# Quantitative easing

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**Quantitative easing** (**QE**) is monetary policy used by a central bank to stimulate an economy when standard monetary policy has become ineffective.[1][2][3] A central bank implements quantitative easing by buying specified amounts of financial assets from commercial banks and other private institutions, thus raising the prices of those financial assets and lowering their yield, while simultaneously increasing the monetary base.[4][5] This differs from the more usual policy of buying or selling short-term government bonds in order to keep interbank interest rates at a specified target value.[6][7][8][9]

Expansionary monetary policy to stimulate the economy typically involves the central bank buying short-term government bonds in order to lower short-term market interest rates.[10][11][12][13] However, when short-term interest rates reach or approach zero, this method can no longer work.[14] In such circumstances monetary authorities may then use quantitative easing to further stimulate the economy by buying assets of longer maturity than short-term government bonds, thereby lowering longer-term interest rates further out on the yield curve.[15][16]

Quantitative easing can help ensure that inflation does not fall below a target.[9] Risks include the policy being more effective than intended in acting against deflation (leading to higher inflation in the longer term, due to increased money supply),[17] or not being effective enough if banks do not lend out the additional reserves.[18] According to the International Monetary Fund and various economists, quantitative easing undertaken since the global financial crisis of 2007–08 has mitigated some of the adverse effects of the crisis.[19][20][21]

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# Process

Quantitative easing is distinguished from standard central banking monetary policies, which are usually enacted by buying or selling government bonds on the open market to reach a desired target for the interbank interest rate. However, if a recession or depression continues even when a central bank has lowered interest rates to nearly zero, the central bank can no longer lower interest rates. The central bank may then implement a set of tactics known as quantitative easing. This policy is often considered a last resort to stimulate the economy.[22][23]

A central bank enacts quantitative easing by purchasing—without reference to the interest rate—a set *quantity* of bonds or other financial assets on financial markets from private financial institutions.[8][24] The goal of this policy is to facilitate an expansion of private bank lending; if private banks increase lending, it would increase the money supply. Additionally, if the central bank also purchases financial instruments that are riskier than government bonds, it can also lower the interest yield of those assets.

Quantitative easing, and monetary policy in general, can only be carried out if the central bank controls the currency used in the country. The central banks of countries in the Eurozone, for example, cannot unilaterally expand their money supply and thus cannot employ quantitative easing. They must instead rely on the European Central Bank (ECB) to enact monetary policy.[25]

# History

## Before 2007

Quantitative easing was first used by the Bank of Japan (BOJ) to fight domestic deflation in the early 2000s.[15][26][27][28] According to the Bank of Japan, the central bank adopted quantitative easing (量的金融緩和, *ryōteki kin'yū kanwa*) on 19 March 2001.[29][30]

The Bank of Japan had for many years, and as late as February 2001, claimed that "quantitative easing ... is not effective" and rejected its use for monetary policy.[31] The BOJ had maintained short-term interest rates at close to zero since 1999. Under quantitative easing, the BOJ flooded commercial banks with excess liquidity to promote private lending, leaving them with large stocks of excess reserves and therefore little risk of a liquidity shortage.[32] The BOJ accomplished this by buying more government bonds than would be required to set the interest rate to zero. It later also bought asset-backed securities and equities and extended the terms of its commercial paper–purchasing operation.[33]

The BOJ increased the commercial bank current account balance from ¥5 trillion to ¥35 trillion (approximately US$300 billion) over a four-year period starting in March 2001. The BOJ also tripled the quantity of long-term Japan government bonds it could purchase on a monthly basis.

## After 2007

Since the advent of the global financial crisis of 2007–08, similar policies have been used by the United States, the United Kingdom, and the Eurozone. Quantitative easing was used by these countries because their risk-free short-term nominal interest rates were either at or close to zero. In the United States, this interest rate is the federal funds rate; in the United Kingdom, it is the official bank rate.

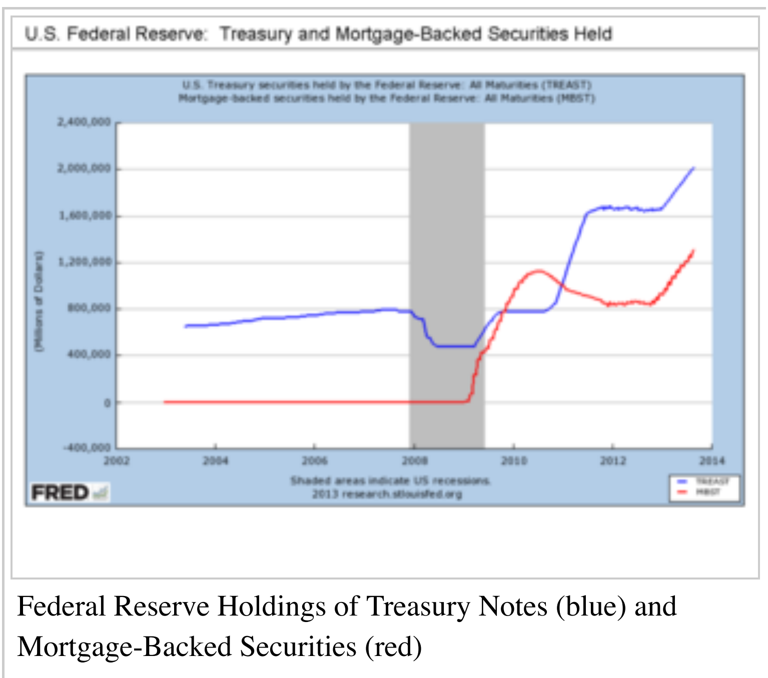
During the peak of the financial crisis in 2008, the US Federal Reserve expanded its balance sheet dramatically by adding new assets and new liabilities without "sterilizing" these by corresponding subtractions. In the same period, the United Kingdom also used quantitative easing as an additional arm of its monetary policy in order to alleviate its financial crisis.[34][35][36]

### US QE1, QE2, and QE3

The US Federal Reserve held between $700 billion and $800 billion of Treasury notes on its balance sheet before the recession. In late November 2008, the Federal Reserve started buying $600 billion in mortgage-backed securities.[37] By March 2009, it held $1.75 trillion of bank debt, mortgage-backed securities, and Treasury notes; this amount reached a peak of $2.1 trillion in June 2010. Further purchases were halted as the economy started to improve, but resumed in August 2010 when the Fed decided the economy was not growing robustly. After the halt in June, holdings started falling naturally as debt matured and were projected to fall to $1.7 trillion by 2012. The Fed's revised goal became to keep holdings at $2.054 trillion. To maintain that level, the Fed bought $30 billion in two- to ten-year Treasury notes every month.[38]

In November 2010, the Fed announced a second round of quantitative easing, buying $600 billion of Treasury securities by the end of the second quarter of 2011.[39][40] The expression "QE2" became a ubiquitous nickname in 2010, used to refer to this second round of quantitative easing by US central banks.[41] Retrospectively, the round of quantitative easing preceding QE2 was called "QE1".[42][43]

A third round of quantitative easing, "QE3", was announced on September 13, 2012. In an 11–1 vote, the Federal Reserve decided to launch a new $40 billion per month, open-ended bond purchasing program of agency mortgage-backed securities. Additionally, the Federal Open Market Committee (FOMC) announced that it would likely maintain the federal funds rate near zero "at least through 2015."[44][45] According to NASDAQ.com, this is effectively a stimulus program that allows the Federal Reserve to relieve $40 billion per month of commercial housing market debt risk.[46] Because of its open-ended nature, QE3 has earned the popular nickname of "QE-Infinity."[47] On 12 December 2012, the FOMC announced an increase in the amount of open-ended purchases from $40 billion to $85 billion per month.[48]



Federal Reserve Holdings of Treasury Notes (blue) and Mortgage-Backed Securities (red)

On 19 June 2013, Ben Bernanke announced a "tapering" of some of the Fed's QE policies contingent upon continued positive economic data. Specifically, he said that the Fed could scale back its bond purchases from $85 billion to $65 billion a month during the upcoming September 2013 policy meeting.[49] He also suggested that the bond-buying program could wrap up by mid-2014.[50] While Bernanke did not announce an interest rate hike, he suggested that if inflation followed a 2% target rate and unemployment decreased to 6.5%, the Fed would likely start raising rates. The stock markets dropped by approximately 4.3% over the three trading days following Bernanke's announcement, with the Dow Jones dropping 659 points between the 19th and 24 June, closing at 14,660 at the end of the day on June 24.[51] On September 18, 2013, the Fed decided to hold off on scaling back its bond-buying program,[52] and later began tapering purchases the next year—February 2014.[53] Purchases were halted on October 29, 2014[54] after accumulating $4.5 trillion in assets.[55]

### United Kingdom

During its QE program, the Bank of England bought gilts from financial institutions, along with a smaller amount of relatively high-quality debt issued by private companies.[56] The banks, insurance companies, and pension funds could then use the money they received for lending or even to buy back more bonds from the bank. Further, the central bank could lend the new money to private banks or buy assets from banks in exchange for currency. These measures have the effect of depressing interest yields on government bonds and similar investments, making it cheaper for business to raise capital.[57] Another side effect is that investors will switch to other investments, such as shares, boosting their price and thus encouraging consumption.[56] QE can reduce interbank overnight interest rates and thereby encourage banks to loan money to higher interest-paying and financially weaker bodies.

The Bank of England had purchased around £165 billion in assets as of September 2009 and around £175 billion in assets by the end of October 2009.[58] At its meeting in November 2009, the Monetary Policy Committee (MPC) voted to increase total asset purchases to £200 billion. Most of the assets purchased have been UK

government securities (gilts); the Bank has also purchased smaller quantities of high-quality private-sector assets.[59] In December 2010, MPC member Adam Posen called for a £50 billion expansion of the Bank's quantitative easing programme, while his colleague Andrew Sentance has called for an increase in interest rates due to inflation being above the target rate of 2%.[60] In October 2011, the Bank of England announced that it would undertake another round of QE, creating an additional £75 billion.[61] In February 2012 it announced an additional £50 billion.[62] In July 2012 it announced another £50 billion,[63] bringing the total amount to £375 billion. The Bank has said that it will not buy more than 70% of any issue of government debt.[64] This means that at least 30% of any issue of government debt will have to be purchased and held by institutions other than the Bank of England. In 2012 the Bank estimated that quantitative easing had benefited households differentially according to the assets they hold; richer households have more assets.[65]

**Europe**

The European Central Bank said that it would focus on buying covered bonds, a form of corporate debt. It signalled that its initial purchases would be worth about €60 billion in May 2009.[66]

At the beginning of 2013, the Swiss National Bank had the largest balance sheet relative to the size of the economy it was responsible for, at close to 100% of Switzerland's national output. A total of 12% of its reserves were in foreign equities. By contrast, the US Federal Reserve's holdings equalled about 20% of US GDP, while the European Central Bank's assets were worth 30% of GDP.[67]

In a dramatic change of policy, on 22 January 2015 Mario Draghi, President of the European Central Bank, announced an 'expanded asset purchase programme': where €60 billion per month of euro-area bonds from central governments, agencies and European institutions would be bought. The stimulus was planned to last until September 2016 at the earliest with a total QE of at least €1.1 trillion. Mario Draghi announced the programme would continue: 'until we see a continued adjustment in the path of inflation', referring to the ECB's need to combat the growing threat of deflation across the eurozone in early 2015.[68][69]

**Scandinavia**

Swedish National Bank launched quantitative easing in February 2015, announcing government bond purchase of nearly 1.2 billion USD.[70] The annualised inflation rate in January 2015 was minus 0.3 percent, and the bank implied that Sweden's economy could slide into deflation.[70]

**Japan after 2007 and Abenomics**

In early October 2010, the Bank of Japan announced that it would examine the purchase of ¥5 trillion (US$60 billion) in assets. This was an attempt to push down the value of the yen against the US dollar in order to stimulate the domestic economy by making Japanese exports cheaper; it did not work.[71]

On 4 August 2011 the BOJ announced a unilateral move to increase the commercial bank current account balance from ¥40 trillion (US$504 billion) to a total of ¥50 trillion (US$630 billion).[72][73] In October 2011, the Bank expanded its asset purchase program by ¥5 trillion ($66bn) to a total of ¥55 trillion.[74]

On 4 April 2013, the Bank of Japan announced that it would expand its asset purchase program by 60 to 70 trillion Yen a year. https://www.boj.or.jp/en/mopo/outline/qqe.htm/

The Bank hoped to bring Japan from deflation to inflation, aiming for 2% inflation. The amount of purchases was so large that it was expected to double the money supply.[75] This policy has been named Abenomics, as a portmanteau of economic policies and Shinzō Abe, the current Prime Minister of Japan.

On 31 October 2014, the Boj announced the expansion of its bond buying program, to now buy 80 trillion Yen of bonds a year.[76]

# Effectiveness

According to the International Monetary Fund (IMF), the quantitative easing policies undertaken by the central banks of the major developed countries since the beginning of the late-2000s financial crisis have contributed to the reduction in systemic risks following the bankruptcy of Lehman Brothers. The IMF states that the policies also contributed to the improvements in market confidence and the bottoming-out of the recession in the G7 economies in the second half of 2009.[19]

Economist Martin Feldstein argues that QE2 led to a rise in the stock market in the second half of 2010, which in turn contributed to increasing consumption and the strong performance of the US economy in late 2010.[21] Former Federal Reserve Chairman Alan Greenspan calculated that as of July 2012, there was "very little impact on the economy."[77] Federal Reserve Governor Jeremy Stein has said that measures of quantitive easing such as large-scale asset purchases "have played a significant role in supporting economic activity".[20]

# Economic impact

Quantitative easing may cause higher inflation than desired if the amount of easing required is overestimated and too much money is created by the purchase of liquid assets.[17] On the other hand, QE can fail to spur demand if banks remain reluctant to lend money to businesses and households. Even then, QE can still ease the process of deleveraging as it lowers yields. However, there is a time lag between monetary growth and inflation; inflationary pressures associated with money growth from QE could build before the central bank acts to counter them.[78] Inflationary risks are mitigated if the system's economy outgrows the pace of the increase of the money supply from the easing. If production in an economy increases because of the increased money supply, the value of a unit of currency may also increase, even though there is more currency available. For example, if a nation's economy were to spur a significant increase in output at a rate at least as high as the amount of debt monetized, the inflationary pressures would be equalized. This can only happen if member banks actually lend the excess money out instead of hoarding the extra cash. During times of high economic output, the central bank always has the option of restoring reserves to higher levels through raising interest rates or other means, effectively reversing the easing steps taken.

Increasing the money supply tends to depreciate a country's exchange rates relative to other currencies, through the mechanism of the interest rate. Lower interest rates lead to a capital outflow from a country, thereby reducing foreign demand for a country's money, leading to a weaker currency. This feature of QE directly benefits exporters living in the country performing QE, as well as debtors, since the interest rate has fallen,

meaning there is less money to be repaid. However, it directly harms creditors as they earn less money from lower interest rates. Devaluation of a currency also directly harms importers, as the cost of imported goods is inflated by the devaluation of the currency.[79]

Neil Irwin wrote in *The New York Times* in October 2014 that the QE programs of the U.S. Federal Reserve likely contributed to:

- Lower interest rates for corporate bonds and mortgage rates, helping support housing prices;
- Higher stock market valuation, in terms of a higher price-earnings ratio for the S&P 500 index;
- Increased inflation rate and investor's expectations for future inflation;
- Higher rate of job creation; and
- Higher rate of GDP growth.[80]

# Risks

Economists such as John Taylor[81] believe that quantitative easing creates unpredictability. Since the increase in bank reserves may not immediately increase the money supply if held as excess reserves, the increased reserves create the danger that inflation may eventually result when the reserves are loaned out.[82]

## Impact on savings and pensions

In the European Union, World Pensions Council (WPC) financial economists have also argued that artificially low government bond interest rates induced by QE will have an adverse impact on the underfunding condition of pension funds, since "without returns that outstrip inflation, pension investors face the real value of their savings declining rather than ratcheting up over the next few years".[83][84]

## Housing market over-supply and QE3

The only member of the Federal Open Market Committee to vote against QE3, Richmond Federal Reserve Bank President Jeffrey M. Lacker, said,

> The impetus ... is to aid the housing market. That's an area that's fallen short in this recovery. In most other U.S. postwar recoveries, we've seen a pretty sharp snap back in housing. Of course, the reason it hasn't come back in this recovery is that this recession was essentially caused by us building too many houses prior to the recession. We still have a huge overhang of houses that haven't been sold that are vacant. And it's going to take us a while before we want the houses we have, much less need to build more.[85]

## Capital flight

The new money could be used by the banks to invest in emerging markets, commodity-based economies, commodities themselves, and non-local opportunities rather than to lend to local businesses that are having difficulty getting loans.[86]

### Increased income and wealth inequality

According to CNBC's Robert Frank, a Bank of England report shows that its quantitative easing policies had benefited mainly the wealthy, and that 40% of those gains went to the richest 5% of British households.[87][88] Dhaval Joshi of BCA Research wrote that "QE cash ends up overwhelmingly in profits, thereby exacerbating already extreme income inequality and the consequent social tensions that arise from it".[88] Anthony Randazzo of the Reason Foundation wrote that QE "is fundamentally a regressive redistribution program that has been boosting wealth for those already engaged in the financial sector or those who already own homes, but passing little along to the rest of the economy. It is a primary driver of income inequality".[88]

In May 2013, Federal Reserve Bank of Dallas President Richard Fisher said that cheap money has made rich people richer, but has not done quite as much for working Americans.[89]

### Criticism by BRIC countries

BRIC countries have criticized the QE carried out by the central banks of developed nations. They share the argument that such actions amount to protectionism and competitive devaluation. As net exporters whose currencies are partially pegged to the dollar, they protest that QE causes inflation to rise in their countries and penalizes their industries.[90][91][92][93]

## Comparison with other instruments

### Qualitative easing

Professor Willem Buiter of the London School of Economics has proposed a terminology to distinguish *quantitative easing*, or an expansion of a central bank's balance sheet, from what he terms *qualitative easing*, or the process of a central bank adding riskier assets to its balance sheet:

> Quantitative easing is an increase in the size of the balance sheet of the central bank through an increase [in its] monetary liabilities (base money), holding constant the composition of its assets. Asset composition can be defined as the proportional shares of the different financial instruments held by the central bank in the total value of its assets. An almost equivalent definition would be that quantitative easing is an increase in the size of the balance sheet of the central bank through an increase in its monetary liabilities that holds constant the (average) liquidity and riskiness of its asset portfolio.
>
> Qualitative easing is a shift in the composition of the assets of the central bank towards less liquid and riskier assets, holding constant the size of the balance sheet (and the official policy rate and the rest of the list of usual suspects). The less liquid and more risky assets can be private securities as

> well as sovereign or sovereign-guaranteed instruments. All forms of risk, including credit risk (default risk) are included.[94]

## Credit easing

In introducing the Federal Reserve's response to the 2008–9 financial crisis, Fed Chairman Ben Bernanke distinguished the new program, which he termed "credit easing", from Japanese-style quantitative easing. In his speech, he announced,

> Our approach—which could be described as "credit easing"—resembles quantitative easing in one respect: It involves an expansion of the central bank's balance sheet. However, in a pure QE regime, the focus of policy is the quantity of bank reserves, which are liabilities of the central bank; the composition of loans and securities on the asset side of the central bank's balance sheet is incidental. Indeed, although the Bank of Japan's policy approach during the QE period was quite multifaceted, the overall stance of its policy was gauged primarily in terms of its target for bank reserves. In contrast, the Federal Reserve's credit easing approach focuses on the mix of loans and securities that it holds and on how this composition of assets affects credit conditions for households and businesses.[95]

Credit easing involves increasing the money supply by the purchase not of government bonds but of private-sector assets, such as corporate bonds and residential mortgage–backed securities.[96][97] In 2010, the Federal Reserve purchased $1.25 trillion of mortgage-backed securities in order to support the sagging mortgage market. These purchases increased the monetary base in a way similar to a purchase of government securities.[98]

## Printing money

Quantitative easing has been nicknamed "printing money" by some members of the media,[99][100][101] central bankers,[102] and financial analysts.[103][104] The term *printing money* usually implies that newly created money is used to directly finance government deficits or pay off government debt (also known as *monetizing the government debt*). However, with QE, the newly created money is used to buy government bonds or other financial assets,[99] Central banks in most developed nations (e.g., the United Kingdom, the United States, Japan, and the EU) are prohibited from buying government debt directly from the government and must instead buy it from the secondary market.[98][105] This two-step process, where the government sells bonds to private entities that in turn sell them to the central bank, has been called "monetizing the debt" by many analysts.[98] The distinguishing characteristic between QE and monetizing debt is that with the former, the central bank creates money to stimulate the economy, not to finance government spending. Also, the central bank has the stated intention of reversing the QE when the economy has recovered (by selling the government bonds and other financial assets back into the market).[99] The only effective way to determine whether a central bank has monetized debt is to compare its performance relative to its stated objectives. Many central banks have adopted an inflation target. It is likely that a central bank is monetizing the debt if it continues to buy government debt when inflation is above target and if the government has problems with debt financing.[98]

Ben Bernanke remarked in 2002 that the US government had a technology called the printing press (or, today, its electronic equivalent), so that if rates reached zero and deflation threatened, the government could always act to ensure deflation was prevented. He said, however, that the government would not print money and distribute it "willy nilly" but would rather focus its efforts in certain areas (e.g., buying federal agency debt securities and mortgage-backed securities).[106][107] According to economist Robert McTeer, former president of the Federal Reserve Bank of Dallas, there is nothing wrong with printing money during a recession, and quantitative easing is different from traditional monetary policy "only in its magnitude and pre-announcement of amount and timing".[108][109] Stephen Hester, chief executive officer of the RBS Group, said in an interview, "What the Bank of England does in quantitative easing is it prints money to buy government debt, and so what has happened is the government has run a huge deficit over the past three years, but instead of having to find other people to lend it that money, the Bank of England has printed money to pay for the government deficit. If that QE hadn't happened then the government would have needed to find real people to buy its debt. So the Quantitative Easing has enabled governments, this government, to run a big budget deficit without killing the economy because the Bank of England has financed it. Now you can't do that for long because people get wise to it and it causes inflation and so on, but that's what it has done: money has been printed to fund the deficit."[110]

Richard W. Fisher, president of the Federal Reserve Bank of Dallas, warned in 2010 that QE carries "the risk of being perceived as embarking on the slippery slope of debt monetization. We know that once a central bank is perceived as targeting government debt yields at a time of persistent budget deficits, concern about debt monetization quickly arises." Later in the same speech, he stated that the Fed is monetizing the government debt: "The math of this new exercise is readily transparent: The Federal Reserve will buy $110 billion a month in Treasuries, an amount that, annualized, represents the projected deficit of the federal government for next year. For the next eight months, the nation's central bank will be monetizing the federal debt."[111]

## Altering debt maturity structure

Based on research by economist Eric Swanson reassessing the effectiveness of the US Federal Open Market Committee action in 1961 known as Operation Twist, *The Economist* has posted that a similar restructuring of the supply of different types of debt would have an effect equal to that of QE.[112] Such action would allow finance ministries (e.g., the US Department of the Treasury) a role in the process now reserved for central banks.[112]

## QE for the people

In response to concerns that QE is falling to create sufficient demand, particularly in the Eurozone, a number of economists have called for "QE for the people". Instead of buying government bonds or other securities by creating bank reserves, as the Federal Reserve and Bank of England have done, some suggest that central banks could make payments directly to households.[113] Economists Mark Blyth & Eric Lonergan argue in Foreign Affairs, that this is the most effective solution for the Eurozone, particularly given the restrictions on fiscal policy.[114] They argue that based on the evidence from tax rebates in the United States, less than 5% of GDP transferred by the ECB to the household sector in the Eurozone would suffice to generate a recovery, a fraction of what it intends to do under standard QE. Oxford economist, John Muellbauer has suggested that this could be legally implemented using the electoral register.[115]

## See also

- Currency War of 2009–11
- Economic history of Japan
- Money creation
- Open market operation
- Zero interest-rate policy ZIRP

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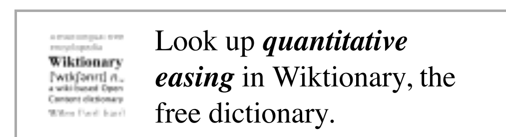
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