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15. Purchases of Conventional SOMA Assets

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Executive Summary

This note examines whether an expansion of excess reserves (ER) via large-scale purchases of short-term conventional SOMA assets—Treasury bills and repurchase agreements—would have a significant effect on prices of financial assets or otherwise influence economic activity when the federal funds rate is at the zero bound. We focus on ER expansion through purchases of short-term assets to minimize possible effects operating through term premiums. Note 16 on purchases of long-term Treasury securities considers effects operating through term premiums.

A policy of ER expansion could have effects on financial asset prices because it provides a useful signal of future policy intentions when combined with a strategy of communicating a commitment to keep future policy interest rates lower than would otherwise be expected. Note 20 of this package discusses such a communications strategy. In this note, however, we assume that the Federal Reserve does not make any commitment concerning future policy actions.

We consider several possible channels for ER expansion to affect financial markets and economic activity. All of the resulting effects appear likely to be small. Neither the U.S. experiences of the 1930s and 1940s nor the Japanese experience with quantitative easing appears to be a useful guide to the effects of this policy tool.² In each case, at least some of the ER expansion was achieved through purchases of longer-term or nonconventional assets and there was an element of long-term policy commitment.

Introduction

A sustained expansion of excess reserves (ER) could be accomplished through an increase in the financial assets held by the Federal Reserve. Notes 16-18 consider the financial and economic implications of the acquisition by the Federal Reserve of several different types of assets, with a focus on the possible effects on the markets for those assets. These policies are all characterized by a corresponding increase in ER and they all can be considered examples of quantitative easing of monetary policy. In this note, we hypothesize that the operating objective itself is a large, sustained increase in ER, and that this increase is accomplished via an increase in conventional System Open Market Account (SOMA) assets. Moreover, we assume that the increase is concentrated at

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² Note 2 discusses the U.S. experience in the 1930s. Notes 3-8 discuss the Japanese experience with quantitative easing.

shorter maturities, in order to abstract from the effects of purchases of longer-term assets, which are discussed in Notes 16 and 17. The restriction to conventional SOMA assets allows us to focus on the role of increased ER balances and not any alteration of the risk profile of assets held by the public, which is the subject of Note 18.

To achieve a positive target for the federal funds rate, the Federal Reserve normally has had to limit the level of ER. However, when the target federal funds rate is zero, the level of ER may be expanded indefinitely with no further effects on the level of this interest rate. We assume that the target funds rate has been set to zero, and we try to isolate the effects that a sustained increase in ER would have in this setting. As a practical matter, the payment of interest on reserves held at the Federal Reserve may allow an unlimited expansion of ER at a somewhat higher level of the funds rate—an important consideration given the possibility that some institutions and markets could face operational problems at zero, as discussed in Notes 9-13.

Possible Channels for ER to Influence Economic Activity

In theoretical macroeconomic models without financial frictions, quantitative easing that is not associated with a change in the expected future short-term policy interest rate cannot affect economic outcomes.³ However, because such frictions are important in practice, there are several potential channels for quantitative easing to affect the economy.

For example, if investors are risk averse and have preferred portfolio allocations across types and maturities of assets, then quantitative easing can affect the economy by altering the mix of assets available to investors. Here, we consider the effects of a particular form of quantitative easing, namely expanding ER by buying short-term conventional SOMA assets, such as Treasury bills and repurchase agreements. As discussed in Note 16, there is some evidence that issuing short-term Treasury securities to buy long-term Treasury securities lowers the yield spread between them. To the extent that ER have an even shorter maturity than Treasury bills and repurchase agreements, this evidence suggests that increasing ER to acquire these assets should push down their yields. Thus, as long as yields on short-term conventional SOMA assets are greater than zero, this policy should be able to provide stimulus to the economy.⁴ But once the yields on these assets reach zero, buying more of them cannot have any further effect on their yields, and thus this channel for providing further macroeconomic stimulus becomes blocked.

Bernanke, Reinhart, and Sack (BRS, 2004) point out that another channel through which expanding ER could affect the economy is the transactions services that are provided by currency and reserves. These assets can be used to pay for goods and services, whereas other assets, including short-term conventional SOMA assets, cannot

³ See, for example, Eggertsson and Woodford (2003).

⁴ This stimulus will be reduced if financial market frictions impede the transmission of lower risk-free yields to the borrowing costs of households and businesses. Notes 17 and 18 consider tools to lower these borrowing costs more directly.

be used directly for most transactions. However, BRS argue that this transactions demand is likely to be satiated quickly as the level of ER rises above historical levels associated with transactions needs. With yields on Treasury bills and repurchase agreements near zero, banks may view additional reserves as just another safe and liquid asset to hold for precautionary, rather than transactions, purposes.

Yet another potential channel operates through the impact of expanded ER on bank deposit rates. The Federal Reserve pays for its acquisitions of assets by crediting the accounts of the sellers' banks at the Federal Reserve. These banks experience an exogenous increase in deposit liabilities which is initially accompanied by an equal increase in their holdings of ER.⁵ The empirical results of Frame, Hancock, and Passmore (2007) suggest that when a bank receives an unexpected surge of deposits, it tends to reduce other liabilities, especially managed liabilities such as borrowed federal funds. In normal times, the federal funds rate is higher than most short-term deposit rates, so this response lowers total costs of the bank. However, if the federal funds rate were zero and short-term deposit rates were positive, the inflow of deposits would likely encourage the bank to lower its deposit rates and shrink its total deposits. As depositors moved to competing banks, deposit rates would fall throughout the banking system.⁶ To the extent that this process reduces banks' overall cost of funds, competition would likely push down their lending rates, thus helping to stimulate economic activity.⁷

If short-term bank funding costs fall all the way to zero, the response of the banking system to further deposit inflows created by expanded ER depends importantly on the expected returns on alternative investment options and on the costs of longer-term funding sources. If the expected excess returns on these alternative uses of funds—reflecting term and risk premiums—are small, then banks have little incentive to rebalance their portfolios toward loans or other investments or to reduce longer-term funding. In this case, they are likely to hold more short-term deposits and more ER with no apparent impact on the overall economy.⁸ On the other hand, if term and risk premiums in alternative uses of funds are large, then banks have an incentive to rebalance their portfolios. Whether they act on this incentive depends on whether the cushion of additional ER makes them feel more comfortable with their liquidity position and thus better able to take advantage of opportunities to lend or to reduce long-term funding. If so, the resultant increased willingness to lend (or reduced demand for long-term

⁵ Even if the asset sellers use their deposits to purchase other assets or goods and services, total deposits in the banking system will have risen because the deposits will merely have been transferred to the providers of these purchases. The exception is when banks themselves are selling these assets to the Federal Reserve. We assume that these assets are purchased in sufficient volume that at least some of them are sold by nonbanks.

⁶ Indeed, the only way the banking system can disgorge an aggregate increase in ER is by lowering deposit rates far enough to induce households and businesses to hold more currency. However, the elasticity of currency demand is believed to be very low, so we ignore this effect.

⁷ The decline in deposit rates also would encourage consumption by lowering the return to saving, but there is an offsetting income effect that tends to reduce consumption; the overall effect of lower deposit rates on consumption is ambiguous.

⁸ If the rate of interest on ER is zero, banks are likely to increase service charges to cover the cost of managing deposits.

borrowing) could potentially stimulate real activity by lowering term or risk premiums and easing tight credit standards.

However, a potentially offsetting factor in bank behavior is capital adequacy. In terms of their regulatory capital, banks must satisfy two risk-based capital ratios and the leverage ratio.⁹ Increases in loans and risky investments reduce all three ratios; because the risk-weight for ER is zero, increases in ER affect only the leverage ratio. Increasing bank balance sheets by expanding ER can increase loans and other private investments only to the extent that all three ratios are viewed as sufficiently high by bank managers and supervisors. On the other hand, expanding ER could have a negative effect on bank lending for banks whose leverage ratios are viewed as low because the increase in ER would reduce the leverage ratio further. In that case, banks might try to offset the increase in the size of their balance sheets from ER by reducing their lending.

Finally, the creation of a large volume of ER might potentially alter expectations of future short-term interest rates even in the absence of any communication from the FOMC regarding the future course of the funds rate. For example, market participants might believe that it would take longer to return ER to normal levels from an initial position that is very large, and thus take longer to raise the federal funds rate as conditions return to normal. Some observers might even take the extreme view that increased purchases of Treasury bills under this strategy constitute a permanent monetization of the federal debt (despite the inconsistency with past Federal Reserve actions and statements), thereby leading them to expect higher inflation in the future. Such expectational effects would tend to put downward pressure on real long-term interest rates, thereby stimulating aggregate spending.

Historical Experience

As discussed in Hanes (2006), the U.S. banking system held substantial volumes of ER at times in the 1930s.¹⁰ Hanes shows that there was a significant negative relationship between ER and the yields on long-term Treasury securities. He argues that it is unlikely that changes in ER were associated with changes in expected future short-term rates, which remained near zero over most of the period. However, the changes in ER during this period were driven largely by purchases of gold to enforce the Roosevelt Administration's devaluation of the dollar and in response to politically driven outflows

⁹ The capital ratios are tier 1 capital to risk-weighted assets and total capital to risk-weighted assets. The leverage ratio is tier 1 capital to tangible assets. Tier 1 capital consists of common equity (excluding intangible assets such as goodwill and excluding net unrealized gains on investment account securities classified as available for sale) and certain perpetual preferred stock. Tier 2 capital consists of subordinated debt, preferred stock not included in tier 1 capital, and loan-loss reserves up to a cap of 1.25 percent of risk-weighted assets. Total capital is the sum of tier 1 and tier 2 capital. Risk-weighted assets are calculated by multiplying the amount of assets and the credit equivalent amount of off-balance-sheet items (an estimate of the potential credit exposure posed by the items) by the risk weight for each category. Tangible assets are equal to total average consolidated assets less assets excluded from common equity in the calculation of tier 1 capital.

¹⁰ According to Hanes, ER ranged from \$1 billion to \$6 billion between 1934 and 1939, a time when total Treasury debt held by the public was around \$30 billion to \$40 billion. At its peak in this period, the total value of ER was roughly equal to 15 percent of outstanding Treasury debt.

of gold from Europe. Moreover, as discussed in Note 2, communication by the Federal Reserve and the Administration concerning desired future rates of inflation also played an important role during this period. Thus, it is not clear that this experience is relevant for understanding the effects of a policy of expanding ER through purchases of short-term conventional SOMA assets.

Note 2 also discusses the period of low U.S. interest rates in the 1940s. Although banks held substantial volumes of ER at times during this period, the most important facet of policy appears to have been the widely perceived commitment of the Federal Reserve to purchase Treasury securities in sufficient volumes to hold yields below fixed ceilings across the maturity spectrum for an extended period of time.

The other historical episode of substantial increases in ER occurred in Japan earlier this decade. From 2001 to 2006, the Bank of Japan (BOJ) expanded reserves far beyond the level needed to achieve zero short-term interest rates. However, a significant fraction of the assets it purchased were longer-term government bonds and it also stated a commitment to maintain the new policy until inflation returned to positive territory on a sustained basis.¹¹ Thus, it is difficult to disentangle the effects of expanding ER from the other elements of the BOJ's policy. Moreover, as discussed in Note 6, Japanese bank lending continued to contract for several years after the start of the quantitative easing period, casting doubt on the transmission of effects of ER operating through the banking system.

Excess Reserves above the Zero Bound

The ability to pay interest on ER raises the possibility that ER could be expanded while maintaining at least some short-term interest rates above zero. Indeed, this appears to describe the situation of the past two months. During this period, the Federal Reserve's provision of extraordinary liquidity to key markets and institutions under stress has exceeded its ability to drain reserves from the system, leaving banks with substantial volumes of excess reserves. Paying interest on reserves has enabled the federal funds rate to remain above zero, even if it is below the target. Over time, as banks become accustomed to the new regime and change their practices accordingly, it is possible that federal funds will trade closer to, or even above, the rate of interest on reserves.

The main reason for keeping some interest rates above zero while easing monetary policy through nonstandard tools is that very low interest rates could harm some markets or institutions and that the cost of this harm might be greater than the benefit from the macroeconomic stimulus of moving all the way to zero interest rates. Notes 9-13 discuss the effects of very low interest rates on financial markets and institutions.

¹¹ Note 3 provides further detail.

Conclusions

All in all, neither theory nor historical experience provides much basis for believing that a policy of expanding ER through purchases of short-term conventional SOMA assets would have a significant impact on other financial variables, including longer term interest rates, or on the general level of economic activity.

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