

**BROKEN SYSTEMS: AGENDAS FOR FINANCIAL AND MONETARY
REFORM**

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Introduction

After of the eruption of the sub-prime mortgage crisis in the summer of 2007, criticisms of past and present Federal Reserve policies became more frequent. In December 2007, the Fed's belated proposals for regulating all mortgage lenders suggested that it was engaged in the proverbial closing of the barn door after the horses were out. Why it had not thought such restrictions were needed earlier seemed evidence of its ideological commitment to deregulation rather than a pragmatic assessment of developments that could cause market disruption and systemic fragility.

But the Fed's ideological commitments extended beyond its failure to monitor and control poor lending practices and fraud. Fed authorities also ignored ways in which monetary policy itself has lost the ability to stabilize financial markets and the economy those markets are intended to serve. The Fed's monetary influence weakened as it chose to champion deregulation and innovation and gave market forces a larger role in determining credit expansion. It paid no attention to the way that foreign capital inflows drove up the supply of credit and ignored the explosion in debt that unchecked credit expansion produced. And, as debt soared, the Fed ignored the asset bubbles it fueled.

Also ignored were critical changes in the structure of financial markets that eroded the effectiveness of monetary tools used to transmit policy initiatives to the real economy. Rather than restore its ability to exert a direct influence over financial markets, the Fed adhered to outdated tools and policies in ways that have become increasingly counterproductive. At this point, it is doubtful that the Fed can perform its anti-cyclical function. Too often, its actions have tended to exacerbate cyclical behavior in financial markets. Now, as it's bailout of Bear Stearns over the weekend of March 15-16 made clear, the Fed is facing a systemic crisis and is struggling to act systemically. As a result, it has become increasingly necessary to ask whether or not the central bank itself has contributed to instability and, if so, what can be done to reconstitute a constructive path for monetary policy.

This paper argues that the effectiveness of monetary policy can – and must – be restored to address the impact of the sub-prime mortgage crisis and credit crunch on the financial sector and the economy. It proposes a new system of reserve management that assesses reserves against assets rather than deposits and applies reserve requirements to

all segments of the financial sector. This new approach would increase the Fed's ability to respond to credit contractions or expansions because it would be implemented by supplying (or withdrawing) interest-free liabilities in exchange for purchases (or sales) of assets on the balance sheet of the financial sector.

In a downturn, for example, purchases of assets by the central bank in exchange for *free* liabilities would more effectively accomplish what the Fed is now trying to do: halt asset sales that drive down prices and erode financial institutions' capital. It would be more effective than the current Fed strategy of lending against or exchanging securities because removing assets and providing interest-free liabilities would encourage financial institutions to rebalance their books by lending or expanding their holdings. In addition, the expansion of reserve requirements would permit all institutions to draw on reserve accounts to make payments and lower the concern about counterparty risk by increasing the number of transactions within the financial system that can be paid by drawing on accounts held by the Fed. Moreover, a supply of new liabilities at no cost emanating from the central bank would make it possible for individual institutions to write-off or restructure the terms of loans or assets – a new and powerful monetary tool that would mitigate the destructive force of the current crisis for borrowers as well as lenders.

The opening section of the paper discusses how monetary policy contributed to asset bubbles as the excess liquidity generated by the Fed when the economy failed to respond to policy initiatives created incentives for leverage and rising debt levels. The next section describes the changes in financial structure that have reduced the Fed's leverage, impeded its ability to transmit policy initiatives to the real economy and eroded its stability mandate. The final sections propose a system-wide reserve regime that assesses reserves against assets as a viable model for rebuilding effective transmission mechanisms for monetary policy. The discussion that follows outlines the changes that would be needed to move to such a model and describes its advantages and benefits.

Tracking the Fed's Policy Failures

Liquidity, credit growth and asset bubbles: In February 2005, Alan Greenspan – then Chairman of the Federal Reserve Board – told the Senate Banking Committee that

he was surprised that long-term interest rates had fallen lower than they had been when the Fed started raising its short-term policy rate in 2004. He noted that there had been similar declines in long-term rates in Europe and other countries and concluded that, “for the moment, the broadly unanticipated behavior of world bond markets remains a conundrum” (Greenspan 2005).

For some analysts, these developments were not surprising. They saw falling long-term rates as an inevitable outcome of monetary policy decisions beginning in 2000 that had flooded US and global markets with excess liquidity. In the aftermath of the collapse of major stock indices, the Fed had been concerned about the economy’s sluggish response to stimulus and the potential for deflation. To address these concerns, it maintained a nominal federal funds rate of one percent from June 2003 through 2004 by generating a continuous stream of liquidity that pushed the real rate of interest into negative territory over the period. As investors’ so-called “search for yield” intensified in the low interest rate environment, the unprecedented increase in the availability of funding spurred escalating amounts of leveraged speculation in the form of carry trades, where the effect of borrowing short-term at low rates is to drive down rates on the higher-yielding, long-term assets in which the funds are invested.

Excess liquidity was also reflected in two other characteristics of market conditions that Greenspan mentioned: narrowed risk premiums and eased credit standards. In fact, what was surprising about the chairman’s testimony was his silence on the subject of liquidity, which is, after all, what central banks create and curb in their quest for price stability.

By contrast, the Managing Director and staff of the Bank for International Settlements (BIS) argued in their June 2004 *Annual Report* that there was a direct link between accommodative monetary policies in the G-3 countries (the US, the euro-area and Japan) and mounting liquidity in global financial markets. The report pointed to quantitative measures such as the monetary base, broad money and credit to the private sector – all of which had expanded rapidly since 1999 in a large group of countries – as clear evidence of exceptional liquidity growth. Moreover, in 2003 the BIS had specifically criticized the Fed for creating a situation in which a potential US downturn could become more severe due to the domestic debt build-up encouraged by monetary

ease. It had also warned about increasing speculation, pointing to a rising volume of leverage in domestic and international financial systems in 2002 that was fueling the credit expansion. In addition, it published research establishing a link between asset bubbles and excessive credit growth (BIS 2002, 2003, 2004; Borio and Lowe 2002).

Less than a month after Greenspan's confession of puzzlement, a major sell-off in bond markets introduced a stress test for a widening circle of leveraged investors. But, continuing to ignore the BIS' warnings, the Fed and other leading central banks made no effort to address the troubling link between excess liquidity and debt-financed speculation. Indeed, that link and the even more problematic connection between liquidity and credit growth had seemingly slipped below their radar screens. Oblivious to the final link in that chain – the asset bubbles inflated by debt – and lulled by stable indicators for wholesale and consumer prices, central banks took no action to deal with the inflation in asset prices.

Capital flows, speculative leverage and credit expansion: Sizable, procyclical capital flows played an important role in weakening the impact of changes in the policy rate on developments in financial markets and the real economy. As noted above, raising the short-term policy rate failed to halt the decline in long-term interest rates in 2004 or prevent a flood of new borrowing that followed in 2005 and 2006. But the Fed's efforts to supply liquidity by lowering interest rates in a downturn had already proved unreliable.

During the recession in the early 1990s, for example, relatively little of the Fed's large infusion of liquidity was transmitted to the real economy. The Fed had successfully lowered interest rates but the search for higher yields by domestic and foreign holders of US assets had prompted capital outflows – mostly to Mexico - that prolonged the recession. Credit growth resumed when the Fed raised interest rates in March 1994 and US and foreign investors returned to US assets, leaving Mexico in crisis.

By the middle of the 1990s, the growth of cross-border carry trade strategies had further undermined the ability of the Fed and other central banks to expand or curtail the transmission of liquidity to their national economies.¹ These strategies, triggered by

¹ Low interest rates in one national market provided an incentive for carry trade strategies that used borrowings in that currency to fund investments in higher-yielding assets denominated in other currencies.

interest rate differentials on assets denominated in different currencies, increased the amount of leveraged speculation by financial institutions and fueled yet another set of asset bubbles to add to the string that began in Japan in the 1980s, moved through emerging markets in the 1990s and started to afflict the US and other advanced economies at the turn of the century. The pattern that has developed over the last two decades suggests that relying on changes in interest rates as the primary tool of monetary policy can set off pro-cyclical capital flows that tend to reverse the intended result of the action taken. As a result, monetary policy can no longer reliably perform its anti-cyclical function – its *raison d'être* - and its attempts to do so may even exacerbate instability.

Throughout 2004 and 2005, for example, borrowing reached truly massive proportions both in the US and abroad. The Fed's measured increases in policy rates had no cooling effect on rising debt levels. In fact, they spurred foreign private inflows into dollar assets at home and abroad by encouraging carry trade strategies based on borrowing low interest rate yen to purchase higher yielding dollar assets. Escalating speculation was reflected in record-breaking growth in borrowing in external banking markets, the great majority of which was channeled to financial institutions and used for position-taking by commercial and investment banks and hedge funds (BIS 2005, 2006).

With capital inflows into the US in 2005 rising to twice the amount needed to finance the current account deficit, the US assumed an *entrepot* function for global markets. Excess inflows into dollar assets triggered sizable outflows for investment in higher-yielding emerging market assets (U.S. Department of Commerce 2006). As an excess of dollars from foreign investment on top of current account surpluses flooded their markets, central banks in those countries responded by buying dollars to brake their conversion into local currencies. While their sterilized intervention strategies helped prevent a buildup in domestic liquidity, they also prevented the appreciation of their currencies.

But, needing to invest the dollars they had acquired, emerging market countries bought US treasury securities and other dollar assets and re-exported the problem back to the US. The accumulation of dollar reserves by these countries augmented the highly liquid conditions in US financial markets, exerting downward pressure on medium and

long-term interest rates and fueling another round of capital outflows from the US back to emerging markets as well as a continued borrowing binge by US residents.

While 2005 was an extraordinary year in terms of rising liquidity and debt, the pattern of capital flows that it reflected was not unique to that year. Although net foreign lending in US credit markets averaged about 20 percent of the annual supply of funds from the mid-1990s through 2007 (Federal Reserve *Flow of Funds*) the advent of monetary ease after 2001 introduced a new dynamic: the generation of liquidity through the spill-over effects of leveraged cross-border investment flows. The round-robin nature of these flows constituted a sorcerer's apprentice scenario that was bound to lead to crisis when uncertainty - from whatever cause - threatened the highly leveraged financial sector's need for funding.

Meanwhile, the rising debt levels of private financial and non-financial sectors were threatening to burst the asset bubbles they had created. The housing bubble that had become apparent in the US and was to burst in the second half of 2007 had been fueled by an extraordinary growth in debt with outstanding credit reaching 352.6 percent of GDP by year-end 2007, up from 255.3 percent in 1997. The rise in household debt over the same decade (from 66.1 to 99.9 percent of GDP) was both a key indicator of the debt bubble and of the growing threat it posed for future spending as debt service took a larger share of disposable income. But the most dramatic development was the jump in the debt of the financial sector to 113.8 percent of GDP from 63.8 percent only a decade earlier (Ibid.). While the increased borrowing by financial institutions signaled rising speculation, it also reflected the new funding strategies adopted by a profoundly changed financial system. Those changes and their implications for monetary policy implementation constituted another critical development the Fed ignored.

The Slipping Transmission Belt for Monetary Policy

Savings shift from banks to institutional investors: Over the past 30 years, the US financial system has been transformed by a shift in household savings from banks to pension and mutual funds and other institutional investment pools. Between 1977 and year-end 2007, the assets of all depository institutions plummeted from 56.3 percent to

23.7 percent of total financial sector assets. Meanwhile, spurred in part by the funding requirements of the Employee Retirement Income Security Act (ERISA) of 1974, the assets of pension funds and mutual funds rose from 21.0 percent to 37.8 percent as these institutional investment pools came to provide the dominant channels for household saving and investment flows.² At yearend 2007, pension funds held \$10.7 trillion of financial assets (including equities) and mutual funds' holdings of money market instruments, stocks and bonds totaled \$11.2 trillion. By contrast, the total assets of commercial banks, savings institutions and credit unions amounted to \$13.7 trillion (Ibid.).

Borrowing shifts to capital markets: Since the primary assets held by institutional investors are securities, the shift in individual savings from banks to pension and mutual funds produced a symmetrical increase in business borrowing through capital markets. Credit flows to individuals also moved into the capital markets as mortgage originators such as banks and brokers bundled individual mortgages into pools and sold securities based on those pools to investors. Government-sponsored enterprises (GSEs) such as Fannie Mae and Freddie Mac and federally related mortgage pools played major roles in facilitating the securitization process. Meanwhile, asset-backed securities (ABS) issuers used securitization techniques to fund car loans and other consumer receivables. In the twenty year period between 1987 and 2007, the assets of GSEs and mortgage pools – primarily holdings of mortgages for single-family housing – rose from \$1.0 trillion to \$7.6 trillion while assets of ABS issuers jumped from \$118.3 billion to \$4.2 trillion (Ibid.).

The policy link to the real economy weakens: The implications of these shifts in saving and credit flows have radically altered the way the financial sector functions, reducing the role of direct lending in favor of trading, investment and asset management. The impact on the transmission of monetary policy initiatives has been profound and was already evident in 1993. At that time, former-Fed Chairman Greenspan noted that “the

² The combined assets of pension and mutual funds as a share of financial sector assets were actually higher in 1997 (42.3 percent) when pension fund assets were 25.7 percent of the total than in 2007 when pension funds' holdings slipped to 18.5 percent.

fairly direct effect that open market operations once had on the credit flows provided for businesses and home construction is largely dissipated” due to the diminished role of banks, the increase in savings channeled through institutional investors and the growth of securitization. Though Greenspan asserted that “the Federal Reserve can still affect short-term interest rates, and thus have an impact on the cost of borrowing from banks, from other intermediaries, and directly in the capital markets,” he acknowledged that “this effect may be more indirect, take longer, and require larger movements in rates for a given effect on output” (Greenspan 1993, p.3).³

The shift to market-based controls: Subsequent events have underscored the accuracy of these remarks. In the almost 15 years since they were made, however, the major central banks have taken no steps to improve the transmission mechanism. On the contrary, they countenanced further innovation and deregulation and promoted the view that market-based solutions – the Basel Agreement on capital requirements, for example – could replace the quantity controls (reserve and liquidity requirements, lending limits and capital controls) that had been targeted for removal by the advocates of liberalization. In the US, reserve requirements have not been removed but they have been substantially lowered and have been further weakened as banks have replaced deposits with borrowed funds and used sweep accounts and other strategies to diminish the cost of holding non-interest-bearing reserves on their balance sheets.

As a strategy for ensuring that market forces rather than regulations and quantity controls would determine the volume of bank lending, capital requirements became the rationale for – and poster child of - deregulation. But they have subsequently been seen as its Achilles heel because of their focus on the individual institution rather than the system as a whole. William R. White describes this “fallacy of composition” as one that can exacerbate a system-wide problem when recommendations for a sale of assets by one institution in a stressful situation could reduce prices and the value of remaining assets, leaving other institutions weaker (White 2007, p.83). And, since markets inevitably

³ During the same 1993 conference, former Bundesbank Vice President Hans Tietmeyer took a somewhat gloomier view, arguing that: “...changes in the financial markets have generally made it more difficult for monetary policymakers to fulfill their stability mandate...In a number of countries, financial innovation and deregulation have distorted the intermediate targets used in the conduct of monetary policy and have altered the transmission mechanisms for monetary policy to the real economy”(Tietmeyer 1993, p.407)

supply more capital during a boom and less during a downturn, capital requirements imposed a strong pro-cyclical bias on bank lending. In time, as the BIS acknowledged, it became evident that market-based financial systems are inherently pro-cyclical. The BIS also acknowledged that, under Basel 2, the weightings for credit risks increase in a downturn – thus depressing the availability and increasing the price of credit – while the opposite occurs in a boom (BIS 2002).

The missing monetary cushion: But these criticisms of the Basel Accord did not foresee the problems that would arise for banks and non-banks in a predominantly market-based system that relied on capital alone to cushion the effects of a systemic disruption in which prices of one or more assets are falling. As assets are marked-to-market, capital is depleted. If, as has proved to be the case, holdings are leveraged, margin calls will accelerate the process. In the aftermath of the Bear Stearns collapse, evidence of the amount of leverage in the system – including derivatives and banks' other off balance sheet positions in special investment vehicles – suggests that the Fed's efforts to provide liquidity may not suffice to moderate the sale of assets (and thus the ongoing pressure on prices) or stem the erosion of capital.

By 2002 there could be no doubt that the Fed's ability to effectively mount a countercyclical monetary initiative – the truly monumental contribution to macroeconomic policy that the Fed itself had initiated in the first half of the 20th century (D'Arista 1994) – was on the ropes. In 1913, the boom and bust behavior of the financial sector had galvanized the political will to overcome the objections of bankers by creating a Federal Reserve System to hold the pool of reserves needed to cushion institutions and the economy they served. By 1951 – a time when depository institutions held 65 percent of financial sector assets and liabilities – reserve balances accounted for 11.3 percent of bank deposits and amounted to a remarkably comfortable cushion for the financial system that contributed to the financial and economic stability the US enjoyed through the mid-1960s (Federal Reserve *Flow of Funds*).

By year-end 2001, however, reserve balances had shrunk to 0.2 percent of deposits and banks' share of total financial assets and liabilities had fallen to less than half that of the 1950s (*Ibid.*). Both the disappearance of banks' financial hegemony and

the virtual disappearance of their reserve balances indicate the extent of the erosion of the Fed's ability to exert a direct effect on bank credit and on credit growth through other, now dominant, channels. The loss of a direct impact on credit has, in turn, removed the leverage needed for effective countercyclical strategies.

Meanwhile, the reintroduction of a deregulated, procyclical financial system under pressure from bankers in the final decades of the 20th century has resulted in a still-unfolding financial crisis that is testing the ability of the Fed to prevent a substantial depletion in financial sector capital. The call by the Financial Stability Forum and others for increases in the regulatory capital banks must hold is among the more seriously counterproductive proposals for alleviating the crisis made so far. As the stresses generated by the crisis spill over into the balance sheets of institutional investors, businesses and households, potential sources for additional bank and investment bank capital narrow. The most likely sources for new capital infusions are foreign sovereign wealth funds or domestic versions of public sector entities patterned on the depression-era Reconstruction Finance Corporation. While capital infusions from these sources would be helpful and may prove necessary, the focus on rebuilding capital overlooks the fact that the absence of reserves has deprived the system of a cushion that could be rebuilt through the monetary channel. The inability of the monetary authority to rebuild that cushion has intensified the problem.

Restoring Counter-cyclical Financial and Monetary Strategies

The BIS agenda: In its June 2005 *Annual Report*, the BIS proposed a new framework for macrofinancial stabilization that strongly endorsed countercyclical techniques to implement both regulatory and monetary policies. The proposed framework would reintroduce quantitative measures such as liquidity requirements, loan-to-value ratios, collateral requirements, margin requirements and tighter repayment periods.⁴ It would also set prudential norms relating to the growth in credit or asset prices and, as BIS economist William R. White argued, “use monetary and credit data as

⁴ This is a far more sweeping proposal than the modest one belatedly proposed for mortgage lenders by the Fed in December 2007 (Andrews 2007).

a basis for resisting financial excesses in general, rather than inflationary pressure in particular” (White 2007, p. 81).⁵

In short, the Bank’s new framework reaffirms the view that market-based systems are inherently procyclical. It argues that both regulatory and monetary policies should be applied symmetrically over the cycle to moderate the rise and fall in credit growth and the effects of changes in credit growth on asset prices. And it asserts that quantitative strategies to influence the growth of credit are necessary to restore effective implementation of counter-cyclical policies.

This is an ambitious and admirable agenda that represents a 180 degree turn away from the deregulatory and inflation-targeting practices put in place over the two decades following the rise of free market ideology. But, as a proposal to reinstate effective countercyclical strategies, it falls short of what is needed. The quantitative measures it recommends would apply only to banks and not to other financial sectors. Moreover, these mechanisms deal mainly with credit standards governing loans to nonfinancial borrowers, not their financial counterparts. They therefore ignore the distinctive systemic issues and threats that have emerged as a result of changes in financial structure: the rapid growth and enhanced role of sectors other than banking in channeling savings and credit; the extensive linkages among all financial sectors that result from changes in funding strategies; increased leverage and the use of derivatives to hedge positions; and the proliferation of nonpublic, opaque markets that operate without on-time information about the price of transactions and the volume of trading. A new policy framework must take into account all these developments in order to be effective.

An alternative, systemic approach: No plausible scenario suggests the likelihood of banks regaining their once-hegemonic role in credit creation. And no likely series of events promises to diminish substantially the influence of institutional investment pools and capital flows on credit expansion. As a result, any practical effort to rebuild effective counter-cyclical financial and monetary strategies must establish new channels for exercising monetary and regulatory control over *all* financial institutions. Simply put,

⁵ White viewed the policy environment at that time as an intellectual turning point and candidly described the professional, institutional and political obstacles to reform on the scale the BIS recommended (White 2007).

banks alone can no longer shoulder the transmission-belt function that links the financial and real sectors of the economy and nonbank financial firms cannot participate meaningfully in transmitting policy initiatives unless they too come under the direct influence of the central bank.

How might such a system be inaugurated? The Fed's sweeping inclusion of all mortgage lenders, state or federally regulated, under the proposed regulations it issued in December 2007 is an important precedent for introducing system-wide requirements and one that acknowledges that omitting any institutional segment would vitiate the intent of its action (Andrews 2007). A systemic approach could use the 1999 Gramm-Leach-Bliley Act's definition of activities deemed financial in nature and apply the same regulatory and monetary strategies to all entities engaged in a given function to moderate the rise and fall in credit growth.⁶ The first step would be to extend the influence of the central bank to the entire financial system by imposing reserve requirements on all sectors and institutions.

Create a reserve system that targets changes in assets, not liabilities: Bringing non-depository institutions under the Fed's monetary control demands significant adjustments to a reserve structure tailored to fit banks' unique role in the financial system. Despite their growing dominance in channeling credit, nonbank financial intermediaries are not designed to engage in money creation. Unlike banks, they do not create new liabilities for customers when they make loans or add assets. Moreover, the liabilities of institutional investors such as pension funds and insurance companies are in longer-term contracts, rendering reserve requirements on those liabilities impractical. In short, the current liability-based system doesn't permit central banks to create and extinguish reserves for nonbank financial firms.

Efficiency and equity therefore require that reserves be held against assets. This is not a new proposal. Thomas Palley provides a full exploration of the advantages of asset-based reserve requirements as a tool of stabilization policy and points out that the

⁶ Requirements needed to implement those strategies would be imposed only on those portions of a company engaged in financial activities but not those portions conducting nonfinancial operations. Drawing this distinction would strengthen the crucial separation between banking and commerce and prevent commercial entities from making emergency liquidity claims on the lender of last resort.

concept actually embodies a range of real-world experiences, including the current model for US insurance regulation (Palley 2000, 2003).⁷ Although reserves are imposed on insurance companies for soundness purposes (as opposed to conducting monetary policy) and are held by the firms themselves (rather than a public agency), they nonetheless illustrate the feasibility of systematically reserving and classifying institutional investors' assets.⁸ Moreover, the liquidity requirements proposed by the BIS and suggestions that margin requirements be extended to assets other than equities are also examples of quantitative monetary tools that target assets.

The experience of European countries during the Bretton Woods era provides additional examples of asset-based reserve systems - some designed to control overall credit expansion, others to shield key sectors from cyclical excesses and drought,⁹ and still others to increase credit flows to privileged sectors. And as recently as 1979, the Federal Reserve imposed reserve requirements on loans by US banks' foreign branches to their home offices to restrain the run-up in domestic credit fueled by this source of funding.

When applied to nonbank financial institutions, these earlier asset-based reserve systems were used to implement allocative strategies. They required nonbanks to hold reserves on the asset side of their balance sheets as banks do now. Non-interest-bearing reserves could be turned into interest-earning assets by nonbanks only if they were loans to privileged sectors (housing, exports, tourism). If they did not lend to privileged sectors, nonbanks had to hold the reserves as non-interest-bearing loans to the central bank.

Asset-based reserve strategies intended to expand or restrain credit growth were usually applied to banks. In the case of US banks' borrowings from their foreign

⁷ For other discussions of asset-based reserve requirements, *see* Thurow (1972), Pollin (1993) and D'Arista and Schlesinger (1993).

⁸ For years, states have required insurers to hold reserves against their assets and, in 1992, insurance commissioners instituted an asset valuation reserve (AVR) system that assigns risk weightings to various asset types (Palley, 2000).

⁹ For example, Sweden required all financial sectors to hold a given percentage of their total portfolio in housing-related assets. Institutions that did not make real estate loans could meet the requirements by purchasing the liabilities of institutions that did. Financial firms that failed to meet the required percentage had to enter the shortfall on their balance sheet as reserves thereby making an interest-free loan to the government rather than an interest-earning loan for housing. Similar strategies for other purposes were used by the Netherlands, the Bank of England, Italy, Switzerland and France (U.S. House of Representatives, 1972, 1976).

branches, the reserve requirements were not effective in restraining credit growth since they could not cover loans from the home offices of foreign banks to their US branches. Nevertheless, these strategies were generally effective within national economies in earlier periods and might even have been effective in the US in cases where bank credit fueled the bubble. For example, imposing asset-based reserve requirements on banks' commercial real estate loans in the late 1980s when such loans were rising by over 20 percent a year in New England banks might have prevented the collapse in values that followed.

In the late 1990s, however, asset-based reserve requirements could not be used to defuse the bubble in high tech stocks without imposing reserves on nonbanks since banks do not hold equities on their balance sheets. Moreover, this strategy could not have defused the subsequent bubble in housing if it had not been applied to all financial institutions. By that time, securitization had distributed mortgage lending across the entire financial system. Raising reserve requirements on banks' holdings of mortgage-backed securities and mortgage related derivatives would have merely shifted sales of these assets to other investors.

In any event, industry resistance and pressures for deregulation had already doomed these earlier asset-based approaches and the many changes that have occurred in financial markets since the 1970s make it unlikely that those models would fit the current institutional framework. Nevertheless, no other models offer more promising paths for modernizing the Fed's policy tools today. Only by targeting financial firms' assets can a reserve system hope to effectively influence a majority of total credit extended to nonfinancial and financial borrowers and ensure greater balance in the distribution of credit across the business cycle.

Make reserves liabilities, not assets: Creating a reserve system that extends the Fed's influence over the financial system as a whole requires that reserves be issued to and held by financial institutions as liabilities to the central bank. Shifting reserves to the liability side of financial institutions' balance sheets would permit the monetary authority to create and extinguish reserves for both bank and nonbank financial firms. By contrast, the attempt to extend reserve requirements to nonbank institutions under the old

framework – with reserves held on the asset side of the balance sheet - would, in fact, have procyclical effects.

For example, if the Fed’s objective were to augment the supply of reserves, adding reserves on the asset side of a mutual fund’s balance sheet would require it to balance its position by adding liabilities. Because, unlike a bank, it can’t *create* liabilities, the mutual fund would have to sell additional shares to customers. If unable to attract additional shareholders, it would have to sell a commensurate amount of assets or sell its reserves to another institution – responses that could either defeat or reduce the expansionary intent of the action. Similarly, if the Fed were attempting to restrain an expansion by extinguishing reserves, the effect on the mutual fund would be to reduce its overall holdings of assets, providing an incentive to buy assets to balance an unchanged liability position – again, defeating the Fed’s objective.

In short, using the old asset-based reserve requirement framework developed in the era of bank-based systems would work only as an allocative strategy. It could be introduced as a special intervention to stimulate credit flows to a sector under stress or to defuse bubbles. It might also be used to reduce excessive leverage within the financial system. But as a tool to maintain financial stability on an ongoing basis or to implement countercyclical policies, requiring nonbank financial institutions to hold reserves on the asset side of their balance sheets would undercut the effort to strengthen the monetary authority’s systemic influence by extending reserve requirements to all financial sectors.

Employ repurchase agreements as the central bank’s primary operating tool and expand the Fed’s eligible holdings. Repurchase agreements (repos) allow both the central bank and private financial institutions to buy an asset with an agreement to resell it in a given amount of time. They are an old and proven tool of monetary policy - currently used by the Fed in transactions with primary dealers – and are ideally structured to allow the Fed to interact with all financial firms on the asset side of their balance sheets and to assess reserve requirements against a broad universe of financial sector assets. Under the proposed system-wide reserve regime, for example, the Fed could use a repo to buy loans, mortgages, commercial paper, government or agency securities or corporate bonds from any of the many institutions that hold these assets – commercial

and investment banks, mutual and pension funds, insurance and finance companies, or government sponsored enterprises (GSEs).

Empowering the Fed to accept a wide variety of sound assets as backing for repurchase agreements¹⁰ would bring the Fed closer to the successful practices of other central banks and enable it to exercise monetary control over a much larger assortment of assets than the shrinking universe of reservable deposits that now constitutes the lever for direct influence over credit growth. More importantly, authority to conduct repos in any sound asset would strengthen the Fed's ability to halt runs, moderate crises and curb excessive investment across the entire financial system. It would, in short, restore the Fed's ability to function as a *systemic* lender of last resort as it did when banks were the dominant lenders in credit markets.

Extending the Fed's range of eligible holdings would also eliminate the central bank's need to own a vast amount of Treasury securities. Its current large stockpile of Treasuries held as backing for reserves and outstanding currency and the even larger holdings of foreign central banks tend to restrict the availability of this risk-free, highly liquid asset for use in private transactions where it is needed as collateral and to support market stability. In the reserve management system proposed here, the Fed could still acquire Treasuries, support Treasury auctions and the market for government securities while releasing a substantial portion of its current holdings for purchase by investors and financial institutions seeking the ultimate safe-haven asset.

Implementing an Asset-Based Operating System¹¹

Balance sheet changes: Moving to a system of reserve management that assesses reserves against assets and creates and extinguishes liabilities held as reserves will necessarily involve balance-sheet changes for both financial firms and the Fed. The current system of booking reserves on the asset side of banks' balance sheets and treating them as claims on the Fed implies that depository institutions have loaned their funds to

¹⁰ A proposal to broaden the portfolio of assets eligible for purchase by the Fed was offered by former Fed Chairman Marriner S. Eccles during hearings on the Banking Act of 1935. He argued that the Fed should be free to buy "any sound asset" (Eccles 1935, p. 194).

¹¹ For a more extensive discussion of the balance sheet changes involved in implementing an asset-based reserve system, see D'Arista 2002.

the central bank - a fiction that failed to survive the Fed's early years of operation. By the 1930s, the importance of the central bank's ability to create and extinguish reserves for credit growth was widely acknowledged. Defining reserves as liabilities would clarify and make explicit the fact that reserves represent the financial sector's obligation to serve as a transmission belt for policy initiatives intended to affect economic activity. Moreover, recognizing reserves as liabilities to the Fed would moot the contentious issue of paying interest on reserves – removing a longstanding competitive disadvantage for depository institutions since non-interest-bearing reserves on the asset side of their balance sheets lower earnings on the liabilities on which they do pay interest.

Such a shift in booking reserves for financial institutions would require a symmetrical shift in the Fed's balance sheet. Bank reserves - now held on the Fed's liability side – would be recorded on its asset side together with the reserves of all other financial institutions. Meanwhile, repurchase agreements and discounts would move from the asset to the liability side of the Fed's balance sheet to reflect the central bank's liability for the private sector assets it acquires when it creates reserves. Foreign exchange assets (international reserves) also would become liabilities rather than assets since they too would be acquired through repurchase agreements. Outstanding currency would remain a liability, manifesting the delegation to the Fed of Congress' constitutional authority to create money and manage its value.

As a result of this rearrangement, financial sector reserves would constitute the Fed's only assets under the proposed system. The central bank would no longer hold a huge portfolio of government securities as backing for Federal Reserve notes, bank reserves and government deposits, ending the fiction that one government obligation is needed as backing for another. This would mean, however, that the Fed would no longer earn interest on its assets, and, with non-interest-earning reserves backing its repurchase agreements and discounts, the central bank would no longer have income to pay interest on its purchases. Nevertheless, the invaluable interest-free liabilities financial institutions would receive when they sell their assets to the central bank under repurchase agreements

supports the argument for compensating the central bank for its role in creating liquidity by allowing it to receive earnings on the collateral backing those repos.¹²

Implications for the conduct of policy: Under the proposed reserve management system, the Fed's method of implementing expansionary and contractionary monetary policies would closely parallel its current implementation process in three significant ways. The central bank would continue to buy and sell financial assets in transactions with private financial institutions. The Fed's actions would still have the effect of simultaneously changing the amounts of its own assets and liabilities as well as those of private financial institutions. Moreover, reserves would continue to be distributed throughout the financial system by means of purchases and sales among private institutions in the federal funds market. The Fed would also continue to have the (little-used) power to change reserve requirements, raising or lowering the amount of reserves needed to back one or more (or all) classes of assets as part of either an allocative or stabilization strategy.

The important difference is the impact that a change in interest-free liabilities would have on the behavior of financial institutions. If the objective of policy were to facilitate expansion, the exchange of assets for interest-free liabilities supplied by the Fed – unlike liabilities supplied by customers or investors that incur costs - would provide a powerful incentive to replace holdings sold to the Fed with other income-producing assets and lead to a fairly predictable increase in credit. By providing this incentive, the proposed reserve system would remedy a major flaw in the existing model – namely that, in a credit crunch as confidence falters and lending and investment stall, the Fed most often finds itself pushing on a string, creating liquidity that banks cash in and hoard rather than pass on to borrowers. Indeed, its liquidity infusions in March 2008 clearly followed that pattern.

¹² If the Fed kept the earnings on financial assets held under repurchase agreements, that income – along with fees for clearing and other services – should prove sufficient for it to continue operating at or near current levels of expenditure. It is highly unlikely that income from this source would be insufficient but, if it were, the Fed, like all other government agencies, would receive supplementary funding through the appropriations process. While this might be seen as an assault on the post-WW II assumption that central banks must be free of political influence, that assumption should be revisited in the light of recent events and of the Fed's unique role as an agency to which Congress has delegated its Constitutional responsibilities.

The shift to this new and expanded reserve management system could prove the difference between recovery and prolonged recession. With the new tools available, the Fed could create reserves to cushion loan work-outs and cancellations of non-performing loans and debt securities, extinguishing the reserves when assets are written off or regain their performing status. This would channel liquidity directly to households and businesses, helping avoid the stagnation that develops when financial institutions resist issuing new credit and cannot cancel debt for troubled borrowers without jeopardizing their own survival. Such actions would be particularly helpful in dealing with the current sub-prime mortgage crisis. And, by strengthening both financial and nonfinancial private sector balance sheets in this fashion, monetary policy could powerfully reinforce fiscal initiatives designed to revive demand and investment.

If, however, the Fed decided to implement a contractionary policy, it would, of course, extinguish these free liabilities held as reserves. By allowing repurchase agreements to mature without renewal or executing reverse repos, it would place assets back on institutions' balance sheets without liabilities to support them. Alternatively, it could increase the amount of reserves needed to back institutions' holdings of assets by raising reserve requirements. These actions would force sales of assets, triggering adjustments that would ripple through the financial system via the federal funds market. At the end of this process, contraction will have occurred in both the total supply of credit and the value of total credit market assets.

Influencing asset prices. The notion that changes in reserves would or should directly affect asset prices may seem radical to some. However, the Fed's open market operations already impact asset prices through changes in interest rates and liquidity, both of which trigger portfolio shifts that disseminate the effects throughout asset markets. Though they do so indirectly and, as has been argued, sometimes with unintended results, the Fed's interest rate changes exert profound effects on the value of pension fund assets, mutual fund shares and housing, as recent experience has shown.

In the growing debate over whether or not central banks should target asset prices, some have sought to portray the technique as illegitimate or simply futile. In practice, however, all efforts to conduct monetary policy must take asset-price movements into

consideration – at least at some level of the analytical or decision-making process. And, targeted or not, all efforts to conduct monetary policy must influence those price movements. As long as the Fed’s basic objectives – sustainable output, low unemployment, stable prices – remain constant, it makes little *philosophical* difference whether policy transmits those influences indirectly (as in the current bank-centered reserve system) or directly (as in a system-wide reserve regime). The point is to ensure that the process is efficient and produces the intended outcomes.

In practical terms, the Fed’s influence on asset markets likely would function far more efficiently under a system-wide reserve regime. With all financial institutions holding reserves and participating in the federal funds market, volatility would decline as a result of those institutions making portfolio adjustments by purchasing and selling reserves rather than assets. This would be particularly important in the event of market disruptions, when forced sales of assets increase downward pressure on prices and threaten the ability of markets to function. The fact that reserves retain their face value enhances their role as a cushion, ensuring that trades settled by debiting an institution’s reserve account with the Fed are accepted with confidence.

Moderating the effects of capital Inflows and outflows: Foreign capital inflows and outflows change the availability and price of credit in domestic markets. Although the Fed can indirectly influence liquidity by buying and selling government securities in open market operations, it cannot – and does not – directly offset the effects of capital flows on the supply or distribution of credit. Under current operating procedures, the Fed could only change the impact of capital flows if foreigners held the majority of their investments in the US in bank deposits rather than in Treasury and GSE securities, corporate bonds and stocks. Given this handicap, the central bank cannot play an effective restraining role when foreign inflows or outflows cause substantial shifts in the issuance volume or price level of mortgage or corporate securities or other assets.

In the proposed system-wide reserve regime, using repurchase agreements as the principal operating tool would allow the Fed to respond more effectively to excessive investment or disinvestment of foreign funds in one or more US asset markets. For example, allowing repos backed by holdings of the kinds of assets purchased by

foreigners to run off and replacing them with repos in foreign assets would effectively mop up an inflow, leaving reserves, interest rate levels and credit conditions largely unchanged. Alternatively, to counter the contractionary effects of an outflow, the Fed could acquire assets sold by foreign investors, increasing the amount of reserves in the system. Moreover, the Fed's ability to conduct repurchase agreements in foreign securities would eliminate the central bank's need to hold international reserves as precautionary investments

The benefit of introducing such transactions would be to enhance the Fed's ability to maintain stable conditions in domestic financial markets. But increasing effective US intervention in foreign exchange markets would not necessarily contribute to global stability. The issue of capital flows is complex and contentious. As argued elsewhere, a rising volume of speculative flows in response to interest rate differentials has contributed to widening global imbalances in recent years with results that have underscored the need for international as well as national monetary reform.¹³ Nevertheless, the Fed's inability to moderate the impact of capital flows on US credit expansion has exacerbated the problem of global payments imbalances even as it has facilitated the buildup of historic levels of domestic and external debt that have weakened the US economy.

Conclusions

At the end of the day, the main purpose of reinstating quantitative policy tools is to improve monetary control and overall macroeconomic performance. But a reserve management system that creates and extinguishes financial sector liabilities to influence holdings of credit-creating assets is a more efficient channel for monetary control because it can constrain or stimulate specific asset types or institutional sectors and thus deal more effectively with asset bubbles or credit crunches.

In the case of credit crunches, for example, if financial institutions were required to back assets by holding liabilities as reserves, a fall in the price of any asset would increase the value of reserves and allow intermediaries to buy more of the affected

¹³ See D'Arista 2008 for a more extensive discussion of these issues.

instruments or other assets. Similarly, an increase in the value of assets without an offsetting increase in the reserve liabilities that back them would limit the rate of increase in prices of one or more classes of assets and thus the potential for bubbles to develop. As Palley (2003) points out, the automatic countercyclical prospect of the system would do more to moderate movements in asset prices than changes in interest rates or margin or capital requirements.

Last, but certainly not least, a system-wide reserve management regime would give all financial institutions direct access to the lender-of-last-resort. For example, if mutual funds faced runs by shareholders, they could avoid selling assets (and thus prevent downward pressure on prices) by selling assets to the Fed and acquiring reserves needed to offset customers' withdrawals.¹⁴ Of course, the Fed would, as now, act in that capacity at its own discretion. But it would not need to jawbone the banks to lend to others the funds it now lends primarily to them to address systemic disruptions.

If it were bundled with complementary reforms in prudential supervision and regulation and a much-needed overhaul of financial sector guarantees, the comprehensive lender-or-last-resort facilities achievable under the proposed reserve regime would make the Fed's crisis interventions more coherent, less costly and, hopefully, less necessary. Like the other benefits of the reforms proposed in this paper, this improvement in crisis-management technique and strategy would begin forging a policy framework appropriate for the 21st century's financial system.

¹⁴ While current law authorizes the Fed to provide emergency liquidity to nondepository financial firms, the authority had been little used until recently and its effectiveness remains largely untested in practice.

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