

THE NEW MONETARY FRAMEWORK

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Do the policy actions of monetary authorities actually affect economic activity? We know that time and other resources are expended, but what can we observe about the results of such efforts?

In answering this question, it is helpful to begin with an account of how monetary authorities in discretionary, fiat currency regimes are traditionally thought to influence economic activity. Here, every college course in intermediate monetary theory tells essentially the same story. A nation's money supply comprises two distinct components: paper currency and deposits at banking organizations. The former was the largest component in earlier times, but the latter has come to dominate in recent decades—at least in most countries. The deposits in banks are subject to minimum reserve requirements, and the total deposit liabilities of banks constitute some multiple of reserve balances (that is, vault cash plus deposits at the central bank). The banking system as a whole is thus “reserve constrained,” which means that, unless the central bank provides more reserves, there is an upper limit to the total deposits that may be held by individuals and businesses. By extension, if currency outstanding increases, and the central bank fails to add to the total supply of reserves available to private banks, then there has to be a corresponding contraction of deposit money. These reserve constraints have historically meant that, for better or worse, monetary authorities have the power to control the nation's money supply, and, in so doing, affect economic activity.

Cato Journal, Vol. 36, No. 2 (Spring/Summer 2016). Copyright © Cato Institute. All rights reserved.

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However, this traditional account no longer holds true. The commercial banking system has ceased to be reserve constrained, and this means that *monetary authority actions to change the size of the central bank balance sheet do not affect the nation's money supply*. Now, instead of being constrained by the amount of reserves supplied by central banks, banking companies are constrained by the supply of earning assets that are available to them. And it is the supply of these earning assets that, subject to capital constraints, determines banks' aggregate deposit liabilities.

What implications does this shift have? Brunner and Meltzer (1972: 973) suggested that while it was possible for inflation or deflation to occur without changes in the monetary base, most inflations were, in practice, the result of base money expansion. That conclusion reflected the fact that the banking system was reserve constrained, so that increases in the stock of money were limited in the absence of expansion of the central bank balance sheet. However, in today's world of massive excess reserves in the banking system, the same model used by Brunner and Meltzer suggests that money creation has become a function of loan demand and the securities on offer to banks.

The new college textbook for intermediate monetary theory explaining all this has not yet been written, but when it is, it will not say that the monetary authorities control the "supply of money" and estimate the "demand for money," the objective being to prevent either an excess supply (which would cause inflation), or an excess demand (which would trigger a recession). That theoretical framework is broken—at least for now—in such a way that the monetary authorities can no longer formulate policy actions intended to influence aggregate economic activity by expanding or contracting the central bank balance sheet.

Interest Rates and Monetary Stimulus

The intermediate college course on monetary theory also offers an alternative theoretical avenue for influencing the economy—the level of *nominal* market interest rates. The basic idea is that when interest rates are lower, people borrow more to consume and invest, and when interest rates are higher, people will borrow less for consumption and investment. The big economic debate—and empirical contest—has been about the degree to which people understand the

inflation premium in nominal interest rates, as well as the before- and after-tax interest expense they will bear. The economic argument is that if people think in terms of interest rates that are adjusted for anticipated inflation and/or taxation, observed market interest rates are higher than the “real” interest that affects consumer and investor decisions.

One hypothesis is that central bank “zero-interest-rate-policy” (ZIRP) works by pushing down bond yields so that investors are driven into equities in search of higher returns. Consequently higher valuations in equity markets then create a “wealth effect,” wherein stockholders decide to increase consumption spending. Presumably, greater consumption demand will, in turn, give potential investors more confidence to forge ahead with capacity expansions and new projects.

However, this model only makes sense in a closed economy. In an open, global economic system, there is no reason to expect that increased investment and output will be domestic—even if aggregate consumer spending does respond to stock prices. This is especially so in a context of tax and regulatory policies hostile to capital formation. And surely no policymaker would argue that the best way to promote prosperity via monetary policy is to drive the trade deficit ever higher as imports outpace export growth.

Whatever the theoretical arguments, and regardless of the evidence of most of the past century, the near-zero interest rates we have seen in recent years have shown no correlation with domestically produced consumption by households, or with domestic investment activity in the private sector. In fact, an argument can be made that the low interest rate environment has reduced the demand for bank credit while increasing the demand for earning assets by non-bank lenders such as mutual funds, pension funds, and insurance companies (Jordan 2014). Hence, the liabilities of banks (i.e., demand deposits) have grown more slowly than they otherwise might have. In other words, the “low interest rates are expansionary” view conflicts with the “slow money growth is contractionary” view of the channels by which monetary authorities influence the economy.

Central Banks and Economic Growth

Another contribution to this debate about the influence of monetary authorities on the economy comes from the “market monetarists,” who

argue that central banks should focus their policy actions on achieving a target growth rate for nominal GDP that is consistent with their objectives for inflation and real economic growth. This claim, however, is the “assume we have a can opener” approach to economics. Monetary authorities once had several tools in their policy bag—reserve requirements, discount rates, interest ceilings, open market purchases and sales—that might be employed to achieve any objective they chose. But what tools do they have today to influence the pace of nominal GDP growth? What instructions can the monetary authorities give to their trading desk to achieve a faster or slower growth of nominal GDP? None!

The notions behind monetary and fiscal stimulus are, first, that that economic growth comes from getting consumers to spend or businesses to invest, and, second, that this can be brought about by government actions designed to “stimulate demand.” But that is not how growth happens. A couple of hundred years ago, Adam Smith would have laughed at the idea that consumers’ wants are satiated and must be “stimulated” by government, or that investors don’t foresee opportunities to enhance profit without the government hyping demand for something—and rightly so.

In fact, growth (i.e., rising standards of living) happens when there are opportunities for real cost reductions. Put simply, when innovations cause the information and transactions costs of doing something to decline, people do more of the now-lower-priced thing. The demand was always there. It was never necessary for either monetary or fiscal authorities of government to “promote demand” for something. Wants are insatiable. If the cost of a weekend fly-around-Mars drops dramatically, the amount demanded will rise. The notion that government can or should do something to stimulate demand is, at best, obsolete.

Monetary Policy and the Politics of Wealth Sharing

Economic progress comes from reducing the sand in the gears. Often that sand is natural—information and transaction costs, for example. In modern societies, however, many such costs are artificial, created by collusive behavior between private interests, who want to protect their turf, and government officials, who want campaign contributions. Erecting and maintaining barriers to entry from potential competitors generates more political contributions than do promises

to reduce such barriers. During the last half of the 20th century, burgeoning licensing and certification requirements created new obstacles to competition, so that innovations, new business startups, and real cost reductions slowed in many industries and sectors.

Meanwhile, political parties competed to build coalitions of voters by promising to transfer to them part of someone else's paychecks—either now or in the future. Eventually, even highly efficient and effective tax systems are no longer able to generate the collections necessary to fulfill all such promises, and political choices become unavoidable. In this dynamic, modern central banks have been part of the problem, not part of any lasting solution.

In the United States in the 1960s, promises made to individuals and households, together with rising government expenditures for the military, began to outrun tax revenues at an accelerating rate. Instead of reining in spending, the Johnson administration and then the Nixon administration cut the U.S. central bank loose from its specie anchor in three steps. First, the "London Gold Pool" was suspended; then the "gold window" was closed while the "gold cover" of U.S. currency was removed by Congress; finally, the commitment to redeem foreign-held dollars for gold was eliminated in 1973. These steps freed the central bank from any institutionalized discipline in the creation of new currency and bank reserves, and in turn removed any need for fiscal discipline. The result was accelerating inflation—the form of taxation favored by politicians for at least a couple of thousand years.

In this respect, the U.S. experience in the 1960s and 1970s was no different from that of other developed and developing countries with central banks and a monopoly national currency. Political promises of other people's money eventually added up to more than the tax system could generate, central banks were called upon to make up the difference with additional new money creation, and the ensuing inflation resulted in devaluation or depreciation of the currency. In the end, voters had been suckered into accepting nominal money units in exchange for their votes, but found the money they received did not buy as much as it had previously. They were the victims of an unholy alliance between fiscal and monetary authorities under the sway of politicians.

The recent experience of Greece is instructive. Even with a booming economy in the 1950s and 1960s, the Greek tax system did not collect enough revenue to fund all the promises politicians were

making to voters. So the country's national currency was devalued in the early 1970s and depreciated continuously for a couple more decades until the drachma was replaced by the euro. Once Greek politicians realized they could sell euro-denominated bonds to foreign investors in order to fund the promises they had made to voters, a frenzy of vote buying led to a national debt much larger than any tax system could service. Because inflation and devaluation were not possible once the Greek central bank was deprived of its power to create new money, default on the foreign-owned Greek government bonds became unavoidable.

Ironically, the absence of a national currency—and a central bank able to create more of it—had in Greece's case allowed politicians to dig a debt hole much larger than had previously been possible. This was because foreign buyers of Greek euro bonds knew that the creator of euros—the European Central Bank (ECB)—would be pressured by governments of lender countries in the eurozone to create the additional euros needed by the Greek treasury to make the interest payments to the non-Greek banks and other lenders that owned the Greek debt.

Of course, the holders of Greek government bonds do not care whether the euros necessary to pay them back with interest come from the ECB or loans from other governments to the Greek government. However, some of those other countries have very large debts of their own, so issuing even more bonds in order to finance loans (or gifts) to the Greek government was a nonstarter. The moral of this story is that effective discipline in the fiscal decisions made by politicians cannot and will not be achieved as long as there are central banks empowered to create more of the money that politicians have promised to deliver.

All bonds issued by governments and all “entitlement” promises made by governments to voters are claims on future tax collections. Historical experience has been that such government-created claims on the tax system will always grow to exceed potential future tax receipts. Yet this experience of central banking and monopoly currency appears to have had no lasting effect on the propensities of politicians to promise potential voters that, if elected/re-elected, he/she will vote to transfer other taxpayers' money to his/her supporters. In almost all democracies, the “politics of wealth sharing” has come to dominate the “politics of wealth creation.” The reason is simple. No single elected representative or group of elected

representatives has much, if any, influence over the pace at which an economy creates wealth. Any promise that newly created national wealth will benefit any one voter or even group of voters is simply not credible. However, even a single elected representative can facilitate a transfer of existing wealth to particular voters or constituents. A group of politicians, organized as a coalition or political party, can arrange this transfer of wealth on a much larger scale.

When it inevitably turns out that the aggregate of such promises exceeds the amount available for redistribution, no recipient group will voluntarily forgo their claims to other people's money. There are, of course, those rare politicians who campaign on promises to reduce some beneficiary groups' payments from government, but they are rarely elected (or reelected). And even in office, they often find themselves powerless to actually carry out their agenda.

All of this was understood very well by James Madison as he drafted the U.S. Constitution to replace the failed Articles of Confederation. The decision that the country's money should be backed by gold and silver was deliberately intended to impose fiscal discipline; since the amount of money in circulation was limited by available precious metals to back the currency, current expenditures of government, and promises of payments in the future, had to be limited to tax collections. Even when the Federal Reserve banks were created in 1914, the currency issued by these new "bankers' banks" was defined in terms of a weight of gold. *There was no provision in the Federal Reserve Act for discretionary monetary policy.*

Sadly, the United States' on-again/off-again efforts to anchor the value of the dollar to a specified weight of gold came to an end as the first six decades of U.S. central banking drew to a close. The next phase included efforts to achieve monetary discipline within the decisionmaking bodies of the monetary authority, sometimes under pressure from congressional oversight.

Learning and Unlearning from Experience

The past four decades of discretionary monetary management have been mixed, to say the least. The first decade saw soaring inflation and simultaneous increases in unemployment—contrary to widespread economic opinion at that time, there was no apparent tradeoff to exploit. With politicians and central bankers mugged by this unfortunate reality, cold-turkey monetary policy was

accompanied by tax reductions and regulatory reforms, which in turn unleashed unexploited supply-side opportunities. Prosperity flourished without monetary actions to stimulate consumption and investment demand.

The second and third of the past four decades supported the view that monetary discipline was a necessary condition—and perhaps even a sufficient condition—for fiscal discipline. The era of the “bond-market vigilantes” dissuaded politicians from incurring budgetary deficits to fund their promises to voters, and the alternative of raising tax rates was constrained by the political process.

Meanwhile, the explosion of e-commerce and the surprisingly large productivity increases throughout the economy in the 1990s helped to continuously drive the measured unemployment rate below the level at which trade-off theorists claimed that inflation would begin to surface. Instead of questioning the validity of their model, these theorists simply kept revising down where they thought the noninflationary rate of unemployment might be encountered. The puncturing of the dot-com bubble cut short this experiment, so the model was not successfully rejected by actual experience.

By the fourth decade of managing a purely fiat currency, politicians were gaining experience in the use of mandates and government guarantees to compete for voter support. There were few dissents from the view that it was the government’s job to promote home ownership. The credit standards for obtaining mortgages and other qualifications for purchasing houses were lowered, and government agencies guaranteed that investors in securities backed by home mortgages would not face losses. In that episode, the stated objectives included promoting home ownership as a good thing in itself, with any wealth effects caused by rising house prices a secondary objective. Nevertheless, the phenomenon of “mortgage equity withdrawals”—refinancing as house prices rose—generated a few trillion dollars for households to spend on consumption, driving the consumption-spending share of national output to historic record levels.

The ensuing collapse of house prices would ordinarily have been accompanied by an associated drop in the consumption share of GDP. However, the political process kicked in, and government issued massive amounts of debt in an effort to sustain aggregate demand at the “bubblenomics” levels. Any notion of fiscal discipline

was abandoned quite quickly, and with little political objection. Decades of shrinking the outstanding national debt relative to the productive potential of the economy were reversed in just a few years of political panic. The decoupling of fiscal actions from the monetary regime raised concerns that the “fiscal dominance hypothesis”—namely, that monetary policy is ultimately a fiscal instrument in a world of unanchored fiat currency—had reemerged.

Given the inability of the political process to rapidly reestablish fiscal discipline and begin to reverse the excesses of 2008–09, the widely held view was that it was only a matter of *when* the subordination of monetary to fiscal policy would show up in the form of taxation by way of inflation. For their part, monetary managers began to publicly lament that the inflation rates in the United States and other major economies were *too low*, and that policy should aim to create higher inflation. Two decades earlier, no central banker or minister of finance would have dared to suggest that inflation rates were too low and needed to be nudged higher. However, the bond market vigilantes of the 1990s were, by now, nowhere in sight. As the first decade of the new millennium drew to a close, monetary authorities around the world vowed to take strong actions in pursuit of the faster erosion of their currencies. It wasn’t just fiscal discipline that had been abandoned; ideas and theories about monetary discipline were shoved into a corner too.

Two lines of thinking drove this rush to monetary pump priming. The first was that the Great Depression of the 1930s could have been prevented if only the central bank had expanded its balance sheet sufficiently. Contemporary monetary authorities vowed not to make that mistake again. Second, the idea that there was a tradeoff between inflation and employment, which could be exploited by policymakers, reemerged. While such notions had been badly damaged by the experience of the 1990s, they returned as the dominant view among policymakers only a decade later. “Pedal-to-the-metal” monetary actions were defended on the grounds that there would be plenty of time to ease off of monetary stimulus as the rate of unemployment moved down toward the nonaccelerating-inflation threshold.

An unanticipated development was that while the unemployment rate did in fact decline, this was not because of stronger labor demand and rising employment, but rather because of an

unprecedented decline in the labor force participation rate. Even adherents to the trade-off model struggled to explain how they would know when a low reported unemployment rate would trigger higher inflation, given that any increase in the demand for labor could be met by several million people *returning* to the labor market. Clearly, the tradeoff theory holds that if labor force participation rates were already high, and monetary stimulus promoted even more demand for labor, wages would rise more rapidly, and that would be one component of faster inflation. However, with the labor force participation rate falling to a 38-year low, even if monetary actions succeeded in promoting greater labor demand, wouldn't the response simply be increases in labor supply? How can rising "wage-push" be expected to emerge and help produce higher consumer inflation if there is no excess demand for labor? Ultimately, the tradeoff model proved to be unreliable when the labor force participation rate was high; why should policymakers rely on it when the participation rate is severely depressed?

A companion theory about *economic slack* as a factor in assessing potential inflationary pressures suffers similar weaknesses. The idea is that an economy has a long-run sustainable potential output that derives from working age population, labor productivity, the pace of technological innovation, and other factors. If current actual output is below the estimated potential, according to this theory, inflationary price and wage pressures are expected to be minimal. It is therefore safe for policymakers to stimulate consumption and investment demand so as to drive actual output closer to potential. Of course, the actual pursuit of such a strategy raises all kinds of knowledge problems, even in the best of circumstances. Moreover, in a global economy, the notion that there can be economy-wide capacity constraints does not fit reality. Except for some nontradable goods and services, sourcing of both final goods and inputs to production occurs in a global marketplace. Any estimate of *domestic* capacity is therefore useless in assessing potential price pressures.

Monetary Decoupling

One thing central banks *can* control is the size of their balance sheets. However, as we have already seen, recent efforts to increase

the pace of consumer inflation have not been successful. Some, no doubt, will argue that an even larger bond-buying program is called for in order to get the job done. An alternative conjecture is that the central bank balance sheet is simply unconnected to economic activity in the national economy. Quite obviously, the various measures of the nation's money supply have not responded to the enormous increase in the volume of central bank money. Moreover, the prevailing (worldwide) low interest rates can be explained by factors other than central bank bond buying (Walker 2016).

Superficially, it seems that central bank purchases of large quantities of any asset ought to bid up the price and (in the case of bonds) lower the current yield. However, a central bank is not like other portfolio managers. Central banks acquire additional financial assets by creating liabilities (more fundamentally, by creating money out of thin air)—not by selling other assets. In an important sense, large-scale asset purchases (LSAP) by central banks involve a form of liability swap within consolidated government accounts—the duration, or maturity structure, of outstanding government liabilities is shortened by LSAP.

It is important to be clear that central bank purchases of government bonds have different effects than purchases of private assets such as mortgage-backed securities. While both reduce the outstanding stock of earning assets available to commercial banks and other investors, only the acquisition of private assets shifts potential default risk to taxpayers. Central bank acquisition of Treasury bonds can be thought of as merely “early retirement” of one form of outstanding national debt. Suppose, by way of illustration, that U.S. Treasury bonds were “callable,” as many corporate bonds are. Let's assume that the Treasury chose to issue \$1 trillion of very short-term securities at near zero interest rates and then “called” for early redemption a corresponding amount of long-term debt. While total debt would remain unchanged, both the duration and the interest burden of the debt would be altered; lower-cost, short-term liabilities were issued in order to redeem higher-cost, longer-term debt.

Because (net) interest income earned by Federal Reserve Banks on their holdings of securities is returned to the Treasury, the effect of central bank purchases of Treasury bonds—matched by interest-bearing liabilities (that is, interest paid on reserve deposits)—is not different, analytically, from what would happen if a bureau of the Treasury financed the purchase of long-term bonds by issuing

short-term bills.¹ Consolidation of the Treasury and central bank's balance sheets would cancel out the bonds held as assets by Federal Reserve Banks, while the interest-bearing liabilities of the Federal Reserve Banks would show up as part of the government's outstanding debt. The composition of government debt is altered in exactly the same way as would be the case if the longer-term bonds had been retired via issuance of short-term bills.

This transformation is important in modern financial markets, which use "riskless" government debt as collateral for many types of transactions. When the availability of securities that can be used for collateral declines, there is a "tightening" of conditions in the greater financial intermediary system. In other words, LSAP by a central bank emits a contractionary impulse through the financial system.²

Williamson (2015) argues that the use of high-quality "riskless" securities as collateral in financial markets declined for several reasons following the financial crisis of 2008. Prior to that time, U.S. government and European sovereign debt were viewed as riskless, as were the obligations of U.S. government-sponsored enterprises (GSEs) such as Fannie Mae and Freddie Mac. Some privately issued mortgage-backed securities (MBS) were also considered safe enough to use as collateral. Of course, it turned out that the GSEs failed and had to be nationalized, that the MBS market seized up, and that some European countries found themselves on the brink of default.

¹A peculiarity of U.S. national income accounting is that in the government's budget, the line for interest expense on the national debt includes the amount paid to the Federal Reserve Banks as interest on the bonds held in the central bank's portfolio. When the central bank returns the net interest earned to the Treasury, it is reported as part of "corporate profits." The reason is that the Federal Reserve Banks are technically private corporations. The effect of these accounting entries is to overstate the net interest expense on the national debt and to overstate corporate profits. In 2014, the Federal Reserve Banks' income (and the amount returned to the Treasury) exceeded \$100 billion.

²See Williamson (2015:10): "A Taylor-rule central banker may be convinced that lowering the central bank's nominal interest rate target will increase inflation. This can lead to a situation in which the central banker becomes permanently trapped in ZIRP. With the nominal interest rate at zero for a long period of time, inflation is low, and the central banker reasons that maintaining ZIRP will eventually increase the inflation rate. But this never happens and, as long as the central banker adheres to a sufficiently aggressive Taylor rule, ZIRP will continue forever, and the central bank will fall short of its inflation target indefinitely. This idea seems to fit nicely with the recent observed behavior of the world's central banks."

Those developments resulted in a sharp decline in the stock of assets deemed to be of sufficiently high quality to serve as collateral in financial transactions. Taken in combination with these developments, the large-scale purchase of U.S. Treasury securities by the central bank, while intended to inject a form of monetary stimulus, had the unintended effect of further tightening the functioning of capital markets. For this reason alone, quantitative easing (QE) was a mistake.

Unfortunately, reversing QE at this point would also have adverse effects. So what can the Federal Reserve do? For one thing, the current portfolio of mortgage-backed securities can be held to maturity and not replaced. That would gradually shrink the central bank balance sheet by over \$1.7 trillion. This would still leave a very large quantity of excess reserve balances on which the depositors are earning interest, but much more needs to be understood about the demand for such interest-bearing deposits before we conclude that they should shrink back to pre-crisis levels.

Much attention has been paid to the size and composition of the Federal Reserve's \$4.5 trillion of assets—and with good reason. But not nearly enough focus has been placed on the liabilities. In recent years, the cash assets of foreign banks have exceeded the cash assets of large domestic banks. By some estimates, approximately half of the interest-bearing reserve balances at Federal Reserve banks are held by foreign banking entities (including branches and subsidiaries) operating in the United States. These cash assets have constituted as much as half of the total dollar assets of these foreign companies. The current large amount of foreign-owned, dollar-denominated deposits held by banking companies may partly reflect foreign governments' supervisory requirements for liquidity. To some extent, they also reflect the very large increase in these foreign companies' dollar liabilities. Compared with 2007, for example, the deposits of foreign banking companies operating in the United States were up by almost 50 percent in 2014.

It is important to note that increased demand for Federal Reserve deposits does not appear to reflect the availability of interest on reserves (IOR). After an initial jump in deposits during the crisis period of 2008–09, dollar deposits in 2011 were not much different than they had been in 2007. What's more, we know that the foreign owners of U.S. currency—the other major liability of the U.S. central bank—do not receive interest. It is estimated that more than half of the \$1.3 trillion of Federal Reserve notes outstanding are

foreign held. That means that a majority of each of the two major categories of Federal Reserve Bank liabilities—deposits and currency—are owned by foreigners. These estimates do not count foreign individual and business holdings of dollar-denominated deposits at commercial banks and money market funds, and of course do not count other holdings of dollar-denominated financial assets and real properties. Nevertheless, the fact that foreign banks' U.S. currency holdings, as well as deposits at Federal Reserve Banks, total almost \$2 trillion reveals an enormous global demand for high-quality money.

At present, it would not be possible to assert the existence of either an excess supply of, or an excess demand for, dollars. Of course, dollar currency held by foreigners, like currency held by domestic residents, constitutes an interest-free loan to the U.S. Treasury. Since late 2008, the deposits held by foreign banks at the Federal Reserve have been earning 25 basis points, so that "loan" is no longer interest free.³ However, because the assets acquired by the Federal Reserve banks have all been longer term and higher yielding, the net interest expense of the U.S. Treasury has gone down as a result of this large amount of foreign-owned dollar deposits.

Some countries have formally "dollarized," but far more people around the world have "spontaneously dollarized." Clearly, where it is not effectively prohibited and punished, people choose currency competition. They want high-confidence money, especially during times of political turmoil. One conclusion has to be that the United States has provided a public benefit to the rest of the world. At the same time, U.S. taxpayers have benefited from very large foreign holding of dollars—and here we are referring only to currency and to dollar deposits of foreign banks at the Federal Reserve.

No Exit

Any analysis, however preliminary, suggesting that LSAP actually had a contractionary effect during the period of quantitative easing must be taken seriously. Certainly, the cessation of such transactions was desirable; the principle of "do no harm" applies to central banks as well as to doctors. Nevertheless, the problem of formulating an "exit

³In December 2016, the monetary authorities announced an increase in the interest on reserve balances to 50 basis points.

strategy” remains. Some believe that the central bank balance sheet should shrink back to pre-QE levels, and that reserve requirements should once again become binding on commercial bank deposit creation. But that is simply not going to happen. The past practice of conducting daily open market operations in order to closely control the overnight interbank lending rate—the federal funds rate—is not going to resume. Central bank purchases and sales of securities in the “open market” can no longer be policymakers’ primary tool.

Their new tools—administering the interest rate paid on reserve deposits and auctioning “reverse repurchase agreements” (RRP)—have not been tested in an accelerating inflation environment. No matter how aggressively utilized, neither has any direct effect on money creation. The former (IOR) can be viewed simply as central bank borrowing *from* private banks, while the latter (RRP) is central bank borrowing from GSEs and money market firms. In theory, market interest rates would be influenced by the rate the central bank offers for such borrowings. If higher rates paid by monetary authorities cause other interest rates to be higher, businesses and households will curtail some credit-financed purchases, aggregate demand for output will be moderated, and inflationary pressures will be mitigated—or so the theory goes.

This theory depends on several assumptions, however. Monetary policymakers must have considerable knowledge about the impact of their actions on other interest rates; about the lags involved before businesses and households respond to rising rates; and about whether and how much *real* interest rates—rather than just nominal rates—are changing. As there is no historical experience employing these tools, there is no basis for assessing their effectiveness. Central banks have demonstrably failed to achieve their objective of higher inflation during the past five years; their tools to contain any inflation that emerges are untested.

The risk posed by the enormous central bank balance sheet is that the willingness of commercial banks to hold idle balances (even those earning some administered rate of interest) will decline. Of course, while any individual commercial bank can take actions to reduce its holdings of “excess” reserves, the banking system as a whole cannot do so. Without a corresponding reduction in the securities held by the central bank as assets, “excess” reserves can decline only if they become “required” reserves. This suggests two possibilities: *either* Congress can authorize a substantial increase in administered reserve

requirement ratios; *or* an extraordinary increase in reservable deposit liabilities of commercial banks absorbs the excess. The second option would certainly involve a hyperinflationary increase in the money supply. What are the odds of that?

Commercial bank deposit liabilities are now a function of the supply of earning assets—both domestic and foreign—offered to commercial banks. In other words, the quantity of “inside money” created by the banking system depends on the demand for bank loans and the aggregate supply of government bonds, mortgage-backed-securities, and other suitable instruments available for acquisition by banks. A forecast of deposit growth—and the money supply—must be derived from a forecast of the supply of (and yields on) earning assets offered to the banking system. That includes forecasts of government budget deficits that must be financed, as well as the prices of commercial and residential real estate against which mortgage securities can be created. The knowledge necessary to make confident forecasts cannot be obtained from historical experience.

Conclusion

For several years, major central banks have pronounced that the objective of massive quantitative easing was to raise the inflation rate. That objective has not been achieved despite the quadrupling (in the case of the United States) of the central bank balance sheet. Because commercial banks are no longer reserve constrained, the historical linkage between the central bank balance sheet (the monetary base) and the outstanding money supply has been broken. Changes in the size and composition of the central bank’s assets and liabilities are thus unrelated to the amount of money in circulation. Without the ability to influence the supply of money, central bank open market operations have no influence on the rate of inflation. Announced changes in the federal funds rate therefore have no implications for economic activity, or the rate of inflation.

If inflation should emerge, central banks will have no tools for countering the pace at which the purchasing power of money declines. In the early stages of past periods of accelerating inflation, central banks mistakenly expanded their balance sheets as they “leaned against” the trend of rising nominal interest rates, failing to see that an “inflation premium” was being incorporated by both

lenders and borrowers. In other words, monetary authorities' policy actions were "accommodative" of rising prices. For the foreseeable future, however, no such accommodation will be necessary. Ballooning central bank balance sheets are more than sufficient to fuel extreme rates of inflation without further debt monetization. This is not a forecast that inflation will in fact occur. It simply is a statement of the new reality: whether or not there is inflation is unrelated to anything central banks do or do not do.

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