

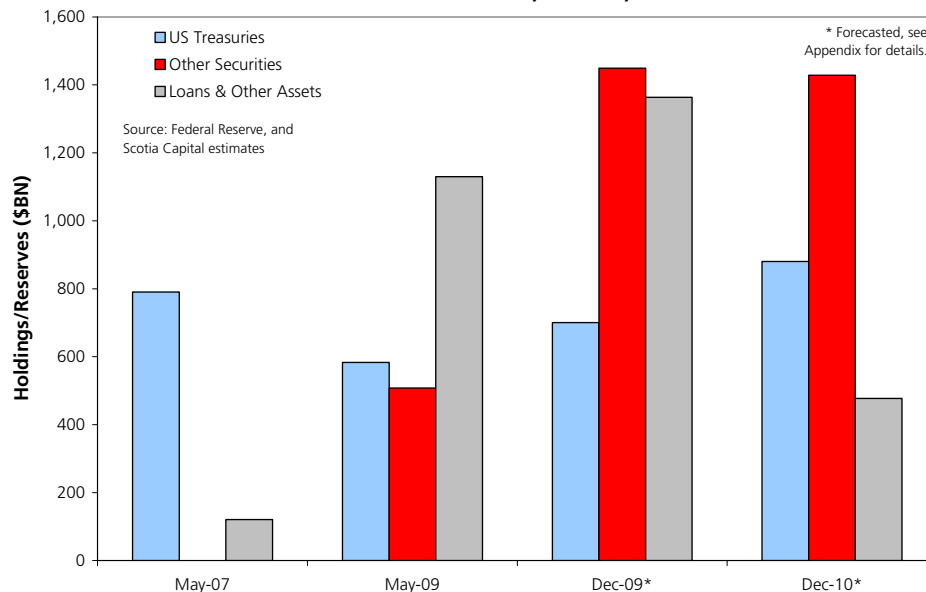
Fed's Balance Sheet: Exit Strategy & Inflation Risks

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- How big will the Fed's balance sheet get? How will the Fed reduce its balance sheet as the economy starts to recover?
- These are important questions. The measures the Fed has taken have been critically important to averting a major deflation and second Depression. But if the Fed were to let these measures continue for too long, it could one day be faced with a serious inflation problem as the economy recovers.
- The Fed's balance sheet is large, about \$2.8 trillion today, three times bigger than it was under normal times before the crisis began. We estimate that it will get bigger, likely reaching \$3.5 trillion by the end of the year.
- Most of the Fed's lending programs and security purchases have been financed by creating new money. Reserves, already \$950 billion, will likely reach \$2.2 trillion by the end of 2009.
- Fed officials have argued that many of their emergency programs will be self-correcting as the economy recovers, and therefore they will be able to manage any associated inflation risks.
- The Fed is at least partly right. We estimate that the Fed's balance sheet would decline in size by about 20% during the next year through these self-correcting mechanisms. The Fed would still be left with large holdings of assets, many of terms 5-years and longer.
- We conclude that the Fed cannot rely just on these self-correcting mechanisms, but instead would have to take numerous explicit, large-scale actions, likely a combination of selling securities, arranging for the Treasury to issue new debt, and also following conventional measures like raising the fed funds target.
- Inflation pressures could still be a long way off. It is nonetheless important to recognize that expecting inflation to remain low in the long run, means in no small part relying on the Fed to time its exit strategy properly.

Federal Reserve Assets: Normal, Current, & Forecast



The Fed's Balance Sheet: Exit Strategy & Inflation Risks

In this report we show that excess reserves on the Fed's balance sheet could easily reach \$2.2 trillion this year, under fairly conservative assumptions. We then consider what the Fed would need to do to return its balance sheet to more normal levels and, in particular, to reduce excess reserves toward zero. We find that the Fed's balance sheet would automatically decline by about 20% in the first year, once the economy starts to recover and the Fed ceases to make emergency loans and buy securities. However, the Fed would still be left with large amounts of assets with maturities well in excess of 5 years. The Fed will eventually need to take relatively large-scale actions to reduce the level of reserves associated with these assets.

The Balance Sheet in Normal Times

We first look at what the Fed's balance sheet looks like under normal times, because eventually the Fed will return to something like this. We use an example from two years ago, shown in the table. The largest number on the Fed's balance sheet in normal times is a liability, the amount of physical currency in circulation. The other liability that has become so important today, Federal Reserve Balances, is usually very small.

The main assets on the Fed's balance sheet in normal times are holdings of Treasury bills, notes, and bonds. The bulk of these securities are held to offset the currency liability. The Fed will however make frequent small adjustments to its Treasury holdings via open-market operations (i.e. repos and reverse repos) in order to fine tune the level of reserves, and hence the supply of money, in the financial system.

Federal Reserve Balance Sheet as of May 23, 2007

Assets	<i>Amt (\$BN)</i>	<i>Proportion</i>	Liabilities	<i>Amt (\$BN)</i>	<i>Proportion</i>
Treasury Bills	277	30%	Currency	811	89%
Treasury Notes & Bonds	513	56%	Reverse Repos	33	4%
Other Securities	0	0%	Treasury Accounts	5	1%
Loans to Financial System	0	0%	Other	46	5%
Repos	31	3%	Reserves	17	2%
Other	89	10%			
Assets	911	100%	Liabilities	911	100%

The Balance Sheet Today

The next table shows how much the balance sheet has grown, and, which is at least as noteworthy, how much the composition of the balance sheet has changed. There are now three new kinds of assets on the balance sheet: \$655 billion of other securities (agency debt and agency MBS), \$555 billion of emergency loans, and \$417 bn of other assets, which includes swap lines with foreign central banks.

T-Bill holdings have declined by more than \$250 billion, and are now approaching zero. Why? For about the first year of the crisis, the Fed was offsetting the impact on reserves of its new lending programs (TAF etc) by selling other assets, primarily T-Bills (the Fed also sold some of its other Treasury securities, but since March it has bought about \$150 bn of Treasury securities, hence the increase in this item in the table below).

The Fed stopped neutralizing the impact of its lending and other activities on the level of reserves in October 2008, when, in a signal that it was going to let reserves increase significantly, the Fed announced that it would begin paying interest on reserves for the first time. The Fed initiated numerous new programs since then, notably buying agency debt and agency MBS, and, more recently, Treasury debt, all funded via the creation of new money (i.e. reserves). The level of excess reserves in the banking system has increased from negligible to more than \$900 billion.

Federal Reserve Balance Sheet as of May 20, 2009

Assets	<i>Amt (\$BN)</i>	<i>Proportion</i>	Liabilities	<i>Amt (\$BN)</i>	<i>Proportion</i>
Treasury Bills	18	1%	Currency	907	41%
Treasury Notes & Bonds	565	25%	Reverse Repos	68	3%
Other Securities	665	30%	Treasury Accounts	238	11%
Loans to Financial System	555	25%	Other	57	3%
Repos	0	0%	Reserves	951	43%
Other	417	19%			
Assets	2,221	100%	Liabilities	2,221	100%

How Big Does the Balance Sheet Get? A Look Ahead to December 2009

The Fed's balance sheet is likely to get bigger before it gets smaller. Notwithstanding the improvement in financial conditions in recent months, banks remain heavily reliant on the Fed, Treasury, and FDIC for support. The Fed is not going to suddenly stop its various emergency programs while this is the case.

The table below shows our forecast for the end of 2009. Total assets are projected to grow by \$1.3 trillion to \$3.5 trillion. Excess reserves are also projected to increase by the same \$1.3 trillion, to \$2.24 trillion.

The main assumptions behind the forecast for the end of 2009 are that the Fed continues its lending programs like the TAF at their current pace until the end of the year, that the Fed completes its security purchase programs, which are already between 35% and 40% complete, and that the Fed makes a total of \$250 bn of loans through the TALF (rather than the full \$1 trillion that is possible under that program). We also take into account other assets that would mature during this time, and hence drain reserves from the financial system. Other assumptions are shown in the appendix.

Forecasted Federal Reserve Balance Sheet as of Dec 31, 2009

Assets	<u>Amt (\$BN)</u>	<u>Proportion</u>	Liabilities	<u>Amt (\$BN)</u>	<u>Proportion</u>
Treasury Bills	0	0%	Currency	907	26%
Treasury Notes & Bonds	700	20%	Reverse Repos	68	2%
Other Securities	1,606	46%	Treasury Accounts	238	7%
Loans to Financial System	789	22%	Other	57	2%
Repos	0	0%	Reserves	2,243	64%
Other	417	12%			
Assets	3,513	100%	Liabilities	3,513	100%

How does the Fed Get Out?

What happens when the economy and financial conditions improve? Will the Fed be able to unwind its various programs and manage the level of reserves appropriately in order to avert triggering a substantial increase in inflation? Various Fed officials have expressed confidence that they can. One of the reasons they typically cite is that several of the programs will self-correct over time, for example as emergency loans mature.

Is this sort of natural correction to the Fed's lending programs enough to extricate the Fed from its massive balance sheet?

To answer this question, we assume that the economy is recovering enough by the end of this year that the Fed stops making new loans in 2010, and stops its various other programs like purchasing MBS or Treasury notes. We assume that the Fed takes no other action to reduce reserves (we do however assume the Fed buys T-bills in order to return its holdings of liquid assets to more normal, pre-crisis levels).

We estimate that after one year the Fed's balance sheet would naturally decline by about \$700 billion, as loans and securities mature. That is a large number. But it is only about 20% of the total \$3.5 trillion balance sheet at the start of the year. It still leaves a huge \$2.8 trillion of assets, and, importantly, \$1.5 trillion of reserves (60% higher than today).

Forecasted Federal Reserve Balance Sheet as of Dec 31, 2010

Assets	<u>Amt (\$BN)</u>	<u>Proportion</u>	Liabilities	<u>Amt (\$BN)</u>	<u>Proportion</u>
Treasury Bills	250	9%	Currency	907	33%
Treasury Notes & Bonds	630	23%	Reverse Repos	68	2%
Other Securities	1,429	51%	Treasury Accounts	238	9%
Loans to Financial System	295	11%	Other	57	2%
Repos	0	0%	Reserves	1,516	54%
Other	182	7%			
Assets	2,786	100%	Liabilities	2,786	100%

Conclusion: a Closer Look at the Remaining Assets

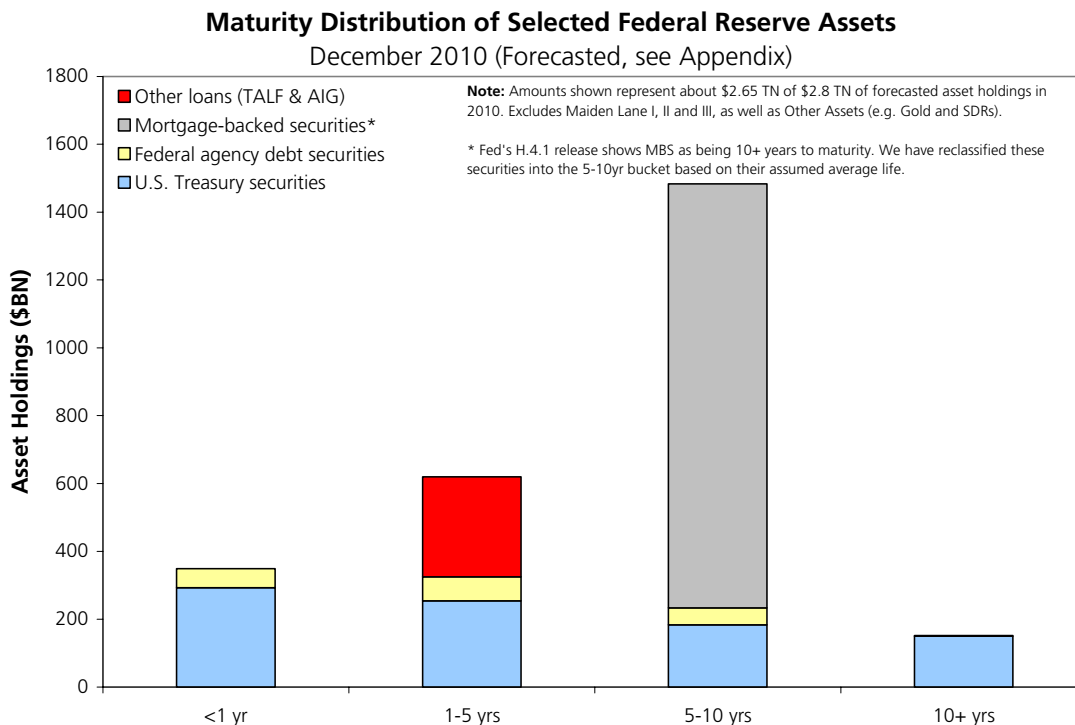
If the Fed does nothing else, the \$2.8 bn of assets that remain on its balance sheet at the end of 2010 will have a maturity profile something like that shown in the graph below. To construct this graph, we assumed that the Fed would continue to buy Treasury, mortgage, and agency securities across the maturity spectrum during the remainder of 2009 in similar proportions to what it has already bought. This seems a reasonable assumption, given that the Fed is more than a third of the way through each of these programs already.

Other assumptions are possible, but I think they would all lead to the general conclusion that there will still be a lot of medium and longer-term securities on the Fed's balance sheet. It would consequently take a very long time for the level of reserves to decline naturally. If the economy recovers in the next couple of years, the Fed is clearly going to have to take more explicit action in order to reduce the level of reserves in the system.

This is an extremely important point, because it means that the Fed cannot rely just on the self-correcting nature of many of its programs to take enough reserves out of the system as the economy recovers. In order to keep inflation under control, the Fed will eventually have to act, in a big way.

What could the Fed do? It seems to have two main options. One is to sell the securities that it holds (excluding of course approximately \$800 or \$900 billion that it would have to keep on its balance sheet to offset the currency in circulation). This could however take a while, so it may not be something the Fed could implement quickly if it needed to, and so it probably cannot be the only solution. The Fed could also arrange to have the Treasury expand the Supplementary Financing Program, i.e. issue new securities (T-Bills) and leave the proceeds on the Fed's balance sheet. This in effect would mean that Fed assets would be financed by new government debt instead of the creation of new money. (n.b. Related to this is the notion of the Fed issuing its own debt, which still means in effect the creation of new government debt, i.e. an obligation of the taxpayer, just like Treasury debt. It just means the Fed wouldn't need to coordinate issuance with the Treasury.)

Note that if inflation concerns start to increase, the Fed should also use its conventional policy tools at the same time that it is trying to reverse its unconventional policy. Along with selling its assets and/or issuing its own debt, the Fed should raise its funds target, and it should raise the discount rate back to its normal 100 bps spread over the fed funds target, so that it becomes once again a penalty rate.



Appendix: Methodology and Assumptions of Balance Sheet Forecast

- All balance sheet figures are from the Federal Reserve's H.4.1 release dated May 21, 2009.

Treasury Holdings

- All Treasury holdings are as per the Fed's System Open Market Account (SOMA) Holdings as of May 20, 2009 and mature accordingly.
- Following the Dec 2009 expiry of the Fed's liquidity facilities, it buys T-Bills at auction amounting to \$250bn outstanding by Dec 2010.
- The Fed's \$300bn Treasury purchase program is completed through to the end of 2009, with a maturity profile equal to current SOMA holdings. No additional purchases are made of coupon bonds (i.e. at auction).

Non Treasury Purchase Programs

- All other purchase programs are completed to their maximum size with a maturity profile equal to that of current SOMA holdings for Agencies.
- All MBS are assumed to carry stated maturities of more than 10yrs and an average life of between 5-10yrs).

Liquidity Facilities & Other Loans

- All short term (i.e. <1yr) extraordinary facilities authorized under Section 13(3) and Section 10(b) cease to exist as of December 2009 and their balances remain constant to that date (i.e. they are rolled over).
- No funds are advanced following December 2009 from non-extraordinary facilities, such as the Primary Credit window.
- Total credit extended under TALF amounts to only \$250 billion, of \$1 trillion available, all of which is for a three year term.
- Loan to AIG remains outstanding at roughly \$45bn, accounted for in the 1-5yr term.

Liabilities

- The Treasury's accounts at the Federal Reserve, including both the general account (approximately \$38bn in May 2009 vs. \$4.5bn in May 2007) and the supplementary financing account (approximately \$200bn in 2009 vs. \$0 in May 2007) do not change over the term of our forecast.
- Approximately \$906bn of currency remains in circulation and all other liabilities (including \$67bn of reverse repos) remain constant through the term of our forecast, reducing reserve balances.

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