



## ITC Markets: FED and their control of interest rates Sept 10th, 2014

*Although the market is focusing on the timing of the first rate hike which is expected sometime in the middle of next year, some focus also needs to be directed towards what tools the FED will use to implement monetary policy going forward.*

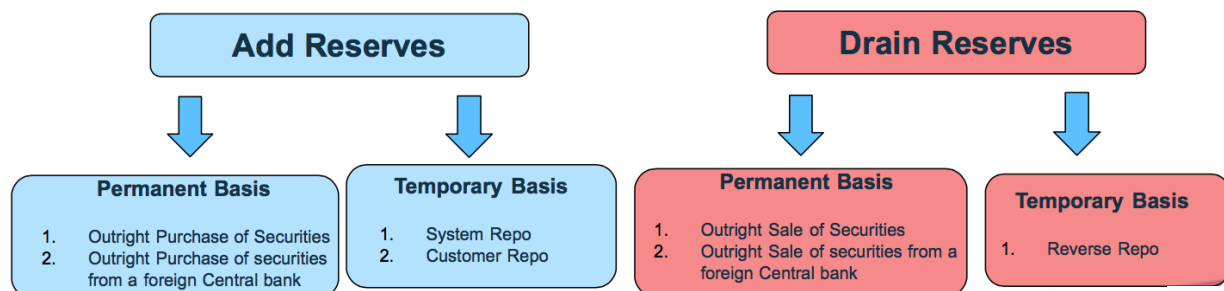
### Fractional Banking System:

For the central bank to effectively control interest rates, the fractional banking system (present banking system in use), was designed for banks to always be slightly short of liquidity to meet their reserve requirements. Since the Central Bank provided the marginal liquidity needed for financial institutions to meet these requirements, it could not only determine the level of short term interest rates explicitly but also enforce its view by setting the price at which this liquidity was provided. This enabled the central bank to effectively control the level of short term interest rates to meet its overall objectives, in the case of the Fed their dual mandate of controlling inflation and unemployment. With the creation of large excesses of liquidity into the system via QE, financial institutions no longer require the central bank to provide them with funds so they can meet their reserve requirements. Although the central bank can still attempt to guide interest rates to a level it deems appropriate for the economy, financial institutions need to willingly participate to make the interest rate move effective.

### Pre-crisis: FED funds target:

Before the crisis of 2008, the Fed's balance sheet was approximately \$900bn and represented some 6% of US GDP. With excess liquidity in the system close to zero, the level of short term interest was set by providing an explicit target for Fed Funds rates. If interbank rates drifted away from the target rate, the FED would actively intervene in the market via Open Market Operations executed by the trading arm of the Federal Reserve Bank of New York to increase or reduce the amount of liquidity in the system. The FED would increase the amount of liquidity in the system if the Fed Funds rate was above the target or decrease the amount of liquidity in the system if the Fed Funds rate was below the target. The addition or removal of liquidity could be done on a permanent basis via the sales or purchase of securities, or on a temporary basis via overnight or term repo operations. (see diagram 1)

### Diagram 1: Before 2008: FED controls short term interest rates via the amount of liquidity in the system:





## Quantitative Easing and its effect on monetary policy:

**Crisis:** QE1, QE2, Operation Twist 1&2, QE3

With QE1, QE2 and now QE3 having blown up the FED's balance sheet to close to \$4,500bn and having created some \$2,800 bn of excess liquidity in the system, a Fed Funds target becomes impossible to enforce and therefore reduces its use as a means to control interest rates. I.e. Although the FED can move the Fed funds target rate higher, it no longer has the necessary tools to enforce their decisions. To return to a Fed Funds Target, the FED needs to drain the \$2,800bn of excess liquidity from the banking system.

### Potential options to reduce excess liquidity in the system include:

1. **Sell assets either Treasuries, MBS or both:** Although theoretically feasible, the presence of a large seller like the FED on top of the Treasury department issuing bonds on a regular basis would quickly read just long term interest rates significantly higher. With the US Government having some \$1,895bn of Bonds maturing in 2015 plus an extra \$400bn to finance its budget deficit for that year, moving the FED from a being a net buyer (with QE) to a net seller would quickly re-price long term interest rates significantly higher. A sharp move higher in long term interest rates would also increase the cost of financing the US debt with some potential implications for the US budget deficit. Selling MBS and/or USTs would also result in significant accounting losses for the FED's balance sheet as securities are sold at higher yields than when the securities were originally purchased. The option to sell either MBS or USTs is therefore very unlikely as confirmed by Yellen who explicitly stated **'there are no plans to sell MBS from the Fed's balance sheet. We think sales of Treasuries are unlikely also'**

2. **Halt Reinvestments:** Another potential option for the FED would be to stop reinvesting maturing bonds (any coupons received on the SOMA portfolio covers the running costs of the FED and any surplus is transferred back to the US government, in 2013 the transferred amount was \$79.6bn). Although in theory a viable alternative, it is important to remember that the FED, for the first time in its history, holds no T-bills and the total amount of USTs bonds the FED holds which mature before the end of 2015 is only \$3.616bn with an extra \$8.618bn of agency debt maturing before 2016. This lack of short term securities held by the FED mainly due to their Maturity Extension Program (operation twist) in 2011/2012 whereby they sold debt of short maturity to buy the long end of the market.

Maturity Profile	US Treasuries (bln)	US TIPS (bln)	US Agency Debt (bln)	MBS Debt (bln)
2014	0.097	0.000	2.885	
2015	3.520	0.000	5.733	
2016	212.094	3.440	16.764	
2017	190.110	4.103	11.789	
2018	366.608	3.818	1.982	
2019	321.284	2.314	0.062	
2020	211.803	5.473	0.000	
2021	168.341	5.534	0.000	
2022	172.026	2.852	0.000	
2023	82.905	0.026	0.000	
2024	20.759	0.005	0.000	
2025 and beyond	564.448	69.766	2.347	1,688.571



With excess liquidity in the system approximately \$2,800bn, halting reinvestment of the portfolio today would still leave excess liquidity present in the system until at least 2020. Of special note, although 87.6% of the MBS portfolio is composed of 30y mortgages, most of the rest are 15y mortgages. MBS securities incorporate a significant amount of prepayments (WAM much shorter than 30 year) and therefore stopping reinvestment now would result in the amount of MBS securities to diminish much faster than the US Treasury component of the FED's balance sheet. Although this certainly helps the FED in reducing the size of the balance sheet more quickly, it would likely result in a significant widening of MBS versus Treasuries and potentially negatively affect housing market performance.

3. **Issuance of Short Term Debt:** To reduce the amount of excess liquidity in the system, another option available by the FED is for them to issue short term debt (such as Certificate of Deposits). Selling short term debt to market participants would enable the FED to absorb liquidity from the market. With \$2.8 Trillion of excess, such a program would likely need to be launched in close collaboration with the Treasury department as both would be competing directly. Although so far the term short term debt has not been mentioned, the FED is presently testing a Term Deposit Facility to enable the FED to remove excess liquidity from the system. The main difference between Short Term Debt and TDF is of course the inability by market participants to trade/exchange their assets before the maturity of the Deposit. Since the FED understands the appeal of TDF would be reduced as market participants are unable to quickly access their cash before maturity, it is presently considering including an early withdrawal option to the TDF facility although an early withdrawal would include a penalty. The ability to withdraw cash is important since it is unlikely any market participants would be willing to lock in cash in a deposit facility over a FED meeting if there is a potential for them to increase rates at that meeting.
4. **Reverse REPO operation:** Another potential option for the FED is the use of Reverse Repo operations to reduce the amount of excess liquidity in the system. Market participants in exchange for USTs as collateral (secured lending) deposit cash at the FED thereby reducing the amount of cash washing around in the system. As the FED determines the level of the REPO explicitly, it can therefore attempt to guide rates higher by increasing the REPO rate. Of course it is important to note that market participants are not obliged to participate in these REPO operations and similarly to the SMP sterilisation programs in Europe, there is the possibility the FED is unable to remove all the excess liquidity from the system. It is also important to note that the FED has already extensively tested REPO operations in the system and it has proved to be effective. One major drawback of using REPO to control interest rates is that acceptable counterparts are not limited to Banks and in a period of financial stress in the banking sector, Banks could be starved of liquidity as market participants prefer dealing with the FED exclusively thereby starving the Banks of liquidity.
5. **Exotic option (thinking out of the box):** Exchange program between the FED and Treasury to replace some of FED's Treasury holdings with T-Bills. The main benefit of such a program would be to decrease the maturity profile of the SOMA portfolio significantly and enable the FED to quickly reduce excess liquidity quickly from the system as T-Bills mature in the short system enabling it to return to a FED Funds target in the short term. Of course such an exotic option would come as a significant shock to the market and likely result in a significant increase in yield across the curve as some trust in US government debt is lost. Such a move would also result in the US government Debt profile to be reduced significantly thereby increasing roll over risk. With the Treasury department likely responding by increasing its issuance in the long end of the debt market, the impact



would be similar to the FED selling its SOMA portfolio directly in the market. The only advantage over a direct sell by the FED would be any potential losses on the sale of the debt would be transferred from the FED to US government (loss would be realized when the Treasury issues new long bonds at a higher yield than the cancelled FED Treasury holdings).

#### **Post-Crisis: Control of Rates in excess liquidity conditions.**

**With the FED having to live with excess liquidity for a relatively extended period of time (even if they stop reinvestment now), the likely path to controlling short term interest rates is likely a combination of different facilities as the FED attempts to GUIDE interest rates where it would like them to be (as they no longer have any means to enforce policy):**

**First:** With the FED no longer capable of determining the FED Funds target explicitly, the FED is now likely to move to range target instead of an explicit rate. I.e. instead of the FED targeting FED funds at let's say 1.00%, it would likely provide us with a range such as FED Funds between 0.90% and 1.15%. The range likely around 25bp wide with the upper range set via the Interest on Excess Reserves (IOER) and the Term Deposit Rate (TDFs) rates while the lower bound controlled via REPO operations. Since the IOER rate is for overnight deposits while TDF's are for longer term, most financial institutions believe the TDF rate will likely be slightly above the IOER rate by around 5bps to encourage market participants in locking their liquidity out of the system for a longer period than overnight. I.e if IOER is 1.00%, TDF is likely around 1.05%.

For the lower bound of the range, the REPO operations would be available to all market participants to use and are expected to be set some 20bp or 25bp below the IOER (for this example around 0.75%). This spread could of course be widened or tightened depending on the FED's desire to move the excess liquidity either away from or onto Bank's balance sheets. Although the FED Fund rate is likely to trade within this range, in theory financial institutions and other market participants still have the ability to refuse to participate in these facilities unless the FED makes the remuneration of their cash more attractive to them.

Note: It is important to understand that the FED will be remunerating these facilities by paying interest on TDFs, IOER and REPO transactions. The cash to pay the interest coming directly from the interest it receives from the SOMA portfolio holdings of some \$4.5trn of Treasuries and Mortgage Backed Securities.

But with some \$2,800bn of excess liquidity in the system, an increase of 0.25% in interest rates results in an increase cost of \$7bn per year to the FED (money is paid to financial institutions/counterparties to park their money with the FED). With the FED SOMA portfolio creating some \$80bn surplus per year (\$79.6 in 2013), it also means the FED could increase rates by 2.86% above the present level of 0.25% before it becomes cash flow negative (so slightly above 3%). At that time, either the Treasury department would need to cover the shortfall. Either more USTs could be issued to help the FED pay the banks, which could result in some political unease as tax payer money is needed to pay interest to the banks, alternatively, the FED could print new cash to pay for interest rate hikes which has been attempted in the past by some central banks with dire consequences as the printing of new money tends to increase inflation



expectations. There is therefore the potential for balance sheet cash flow considerations to interfere with the FED's interest rate policy. Limiting interest rate hikes to prevent the FED from becoming negative cash flow, would of course potentially risk higher inflation for the future.

**Solution:** Reducing the size of the FED balance sheet therefore needs to be addressed relatively quickly since it may limit the FED's ability to respond appropriately to a potential increase in inflation in the future. 'Falling behind the curve' when your ability to raise interest rates is limited should not be a decision taken lightly. To limit the potential impact of the Fed becoming cash flow negative, one potential solution would be to stop immediately all transfers of its surpluses to the Treasury department thereby enabling the FED to build a large cash buffer as a precautionary step for any potential negative cash flow eventuality. Of course, this solution would likely necessitate the FED to admit the potential for this negative cash-flow situation to exist and convince the Government it should be implemented. Such a move would of course also increase the US budget deficit by some \$80bn instantly, which may not be seen favourably by the present political establishment. It is important to remember the FED appears to have alienated most of the Republican party and any difficulties it encounters in the future could detrimentally impact its independence.