A Primer On Quantitative Easing
by Ray Stone, PhD
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--Stone & McCarthy (Princeton)--A lot of economic commentators have been using the expression "Quantitative Easing" (QE) to characterize the recent conduct of monetary policy. Indeed, the announcement that the FOMC will meet in December for two days instead of the originally scheduled one-day meeting has conjured up speculation that the FOMC will be discussing non-traditional approaches to policy, including QE.

QE is getting a lot of press, but doesn't appear to be a well-understood concept.

There is nothing expressly regarding Quantitative Easing in the textbook I assigned to my Money & Banking class at Rutgers (Money, Banking and Financial Markets 8th edition, by former Fed Governor Mishkin). There is short discussion of the lessons learned from the Japanese deflationary experience, but the QE expression is not used.

For this reason, in this note, we will define QE, make a subtle distinction between two types of QE, explore the theory underpinning QE, and conclude with observations from the Japanese experiment with QE.

**What Is Quantitative Easing?**

Quantitative Easing is usually regarded to be one of the few policy options available to a Central Bank as the overnight policy rate approaches zero. Often QE is linked to the "Zero-Bound" policy debate.


Effectively, QE is nothing more that a saturation of the banking system with bank reserves, far beyond that which is mandated by required reserves ratios, or the banking system commercial need for clearing balances etc.

The underlying thesis that the expansion of excess reserves and the monetary base (reserves + currency) will lead to an expansion of the money supply and ultimately aggregate demand.

By this definition the Fed embarked on a QE campaign in the aftermath of the Lehman bankruptcy in mid September.
Up until the Lehman debacle, the provision of bank reserves associated with the Term Auction Facility (TAF), swap-line drawings etc, was offset by the selling or redemption of Treasury securities from the Fed's System Open Market Account.

Effectively, the composition of Federal Reserve Bank Credit (RBC) had changed, but the overall magnitude of RBC was little change as were bank reserves.
The post-Lehman expansion of the Fed's liquidity facilities and the creation of a number of lending facilities pumped reserves into the banking system, which went unsterilized. In other words, the enlargement of RBC resulted in an increase in bank reserves far beyond that mandated by required reserves etc.
Subtle Distinction in Motivation Underpinning Quantitative Easing

In this section we underscore 2 motivations for QE. We call these intentional and consequential, while the impact on bank reserves is identical, the motivation is different.

**Intentional Quantitative Easing**

In its purest sense Quantitative Easing solely aimed at increasing the monetary base, and not directed towards easing specific credit strains, or toying with the yield curve we might call "Intentional Quantitative Easing" (IQE).

Given that QE is a tool typically associated with the zero-bound issue on the over-night policy rate, one might envision that Intentional Quantitative Easing would be implemented by the Fed buying a massive volume of Treasury Bills. The impact on the yield curve, absent changes in the pattern of Treasury financing, would be little, for Bill rates would presumably be closely aligned with the near zero Funds rate.
The sole purpose of IQE is to enlarge the monetary base. The basic thesis associated with IQE is that an expansion of the monetary base will lead to an expansion of money supply, and via the portfolio decisions described by Milton Friedman and others, such would render an increase in aggregate demand and the price level.

IQE is rooted in what economists call the "Monetarist Channel" when reflecting on the monetary transmission mechanism.

The QE that we have witnessed since mid-September should not be construed as IQE, for the motivation was not to simply enlarge the monetary base, but was instead aimed at easing specific credit strains.

**Consequential Quantitative Easing**

The motivation underpinning Consequential Quantitative Easing (CQE) is not directed at simply enlarging the monetary base, but instead focuses on "Credit Policies" aimed at specific credit issues.

For example, the TAF program, aimed at providing term funding to banks to ease Libor/OIS strains, increases bank reserves and the monetary base in the same fashion as an outright Fed purchase of Treasury bills. But in the former case the motivation was targeted to a specific problem, as opposed to simply massive expansion of excess reserves and the monetary base.
In other words, the post-Lehman surge in excess reserves was a consequence of the TAF and other programs.

Federal Reserve Balance Sheet
November 19, 2008 Change from September 16 (Pre-Lehman Debacle)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\text{assets}$</td>
<td>$\text{liabilities}$</td>
</tr>
<tr>
<td>$-$2.4 Treasuries</td>
<td>$599.2 \text{ Reserve Balances}$</td>
</tr>
<tr>
<td>$12.5$ Agencies</td>
<td>$30.8 \text{ Currency in Circulation}$</td>
</tr>
<tr>
<td>$-$46.8 RPs</td>
<td>$63.0 \text{ Treasury Deposits}$</td>
</tr>
<tr>
<td>$265.3 \text{TAF Credit}$</td>
<td>$509.0 \text{ Treasury SF acct}$</td>
</tr>
<tr>
<td>$75.2$ Advances (depository inst's)</td>
<td>$33.6 \text{ Reverse RPs (Foreign Official)}</td>
</tr>
<tr>
<td>$46.6$ PDCF and related</td>
<td>$25.0 \text{ Reverse RPs (Dealers)}</td>
</tr>
<tr>
<td>$61.9$ ABCP/MMF Liquidity Facility</td>
<td>$3.6 \text{ All Other Liabilities &amp; Capital}$</td>
</tr>
<tr>
<td>$87.4$ AIG Loan</td>
<td></td>
</tr>
<tr>
<td>$270.9 \text{ CPFF}$</td>
<td></td>
</tr>
<tr>
<td>$-$2.4 Maiden Lane LLC</td>
<td></td>
</tr>
<tr>
<td>$-$0.3 Float</td>
<td></td>
</tr>
<tr>
<td>$503.3 \text{ Other FR Assets}$</td>
<td></td>
</tr>
<tr>
<td>(incl SWAP Drawings)</td>
<td></td>
</tr>
<tr>
<td>$1,264.3 \text{ Total Reserve Bank Credit}$</td>
<td>$655.0 \text{ Factors Absorbing Reserves}$</td>
</tr>
<tr>
<td>$0.0$ Gold stock</td>
<td></td>
</tr>
<tr>
<td>$0.0$ Special Drawing Rights</td>
<td></td>
</tr>
<tr>
<td>$0.0$ Treasury Currency Outstanding</td>
<td></td>
</tr>
<tr>
<td>$1,264.2 \text{ Total Factors Supplying Reserves}$</td>
<td>$1,264.2 \text{ Total Liabilities &amp; Capital}$</td>
</tr>
</tbody>
</table>

The lack of reserve sterilization, herein was quantitative easing. But the lack of sterilization also reflected the limitations of the Fed's balance sheet.

See: What Are the Limits of the Fed's Balance Sheet? (Stone, September 15)

The earlier reserve sterilization associated with each of the Fed's lending or liquidity programs, was conducted by the redemption of outright sale of Treasury securities. Between the first TAF offering in December 2007 and mid-September 2008 the Fed's holdings of Treasury Securities fell $300 bln, to around $475 bln.
Given that another $250 bln of Treasuries on the Fed's balance sheet were encumbered by the TSLF (and options on TSLF) the Fed didn't really have enough Treasuries left to sell to address the lofty enlargement of RBC required to maintain functioning of the credit markets post Lehman.

The Congressional approval required for the Fed to pay interest on bank reserves provided the Fed with a mechanism to enlarge its balance sheet, without pushing the policy rate to zero.

CQE is effectively a form "Credit Policy" as oppose to "Interest Rate Policy", which is the setting of the Fed funds target.

It is not only a changing of the composition of the asset side of the Fed's balance sheet or RBC as occurred between December 2007 and mid-September 2009, but it is also the enlargement of the Fed's balance sheet, as has occurred post-Lehman.

**How Does Quantitative Easing Work?**

**The Monetarist Channel**

When one considers IQE, the monetarist transmission mechanism is at work. Here the monetary base is enlarged, which in theory renders an increase in money supply, changes relative asset prices, and impacts on aggregate demand.

**Reserves->Monetary Based->Money Supply->Relative Asset Prices->Aggregate Demand**
Sceptics might question how the expansion of the monetary base necessarily induces a rise in money supply. Here the mechanism relies on expansionary monetary being deemed by the public as inflationary. While nominal interest rates may be constrained by the zero-bound issue, real interest can be negative. The higher inflationary expectations stemming from expansionary policies render declines in real rates, even though nominal rates may be unaffected.

Some proponents of this approach might work best with an Explicit Inflation Target. The inflation target reaffirms the central bank's anti-inflationary and also anti-deflationary commitments.

**The Credit Channel**

Those economists who prefer the "Credit Channel" might embrace the inflationary expectations mechanism, but will also argue that the expansion and changing composition of the Fed's balance sheet associated with CQE provides incentives for private sector lenders to make loans.

Programs such as the TAF serve to reduce the term funding costs of banks, making it easier for banks to fund balance sheets, and make loans or buy securities.

Programs such as the Money Market Investors Financing Facility (MMIFF) lift assets from other lenders, in this case Money Market Funds (MMFs). The lifting of assets not only provides a vehicle for funds to remain liquid to meet redemptions, but also changes the composition of MMF asset mix, providing incentives for MMFs to lend to banks, CP issuers etc.

**What Can Be Learned From The BoJ Experiment with Quantitative Easing?**
A 2006 study by Mark Spiegel from the Federal Reserve Bank of San Francisco concludes "outcomes appear to be consistent with the intentions of the program, the magnitudes of these impacts are still very uncertain. Moreover, in strengthening the performance of the weakest Japanese banks, quantitative easing may have had the undesired impact of delaying structural reform."

See: [Did Quantitative Easing by the Bank of Japan "Work"?](#)

A Bank of Japan working paper published in April 2005 concludes that the BoJ monetary policy has function mainly through the BoJ's zero-interest rate commitment, which led to declines in medium and longer term interest rates. The raising of reserve targets or QE effect was not large. Nor, did the BoJ's portfolio rebalancing, buying long term bonds, have a significant impact.

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**The Japanese Experience**

Interest rates, monetary base, and bank lending

![Graph showing interest rates, monetary base, and bank lending](image)

See: [The Effects of the Bank of Japan's Zero Interest Rate Commitment and Quantitative Monetary Easing on the Yield Curve: A Macro-Finance Approach](#) (Oda and Ueda, April 2005)