

**On the Need for Increased Capital Requirements for Banks and Further Actions to
Improve the Safety and Soundness of America’s Banking System**

Testimony before the Senate Banking Committee

August 3, 2011

Joseph E. Stiglitz¹

Thank you for this opportunity to address the question of the financial structure of the banking industry, which I believe is central to the future stability and prosperity of the American and global economy.

Two fundamental analytic insights, buttressed by some empirical observations should inform our thinking about the appropriate regulation of banks, including capital requirements and risk taking. The first is that when information is imperfect and risk markets incomplete—that is, always—there is no presumption that unfettered markets will result in efficient outcomes. The reason is that actions give rise to externalities, consequences that are not borne by those undertaking them.² There is a misalignment of private and social returns.

¹ University Professor, Columbia University; recipient of the 2001 Nobel Memorial Prize in Economics; former Chair, President Clinton’s Council of Economic Advisers, Former Chair, Commission of Experts on Reforms of the International Monetary and Financial System, appointed by the President of the General Assembly of the United Nations, 2009, President of the International Economic Association. All views are personal.

² See B. Greenwald and J. E. Stiglitz, “Externalities in Economies with Imperfect Information and Incomplete Markets,” *Quarterly Journal of Economics*, Vol. 101, No. 2 (May), pp. 229-264, 1986. For an excellent discussion of these externalities at the macro-economic level, see A. Korinek, “Systemic Risk-Taking: Amplification Effects, Externalities, and Regulatory Responses,” working paper, University of Maryland, 2011

This result is of central importance in banking and finance, because the very rationale for the sector arises out of risk management and the acquisition and utilization of information necessary for the efficient allocation of capital. The externalities consequent to the excessive risk taking of the banks are manifest: it is not just the costs of the bailouts and the millions of Americans who have lost their homes, but the literally trillions of dollars of lost output, the gap between the economy's actual and potential output, the predictable and predicted fallout of the crisis. The resulting suffering—including that of the 25 million Americans who would like a full-time job and can't get one—is incalculable. The budgetary problems facing the country too are in no small measure a result of the inevitable decline in revenues and increase in expenditures that follow. It is well-known that recoveries from financial crises are slow and painful.³

This crisis not only demonstrated the importance of the externalities to which failures in financial markets give rise, but also the importance of what economists call agency problems—those, like bank officials, who are supposed to take actions on behalf of others, who have a fiduciary responsibility, often have incentives that lead them to take actions that benefit themselves at the expense of those that they are supposed to serve. The so-called incentive systems in place in the financial sector may have served the bank managers well, but they did not serve well shareholders or bondholders, let alone the rest of society.⁴

³ See, e.g. C. Reinhart, and K. Rogoff, 2009, *This Time Is Different: Eight Centuries of Financial Folly*. Princeton University Press or J. E. Stiglitz, "Rethinking Macroeconomics: What Failed and How to Repair It," *Journal of the European Economic Association*, 2011

⁴ There is by now a large literature explaining and documenting this observation. See, e.g. J. E. Stiglitz, *Freefall: America, Free Markets, and the Sinking of the World Economy*, New York: W.W. Norton, 2010. Indeed, well before the crisis, it was noted that managerial incentive structures ("incentive pay") had perverse effects, not only in encouraging excessive risk taking and shortsighted behavior—which is particularly costly when it occurs in the

The second fundamental insight is that increased leverage in general does not create value, but simply shifts risk—as leverage increases, increased risk is placed on the equity base. This is the central insight of the Modigliani-Miller theorem.⁵ In the 1960s and 1970s, I showed that that result was far more general than Modigliani-Miller had thought—but that there were limitations too, most of which cautioned against excessive leverage: if there were real costs to bankruptcy (as there are), then increased leverage increased the likelihood of these dissipative costs.⁶

In the financial sector, the social costs of increased leverage are even greater, because of the societal costs associated with the externalities that I described earlier.⁷ The misalignment of incentives is even more in the case of too-big-to fail banks—banks that are so large that the potential consequences of allowing them to go bankrupt poses an unacceptable risk. Their failure poses a *systemic* risk. They can reap returns from risk taking, with the losses borne by the government. But too-big-to-fail banks present another major distortion: because those providing them with capital know that they are too big to fail, that there is at least a

financial sector—but also in encouraging dishonest accounting, so manifest not only in this crisis, but in the scandals that marked the beginning years of this decade, epitomized by the Enron bankruptcy, the largest bankruptcy up to that point. See, e.g. J. E. Stiglitz, 2003, *The Roaring Nineties*, New York: W.W. Norton.

⁵ F. Modigliani and M. Miller, 1958, "The Cost of Capital, Corporation Finance and the Theory of Investment," *American Economic Review*, 48, 1958, pp. 261-267. From early on, it was recognized that theorem was relevant to financial firms as well as non-financial firms. See M. Miller, 1995, "Do the MM propositions apply to banks?", *Journal of Banking and Finance*, 19(3), pp.483-489.

⁶ See, in particular, J. E. Stiglitz, 1969, "A Re-Examination of the Modigliani-Miller Theorem," *American Economic Review*, 59(5), December, pp. 784-793 and J. E. Stiglitz, 1974, "On the Irrelevance of Corporate Financial Policy," *American Economic Review*, 64(6), December, pp. 851-866. In particular, I showed that the kind of arbitrage that Modigliani and Miller had invoked in their analysis was not necessary to establish the result. I established that there did not have to exist a set of risk classes as they had assumed; and that the conclusions held in a very generally specified general equilibrium model. What was required was that the level of debt was not so high that there was a risk of bankruptcy. For a discussion of some of the other restrictions that have to be satisfied for the result to be true, see the footnotes below.

⁷ The problem would arise even if all the costs were borne by a self-financed deposit insurance scheme, and if there were no macro-economic externalities.

higher probability of their being rescued (evidenced so clearly in the recent crisis), they can get access to finance at lower costs⁸, and thus they can grow relative to competitors, not because of their relative competence, but because of the implicit subsidy. As they grow, the likelihood of a rescue increases, and their profitability is enhanced not just because of the increase in the implicit subsidy but because of growing market power, providing further distortions to the market. Moreover, banks know that if they become too big to fail (or too intertwined to fail, or too correlated to fail) they will have an enhanced likelihood of being rescued; they thus have strong *incentives* to become too big to fail, too intertwined to fail, and too correlated to fail—as we saw in the recent crisis. Systemic risk is real, and markets by themselves work to increase it, not to mitigate it. The notion that risk would be spread efficiently, through diversification, was either pure propaganda, or based on models that showed insufficient understanding of market incentives, of the nature of contagion, and/or of the consequences to systemic stability posed by the non-convexities to which contagion and bankruptcy give rise.⁹

The key empirical observation is that markets are often not rational in assessing risk; this is true even of the so-called experts, but even more so of those who are financially unsophisticated.¹⁰ Alan Greenspan testified to this before Congress, when he expressed his

⁸ See for example D. Baker and T. McArthur, 2009, “The Value of the ‘Too Big to Fail’ Bank Subsidy,” Center for Economic Policy and Research Issue Brief, September, available at <http://www.cepr.net/documents/publications/too-big-to-fail-2009-09.pdf> (accessed on August 1, 2011).

⁹ See, e.g., A.G. Haldane, 2009, “Rethinking the Financial Network,” address to the Financial Students Association, Amsterdam, April, available at <http://www.bankofengland.co.uk/publications/speeches/2009/speech386.pdf> (accessed August 2, 2011); A.G. Haldane and R.M. May, 2010, “Systemic risk in banking ecosystems,” University of Oxford mimeo; J.E. Stiglitz, “Contagion, Liberalization, and the Optimal Structure of Globalization,” *Journal of Globalization and Development*, 1(2), Article 2, 45 pages; and J. E. Stiglitz, 2010, “Risk and Global Economic Architecture: Why Full Financial Integration May be Undesirable,” *American Economic Review*, 100(2), May, pp. 388-392.

¹⁰ There is a large literature documenting both systematic and non-systematic but persistent anomalies in capital markets. See, for instance, R.J. Shiller, 2000, *Irrational Exuberance*, Princeton: Princeton University Press; or G.

surprise that the financial markets had not managed risk as well as he had expected.¹¹ But, while he was correct in the conclusion that financial markets had done a miserable job of managing risk—one of their central societal functions—I was surprised at his surprise. After all, anyone looking at the incentive structures confronting key decision makers should have realized that they had incentives for excessive risk taking and short sighted behavior. (That they had such perverse incentive structures is testimony to the importance of the agency problems to which I referred earlier.)

But beyond that, Greenspan made another error—if I mismanage risk, if I am irrational in my risk analyses, I and my family suffer, but there are unlikely to be societal consequences. But if a bank and especially a very large bank mismanages risk, the macro-economy can be seriously affected. There are externalities. It is these externalities that provide the motivation for government programs (like FDIC insurance and regulation). It is these externalities that explain why self-regulation simply won't work. It is deeply troubling when the country's major financial regulators do not understand the rationale for regulation.

Rational markets would realize that increasing leverage shifted risk, and would demand compensating differentials. (Rational market participants in well-functioning markets would

Akerlof and R. Shiller, 2010, *How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism*, Princeton, New Jersey: Princeton University Press. See also J. E. Stiglitz, 1982, "Information and Capital Markets," in William F. Sharpe, Cathryn M. Cootner, eds.: *Financial Markets: Essays in Honor of Paul Cootner*, Englewood Cliffs, NJ: Prentice-Hall, Inc; and the broader discussion of irrationality in capital and financial markets in J. E. Stiglitz, forthcoming, *The Selected Works of Joseph Stiglitz, Volume II*, Oxford University Press. For more on the lack of rationality in much economic decision making, see for instance R. Thaler, 1994, *The Winner's Curse: Paradoxes and Anomalies of Economic Life*, Princeton, NJ: Princeton University Press.

¹¹ In Congressional testimony on October 23, 2008, Greenspan described being "in a state of shocked disbelief" that the lending institutions' self-interest had not protected shareholders' equity. Testimony available at <http://democrats.oversight.house.gov/images/stories/documents/20081023100438.pdf> (accessed August 1, 2011).

have realized too that a shift to variable rate mortgages from fixed rate mortgages would, on average, not save on financing costs, but would expose ordinary citizens to increased risk. But not even Greenspan seemed to understand this, as he seemed to advise ordinary citizens on the virtues of variable rate mortgages.¹²⁾

As we see banks striving to increase their leverage, there may be uncertainty about what is driving this: is it because in doing so, they increase the implicit subsidy from the government? Is it because they do not understand the fundamentals of risk? Is it because they understand the fundamentals of risk, but realize that their bondholders and shareholders do not, so that they can extract more money for themselves? But about this there is no uncertainty: excessive leverage has large societal costs. Banks, and especially the big banks, need to be restrained.¹³

¹² See for example "Understanding Household Debt Obligations," Remarks by Chairman Alan Greenspan at the Credit Union National Association 2004 Governmental Affairs Conference, available at <http://www.federalreserve.gov/boarddocs/speeches/2004/20040223/> (accessed August 1, 2011).

¹³ There are a few other reasons that have been mentioned for banks' seeming preference for excessive leverage. One is that the tax system, by allowing tax deductibility of interest, increases the *private* return on increased leverage. But if so, this is not an argument for allowing greater leverage, but for correcting a tax distortion. (A full analysis of the tax consequences has to integrate an analysis of the corporate and individual income tax system. The results are more complex and ambiguous, once the preferential treatment of capital gains is taken into account. See J. E. Stiglitz, 1973, "Taxation, Corporate Financial Policy and the Cost of Capital," *Journal of Public Economics*, 2, pp. 1-34.) Another criticism of the Modigliani-Miller analysis (which I raised in my original evaluations of their work) is that financial structure may convey information. (See, e.g. H. Leland and D. Pyle, 1977, "Informational Asymmetries, Financial Structure, and Financial Intermediation," 32(2), pp. 371-387; N. Maljuf and S. Myers, 1984, "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have," *Journal of Financial Economics*, 13, pp. 187-221; B. Greenwald, J. E. Stiglitz, and A. Weiss, 1984, "Informational Imperfections in the Capital Markets and Macro-economic Fluctuations." *American Economic Review*, 74 (1), pp. 194-199; and J. E. Stiglitz, 1982, *Op. cit.* But as A.R. Admati *et al.* point out, if banks are required by regulation to raise capital when their capital ratio falls below a certain level, then there is in fact no adverse signal (A.R. Admati, P.M. DeMarzo, M.F. Hellwig and P. Pfleiderer, 2010, "Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Expensive," Stanford University Working Paper No. 86). To the contrary, the only firms in such a situation that would not raise new equity would be those that believed that their future prospects were bleak: raising new equity would thus provide a *positive* signal. While it may be the case that the cost of raising equity funds may be high in recessions, this is an argument for macro-prudential regulations, which adjust capital requirements to the state of the business cycle, or the adoption of

Indeed, the analysis above suggests that there are few or no societal costs to doing so, and considerable benefits. It is not as if leverage somehow manufacturers resources out of thin air. Lending is risky. The risk has to be borne somehow. It is borne by equity holders of lending institutions—to the extent it isn't shifted to government, FDIC, or bondholders, or depositors. It is better to have it better distributed, among a large equity base, given the high social costs of financial disruption. Advocates of low equity requirements for banks need to argue that this is the best way by which the risks of lending should be distributed within the economy—and I have seen not even an attempt to do so.

Recent empirical research has provided considerable support for the views expressed here. Miles *et al.* of the Bank of England find no relationship between bank leverage and the spread on business loan rates over T-bill rates, and after a careful (but conservative) analysis of the consequences of increasing bank-equity requirements, concludes that very substantial increases would have very little effect on lending rates.¹⁴

related provisioning requirements. A still weaker argument for high leverage is based on the “back to the walls theory of corporate finance”—high leverage force gives management less leeway to behave badly. (See, e.g. M.C. Jensen, 1986, "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," *American Economic Review*, , 76(2), pages 323-29.) No evidence of this effect was observed in the run up to the crisis. On the contrary, the convexities in payoffs generated by bankruptcy encourage excessive risk taking, of particular concern in the financial sector. These non-convexities, in turn, have important consequences for systemic stability, which the standard literature ignored. See below.

¹⁴ D. Miles, J. Yang and G. Marcheggiano, 2011, “Optimal bank capital”, Bank of England Discussion Paper No. 31, April. In their analysis, they typically ignore the increased cost of borrowing funds that results from increased leverage, thus overestimating the benefits of leverage. They also find no relationship for the UK between Bank leverage and economic growth. Similarly, K. Kashyap, J. Stein, and S. Hanson argue that the effect on lending rates of a substantial increase in equity requirements would be very small (“An Analysis of the Impact of ‘Substantially Heightened’ Capital Requirements on Large Financial Institutions,” Working Paper, 2010).

But even if there were some increases in lending costs as a result of increased equity requirements, those costs have to be offset against the benefits: (a) To the extent that the increased costs are a result of increased taxes paid by banks, then in principle, the government could, for instance, have broader based reductions in, say, taxes on investment—enhancing growth and efficiency. (b) There are very large societal costs from bank failures, and these can be substantially reduced by higher equity requirements. Based on a conservative estimate of the increased cost of borrowing and plausible magnitudes for the shocks facing an economy, Miles *et al.* conclude that substantial increases in the equity requirements are warranted.¹⁵

There are two responses to this perspective. The first is that increasing equity requirements will increase the cost of borrowing and lead to less investment. But (in a closed economy) aggregate investment is limited by aggregate savings, and there is no reason to believe that the latter will be adversely affected.¹⁶ But most critically, we have argued that in the case of well-functioning markets, there is no basis to this belief. If, of course, markets irrationally do not take into account the additional risk imposed on equity (in the short run), then with increased leverage, funds might be able to be provided at lower than their true social costs. But it would be a big mistake (as we should have learned) to allow banks to do this. As we have learned, society will eventually pay the price for this market distortion—and that price can be very, very high.

¹⁵ They look at shocks over a sample of 31 countries over 200 years. We suspect that Miles *et al.* estimate of the small benefit from increased equity in fact considerably overestimates the net social benefit, taking into account the costs of bankruptcy and financial distress.

¹⁶ Indeed, if the argument that changing bank capital structure increased the cost of capital to banks were correct, it would imply that the return to those providing funds to the financial system would have increased, and thus arguably that savings might have increased. In fact, we have contended that the systemic cost of capital (return to capital) would be essentially unchanged, and thus, whether the economy is open or closed, whether it is operating at full employment or less than full employment, there is little reason to believe that aggregate savings or investment would be affected.

The second is that the existing banks (perhaps especially the large banks) have an absolute advantage in judging credit worthiness. Restricting leverage in effect restricts their ability to leverage their core competencies to ensure the efficient allocation of resources in society. The crisis has shown that the predicate of this hypothesis is simply false: the large banks' performance was hardly stellar, and some of their (admittedly low) returns were undoubtedly related to the implicit subsidy provided by the government. But again, more fundamentally, putting aside concerns about too-big-to-fail and anti-competitive practices, if the existing banks can demonstrate to the market their greater competency, including at managing risk, they will have no difficulty raising capital at the appropriate risk adjusted rate; indeed, if they are better at risk management, then their cost of funds will be lower than that of their competitors.

Some have argued that even if it makes sense in the long run to increase capital requirements, doing so in the short run can be costly, especially at a time such as this when the economy is fragile and the banking system already weak. At most, this is an argument for a paced increase in capital requirements, and one which would not allow any dividends or share buybacks or extravagant bonus pools until the desired capital ratios are reached, unless the bank is raising on the market a more than offsetting amount of capital. But one should, at the same time, be aware of the large risks, especially *under the current circumstances*, of delay: it is precisely because the economy is fragile, banks have inadequate capital, and the banking sector in the aftermath of the crisis is *more* concentrated than before that the risk of a financial catastrophe of the kind that we experienced in 2008 is so great today. The downside risks of not doing something are especially grave now. It may be desirable, or even necessary, for the

government to provide funds for another round of equity injections (hopefully done in a far better way than under TARP), if the private sector cannot raise the necessary funds. But with literally hundreds of billions of cash available in the private sector, it should tell us something about the riskiness of the banks (and perhaps their lack of transparency) if the private sector is not willing to make these investments.

I have focused my remarks this afternoon on increasing banks' equity capital. There are a number of other factors affecting the risk to the economy posed by the banking and financial sector. I have noted the risk of too-big-to fail banks. We should not allow any bank to grow to a size that it poses a systemic risk to the economy. Yet in the aftermath of the crisis, the banking sector has become more concentrated, and the risk posed by too-big-to fail banks has, if anything, increased. We saw in the crisis the risks posed by non-transparent transactions, such as over-the-counter CDS's, and off-balance sheet activities. One of the reasons that the financial system froze was that everyone knew that there was no way that they could know the true financial position of most of the banks. While the Dodd-Frank Bill improved matters, it went nowhere far enough: the problems continue, and as long as they continue, our economy is at risk. The gravity of the situation is illustrated by what has been happening in Europe, where the European Central Bank has warned against the risk to Europe's financial system posed by a Greek default. In principle, the direct exposure of the banks outside of Greece should be limited, well within the capacity of adequately capitalized banks to withstand. But it is clear that the risks can be amplified as a result of the high levels of interconnectivity and through CDS's. The facts of the matter are that no one seems to know with any degree of precision to what extent individual banks on either side of the Atlantic are at risk; and to

protect the banks from the excesses of their own risk taking, the ECB had demanded that European taxpayers bear the full costs of any restructuring. The ECB's vehement opposition to what is essential to all capitalist economies—the restructuring of debt of failed or insolvent entities—is evidence of the continuing fragility of the Western banking system. (The appropriate response of the ECB should not have been to oppose the restructuring, but rather to insist on an appropriate banking and financial sector regulatory framework.)

We may never fully protect the economy against the risk of another crisis such as the one that we have been through. But this much should be clear: our economic and financial system is badly distorted. Resources were misallocated before the crisis. No government has ever wasted resources (outside of war) on the scale that has resulted from the failures of America's financial system. We may have begun the work of making our financial system once again become the servant of the society which it is supposed to serve, but there is a long way to go. Lending, especially to small and medium sized enterprises is constrained. Activities that pose unnecessary risks to our entire economy continue.

We cannot rely on the self-restraint or self-regulation of financial markets. We learned that lesson in the aftermath of the Great Depression, and the decades following World War II, with this strong regulatory system, were among the most prosperous this country has experienced. The question is, will we relearn that lesson in the aftermath of the Great Recession of 2008?

