed properties bring externalities with them too, but in such cases those externalities are negative. While buying a home is a desirable option for many households, renting may be as desirable for other households that prefer greater financial and locational flexibility. Households should make that decision based on their own particular circumstances, including, among other things, their expected earnings, the variability of those earnings over time and the value they place on mobility.

Placing Credible Boundaries on the Safety Net

To summarize then, financial innovations, like all innovations, can be either good or bad, depending largely on the incentives facing potential innovators. Outside of the financial system, innovators’ incentives are generally aligned with the interests of consumers, the ultimate beneficiaries of the invention process. The heavy regulation of the financial system can distort incentives, however, and lead to detrimental, rather than beneficial innovation. Broadly speaking, the government’s role in financial markets involves two things: provision of a safety net, both explicit and implicit, and prudential regulation to counteract the moral hazard effect of such backstops. Financial stability requires a close match between the scope of the safety net and the scope of prudential regulation. When there are gaps between the two, financial institutions have incentives to by-pass regulation and structure their funding in ways that exploit safety net protection. The recent financial crisis was caused by large gaps between the scope of prudential regulation and the scope of the safety net, which had grown to cover nearly half the financial sector because of the dynamics induced by safety net ambiguity. When the boundaries of the safety net are unclear, withholding support from a failing institution always looks too risky. In the presence of such gaps, innovation was drawn toward by-passing regulation and increasing reliance on implicit government support. Safety net ambiguity thus distorted financial innovation in a way that made the financial system more risky and more prone to financial crises. Actions taken during the recent crisis have set precedents suggesting a dramatically expanded safety net – 62 percent of financial sector liabilities according to one conservative estimate.

This diagnosis implies that the first reform priority should be establishing clear and credible boundaries around the federal financial safety net in a way that conforms the extent of the safety net to the extent of prudential regulation. This leaves open whether to do so by expanding regulation to encompass a broader safety net, or contracting the safety net to a more tightly drawn set of well-regulated institutions. This choice depends on trade-offs that are beyond the scope of this address. My broad sense is that we would be better off if we were to significantly scale back the boundaries of the government-managed portion of the financial sector to include fewer institutions and their respective liabilities. It is not healthy when, in effect, profits are privatized and losses are socialized. Countervailing regulatory and supervisory regimes are inevitably imperfect and impose costly burdens of their own.

As I noted earlier, establishing credible safety net boundaries will likely require that policymakers permit the failure of an institution that was previously believed to be too big to fail. This could involve serious short-term disruptions – in fact, it may be that the more costly the disruption the greater the enhancement to safety net credibility. But the long-term benefits would be quite large. When thinking about this issue, I am reminded of the history of monetary policy in the late 1970s and early 1980s. At the time, the country was experiencing both high unemployment and high rates of inflation. The Fed, under the leadership of Paul Volcker, steadfastly pursued a path to bring down inflation. It was, in some ways, a very painful course of action because the economy went through a very significant recession in 1981 and 1982. But the economy did recover – and proceeded to grow relatively briskly – while the Fed credibly established that it would pursue price stability. The short-term pain of scaling back the monetary accommodation of the 1970s was worth the cost. I think the same would be true of an effort to scale back and set credible boundaries around the federal financial safety net.

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[1] I am grateful to Aaron Steelman for assistance preparing this speech.

[2] Jeffrey M. Lacker, "The Evolution of Consumer Finance," Speech to the Conference of State Bank Supervisors, Norfolk, Va., May 18, 2006.

[3] Kartik Athreya, Xuan S. Tam, and Eric R. Young, "A Quantitative Theory of Information and Unsecured Credit," Federal Reserve Bank of Richmond Working Paper No. 2008-06, October 2008; Juan M. Sánchez, "The Role of Information in the Rise of Consumer Bankruptcies," Federal Reserve Bank of Richmond Working Paper No. 2009-04, April 2009.

[4] The Dodd-Frank Wall Street Reform and Consumer Protection Act ended the prohibition on interest on corporate deposits, effective July 21, 2011.

[5]Charles W. Calomiris, "Is the Discount Window Necessary? A Penn Central Perspective," Federal Reserve Bank of St. Louis *Review*, May/June 1994, pp. 31-55.

[6] Shadow Financial Regulatory Committee, "Systemic Risk and Money Market Mutual Funds," Statement 309, February 14, 2011.

[7] Jeffrey M. Lacker, "Address to the Oversight and Investigations Subcommittee, Committee on Financial Services," March 30, 2011.

[8] Nadezhda Malysheva and John R. Walter, "How Large Has the Federal Financial Safety Net Become?" Federal Reserve Bank of Richmond *Economic Quarterly*, Third Quarter 2010, vol. 96, no. 3, pp. 273-290.

[9] Zoltan Pozsar, Tobias Adrian, Adam Ashcraft, and Hayley Boesky, "Shadow Banking," Federal Reserve Bank of New York Staff Report no. 458, July 2010.

[10] Richard K. Green and Susan M. Wachter, "The American Mortgage in Historical and International Context," *Journal of Economic Perspectives*, Fall 2005, vol. 19, no. 4, pp. 93-114.

[11] U.S. Department of Treasury and U.S. Department of Housing and Urban Development, "Reforming America's Housing Finance Market: A Report to Congress," February 2011.