Quantitative Easing
(Print money to buy bonds)
The Fed’s large scale asset purchase program.
(Monthly purchases of $45 billion Treasuries and $40 billion MBS)

Did QE have a Positive Impact on the Economy or Not?

The Fed policy is to hold down long-term interest rates and encourage investors to take more risk. This should revive demand and economic growth.

In normal times the Fed moves short-term interest rates via “open-market operations”: by buying and selling securities, they supply or subtract reserves from the banking system. The quantity of reserves that banks hold is a secondary consideration; the real target is the interest rate. A lower rate, for example, encourages spending and investment, boosting the economy.

In times of severe economic distress, however, short-term interest rates may fall to zero. That is when QE comes into play. One type of QE is called “credit easing” with the aim to support the economy by boosting liquidity and reducing interest rates when credit channels are clogged, for example the mortgage backed security market.

Another type of QE works through “portfolio rebalancing”. Investors who sell securities to the Fed then take the proceeds and buy other assets, raising their prices. Lower bond yields encourage borrowing; higher equity prices raise consumption; both help investment and boost demand. If investors buy foreign assets, portfolio rebalancing also weakens the domestic currency, fueling exports.

The critical question is whether the uncertain risks of uncertain magnitude outweigh the benefits of dong more QE.

Stipulated: The FRB of San Francisco estimates that $600 billion of QE reduces long-term interest rates by 15-20 basis points, equivalent to a 75 basis point cut in the federal-funds rate. QE helps the real economy. QE1 and QE2 increased output 3%, employment is 3 million higher, and the unemployment rate is 1.5 percentage points lower than otherwise.

Quantitative Easing Timeline
QE-1 = November 2008…$ 600 b MBS
QE-2 = November 2010…$ 600 b Treasury
QE-3 = September 2012…$40b/m of MBS
QE-4 = December 2012…$85b/m of MBS & Treasury
Spending = HH + Bus./Res. + Gov. + Exports – Imports

Con. Invest.
The size of the Fed’s balance sheet is what matters for monetary policy. If the size of the balance sheet continues to grow then policy is getting looser. So if the Fed cuts in half its monthly purchases, that would be like reducing the fed funds rate by 5 basis points instead of 10.

**QE:** The Fed has indicated it would hold the bonds on its balance sheet to maturity to address fears that dumping bonds will lead to a rapid rise in borrowing costs. This will also allow the Fed to avoid realizing losses on its bond holdings (and therefore capital levels) as interest rates rise to normal levels when QE ends.

**Not QE:** The level of the monetary base has now reached dangerous levels. Unwinding of such a massive program will prove to be very difficult. So the longer the Fed continues QE the harder it will be. The Fed’s asset purchases and growing market presence could increase the chance of price distortions because QE makes the markets less liquid. QE is distorting pricing signals in the MBS market. The greatest risk is a mishandled QE exit: inflation and interest rate could spike, and the Fed could lose credibility with financial markets and lawmakers.
QE: The large increase in excess reserves has stabilized the banking system, reduced the liquidity crisis that almost brought down the U.S. banking system and has reduced interest rates on all types of lending products. This has revived borrowing and spending and helped boost the economic growth rate.

Not QE: QE has caused what John Maynard Keynes referred to as a “liquidity trap”. All that new Fed money (excess reserves = $2.4 trillion) is stuck in the banks, not being lent out into the community. So further QE will be as effective as “pushing on a string”.
Expectations Theory of Interest Rates

In general, for an $n$-period bond:

$$i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \ldots + i^e_{t+(n-1)}}{n}$$

In words: The interest rate today ($t$) on a long-term bond ($n$) is equal to the average of short-term rates expected to occur over the life of the long-term bond.

Liquidity Premium Theory of Interest Rates

Key Assumption: Bonds of different maturities are substitutes, but are not perfect substitutes

Investors prefer short-term rather than long-term bonds so must be paid a positive liquidity (term) premium, $l_{nt}$, to hold long-term bonds

This results in the modification of the Expectations Theory

$$i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \ldots + i^e_{t+(n-1)}}{n} + l_{nt}$$

QE: Talk of “tapering” has changed market expectations, pushing up interest rates and has led to an effective tightening of monetary policy. Long-term bond yields are essentially a forecast of future short-term interest rates. When investors reduce their expectations at how large the Fed’s balance sheet will grow, bond yield will rise further, slowing the economy.

Not QE: There are massive distortions in the government debt market. Unusually low yields on long-term bonds are quite worrying. Changes in expected short-term rates account for most bond-market sell-offs (1994). The “term premium” on long term bonds is now zero due to the Fed reducing the supply of risk-free government debt forcing insurance companies and pension funds to accept much lower yields, and a large demand for safe assets by many investors worldwide. A change in investor’s risk appetite may increase the term premium quickly. Any term premium adjustment may be sudden and have unpredictable consequences potentially creating outsized risks.
QE: Talk of “tapering” has changed market expectation, pushed up interest rates and has led to an effective tightening of monetary policy. Since a return of 10-year Treasury interest rates to pre-crisis levels (4-5%) looks highly unlikely in the near future, there can hardly be a bond bubble. When investors reduce their expectations at how large the Fed’s balance sheet will grow, bond yields will rise. In 1994, tighter Fed policy caused global financial turmoil.

Not QE: QE has created a bond bubble: Over a business cycle, 10-year Treasury yields should average around the economy’s long-run nominal GDP growth rate, currently around 4.0% (2.0% real growth plus 2% inflation). But today’s 10-year rate is around half that at 1.8%.

The financial risks of QE and low interest rates are dangerous risk-taking, asset misallocation and financial instability. Recent market gyrations show that investors are reaching for returns amid low interest rates. A sudden spike in yields and volatilities could trigger a disorderly adjustment and potentially create outsized risks.

Speculative elements have returned to the bond markets. Yields on “junk bond” are at record lows, around 5%. Moreover, “covenant-lite” loans have returned, and payment-in-kind debt (interest is paid as more debt) are now being issued. A surge in inflation, a change in Fed policy, or a recession with corporate bond defaults will force corporate bond yields to soar and prices to plummet.

QE’s short-term gains do not justify its long-term risks anymore. QE is facing diminishing returns. So any additional QE will do little to further reduce long-term interest rates. Therefore the Fed should stop manipulating the price of money and let market forces set interest rates.
QE: QE kept the economy from falling into depression following the 2008 financial crisis. QE boosted GDP and lowered unemployment according to event study and time-series analysis. The 10-year Treasury interest rate is at least 104 bps lower than it would be without any QE. GDP is 1.2% higher. History shows that when the Fed scales back its bond-buying, the economy falters, and the Fed has to restart the program. The Fed wants to avoid that type of relapse by staying looser for longer. This will help achieve economic “escape velocity”. Current GDP growth of 1.5% is below its long-run average of 2.0%. And 2017 growth forecasted is only 2.4%. The removal of QE carries substantial risks for deflation, weaker economic growth and higher interest rates.

Not QE. The economic benefits of QE are diminishing and the potential distortions are rising. The housing market and economy are recovering. Business sit on record levels of cash so cheap money is not required. What is holding back the U.S. economy is not monetary in nature, so the Fed should end QE. QE costs rise with the program’s diminishing returns over time. QE is just postponing the day of reckoning, and the rebalancing and restructuring of the U.S. economy. QE is a weak lever to move the world.
QE: The large output gap and 7 million unemployed people justify the use of more QE. Since September 2012 when the Fed stepped up QE and promised to keep it in place until there was a substantial improvement in the labor market, the unemployment rate has dropped, job creation has accelerated and GDP growth is around 2%. This growth rate is not bad when you consider that fiscal policy squeezed growth by 1.75% of GDP.

Not QE: Cheap money is not the cure for the output gap. Restructuring our economy away from domestic consumption and towards investment and exports will reduce the output gap in a more balanced and sustainable manner.
QE: QE boosted GDP and lowered unemployment according to event study and time-series analysis. Employment is 1.4 million greater than the counterfactual of no QE

Not QE: Low borrowing costs are not a factor holding firms back from additional hiring. What they lack is demand for their product. As the economy recovers, incomes increase and demand will return leading to additional hiring.
QE: Unemployment is 0.6 percentage points lower than the counterfactual of no QE. QE boosted GDP and lowered unemployment according to event study and time-series analysis. The Fed will continue QE until the labor market has improved substantially (U.R. drops below 7%). The “new” full employment (4.7% unemployment rate) is not expected until 2017 at the earliest.

Not QE: QE will not address what ails the labor market. Long-term structural unemployment cannot be fixed with cheap money, it takes education, retraining, and worker mobility.
QE: QE has prevented a prolonged period of deflation. Core personal consumption expenditure index – the Fed’s preferred inflation gauge – has averaged 2% year-over-year growth since QE began, exactly equal to the Fed’s explicit target. Inflation is unlikely to top 2% anytime soon. The Fed could do more QE to ward off deflation. The core CPI inflation rate is unusually low and falling. Core PCE is up 1.70% year over year, below its official target of 2%.

Not QE: The Fed is being overly complacent with regards to future inflation. QE has raised the risks of runaway inflation. Monetization of the debt, Milton Friedman warned, would lead to surging inflation in the long run.
Factors Determining Inflation

Inflation is determined by:
1. Expected Inflation
2. Economy’s output gap
3. Price (supply) shocks.

Inflation will rise one-for-one with any increase in expected inflation.

Workers and firms care about real wages. If workers expect higher inflation in the future, they will demand higher wages to maintain real wages. Because labor costs typically makeup 70% of a firm’s costs, businesses will increase prices to maintain profit margins.

Output gap is the difference between aggregate economic output and potential output.

If economy is operating below potential, then there is lots of slack in the economy, workers accept smaller increases in wages, and firms need to lower prices to sell their goods => lower inflation

If economy is operating above potential, then there is little slack in the economy, labor markets get tight, workers demand higher wages, and firms take opportunity to increase prices => higher inflation

Price (Supply) Shocks – occur when there is a shock to the supply of goods and services produced in the economy.

Examples: Oil supply restrictions, developing countries rising demand for commodities, a falling exchange rate pushing up import prices, workers pushing for wage gains higher than productivity gains (Cost-push Inflation).
Investor expectations of future inflation is falling, pushing up real interest rates. Worries of deflation are greater than worries of inflation. To minimize the costs/risks of QE the Fed must be clear/specific about the circumstances in which it will end. When interest rates are near zero, the Fed can influence monetary conditions more through words than through actions. Its most powerful tool is its ability to influence investors’ expectations of future inflation. A fall in expected inflation raises the “real” or inflation adjusted interest rate.

Not QE: The Fed could lose control of inflation expectations, as happened in the 1970s, as the economy strengthens. QE is no longer raising market-based inflation expectations to the Fed’s explicit target of 2%.
The debt-to-income ratio fell over the last 7 years because a lot of mortgage debt has been written off and new debt is hard to get. Consumers are also deleveraging to work off this mountain of debt. The debt-to-income ratio reached 1.02% in Q2, 2016, down from 1.29% in Q3 2007. Economists believe a ratio of 100% is sustainable in the long run.

**Rising debt ratios:** Households using future income to fund current consumption.

**Falling debt ratios:** Households using current income to pay for past consumption.

**QE:** Continued QE will lower interest rates, encourage additional borrowing and spending, and therefore increase economic growth and job creation.

**Not QE:** American households’ debt levels are still excessive and therefore must continue to deleverage their balance sheets. The Fed’s QE policy of encouraging more debt will just postpone the day of reckoning of the U.S. economy. QE and low interest rates has caused a redistribution of wealth from the old (savers) to the young (borrowers).
QE: Fiscal policy (tax increases and spending cuts) is restraining growth so a premature ending of QE or a tightening of monetary policy could erase all the economic benefits of QE and send the economy spiraling back into recession. This happened in 1937, when the Fed tightened monetary policy and put the economy back into recession, prolonging the Great depression. QE has cut government-borrowing costs and reduced the future burden of taxation. To reduce the nation's federal debt-to-income ratio (debt burden) the average Treasury interest rate must be lower than the economic growth rate. With the economy growing less than 2%, the Fed must keep Treasury yields lower than 2%. QE is supporting the economy by cutting government borrowing costs and reducing the future burden of taxation.

Not QE: QE is reducing market pressure on the government that would otherwise face higher interest rates and a corresponding need to deal responsibly with their public finances. Fiscal austerity at the state and local level is coming to an end as their budgets improve and municipal hiring resumes. The U.S. budget deficit will fall to $642 billion, or 4% of GDP, down from over 10% in 2010. High fiscal deficits and central bank money printing will eventually cause a rapid rise in inflation, in the long run. The U.S. pension problem is dire. State and municipal pensions face a funding gap of $4 trillion – 25% of GDP - approximately 52% underfunded. Artificially low yields on government debt is exacerbating the funding gap problem. Falling bond yields have made defined-benefit pensions far costlier. Ending QE will help diffuse the state and local pension time bomb. QE is keeping interest rates artificially low which is letting politicians off the hook for addressing the current and future deficit issue.
QE: QE lowered the value of the dollar, making U.S. goods cheaper on the world market and therefore supporting our export sector of the economy. American monetary policy is amplified in the emerging markets of the world. Ending to soon will cause emerging-market currencies and bond prices to fall. Even if the Fed raised yields slowly and the dollar rallied slowly this would crush emerging market currencies and drive up their interest rates. This will slow further their already tepid growth rates. Interest rate are already rising in some countries as foreign buyers for local currency bonds dry up. If the fed ends QE, investors around the world will sell emerging market bonds and currencies.

Not QE: Excessive money printing will lower the value of the dollar, making what we buy cost more and sell worth less. This potential devaluation could cause the U.S. dollar to lose its “reserve currency” status, a singularly important privilege. A lower value of the dollar will increase oil prices (now at $54). Currency wars are now taking place between the U.S., Japan, Eurozone, Switzerland.

The new money is being invested in the world with higher growth rates, not here in the U.S. This has resulted in property price bubbles abroad. Excessive money creation may lead to high inflation and rapid currency depreciation, bad news for domestic and foreign investors respectively. If investors lose 50% of their purchasing power, it does not really matter how this happens. QE is pushing up emerging-market currencies as cheap foreign credit has poured in. This has had a detrimental effect on exporters there. QE has caused massive inflows of capital into emerging markets, raising their exchange rate, lowering their exports and boosting domestic consumption. Ending QE will increase the amount of capital flowing into the U.S., raise the value of the dollar, and allow the U.S. economy to restructure away from consumption and towards the investment and export sectors.
QE: Lower interest rates reduce debt service costs and therefore helps to offset the rising cost of fuel.

Not QE: QE has created a commodity price bubble. QE has lowered the value of the dollar, making commodity prices (oil) cheaper on the world market, increasing the world’s demand for oil and pushing up its price. Ending QE will increase the dollar’s exchange rate and push commodity prices lower. This will act like a tax cut for consumers which will boost demand for other goods. The shale oil and gas boom in the U.S. will have great positive effects on the U.S. economy, decreasing the need for QE.
S&P 500 Stock Index
(monthly average)

QE: QE lowers bond yields, which lowers the required return on equity investments ($K_e$), which boosts equity prices, increasing wealth, consumption and economic growth.

The S&P 500 stock index has risen by more than 70% cumulatively when the Fed was pursuing QE and fallen by around 15% when it has paused. QE reduces the total supply of assets that private investors can buy. Lower supply pushes asset prices higher. Higher stock prices have boosted firms' firm net worth, thereby lowering the adverse selection and moral hazard problems that lenders face when making commercial loans, leading to higher business lending, greater investment, and faster rising economic growth.

Not QE: A prolonged period of low rates carries the risk of stock and bond asset bubbles. Stock prices are being artificially inflated by artificially low bond yields. These low bond yields have reduced the discount rate ($K_e$ on previous page) applied to future cash flows, increasing the present value (stock price), other things being equal. The problem is other things are not held equal. Bond yields are low because inflation expectations and real economic growth are low (hence lower nominal GDP growth). If profits and dividends rise in line with nominal GDP over the long run, then forecasts for profits/dividends growth (see the “g” term on previous page) must be downgraded as well. The Fed is pursuing QE because they are worried about very slow economic growth which also translates into very slow profit growth. Research shows that future 10-year real equity returns were negative when bond yields were at their lowest and highest when bond yields were highest. So equity investors should expect negative returns over the next 10 years.
QE: Mortgage rates are down helping to support the housing market. A housing market recovery is necessary to secure a self-sustaining economic recovery. Two thirds of all new jobs over the next 2 years will be related to the housing sector.

Not QE: Mortgage rates are down but only the wealthy can get a mortgage, not helping the middleclass. QE is not needed due to strong housing market fundamentals:
Demand is strong due to high affordability, large pent up demand for homes, looser credit, rising investor and consumer confidence, modest job and income growth
Supply is low due to many “underwater” households reticent to list their home for sale, falling number of “distressed homes” available for sale and lack of new home inventory.
The household debt service ratio is an estimate of the ratio of debt payments to disposable personal income. The financial obligations ratio adds automobile lease payments, rental payments on tenant-occupied property, homeowners’ insurance, and property tax payments to the debt service ratio.

QE: The debt service ratio recently fell to its lowest level on record. Falling interest rates and debt levels both caused the decline. Low debt payments are freeing up disposable income for additional consumption or savings.

Not QE: The debt service ratios are starting to rise again as households are enticed back into indebtedness.