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Working Paper No. 763

The Problem of Excess Reserves, Then and Now

by

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American Institute for Economic Research

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ABSTRACT

This working paper looks at excess reserves in historical context and analyzes whether they constitute a monetary policy problem for the Federal Reserve System (the “Fed”) or a potentially inflationary problem for the rest of us. Generally, this analysis shows that both absolute and relative sizes of excess reserves are a big problem for the Fed as well as the general public because of their inflationary potential. However, like all contingencies, the timing and extent of the damage that reserve-driven inflation might cause are uncertain. It is even possible today to find articles in both scholarly circles and the popular press arguing either that the inflationary blow-off might never happen or that an increasing tendency toward prolonged deflation is the more probable outcome.

Keywords: Excess Reserves; Federal Reserve; Fed; European Central Bank; ECB; Quantitative Easing; Monetary Stimulus

JEL Classifications: E51, E52, E58

WHAT ARE EXCESS RESERVES, AND WHY MIGHT THEY MATTER?

The most recent H.3 release from the Board of Governors of the Federal Reserve System (the “Board”) shows excess reserves of about \$1.794 trillion (data as of April 17, 2013, and most recent data from that date). The current level of excess reserves is the highest ever reached in nominal, real (inflation-adjusted), and relative terms, by a factor of multiple whole integers. Total reserves now are \$1.905 trillion, with about \$112 billion of required reserves. Only the level of required reserves could be considered normal in any historical context.

Excess reserves are the surplus of reserves against deposits and certain other liabilities that depository institutions (loosely called “banks”) hold above the amounts that the Board requires within ranges set by federal law. The general requirement is that covered institutions maintain reserves at least equal to ten percent of liabilities payable on demand. For the first time in history, there is statistical evidence that as much as one-half or more of excess reserves are held for United States banking offices of foreign banks.

This working paper looks at excess reserves in historical context and analyzes whether they constitute a monetary policy problem for the Federal Reserve System (the “Fed”) or a potentially inflationary problem for the rest of us. Generally, this analysis shows that both the absolute and relative size of excess reserves are a big problem for the Fed as well as the general public because of their inflationary potential. However, like all contingencies, the timing and the extent of the damage that reserve-driven inflation might cause are uncertain. It is even possible today to find articles in both scholarly circles and the popular press arguing either that the inflationary blow-off might never happen or that an increasing tendency toward prolonged deflation is the more probable outcome.

The Fed has fewer effective and politically palatable policy tools than its public statements indicate for dealing with excess reserves of the current magnitude. If the Fed were willing to take politically painful policy actions when the need arose, it could deal with the excess reserves effectively. Unfortunately, an ineffective response arising from a desire simply to muddle through is more likely, thereby giving rise to unacceptable levels of inflation, followed by tighter credit conditions and, finally, fewer sustainable employment opportunities because of weak domestic investment.

WHAT ARE BANK RESERVES GENERALLY?

In banking systems over the last 350 years or so, human experience has taught that banks (persons or institutions accepting deposits of money and promising to redeem them in money on demand or at a stated future time) may need to retain reserves against deposits. Reasonable people can disagree about the nature and proportional amount of those reserves, ranging from zero (a classical position associated with the free banking movement) to 100 percent (generally a 20th-century concept called “safe banking” or “narrow banking”).

The nature of banking reserves depends on the legal and institutional structure of the banking system. Frequently encountered historical reserves include gold and silver coin or bullion, full-faith-and-credit securities of the US Treasury, coins and currency issued by the Treasury, and foreign currency and coins granted lawful-money status under applicable law. In countries with central banks, deposit accounts at the central banks are reserves of banks that hold those accounts. Most of the current reserves of the US banking system are deposit accounts held at the Federal Reserve banks.

Correspondent banking arrangements also may play a role in reserve management. A larger bank’s reserve account at the central bank may include pass-through reserves held for smaller banks. In the US, before the creation of the Fed in 1913, national banks (in existence since 1863) were required to maintain reserve accounts at designated reserve city banks, and these banks, in turn, were required to maintain reserve accounts at banks in any of three cities: New York, Chicago, and St. Louis (central reserve cities).

At various times in US history, as well as currently, vault cash (funds held as coins or currency at banks and at approved armored carrier companies) counted as reserves and could be used to satisfy the entirety of any statutory or regulatory reserve requirement. Before the onset of the current financial crisis in the fall of 2008, vault cash frequently satisfied all the reserve requirement for smaller banks and usually between 80 and 90 percent of the requirement for the entire US banking system. Reserve accounts held at the Federal Reserve banks often were little more than clearing accounts covering the settlement of checks and wire transfers of funds.

Under current rules, primarily the Board’s Regulation D (12 CFR Part 204), depository institutions are required to hold reserves equal to ten percent of their demand liabilities, which includes checking and other accounts subject to withdrawal by orders to pay third parties. Since

the 1970s, however, banks have devised increasingly creative ways to enable depositors to have accounts with ready access for withdrawal or for transfer to third parties that technically are not demand liabilities (for example, “sweep accounts”). The rise of these accounts has led some commentators to suggest that reserves have lost their traditional function of constituting a liquidity backstop for the banking system and that a modern banking system could function reasonably well with no required reserves at all. However, most such commentary was published before the present crisis, and there is a general move among banking system supervisors now to increase the liquidity requirement for banks. Central bank reserves satisfy at least a significant part of that liquidity requirement.

HOW THE FED CREATES EXCESS RESERVES

The Fed creates reserves both passively and directly. When the Federal Reserve banks began operations after 1914, member banks initially deposited the reserves then required (13 percent of demand liabilities) at their Federal Reserve banks. Depository institutions beginning operations today essentially do the same thing.

The original purpose for discount window assistance from the Federal Reserve banks was to enable member banks to maintain required reserves. Banks deposit approved forms of collateral for advances with the Federal Reserve banks, and then the Federal Reserve banks lend the amounts that banks request within the valuation limits of that collateral. In this example, the Fed creates new reserves for the banking system through the discount window.

During the 1920s, the Fed discovered that, when it purchased US government securities, or when it purchased foreign exchange or bankers’ acceptances in the open market, its actions affected the aggregate level of reserves in the banking system. More purchases increased reserves, while more sales reduced reserves. After the 1930s, the Fed relied increasingly on open-market purchases and sales as the principal tool for monetary policy operations, and non-emergency use of the discount window eventually became a comparatively trivial amount (usually only in the tens or hundreds of millions of dollars, a mere rounding error on the Fed’s books). In the Fed’s weekly H.4.1 accounting statement for transactions through August 1, 2007, the last statement date unaffected by measures taken to cope with the present crisis, total

ordinary borrowings at the discount window were only \$3 million in a monetary base of \$823 billion.

The Fed's variable liabilities, including its reserve accounts, are the main components of the monetary base. That variable base usually is considered to consist of currency in circulation plus banks' reserve accounts, including vault cash. Before August 2007, the Fed's reserve accounts were equal to about 5.1 percent of the monetary base. Today, the Fed's reserve accounts, nearly all of which are in excess of the amounts required, are equal to 63 percent of the monetary base. Required reserves are only 3.7 percent of the monetary base.

THE GREAT INCREASE OF EXCESS RESERVES

The monetary part of the Fed's overall balance sheet ("factors affecting reserve balances") has expanded from about \$909 billion before the crisis to about \$3.3 trillion currently. Of the \$2.4 trillion increase, \$1.8 trillion is excess reserves. The excess arose originally from the Fed's emergency lending activities after August 2008, increasing from less than \$2 billion of excess reserves then to \$767 billion by year-end 2008.

Afterward, from early spring throughout 2009 and until mid-year 2010, the Fed engaged in the first major quantitative easing program of purchases of government agency debt and agency-guaranteed mortgage-backed securities. The Fed's purchases reached a cumulative total of \$1.285 trillion, and excess reserves reached nearly \$1 trillion. Essentially, the new reserves provided by the purchases program enabled the banking system to fund the repayment of about \$1 trillion of various forms of advances to financial institutions under the emergency lending program. The emergency lending program ended, but quantitative easing replaced it.

In early 2011, the Fed began its second round of quantitative easing, aimed at purchasing about \$600 billion of longer-term Treasury securities. When the program ended in June 2011, \$581 billion were added to excess reserves, with the peak amount of excess reserves outstanding reached in July 2011, \$1.618 trillion. The peak amount of monetary base that same month was \$2.681 trillion. Before the current quantitative easing program, which was announced in September 2012 and commenced in earnest in early 2013, these were the previous peak amounts. The earlier rounds of quantitative easing did not accomplish much, in other words, if the Fed's objective was to encourage banks to ease the terms of credit extensions for borrowers

and to stimulate economic growth. Instead, the Fed emerged from its purchase programs with an excess reserves problem that now is about 80 percent larger than the already vastly too large amount of excess reserves when the first quantitative easing program ended. It is difficult to see how a third and present round of quantitative easing makes sense in such a context.

The Fed should have learned from the experience of the earlier quantitative easing programs that its purchases of securities do little or nothing to increase the quantity of bank credit actually supplied to the general economy. Purchase programs might make sense in some circumstances if they helped make real interest rates positive, but generally real rates have been negative since 1Q2009. The Fed's methodology is not necessarily entirely irrational, but the evidence is that it simply has not worked.

RECENT SIGNS OF LIFE IN BANK LENDING AND MONETARY AGGREGATES

After several years of comparative inactivity, bank lending activity for commercial and industrial (C&I) loans increased moderately in 2011. That positive trend continued in 2012 but may be decelerating in 2013. Reversing a long series of stagnant or negative quarterly numbers after the onset of the crisis, C&I loans increased in each quarter of 2011 and grew at an annual rate of 20.7 percent in August 2011, just ahead of eruption of the Greek financial crisis the following month. The increases continued at an annual rate of 12.5 percent throughout 2012, but the rate of increase has slowed in 2013 (3.34 percent to date, 8.9 percent annualized). In mid-April 2013, the domestic C&I loans total for all US banking institutions was 13.6 percent greater than in early August 2007, just before the European crisis-linked extraordinary maneuvers of the Fed began. That is an average annual increase of 2.4 percent for C&I loans in return for a 367 percent increase of the monetary base since August 2007 (65.7 percent per year, on average), now standing at \$3.024 trillion. The disproportion between intended cause (the monetary stimulus) and the observed effect (a comparatively trivial increase in bank credit expansion) suggests that the stimulus cannot achieve the desired real economic effects directly.

Some combination of factors beyond the merely monetary ones must have been present to account for the disproportion between monetary stimulus and credit expansion. It is respectfully suggested that those factors might include a failure of bank reform efforts in late 2008 and early 2009, abusive banking practices reflecting counterproductive changes in credit

reporting and credit scoring, supervisory emphasis on elaborate mathematical modeling of banks' credit and investment risks instead of direct attention to significant factors in banks' commercial and consumer loan agreements (like higher interest rates offered to borrowers than banks' own actually decreased costs of funds), and the payment of interest on bank reserves (for most of the time since the practice began in October 2008, at a rate significantly higher than contemporaneous market rates). Market consequences, including an increase of excess reserves, have to be expected when Federal funds command an annual interest rate of 0.15 percent while the Fed offers 0.25 percent for reserves (current rates).

The monetary aggregates, which were either stagnant or declining moderately during the first three years of the present crisis, began to show signs of life during 2010. The last low measure for M1 in the Federal Reserve Bank of St. Louis (FRED) series was \$1.699 trillion in April 2010. M1 reached \$2.123 trillion in September 2011, just before the Greek crisis. The upward trend continued throughout 2012, and the mid-April 2013 level of M1 is \$2.514 trillion, 48 percent greater than the post-2007 low (annual average increase of 16 percent since the low). The increase for M1 in 2013, however, has been 3.1 percent since year-end 2012 (8.3 percent annualized).¹

In monetary terms, distinguished from Phillips-curve concepts like a direct link to employment numbers, Fed monetary policy has been conducted with no real guideposts. Excess reserves are not included in M1 (to avoid double counting), but now are equal to 71.3 percent of M1. If excess reserves were released to the public, M1 would increase by a large amount in short order, which in turn should bid up asset prices.

The behavior of M2 (which also excludes excess reserves) was similar to M1. The most recent low was \$8.466 trillion in January 2010. M2 now stands at \$10.536 trillion, an increase

¹ The Fed's definition of M1 is the sum of (1) currency outside bank vaults, (2) traveler's checks of nonbank issuers, (3) customers' demand deposits at commercial banks (with minor deductions), and (4) other checkable deposits, like negotiable order of withdrawal (NOW) and automatic transfer service (ATS) accounts. Basically, this is currency held by the public plus demand deposit balances outside the Fed. M2 consists of M1 plus (1) savings deposits (including money market deposit accounts), (2) small-denomination time deposits (less than \$100,000), and (3) balances in retail money market mutual funds. Individual retirement account (IRA) and Keogh account balances are excluded from M2. Excess reserves, required reserves, clearing balances held at the Federal Reserve banks, and the like, are components of the Fed's monetary base but would constitute double-counting of the same factors if included in M1 and other monetary aggregates. Such accounts are readily spendable media of exchange (transaction accounts), but counterparts of these accounts already are included in M1, for example, as components of customers' demand deposits at commercial banks. The quantities of liquidity to fear for inflationary consequences are either monetary base or M1/M2, but not both simultaneously.

of 24.4 percent from the low (5.58 percent average annualized). However, the increase of M2 for the first 4.5 months of 2013 has been only 0.57 percent, an annualized rate of only 1.52 percent.

Are the rapid increases in the monetary aggregates since 2010 the harbingers of inflation yet to come, which should occur as the Fed's excess reserves first leak and then gush out into the banking system's mechanisms for the creation of money and credit? Only time will tell, but standard monetarist theory holds that increases of Federal Reserve credit (expansion of its balance sheet and of the monetary base) lead inexorably to increases in spendable media of exchange held by the public, usually with a long and variable lag (6–18 months), with consequent increases in the consumer price level.

If the monetarists are right, then the time for the Fed to stop its monetary easing policies already is long since passed, and proposals for continuing the present round of quantitative easing would have to be considered utmost folly. Excess reserves, monetary base, and C&I loans increased by 27.3, 16.4, and 6.0 percent, respectively, since the current round of monetary easing began. So much monetary creation for so little measurable result, in other words.

THE EUROPEAN EXPERIENCE WITH EXCESS RESERVES IS LARGELY SIMILAR

The continental European and US experiences with excess reserves since the onset of the present crisis have been similar, making allowances for the importance of the Greek financial crisis in causing expansive monetary efforts in Europe. Using the balance sheet of the European Central Bank (ECB) as a source of data analogous to the US data cited above, the measures below are presented.

Table 1. Comparable monetary data from the European Central Bank

	Billions of euros			Percent annualized, 5.58 years
	08/01/2007	09/30/2011	04/19/2013	
Dollars per euro (closest week)	1.3818	1.3429	1.3065	
Required reserves	189.6	204.9	329.8	13.2
Excess reserves	0.1	358.1	312.6	—
Monetary base, US definition	925	1513	1832	17.6
M1 (latest = end March 2013)	3754	4755	5176	6.8
M3 (latest = end March 2013)	8304	9466	9814	3.3
ECB gold reserve (market value)	172	420	435	27.4
ECB balance sheet	1195	2289	2617	21.3

Source: ECB (2013a)

The peak value for the euro during the crisis period was 1.5914 during the week of July 7, 2008. The low value was 1.1934 during the week of May 31, 2010, just before the first eruption of the Greek crisis.

The ECB raised its required reserve during the second week of July 2012, when excess reserves stood at 1.006 trillion euros. At that point, the ECB's balance sheet also was much larger, 3.085 trillion euros. Initially, about one-half of the excess was absorbed into the pool of required reserves, and the overall balance sheet then began to shrink toward the current level. Otherwise, the ECB experience has been roughly comparable to the Fed's experience: Much monetary creation and much expansion of the balance sheet and monetary base producing comparatively little credit expansion. In Europe, M3 (Table 1, above) is the monetary aggregate commonly used as the reference point for the base of expansion of bank credit and is the aggregate most useful to compare with US M2.

The brief conclusion about the European experience with excess reserves is that they were brought into some degree of control in mid-2012, but still are abnormally large compared with required reserves. The Fed is still a long way from achieving a comparable measure of restraint on the growth of excess reserves.

THE KEYNESIAN COUNTER-ARGUMENT AND A RESPONSE

Some Keynesian economists, led chiefly in the mainstream popular press by New York Times columnist, Princeton University professor, and Nobel Prize winner Paul Krugman, have been arguing almost since September 2008 that the US economy needed a monetary stimulus even greater than the \$786 billion fiscal stimulus package that Congress approved in 2009. Essentially, these Keynesians advocate a massive program of loans or purchases of securities by the Fed on top of any fiscal stimulus that Congress might enact.

The Board's spokesmen argue that the Fed's emergency actions in 2008–09 and the subsequent federal fiscal stimulus were necessary for the recovery, but these points are uncertain. Properly applied fiscal stimulus in appropriate amounts might have been enough, for example. The Board also argues that the Fed's subsequent quantitative easing programs, adding nearly \$2 trillion to the Fed's balance sheet, also were necessary for the degree of recovery thus far. The Fed drove short-term market interest rates to nearly zero by December 2008, a target

range of 0–0.25 percent (annualized) for Federal funds, and announced its intention to pay interest on both required and excess reserves in October 2008. Paying interest had the effect of encouraging banks to retain excess reserves at the Fed.

Unfortunately, the Fed’s interest rate policy discourages banks from making loans at prevailing market rates. For example, on October 13, 2011, the weighted average Federal funds rate was only 0.07 percent (annualized), and for several weeks some reported trades occurred daily at 0.01 percent. The four-week Treasury security secondary market rate fell below zero on several trading days in late September-early October 2011 (-0.01 percent). The lowest average rate for Federal funds was 0.06 percent on September 30, 2011, a quarter end date of great market turmoil due to concern about the Greek crisis. Such nominal interest rates effectively were zero, but real rates, as measured in the Treasury’s Inflation-Protected Securities (TIPS) rates, have been below zero since 2010.

It is reasonable to argue that the impact of any Fed monetary stimulus has been reduced and possibly nearly eliminated by the payment of positive interest on excess reserves. Professor Edward J. Kane of Boston College explains the issue as follows in a note to this writer:

What is different about this experience is that the Fed is paying interest on these excess reserves. . . . What the Fed could do that it could not do before is to make that interest rate negative. Even a zero rate for excess reserves would be helpful. It would make lending more attractive to banks and put us back into the regime that monetarists have investigated in the past. A negative rate would break new ground. Excess reserves should pay less than the Fed funds rate to avoid subsidization. Excess reserves currently are more attractive than selling them as Fed funds because they can be rolled over at no cost and can be liquidated without waiting for a day to pass.

The Fed has offered an interest rate of 0.25 percent for excess reserves since the inception of the program. Gerald Dwyer of the Federal Reserve Bank of Atlanta (now at University of North Carolina–Charlotte) posted the following prophetic comment on the Bank’s website in October 2009:

Currently, banks receive a higher interest rate from holding excess reserves than from holding three-month Treasury bills. As long as the interest rates on reserves and risk-free assets are similar and banks' demand for risk-free assets does not decline, there is no obvious reason why excess reserves will decline.

The market interest rate on three-month Treasury bills has been around 0.06 percent for several weeks at this writing (it was 0.09 percent in March 2013) and generally has been at

comparable rates (well below 0.25 percent) since 2009. Professor Kane's observation and Mr. Dwyer's prediction generally have been borne out.

THE EXPERIENCE OF THE 1930s WITH EXCESS RESERVES

The only prior occasion in Federal Reserve history when there were large and lasting amounts of excess reserves was, as one might expect, during the 1930s. They were not a factor in the formulation of Fed policy on money and credit throughout the 1920s. For example, in 1929, the estimated annual average of excess reserves was only \$43 million in a system with \$2.4 billion of total member bank reserves. Excess reserves remained at or near zero through year-end 1931, never exceeding \$130 million or about five percent of total reserves, and began to emerge as a notable issue only in early 1932.

Excess reserves first exceeded \$150 million in April 1932 and never were reduced to an amount that could be considered normal until 1942. The two peak amounts of excess reserves were reached in 4Q1935 and 4Q1940. The December 11, 1935, reporting date showed \$3.304 billion of excess reserves versus \$6.040 billion of total reserves, about 55 percent of the total. The same figures for October 30, 1940, were \$6.930 billion of excess reserves, 49 percent of the total of \$14.177 billion.

The proportion of excess reserves remained above or near 40 percent of total reserves through most of 1941 and declined steadily throughout 1942. The necessity of financing the US war effort forced innovations in all standard banking system, Federal Reserve, Reconstruction Finance Corporation, and Treasury financing devices. Banks' lending for government-guaranteed defense production programs gradually eroded the quantity of excess reserves throughout 1941. The perceived problem of excess reserves finally was eliminated in 1942. Monthly averages of excess reserves fell to \$2.328 billion in 3Q1942, 19 percent of total reserves of \$12.234 billion, the lowest proportion since 1933. Afterward, excess reserves generally were not regarded as a monetary policy problem.

Research by Milton Friedman, Anna J. Schwartz (1963), Allan Meltzer (2003), and others over the years has documented amply the Fed's expressions of concern for free or excess reserves during the 1930s. The Fed frequently interpreted excess reserves as signals of monetary ease. Meltzer (2003, pp. 161–65, 734–36) points out that the Fed's dominant monetary policy

model from the mid-1920s through the 1930s, the Winfield Riefler-W. Randolph Burgess model, was aimed at requiring the banking system, especially in New York, to operate without many excess reserves and constantly to need to borrow at least small amounts at the Federal Reserve banks' discount windows to meet their reserve requirements. Friedman and Schwartz (1963, pp. 517–34) interpret the influence of the Riefler-Burgess model consistently with Meltzer.

The Fed persistently interpreted excess reserves as a signal of insufficient policy tightness because banks' borrowings were below the desired target. The Board's official publications of the 1930s paid attention to excess reserves, generally in the context of rationalizing the absence of a more active program of open-market purchases of Treasury securities or commercial bills of exchange. Excess reserves also created a rationale for increasing reserve requirements to reduce or eliminate them.

The most notable Fed policy action on reserves in the 1930s, also the one most frequently criticized in subsequent academic publications, was the increase of reserve requirements in 1936–37. The Board doubled reserve requirements, from 13 percent of demand deposits at central reserve city banks to 26 percent, in three stages: August 1936, March 1937, and May 1937. There were corresponding but smaller increases for banks in other reserve cities. The increase temporarily absorbed excess reserves, which the Fed intended.

Friedman and Schwartz and Meltzer identify the Treasury's changing policies regarding sterilization of gold inflows from Europe as the driving factor in changes of excess reserve levels prior to the increased reserve requirements in 1936, as well as in the years afterward until World War II. Excess reserves fell to \$1.714 billion, about 28 percent of total reserves of \$6.206 billion, on September 16, 1936, and then rose until shortly after the second and third installments of the three reserve requirement increases were announced on January 30, 1937 (\$2.186 billion excess vs. \$6.768 billion required, February 17, 1937). Afterward, excess reserves fell to \$704 million (vs. \$6.636 billion required) on August 4, 1937.

The 1937 decline of excess reserves accompanied a simultaneous pronounced collapse of general US economic activity, which until then had been recovering nicely from the low level of 1933. Meltzer notes (2003, p. 522) that “[r]eal GNP fell 18 percent and industrial production 32 percent,” with corresponding increases of unemployment, from mid-1937 to mid-1938. On April 16, 1938, the Board reduced the top reserve requirement by about one-sixth, from 26 to 22.75 percent at central reserve cities, with corresponding reductions elsewhere. Meltzer (2003,

pp. 529–33) interprets the April 1938 reduction of required reserves as the Fed’s contribution to part of the White House economic recovery program of that spring, including a temporary desterilization of European gold inflows.

The US gold reserve rose from about \$4 billion, 1929–33, to more than \$13 billion in 1937. Once war began in Europe in 1939, the gold reserve rose from nearly \$15 billion to more than \$20 billion before US entry into the war at year-end 1941. When desterilized, the gold inflows added to excess bank reserves.

The April 1938 reduction of required reserves occurred even though excess reserves had been rising again (probably due to the Treasury’s desterilization of gold inflows) for more than six months, to \$1.727 billion (23 percent of the \$7.472 billion required). There were no further sustained decreases in excess reserves until World War II.

The causes of the 1937–38 recession are various, and it probably overstates the case to call the Board’s increase of reserve requirements the primary cause. Academic opinion generally holds that the increase was not helpful and worsened the “atmospherics” of the political and economic environment of the time. Other factors that Meltzer identifies (2003, pp. 521–23) as contributing causes for the recession include a reduction of World War I soldiers’ bonus payments made the year before as a form of federal stimulus to the economy (in other words, the stimulus program ended); passage of an undistributed profits tax (which had the perverse effect of taxing part of corporations’ capital if it could not be invested or paid out as dividends fast enough—the tax was repealed effective in 1940); the beginning of collection of Social Security taxes (which the economy experienced as a new tax and not a replacement tax); a new round of anti-trust actions intended to hold down price increases; the initial round of labor organizing and strikes under the new Wagner Act of 1935; and Administration rhetoric deemed hostile to business interests. Meltzer is cited here chiefly for summarizing nicely the recession-causing factors identified in other studies as well as his own.

The key conclusion about Fed policy drawn by most scholars of the 1930s is that those policy decisions occasionally were led astray by the continuing and usually growing presence of excess reserves in the banking system. The Board’s public statements on the

1936–37 reserve requirement increases express concern about the continued existence of excessive reserves as the driving factor in support for the increases.²

CONCLUSION: WHAT WE CAN LEARN FROM THE 1930s ABOUT HOW TO HANDLE THE PROBLEM OF THE FED’S EXCESS RESERVES TODAY

One valid conclusion from this study very well could be that we should ignore the presence of excess reserves in the banking system as a day-to-day guide to the Fed’s monetary policy. It was a misinterpretation of the presence of excess reserves that drove the 1930s Fed to refrain from expansionist monetary policies (like purchasing Treasury securities or commercial bills of exchange in the open market) during periods of negative real interest rates not unlike the present. A perception of insufficient tightness in financial markets does not always translate into boom times in the non-financial economy.

Today, a plausible argument can be made that the Fed’s monetary policy leniency and misinterpretation of periodic financial market or employment market slackness since autumn 2008 have created too many excess reserves again. In retrospect, it is difficult to see how further expansion of the excess reserves pool by the quantitative easing programs in 2009–13, once the initial round of emergency lending generally ceased in March 2009, assisted in the maintenance of sound economic conditions or helped lay the basis for a sustained recovery. QE3, the present expansion program, simply adds to the already existing enormous excess supply of reserves.

Interest-earning excess reserves constitute an administrative problem for the Fed and are a drain on net federal income as long as the Fed pays interest on them (the Fed’s interest payments reduce its own income and, thus, the “interest on Federal Reserve notes” paid to the Treasury). Real rates of return have to become positive for borrowers to identify projects for

² Sources cited begin with Friedman and Schwartz (1963). For the Federal Reserve era (1913 forward), see Meltzer (2003). For Federal Reserve information and data, see Federal Reserve Bulletin issues for the years cited; various parts of the Board’s website (“All Statistical Releases”) for contemporary data. Historical Federal Reserve data also are available on the FRED website maintained by the Federal Reserve Bank of St. Louis. Interest in writing this article was stimulated by receipt from William F. Ford, former president of the Federal Reserve Bank of Atlanta and currently a professor of finance at Middle Tennessee State University, of an archived copy of a March 1936 pamphlet published by the Federal Reserve Bank of Cleveland, “The Federal Reserve System Today.” That pamphlet includes charts and data on excess reserves. It was published to acquaint the public with recent changes in the System’s operations and policies after extensive changes were made pursuant to enactment of the Banking Act of 1935 the preceding year. (See Federal Reserve Bank of Philadelphia 1936, pp. 15–19; we assume that each Reserve Bank initially published its own version identical to the version cited.)

which they wish to borrow and for lenders to prefer to lend instead of receiving net positive interest payments for excess reserves held at the Fed.

On balance, it is reasonable to conclude that it would be better for the Fed at least to take steps to discourage the further accumulation of excess reserves and to retire, say, at least ten percent of them each year (by open-market sales of Treasury securities or, if feasible, government agency securities) for the next ten years. Sales of such comparably modest quantities (about \$180 billion a year at the current level) probably could be offset, if need be, by net Fed purchases of Treasury securities if the economy seemed to undergo an outright contraction. The 1930s experience shows that it can take a long time to dispose of excess reserves (a decade then). Also, with federal budget deficits continuing to run about \$1 trillion a year, having the Fed sell about \$180 billion a year of (preferably) mortgage-backed securities and longer maturity Treasury securities should be feasible and comparatively non-disruptive to market demand for Treasury paper: At this rate, the amount of securities added to the market by Fed sales would add to supply only at the margin.

The ECB took important steps to reduce its own excess reserves in mid-2012 by increasing required reserves so as to move about one-half of the total into the category of required reserves. At this writing, however, Europe generally is viewed as experiencing an economic recession. Other factors are in play there, too, including threats of civil and political disorder in several countries, but raising the level of bank reserves could reduce the overall level of bank credit available for lending to productive enterprises, thereby making the European recession worse. Europe also is more dependent on bank credit day-to-day than countries like the United States or, to a lesser degree, the United Kingdom with established securities markets.

In any case, disposing of excess reserves would remove a temptation for an easy path to inflation for Fed policymakers and would improve the quality of the Fed's responses to monetary policy developments by enabling the Fed to manage open-market purchases and sales in a positive nominal interest rate environment. Positive interest rates, in the present environment, would provide relief to savers relying on interest income and might encourage some of the more entrepreneurial spirits in society to undertake new projects requiring investment.

The decline of some market interest rates to zero and even below during the second half of 2011 and the persistence of negative real rates afterward should have been an alarm bell for

the Fed showing that its policies were not working. It is hard to make interest rates turn positive with a large market overhang of \$1.8 trillion of excess reserves paying a positive rate of return to banks in a stagnant economic environment.

It may turn out that there are no policies that could resist the depressive effects of external events beyond US control on the US banking system, ranging from military engagements abroad to bank failure (domestic or foreign), Japanese money creation and currency devaluation, or sovereign debt default in Europe. But it would be a policy mistake not to begin now to try to offset the domestic economic drag of excess reserves while awaiting more bad news from abroad.

In the 1930s, after all, gold flows fleeing political turmoil in Europe helped create the Fed's monetary policy conundrums of that era. Unsterilized gold inflows increased overall bank reserves then and thus increased excess reserves, once the excess emerged. After the Treasury began to sterilize gold inflows, a policy that amounted to stop-go driven by political factors, excess reserves stabilized until the next round of Treasury desteralization, a cycle that repeated itself several times in the 1930s.

It is easy to imagine a general flight of foreign capital into the US dollar, with a corresponding increase of US bank deposits (and reserves!), today if European economic policy coordination fell apart, if military or crime-driven actions abroad disrupted local economies, or if China's investment bubble fell apart, just to list several things analogous to the events of the 1930s that should be weighed in any analysis of excess reserves today. But the wisest decision would be gradually to remove excess reserves as barriers to effective US policy responses to any such new factors today.

In the United States, the excess reserves of the 1930s went away when banks were offered government-guaranteed lending alternatives requiring a lot of new investment, in that case involving the funding of defense production loans. Any comparable program today probably should aim at encouraging banks to move reserves into an activity that would draw down the monetary base (reserves held at the Fed), but would not expand the money supply (monetary aggregates created by the banks themselves).

In light of the vast quantity of excess reserves, it would be desirable to identify a few major programs that would be desirable in their own right and that could absorb a lot or all of the excess reserves if they were accompanied by government guarantees. Two such programs

immediately come to mind: Refinancing all student loans (now in excess of \$1 trillion) or refinancing pre-2009 mortgages that are in default or heading for foreclosure (probably between \$2.2 and \$2.5 trillion). The time horizon for mortgages to be considered for refinancing could be extended as far as year-end 2012 (the commencement of the present QE program) if not enough qualified borrowers emerged. Qualified borrowers should have negative equity in their houses not in excess of ten percent and should be offered financing terms up to ten or 15 years at a fixed rate set slightly in excess of the Treasury's borrowing costs for bonds of equal maturity. In any case, the repayment schedule should be set so that the borrower would reach positive equity based on current home values within ten years.

APPENDIX 1

Table A1. Federal Reserve Banks, factors affecting reserve balances (all amounts in billions of dollars unless otherwise noted)

Category	8/1/2007	9/30/2011	4/17/2013
Total reserves	42	1636	1905
Required reserves	40.4	93.7	111.6
Excess reserves	1.6	1542	1794
Monetary base	822.9	2632	3024
Total factors affecting reserves	909.4	2895	3339

Source: FRB (2013a, b)

Table A2. US M1 and M2 data plus commercial and industrial (C&I) loans (all amounts in billions of dollars unless otherwise noted)

Category	8/1/2007	9/30/2011	4/17/2013
M1	1616	2127	2514
M2	7294	9541	10536
C&I loans	1283	1297	1555

Source: FRED (2013a, b); FRB (2013c)

Table A3. ECB statements (amounts in billions of euros)

Category	8/1/2007	9/30/2011	4/17/2013
Required reserves	189.6	204.9	329.8
Excess reserves	0.1	358.1	312.6
Monetary base (US components)	925	1513	1832
ECB gold reserve (market val.)	172	420	435
ECB balance sheet	1195	2289	2617
M1 (end March 2013)	3754	4755	5176
M3 (end March 2013)	8304	9466	9814
Dollars per euro	1.3818	1.3429	1.3065

Note: Peak value after August 1, 2007: 1.5914 (July 7, 2008); low value after August 1, 2007: 1.1934 (May 31, 2010).

Source: ECB (2013a, b)

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