



Financial Stability and Responsive Monetary Policy: Resolving a Dynamic Incompatibility.

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FINANCIAL STABILITY AND RESPONSIVE MONETARY POLICY:

RESOLVING A DYNAMIC INCOMPATIBILITY*

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In the wake of the 2007-9 financial crisis a narrative has emerged, especially for the United States, that poses a new challenge to the joint conduct of monetary policy and financial regulation. This narrative places much of the blame for the crisis, and therefore the economic costs that the aftermath of the crisis inflicted (and continues to inflict) not just in the U.S. but elsewhere around the world as well, on the easy monetary policy that the U.S. Federal Reserve System pursued during the early years of that decade.¹

In brief, the cause-and-effect sequence posited by this reasoning is that the Federal Reserve set short-term interest rates at historically low levels, in an effort to stimulate economic activity and thereby avert a perceived threat of deflation; that low short-term interest rates spurred investors to seek higher rates of return, for some (mostly individuals) by investing in

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assets such as houses and for others (mostly institutions) by lending to finance such investments; that this debt-financed investment bid up the prices of houses and other assets, at first in the usual way but in time also via a bubble-like dynamic in which both the investments and the loans behind them made sense only on the assumption of yet further asset price increases; that after the prices of houses and other assets reached levels sufficiently out of line with fundamental economic criteria the bubble proved unsustainable and asset prices started to fall; that without the rising prices the investors who had borrowed to finance their purchases of these assets could no longer either service or refinance their obligations, especially for home mortgages; that borrowers' defaults on these obligations, and even more so the mere prospect of further defaults, caused the value of securitized claims against them to fall; and that banks and other highly leveraged financial institutions owned enough of these obligations and claims, and were sufficiently impaired by their decline in value, that a financial crisis ensued. Further, the response to the crisis by the Federal Reserve together with other central banks, intended both to resist the consequent decline in economic activity and to help preserve the integrity of leading financial institutions, was once again to lower short-term interest rates – in the event, to a level below what, under this reasoning, had started the perverse cumulative dynamic in the first place.

It is not obvious that this narrative, including in particular the blame it places on the Federal Reserve's maintaining low short-term interest rates earlier in the decade, is fully persuasive. Most immediately, the link it assumes between low short-term interest rates and the subsequent bubble in house prices seems plausible enough on its face but nonetheless lacks more substantive empirical support. Neither for the United States nor for other countries that experienced extraordinary increases in house prices during the pre-crisis years have researchers yet found evidence of a direct link of this form.² Nonetheless, this narrative, together with the

assumed primary causation that it attaches to monetary policy, is now a central part of the discussion of the crisis and of what policymakers should do differently in the future to avoid further such experiences.

To the extent that it therefore does have force for the current public discussion, this monetary policy-centered narrative bears interesting implications for economic policymaking on at least three grounds. To begin, under this logic the initial impetus that led to the crisis was *easy* monetary policy. The more familiar story is that what triggers a financial crisis is tight monetary policy: the central bank raises short-term interest rates, which increases banks' funding costs and also causes the prices of longer-lived assets, including not just houses but equities and especially bonds, to decline. In the monetary policy-centered narrative of the 2007-9 crisis, the standard logic is reversed: the asset price decline was a reversal of overshooting attributed in the first instance to *low* short-term interest rates. Moreover, even in the later years immediately preceding the onset of the crisis, there was no significant move toward a tight policy on the Federal Reserve's part. The target federal funds rate peaked at 5 ¼ percent, from July 2006 through July 2007; with price inflation averaging 3 percent per annum from mid 2006 to mid 2007, this interest rate level hardly constituted tight monetary policy. And the Federal Reserve quickly backed away from even this modest interest rate increase once indications of strain in the home mortgage market appeared. By yearend 2007 the target federal funds rate was back down to 4 percent. By May 2008 it was just 2 percent.

Second, this narrative of the 2007-9 crisis suggests the prospect of an explosive monetary policy dynamic. To repeat, under this logic the root cause of the crisis was *low* short-term interest rates. But once a crisis emerged, and thereafter through the resulting period of weakness in real economic activity, most central banks followed the conventional approach of a return to

easy monetary policy – again in the form of low short-term interest rates. After the failure of Lehman in September 2008, and the failure-but-for-bailout of many of America’s other leading financial institutions, the Federal Reserve lowered the target federal funds rate to 1 percent. By yearend 2008 the target rate was effectively zero, where it has remained through the remaining six months of the recession and (as of the time of writing) two and a half years of post-recession recovery. Beyond that, the Federal Reserve has publicly pledged to maintain the target federal funds rate at effectively zero for at least another three years.

From the perspective of this narrative of the crisis, therefore, the amplitude of the interest rate swing is widening. During the period of low interest rates to which this reasoning attributes the crisis in the first place, the lowest level at which the Federal Reserve set the target federal funds rate was 1 percent, and for just one year (from July 2003 through June 2004). In response to the events to which this narrative claims that that earlier policy gave rise, the target level went to zero, and for six years (from December 2008 through, on promise, December 2014). Were it not for the zero lower bound, the down-side amplitude of the swing would presumably have widened even further. Conventional empirical estimates of the Federal Reserve’s systematic setting of the target federal funds rate in response to variables such as inflation, unemployment and the gap between actual and potential economic output indicate that the rate chosen in the aftermath of the crisis (and, under many estimates of this relationship, still today) would have reached *minus* 5 to 6 percent.³

Third, and most important for purposes of thinking about future economic policy arrangements, the logic underlying this monetary policy-centered narrative of how the 2007-9 crisis came about suggests a fundamental incompatibility among three elements that are

conventionally seen as essential underpinnings of the modern economic/financial policy structure:

- a responsive monetary policy that actively resists more-than-trivial price inflation, and that may actively resist fluctuations in real economic activity as well (for this purpose whether the central bank describes its policy framework as inflation targeting or an American-style dual mandate, or something in between, is irrelevant⁴),
- an intermediation system built on banks and other deposit-type institutions with significantly levered balance sheets, and with substantial freedom both to invest in a wide variety of financial assets and to finance those assets with mismatched (normally shorter-duration) liabilities,
- and asset markets characterized by open entry, free trading, and few restrictions on how nonfinancial investors finance their positions.

According to the monetary policy-based narrative of the 2007-9 crisis, each of these three elements was visibly at work facilitating one or more steps along the way. But each of the three also currently stands as an essential part of the standard conception of the modern free enterprise economy. If the three in combination are systematically prone to deliver the harmful consequences that the crisis bore, or even to render an economy plausibly vulnerable to such consequences, then perhaps that conception warrants changing. If so, the question is which element(s) to change, and how.

Restrict the Responsiveness of Monetary Policy? NO

Discussions of “activist” monetary policy inevitably trigger images from the half-century-old debate over what many economists of that time called “fine tuning.” The argument made then had two components. First, in the presence of uncertainty over not just the

disturbances to which the economy is subject but also the magnitude and timing of the economic impact of whatever measures policymakers might take in response, actions intended to stabilize the economy might end up destabilizing it. In a classic early paper along these lines, Milton Friedman famously showed that (under specific conditions) a policy aimed at fully offsetting economic shocks would instead amplify them if the correlation between the intended effect of such actions and their actual effect were less than one-half.⁵ Absent confidence that the achievable correlation would be this great, therefore, a “do nothing” policy would be superior, on average over time, to a policy aiming to offset shocks fully.

Second, given the setting in which this debate arose, in the early decades following World War II, the implicit assumption was that what policymakers were seeking to stabilize was real economic activity: output, or employment (perhaps unemployment), or both. The concern, therefore, was that this kind of “fine tuning” would distract attention from the need to maintain stability in prices or in the rate of inflation. No one (at least to my knowledge) used the derogatory phrase “fine tuning” to refer to attempts to resist either actual or incipient price inflation. Similarly, later on, once many central banks began using monetary aggregate targets as formal guidelines for monetary policy, no one argued that attempting to keep the money stock (however measured) as close as possible to the targeted trajectory constituted “fine tuning.”

Both of these lines of argument have merit, but neither is persuasive in the modern context. Milton Friedman’s famous result about the dangers of a policy intended to offset fully any given shock to the economy was just that: an analysis of what happens if policymakers try to offset shocks *fully*. In another classic paper a decade and a half later, William Brainard implicitly showed that while a correlation of less than one-half between the actual and intended effect of policy action rendered a “do nothing” policy superior on average to attempting to offset

shocks in full, the “do nothing” policy would not necessarily be superior to a more conservative policy that aimed to offset the same shock only partially.⁶ Brainard showed that as long as there was any positive correlation at all between the actual and intended effect of the policy action, under the conditions posited by Friedman there necessarily existed some activist policy that would be superior to the “do nothing” policy.

Moreover, a logically prior – and, from the perspective of monetary economics, deeper – problem was how to define the “do nothing” policy in the first place. Given the setting of the early postwar years, especially in the United States, one might have supposed that “doing nothing” meant holding the short-term nominal interest rate unchanged; that, after all, is what the Federal Reserve System was required to do before the 1951 Treasury-Federal Reserve Accord. But economists and others who made the anti-“fine tuning” argument certainly did not intend a return to interest rate pegging. Those who, like Milton Friedman, were closely interested in monetary policymaking instead had in mind defining the “do nothing” policy as maintaining an unchanging rate of growth of one or another deposit-monetary aggregate, or perhaps the monetary base (central bank liabilities). As a result, once the empirical relationship between monetary aggregates and either prices or nominal income broke down in most industrialized economies, in the 1970s and 1980s, the argument along these lines became empty for practical purposes because no one could say what the “do nothing” policy was. (Some economists interested more in the theory of monetary policy than in actual policymaking continued to think along these lines, defining the “do nothing” policy as maintaining an unchanging rate of price inflation; but this conception has nothing to say about what a central bank should actually do.)

The concern that what “fine tuning” meant in practice implied neglect of, or at least inadequate attention to, the price dimension of aggregate economic activity among the central

bank's objectives had more lasting force. Regardless of one's view of the *origins* of the "Great Inflation" of the 1970s and early 1980s – whether the root cause was a flawed model of the macroeconomy (such as the stable Phillips curve), or perverse economic institutions (indexed wage contracts, for example), or a series of extraordinary supply shocks (oil, anchovies, etc.), or, more likely, some combination – it is clear in retrospect that once inflation reached levels that both policymakers and the public regarded as problematic, policymakers did not fix the problem because they did not attach sufficient priority to it.

Once they did, monetary policy conducted mostly along conventional principles, albeit involving extraordinarily high nominal interest rates, proved predictably able to reduce inflation to acceptable rates. Moreover, the real economic costs of doing so – costs in terms of reduced output and employment, and foregone incomes and profits – were also approximately in line with the predictions of previously existing conventional economic models. For more than a quarter-century since then, economic policy, importantly including monetary policy centered around active variation of short-term interest rates, has kept price inflation well within acceptable bounds in most of the world's industrialized economies. And, until the 2007-9 financial crisis, in most countries this combination of economic policies achieved that success without large-scale fluctuations in real economic activity either.

To be explicit, this macroeconomic success was based on an actively responsive monetary policy under which central banks raised short-term interest rates when the inflation rate rose or economic activity surged, or both, and conversely lowered short-term interest rates when the inflation rate fell too low (which in most countries meant a threat of deflation) or economic activity ebbed, or both.⁷ What made the difference, compared to prior experience, was attaching adequate priority to keeping inflation low. Adopting what an earlier generation of economists

had conceived as a “do nothing” policy was not part of the recipe. At least based on past experience, therefore, abandoning this kind of actively responsive monetary policy would presumably imply significant cost.

This conclusion need not preclude generalizing the responsive approach to monetary policymaking, however – most obviously, by broadening the set of observed economic phenomena to which the central bank responds – and in the wake of the 2007-9 crisis two such generalizations seem at least potentially constructive. First, evidence for the United States shows that observations of the financial condition of individual banks (based on, for example, the criteria included in the standard CAMELS ratings), when aggregated, contain incremental information that helps predict fluctuations in aggregate-level economic activity.⁸ There is at least an a priori case, therefore, that the central bank’s systematically responding to these observations in its setting of short-term interest rates, presumably reducing interest rates when banks’ measured soundness erodes (not because banks’ condition is per se an objective of monetary policy, but rather for the information value it contains) may improve the aggregate-level performance achieved by monetary policy. Whether such a policy change would be likely to achieve a quantitatively significant improvement in macroeconomic performance would be a useful subject for empirically grounded research. (I am unaware of any such research undertaken to date.)

Second, in the wake of the recent financial crisis it is also plausible that a central bank might take account of asset prices, most obviously house prices but perhaps also equity prices, in its setting of short-term interest rates. Some empirical work for the United States, evaluating the consequences of adding a term in house prices to the Federal Reserve’s historically estimated interest rate-setting rule, indicates potential improvement across some range of strength of the

response to house prices, relative to the historically estimated responses to inflation, the output gap and the lagged interest rate level, and under a variety of different objective functions for evaluating the success of monetary policy at the aggregate level.⁹ In light of the historical pattern of variation in house prices, however, such results are inevitably highly dependent on what amounts to a single observation: the large price run-up in the years before the 2007-9 crisis and the subsequent decline. (Here again, it is important to distinguish an interest rate response to house price movements based on their incremental information with respect to conventional objectives of monetary policy, like overall price inflation and the level of real output, from an interest rate response meant to affect house price movements per se; to repeat, the existing evidence of an effect of interest rates on house prices is modest at best, certainly smaller than what the standard user-cost-of-capital theory would imply.¹⁰)

The idea of the central bank's varying short-term interest rates in response to equity prices is much older. It was at least implicit in much of James Tobin's work, which made a central point of arguing that the effect of monetary policy depended not just on short- or even long-term interest rates but on the rate of return on equities (or, equivalently, the ratio of equity prices to the comparable cost of building new capital) as well.¹¹ Some observers of U.S. monetary policy in the Greenspan era claimed that the Federal Reserve did systematically vary short-term interest rates in response to fluctuations in the stock market – the so-called “Greenspan put.”¹² (Here too, the evidence indicates that this element of the variation of short-term interest rates was a response to the incremental information content of stock prices, not an independent attempt to target stock prices per se.¹³) For purposes of this discussion, however, the issue is not whether central banks do, or did, vary short-term interest rates in response to equity price movements but whether doing so would enable monetary policy to achieve superior

performance over time. Before the crisis, the consensus view – articulated most prominently by Ben Bernanke and Mark Gertler – was that doing so would be unlikely to enhance macroeconomic performance.¹⁴ More recent work, however, has not only established a firmer theoretical basis for a response of monetary policy to financial asset prices but also provided some limited evidence that such a response would be likely to help the central bank to achieve its macroeconomic objectives.¹⁵ Empirical support for this claim remains limited, however, and so this subject too is a useful focus for research.

The central point, however, is that with or without the addition of a systematic response to house prices and/or equity prices, the idea that central banks might back away from the active responsiveness that has characterized the conduct of monetary policy in most industrialized countries over the past quarter-century and more holds out little attraction. Whether the objective is to achieve price stability and maximum sustainable employment, or to focus more narrowly on inflation, the outcome has been generally favorable. If this way of conducting monetary policy is incompatible with a highly leveraged intermediation system and free trading in asset markets, along the lines that the monetary policy-centered narrative of the 2007-9 crisis suggests, the better resolution to this incompatibility lies in making some change to one or another, or even both, of those two elements in the triad.

Whether the low short-term interest rate that the Federal Reserve chose to implement during much of 2003 and 2004 constituted a mistake in hindsight depends whether the threat of deflation was as serious as policymakers then took it to be – yet another empirical question. But given that policymakers did take this threat seriously, the policy action that ensued was not a mistake *ex ante*. Similarly, it is of course possible that the low level of short-term interest rates (and, in some countries, the accompanying large-scale purchases of assets) currently being

implemented by the world's major central banks may turn out in hindsight to have been a mistake, but on the available evidence it too is not a mistake *ex ante*.

Tightening Financial Intermediary Capital Requirements? YES

The second feature of the modern economic and financial landscape that was clearly at work in the monetary policy-centered narrative of the 2007-9 financial crisis is the highly leveraged position of many of the major economies' most important deposit and lending institutions.

There is no surprise in the fact that financial intermediaries have leveraged balance sheets. The essential function of a financial *intermediary* is to stand between depositors who demand ready liquidity for their funds and borrowers who seek funds for purposes with payout streams that cannot support liquid liabilities. Issuing liquid liabilities and relending in illiquid form are inherent to its economic purpose. In addition, in light of the key role that financial intermediaries normally play in the economy's payments mechanism, it is essential that the deposits they issue, and by extension their other liabilities as well, be extremely reliable. By contrast, many of the uses to which their borrowers apply funds are inherently risky even apart from the time profile of the hoped-for returns. Hence the transformation that financial intermediaries undertake involves both liquidity and risk.

This said, there is nothing in the underlying fundamentals to necessitate that intermediaries' leverage be of any given magnitude, much less what many important institutions maintained in the period leading up to the 2007-9 crisis. In the United States, most of the largest commercial banks had leverage ranging from twelve- to fifteen-to one. Many of the major investment banks had leverage of 25- to 30-to-one, and some even higher. Moreover, even these reported leverage ratios were in many cases understatements because of assets and/or liabilities

held off a firm's balance sheet. Lehman's infamous "Repo 105" (which would not have been allowed if the transactions had been booked in the U.S.) temporarily removed some \$50 billion from the firm's balance sheet at every quarter-end.

Given the liquidity and risk transformation that is essential to financial intermediaries' economic function, together with the basic implications of limited liability under which almost all major firms do business, there is a natural need in this area of economic activity for public policy instruments such as capital requirements, supervision and regulation, and deposit insurance. Nearly all economically developed countries have these instruments, and for some applications (the most obvious example is the Basel capital standards process) international coordination has evolved to overcome the potential shortcomings of imposing different rules in different jurisdictions.

But the 2007-9 crisis dramatically demonstrated that the regulations and other protective devices then in place were inadequate to restrain institutions from business decisions that subjected not only their shareowners but also the economy at large to substantial costs, and exposed their countries' taxpayers to potential losses as well. The leading example in the United States, and perhaps more broadly, was Citibank. By mid 2008 – well before Lehman failed and what had been mounting strain in key markets turned into an out-and-out crisis – Citi had taken losses of \$55 billion, mostly on its portfolio of mortgage-backed securities including collateralized debt obligations backed by subprime and other mortgages.¹⁶ The bank actually held most of these assets through separately structured entities from which in principle it could simply have walked away, as Bear Stearns did when it let one of its sponsored hedge funds collapse in the summer of 2007 (in what became the first concrete sign that a crisis might be coming). But Citi had apparently marketed claims against these special-purpose vehicles as if

the bank stood behind them, and it was unwilling to accept the reputational damage that would therefore have followed from letting investors take the losses. If its large depositors had withdrawn their funds in the same way that Bear Stearns's short-term creditors had (the limit on deposit insurance in the U.S. was then \$100,000 per account), the bank would have been ruined just as Bear Stearns was.

Citi therefore took the assets back from the off-balance-sheet entities and absorbed the losses itself. Without direct assistance from the U.S. Government, the bank would presumably have failed. Citi received \$45 billion in direct capital infusions under the Treasury's TARP and TIP programs, which made the government by far the bank's largest shareowner (after the Treasury converted the initial \$25 billion of preferred stock that it received into common, it held 33.6 percent of Citigroup common stock¹⁷); the Treasury and the Federal Deposit Insurance Corporation together guaranteed the value of more than \$300 billion of the bank's remaining assets; and the FDIC further guaranteed new debt issued by Citi (along with that of all other U.S. banks). Even so, by early 2009 Citigroup stock had fallen to just 97 cents per share, from \$55 as recently as late 2006.

Citi was not the only example. The U.S. Government had to rescue several other major American financial institutions as well: most prominently Bank of America, which also received \$45 billion in direct capital infusions, and insurance company AIG, which set the all-time bail-out record at \$182 billion and became almost entirely government-owned. Nor was the phenomenon of banks' running themselves into the ground and looking to government for rescue limited to the United States. UBS took \$38 billion in losses on its portfolio of mortgage-backed securities and related derivatives. In October 2008 the Swiss government rescued the bank by setting up a classic "bad bank," the StabFund, into which the Swiss National Bank put \$40

billion.¹⁸ Royal Bank of Scotland took \$15 billion in losses; the U.K. government rescued it, taking an 82 percent ownership share in the process, also in October 2008. In March 2009 the French government bailed out BNP Paribas, the largest French bank with a E5 billion loan. Just last year France, Belgium and Luxembourg joined in issuing E90 billion of guarantees to rescue Dexia, a bank owned by interests in those three countries, and the Belgian government bought the bank's Belgian division for E4 billion. And there were others as well.

It is difficult to escape the conclusion that these losses, and the consequent government bail-outs that ensued, were the result of excessive risk-taking by the banks' managements. Here again, Citi is the easiest example at which to look – in this case through public statements made both before and after the fact by one of Citi's most senior executives. In the spring of 2007, William Rhodes, at the time senior vice chairman of Citigroup and chairman of Citibank, wrote in the *Financial Times* that “pockets of excess” were developing in the U.S. financial system and pointed to the housing and mortgage markets in particular. “I believe,” Rhodes wrote, “that over the next 12 months a market contraction will occur and this time it will be a real correction.” It was therefore “the time to exercise greater prudence in lending and in investing and to resist any temptation to relax standards.”¹⁹ In a book published soon after the crisis, however, Rhodes acknowledged that the bank's management chose not to act accordingly.²⁰ Moreover, the 2007-9 episode was hardly unique in Citi's experience. In the early 1990s the bank was probably insolvent after its real estate and leveraged-buy-out portfolios suffered major losses. In the early 1980s the bank was in a similar situation after many of the Latin American and other developing countries to which it had lent defaulted on their obligations.

The reason is not hard to infer. The asymmetric payout structures inherent in limited liability create incentives even for the shareowners of a firm to undertake investments that they

would consider excessively risky were they operating as an unlimited partnership. The prospect of taxpayer-financed bail-outs further skews the incentives that bank shareowners face. Perhaps the most distorted incentives, however, operate at the level of management, not the shareowners. To cite once again the case of Citigroup, owners of stock in the bank before the crisis have done poorly, whether they sold along the way or not. But the bank's managers, especially those who had only modest stock holdings, did well. In the spring of 2009, for example, soon after receiving the government's \$45 billion capital infusion, the bank paid out \$2 billion in bonuses, including payments of more than \$5 million apiece to forty-four individuals, for work done in 2008 – a year in which shareowners lost 95 percent of their value.²¹

The conclusion this experience supports is not only that self-regulation of financial institutions and financial markets failed but that the body of regulatory arrangements imposed by government was inadequate as well. Public discussion since the crisis has taken this conclusion in two directions. The one that bears on leverage is to call for increased capital requirements for banks and other financial institutions, especially those deemed systemically important on account of size, or “interconnectedness,” or both. Given the potential drawbacks of imbalances in such requirements across different countries, much of the effort along these lines is currently embodied in the process designed to lead to internationally agreed “Basel III” minimum capital requirements. If these requirements go forward as currently discussed, many major financial institutions, especially in Europe, will need to increase their capital or reduce their holdings of risk-rated assets. In the United States the Federal Reserve Board is proceeding on a parallel track, including an overall “leverage ratio” limit and, for the largest institutions, a “liquidity ratio” test (in both cases mirroring the in-process Basel III discussions).

It is premature to judge the likely efficacy of these more onerous restrictions on bank asset-liability management, and not just because the intended effective date of the Basel III agreement is not until 2019. Much of what matters in this context is not just the numerically stated minimum capital requirements but the accounting standards that designate against what collection of assets or liabilities the requirements apply. The failure-but-for-bailout of Citibank, for example, was due almost entirely to losses that the bank took on assets it was holding off of its balance sheet – and therefore against which it was required to hold no capital at all, regardless of the stated ratios for on-balance-sheet assets. Here too, Citi was not unique.

Critics of the call for greater capital requirements point to a likely decline in banks' ability to lend in support of economic expansion. With a limited amount of bank capital, it follows straightforwardly that balance sheets must be smaller under higher required capital ratios and smaller permitted leverage. Further, as long as government-issued obligations continue to carry a lighter risk weighting than private obligations, the more limited lending that banks can then do will also be more skewed toward supporting government needs rather than those of businesses or households. (In an era of stubbornly outsized government borrowing, this concern carries particular force.) But there is no reason that the supply of capital to banks need be strictly limited as this line of argument assumes. Over time, the higher rate of return implied by greater scarcity of bank capital is likely to increase the supply of it, and therefore to support bank balance sheet expansion beyond what a mechanical application of higher capital ratios to an unchanged aggregate quantity of capital would imply.

The aspect of this criticism that does withstand scrutiny is that if the new equilibrium under stricter capital requirements therefore involves not only a larger quantity of bank capital but also a higher rate of return on it, that higher rate of return will correspondingly imply higher

interest rates, all else equal, on bank lending (and perhaps lower interest rates on bank deposits too). But these higher interest rates will merely cause bank borrowers (and, if they receive lower rates, the depositors) – who are the ultimate economic beneficiaries of the intermediation the banks are providing – to internalize the cost of the systemic risk to which the intermediation from which they are benefitting potentially subjects the economy. Some of those borrowers will remain as borrowers from banks, but at higher cost. Others will exit the banking system, either finding the funds they need (also presumably at higher cost) elsewhere or doing without. For both groups, the fundamental matter is the removal of a public subsidy and the correction of an externality: with inadequate capital requirements, as at present and in the recent past, the availability of taxpayer-financed bail-outs constitutes a subsidy to intermediation, and the exposure of the economy more generally to the loss of incomes and profits in the event of crisis constitutes a negative externality (as the 2007-9 crisis showed, potentially a very large one). Seen from this perspective, stricter capital requirements would merely reduce (in the limit, eliminate) the subsidy and offset the negative externality. On both grounds, the economic effect would be positive.

Within the specific context of the monetary policy-centered narrative of the 2007-9 crisis, and the implications for monetary policy in particular, under stricter capital requirements low short-term interest rates maintained by the central bank, even over an extended period of time, might still make banks eager to seek higher returns in riskier assets but would limit their exposure to potential failure if the investments through which they sought to do so turned out badly. From a broader economic perspective, higher capital requirements would remove the subsidy that taxpayers now provide to bank lending, and would also cause banks (and those who borrow from them) to internalize at least part of the negative externality that bank risk taking

now imposes on taxpayers and on the economy at large. Both outcomes would be well worth while.

Restrict Trading in Asset Markets? YES, BUT ONLY IN A TARGETED WAY

A second major initiative along similar lines, also triggered by the 2007-9 crisis, and particularly in the United States, is reducing the scope of commercial banks to engage in speculative trading unrelated to their intermediation role. It is difficult today to realize that until as recently as 1999, U.S. financial institutions operated under a separation of commercial banking (defined as taking deposits and making loans) and investment and trading in privately issued securities. In the most recent period, the industry-wide presumption has instead been that banks cannot operate without universal trading functions.

That presumption, however, rests on either or both of two claims. One is the presence of direct synergies between intermediation and trading. The other is that trading is a systematic source of profit that banks will then use to subsidize their lending. Neither claim withstands scrutiny. There is little or no empirical evidence of synergies between banks' lending and trading functions, and the crisis demolished any idea that banks' trading of securities is systematically profitable. (It is profitable except when it isn't; and when it isn't, banks look to government to make up their losses.) Moreover, even if banks' trading activities were systematically profitable, it is not clear why they would channel those profits to subsidize their lending – in other words, to subsidize the borrowers – rather than charging borrowers market-equilibrium interest rates and either explicitly or implicitly returning the trading profits to shareowners.

As with the Basel-based effort to impose stricter capital requirements, however, it is likewise premature to judge what will emerge from the current effort to limit banks' securities

trading. In the United States, in principle Congress has imposed a version of the “Volcker rule” that does exactly this. But while the 2010 Dodd-Frank legislation opened the way for these and other reforms, it left much of the actual decision making to independent regulatory agencies such as the Federal Reserve Board, the FDIC, the Securities and Exchange Commission, and the Commodity Futures Trading Commission. As of the time of writing, some 350 separate rule-making exercises are currently under way.²² The situation in many other countries is analogous, though in most cases less complicated.

What about securities trading by firms other than banks? Any case for such restrictions outside the banking system would have to face a steeper hurdle. What makes banks’ assumption of risks different from that of other investors is the combination of their high leverage and the role they play in the intermediation and payments systems. The collapse of the “dot-com” bubble, at the end of the 1990s, is a useful counter-example. Then too, investors in many of the Western economies suffered major losses. In the U.S. alone, the peak-to-trough decline in equity values was nearly \$9 trillion.²³ But because the securities that lost value were mostly held outside the banking system, the resulting impact on economic activity was small. There was certainly no sense of a financial crisis. Losses absorbed by pension funds, mutual fund shareowners and other such investors are not welcome, to be sure, but they do not have the same impact as losses that erode the limited capital position of leveraged intermediaries that are essential to the transfer of funds from savers to borrowers and to maintaining the payments mechanism.

Moreover, there is a long-standing presumption that the open character of markets in which securities are issued and traded has served the industrialized Western economies, and again especially the United States, well over time. These countries’ free enterprise economies, in

which saving is both mobilized and also allocated to specific investment applications mostly by private transactions in decentralized markets, have achieved long-term growth records far superior to what any attempt at central planning has been able to deliver. Recently some economies that rely more heavily on government guidance for these purposes, most obviously China, have achieved even more impressive growth rates over a period now measured in decades (in China's case, since soon after the reforms instituted by Deng Xiao-ping beginning in 1978). But there is a difference between catch-up growth, in which an economy with average productivity and per capita income far below the economic leaders can exploit technologies developed elsewhere and also take advantage of its low relative labor cost, and growth at the frontier. Even after three decades of rapid growth, China's per capita income is just one-fifth that in the large European economies, and only one-seventh that in the U.S., in comparable prices.²⁴ It is far from clear that China, under its current economic system (and, still more so, under the country's current political system), will be able to maintain its rapid growth as Chinese incomes and productivity draw closer to those in the industrialized West.

Even so, today there is increasing reason, on several grounds, to wonder whether the lack of restriction on entry and trading in securities markets is serving the Western economies well.²⁵ One by-now familiar concern, to repeat but now in a different context, is again the consequent potential exposure to occasional costly disruption in real economic activity. Whether under the monetary policy-centered narrative of the 2007-9 crisis or some different account that attaches less importance to the period of low short-term interest rates earlier in that decade, an essential element in what happened in the most recent episode was surely the run-up in house prices and accompanying surge in home construction spurred in part by the low interest rate on residential mortgage lending – importantly including lending to what were, even *ex ante*, questionable

credits. If the funds behind those loans had come solely from the banking system, this element too would have been merely another failure by the banks. But in this instance the loans were largely securitized, which means that the pricing reflected, in great part, the decisions of the nonbank investors that bought the securities.

A second ground for concern is the increasing evidence of misallocation of the economy's investment (which is the real counterpart to financial bubbles): too many now-empty houses built in the years before the 2007-9 crisis, when house prices were increasing so rapidly; too much never-lit fiber-optic cable laid during the dot-com bubble, when the prices of telecom stocks were shooting up; and similar wasting of resources in previous episodes as well.

Allocating the economy's scarce capital stock is the essential role of the private financial sector in a free enterprise capitalist economy. Well established public utility models exist for operating the payments mechanism, providing liquid deposit instruments and vehicles for retirement saving, providing life and casualty insurance, and most of the other functions that the financial sector in a modern economy also carries out. By contrast, the force of the lop-sided comparison between the long-term performance of the free enterprise economies and what has repeatedly ensued under central planning is to demonstrate the superior allocation of investment that decentralized private markets achieve. The idea that those markets may instead *misallocate* investment in a major way therefore goes to the heart of the argument.

And a third now-familiar concern is the large cost of running this capital allocation mechanism, especially when that cost is measured as a share of the total economic return earned on the capital being allocated. The aspect of this cost that has received the greatest attention in recent years is the large and increasing share of the economy's profits – in the United States, 34 percent on average in the years just before the 2007-9 crisis – that accrues to firms in the

financial sector. But the relevant total for this purpose includes all of these firms' operating expenses as well: salaries, bonuses and other personnel costs; office rents, rental equivalents for owner-occupied buildings, and other real estate costs; utilities and maintenance; travel; advertising; and all of the other costs that go into running any modern service-sector business.

What gives these latter two concerns added force is the widespread sense, in many of the Western economies, that capital formation in aggregate is likely to be limited for the foreseeable future and also (paradoxically, since scarcity normally implies a higher return) that this period is likely to be one of only modest asset returns compared to historical norms. Aggregate capital formation is likely to be limited both by the continuing need of households and intermediaries to deleverage, following the excesses of the pre-crisis period and then the damage that the crisis inflicted on their balance sheets, and also by ongoing fiscal imbalances that will force government borrowing to continue to absorb a large share of private saving in many economies. The reasoning underlying the prospect of modest returns is more diffuse, but the expectation is widely shared nonetheless.

Both limited aggregate investment and the prospect of modest returns render these concerns about the functioning of the Western economies' capital allocation mechanism more acute. If investment in the aggregate is likely to be limited, then misallocating the investment that an economy is able to undertake becomes a more noticeable waste of resources. For just the same reasoning, dissipating what is invested by devoting it to the process of running the allocation mechanism – to point to the most readily visible example, using scarce resources to construct office buildings to be occupied by banks and other financial firms – is likewise more costly.²⁶

Similarly, if the overall return to the economy's invested capital is low, then any given amount taken off the top by the firms that perform the allocation function leaves less for ultimate savers and investors. Especially in economies like the United States, where the average return earned by equity market investors over the past decade and a half has already been historically low, this prospect raises the concern that a new generation of potential investors may conclude that investing in equities is not worth the risk, or even that attempting to save is not worth the foregone consumption.²⁷

The need to balance these more recent concerns against the long-standing presumption of superior allocation of capital by markets characterized by free trading in securities and other assets precludes any sharp conclusion in favor of radical restrictions. Two steps seem warranted, however. One, already emphasized in the context of the monetary policy-centered narrative of the 2007-9 crisis, is to bar banks and financial intermediaries, in so far as is possible, from trading activities not inherently relating to their lending. The clear benefit of doing so would be to make one of the key steps in the dynamic posited by this narrative (and not challenged more generally) less likely: the impairment of the economy's intermediation system, and perhaps even the payments mechanism too, as a result of losses incurred by banks and other key intermediaries. As the experience of the dot-com bubble demonstrated, equivalent losses are less damaging when they accrue outside the banking system.

The second step would be to impose restrictions more broadly on those trading activities that add to market price dynamics but do not contribute to the capital allocation process. The most obvious current example is high-speed trading. It is difficult to believe that the economy's ability to allocate its scarce capital resources is improved by resolving departures of securities prices from their correct values (on the benign assumption that this is what is taking place) in one

nanosecond rather than three. It is still less plausible that systematically placing large volumes of orders, but then canceling most of them before the market maker's less-advanced electronic capability can execute them, improves capital allocation. Yet these are currently among the most profitable, and large-scale, sources of securities trading today.

A modest per-transaction tax, too small to be meaningful (or even noticeable) to investors whose decisions do matter for allocating the economy's capital, would render such activities unprofitable. The benefit of such a tax would not be to raise revenue but rather to eliminate one form of off-the-top drain against the limited return on the economy's capital, and to hence leave more of that return to be distributed to investors whose decision matter for this fundamental economic purpose.²⁸ In the United States, member firms of the New York Stock Exchange have traditionally operated under restrictions that prevent them from gaining a communications advantage (to the floor of the Exchange) over other traders. The case for preventing non-member securities firms from exploiting a similar kind of technological advantage is analogous.

Both of these steps are sharply limited. In parallel, however, a highly useful initiative for economic research – though certainly not yet for policy action – would be to explore more broadly which components of today's securities trading add economic value in the sense of plausibly enhancing the economy's capital allocation mechanism. The question is a large one, and neither the conceptual basis nor the empirical tools for addressing it are currently in place. But by proceeding on a piecemeal basis, rather than attempting to evaluate the economy's capital allocation mechanism as a whole, it should be possible to make useful progress. For example, what would have been different, not just in the latest episode but in recent experience more broadly, if the U.S. economy had not had a market in collateralized debt obligations? Much of the public discussion in the wake of the crisis simply assumes that it is impossible to go back to a

world without mortgage securitization. But Americans built and bought houses, and owned and lived in them, long before securitization appeared. Indeed, the American home-ownership rate was among the world's highest before anyone thought to securitize the first mortgage. Does having a CDO market generate benefits to the economy – by mobilizing additional saving, for example, or by facilitating a more efficient allocation of investment – that exceed the accompanying risk? The question can be asked for many other institutions and markets as well.

Conclusion

The narrative of the 2007-9 financial crisis that assigns a primary causal role to the low short-term interest rates that central banks, especially the Federal Reserve System but others as well, maintained earlier in that decade poses a major challenge for monetary policymaking under the existing institutional arrangements in many countries. Some elements of this account of the crisis are unquestionably valid, while the empirical support for others remains weak. But the account overall has sufficient support, and sufficient likelihood of merit, to be taken seriously. It has already fostered significant criticism of the steps that many central banks have taken in the post-crisis period, including in particular a new and already even more protracted period of low short-term interest rates.

A key implication of this narrative is that the combination of (1) monetary policy centered on an active response of short-term interest rates to observed and anticipated movements in price inflation and perhaps also in real economic activity, (2) highly leveraged banks and other financial intermediaries, and (3) open trading in asset markets by investors including banks and other intermediaries but other categories of investors too, is potentially inconsistent with financial stability. On the evidence of the recent crisis and its aftermath, this narrative also raises the possibility that these three familiar features of the modern economy, in

combination, create the makings of a potentially explosive monetary policy dynamic in the sense of swings of increasing amplitude in short-term interest rates at business cycle frequencies.

The conclusion argued in this paper is, in the first instance, that the right policy response to this incompatibility is *not* to curtail the active responsiveness of monetary policy. (There is some ground to argue for expanding the set of dimensions of economic policy to which monetary policy actively responds, to include asset prices and especially house prices; but from this perspective that is a second-order issue.) The gains achieved over the past quarter-century by this way of conducting monetary policy are too important to forego. To the extent that this trio of features of the modern economic and financial system is inconsistent with financial stability, and may threaten an explosive monetary policy cycle, the way to resolve the impasse is by addressing the other two elements.

Second, both on this ground and for other reasons as well, there is a strong case for limiting the leverage of banks and other financial intermediaries – that is, for requiring them to hold more capital in relation to the size of their balance sheets. Movements to do so are now under way via the Basel process, as well as in many countries individually. They merit support. To be effective, however, enhanced capital requirements also imply parallel reforms to financial-institution accounting. What matter for this purpose are not just the stated ratios but the precisely defined collections of assets or liabilities to which they apply.

Third, in the wake of the crisis there is also ground for limiting some forms of securities trading, by some categories of investors. The strongest case is for barring banks from private securities trading not directly related to their lending activities. (Even with stricter capital requirements, banks and similar intermediaries will still inevitably operate with significant leverage.) There is also a good case for limiting some forms of securities trading by other

investors – such as high-speed trading, which in some economies accounts for a large and increasing share of all trading done – for example, by a small per-transaction tax that would be negligible from the perspective of investors engaged in other kinds of trading.

Finally, the economics profession, including not just academic researchers but also agencies within respective countries' statistical apparatus, and together with policy institutions like their central banks, should undertake a program of empirical and conceptual research to explore how well the existing financial market structures are performing their fundamental economic functions, and at what cost, and whether there is reason to conclude that different institutional structures would better serve their economies. Making policy decisions effectively requires having an adequate knowledge base in place first. Sponsoring research to establish a sufficient basis for taking decisions is, therefore, also a part of the policymaking process.

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Notes

¹ An early critic along these lines was John Taylor; see, for example, Taylor (2007, 2008). For other supporting views, see Jarocinski et al. (2008), Ioannidou et al. (2009), Ahrend (2010), Kahn (2010) and Maddaloni and Peydro (2010).

² For a review of the pertinent evidence, see Kuttner (forthcoming).

³ See, for example, Rudebusch (2009, 2010).

⁴ Whether this difference matters in a more general context is subject to debate. A striking aspect of the 2007-9 crisis and its aftermath was the similarity in actions taken by central banks with sharply different policy mandates: for example, the Bank of England (an explicit inflation targeting mandate), the European Central Bank (a price-stability-first mandate), and the Federal Reserve System (a dual mandate assigning equal importance to price stability and maximum sustainable employment). One interpretation of events is that these differences in central bank mandate matter for monetary policy under ordinary circumstance but not in a crisis. Another interpretation is that they matter for rhetorical purposes but not for what central banks actually do. The subject is ripe for serious empirical research.

⁵ Friedman (1953).

⁶ Brainard (1967).

⁷ The central bank’s actively responding to movements in real economic activity in this way does not necessarily mean that real activity is per se an objective of monetary policy. Such a response would be warranted even if the inflation rate were the sole argument of the central bank’s policy maximand, as long as observed movements in real activity reflect incremental information about future (or at least not yet observed) movements of inflation – which the evidence for most economies indicates that they do.

⁸ See Peek et al. (2003a, 2003b). In the U.S. bank supervisory system, an individual bank’s CAMELS rating is based on the examiners’ assessment of its capital adequacy, asset quality, management, earnings, liquidity and sensitivity to market risk.

⁹ See Lo (2010). For related evidence for Norway, see Akram and Oyvind Eitheim (2008).

¹⁰ See again Kuttner (forthcoming).

¹¹ See, for example, Tobin (1961, 1963).

¹² See, for example, Rigobon and Sack (2003).

¹³ See Fuhrer and Tootell, (2008).

¹⁴ Bernanke and Gertler (1999, 2001). See also Cecchetti et al. (2000).

¹⁵ Curdia and Woodford (2009), for example, laid out a model in which financial frictions, including the kind of phenomena that figured importantly in the 2007-9 crisis, create the basis for a systematic monetary response to the prices of financial assets. For empirical exercises offering some support for this proposition, see Grossi and Tamborini (2011) and Gambacorta and Signoretto (2011). See Kuttner (2012) for a useful review of the available evidence overall.

¹⁶ *The Economist*, August 7, 2008.

¹⁷ U.S. Treasury (2011), p. 31.

¹⁸ Zimmermann and Seyles, (2010). See also the Swiss National Bank's 2009 *Accountability Report*, section 6.5, and the 2010 *Accountability Report*, section 6.7.

¹⁹ Rhodes (2007).

²⁰ Rhodes (2011).

²¹ *New York Times*, July 30, 2009.

²² See Kroszner and Shiller (2011) for an assessment of Dodd-Frank and views on useful further steps.

²³ This magnitude is based on quarter-end values (2000:Q1 to 2003:Q1). The peak-to-trough decline on a daily basis would be greater.

²⁴ World Bank, *World Development Report 2011*, Table 1. (Data are for 2009.)

²⁵ For a fuller account of the first three arguments that follow, see Friedman (2010).

²⁶ A parallel argument applies to the use of so much of the economy's most valuable labor in the financial sector; see Friedman (forthcoming).

²⁷ The latter part of this argument is a familiar one, but its conceptual basis is less sound because it rests on the assumption of a positive interest elasticity of saving. Because of the opposing income and substitution effects, the (uncompensated) interest elasticity of saving is of indeterminate sign a priori, and for most countries over recent decades the available empirical evidence is not able to determine the sign either.

²⁸ A parallel benefit would be to free up the extremely talented people who currently work in high-speed trading to do something else that might add economic value; see again Friedman (forthcoming).