Money printers go grr: three myths and three uncomfortable truths about quantitative easing

Has there ever been an economic policy both as commonplace and as poorly understood as quantitative easing (QE)? By the end of 2021 central banks in the rich world will have grown their balance-sheets by almost $12trn during the pandemic, projects JPMorgan Chase (see chart). Their combined size will be $28trn—about three-quarters of the market capitalisation of the S&P 500 index of stocks today. Yet despite the massive scale of QE there remain deep divisions over the nature and magnitude of its impact.

QE, defined here as the purchase of government bonds with newly created money, is variously said to be impotent; to boost asset prices too powerfully; to raise inequality; to lower inequality; to be a subsidy to banks; and to be a form of financial repression that compels banks to finance the government. The battle over QE's effects rages among the public, bond traders, economists and even among central bankers—although they do not like to admit it.

The argument has spilled out into the open most clearly in Britain. "The question in the UK is whether the Bank of England still exists or whether it has now reverted to being the operational arm of the Treasury," said Paul Tucker, a former deputy governor of the bank, in 2020. This year the economic affairs committee of the House of Lords, which includes Mervyn King, a former governor, accused monetary policymakers of having a "dangerous addiction" to buying bonds.

The debate over QE is growing in importance globally as central banks prepare to turn the stimulus mega-tanker around. The Bank of Canada began curtailing the pace of its bond-buying in April. The Reserve Bank of Australia will begin tapering purchases in September. The Bank of England is approaching its £895bn ($1.2trn) asset-purchase target. It has said it will begin to unwind QE after raising interest rates to only 0.5%. The Federal Reserve and the European Central Bank (ECB) are locked in debate about when to curtail their respective asset purchases. And emerging markets, many of which dabbled with QE during the pandemic for the first time, must decide whether to make it a permanent tool of monetary policy.

This essay attempts to bring some clarity to the aspects of the debate about QE's effects, and by extension, the impact of reversing it. It will argue that three commonly held beliefs about QE are myths, and that three uncomfortable truths are too rarely acknowledged.

Myth 1: QE props up financial markets

The image of central banks pumping up asset prices while the real economy sags fits with populist sentiments about rising inequality, and has proved potent during the coronavirus

pandemic. Nobody disputes that in the heat of a crisis—such as in the spring of 2020, when the pandemic broke out and bond markets seized up—QE can restore calm. But a common claim is that even in normal times, central banks' bond purchases are related to high asset prices. In its inquiry into QE in Britain, for instance, the House of Lords committee wrote that the policy has "benefited wealthy asset holders disproportionately by artificially inflating asset prices".

At first glance, the claim that QE boosts the prices of the bonds being bought might seem like a simple matter of supply and demand. It is clear that markets react to QE: announcements that a central bank will buy long-term bonds tend to drive up prices and bring down yields. It is a short step from there to say that QE underpins asset prices more broadly, via spillover effects.

Yet economists first saw QE's influence on asset prices as a puzzle. In 2014 Ben Bernanke, then chairman of the Fed, quipped that QE "works in practice, but not in theory". In standard economic theory, assets are valued according to their expected future returns. If the central bank drives up bond prices, that creates opportunities for arbitrageurs who, perceiving the asset to be overvalued, drive them back down. Another problem is that the central bank is ultimately owned by taxpayers. Investors therefore have indirect exposure to any asset the bank buys. Swapping assets with the central bank does not change the risks they face, all told.

To overcome these problems economists have developed two main theories for how QE works most of the time. The first is that central banks' balance-sheets influence long-term-bond yields not directly, but by acting as a signal of future short-term interest-rate decisions. The more QE being done, the further off raising interest rates the central bank appears to be.

The "taper tantrum" of 2013 provides good evidence for the signalling theory. Hawkish comments by Mr Bernanke prompted a sell-off in American Treasury bonds, a surge in the dollar and capital outflows from emerging markets. Mr Bernanke had raised the subject of slowing the Fed's pace of bond-buying. But asset prices fell because investors brought forward the date at which they expected the central bank to raise overnight interest rates, the traditional lever of monetary policy. In a recent speech Gertjan Vlieghe of the Bank of England, a proponent of the signalling theory, said recent experience has also provided evidence in its favour. Even as the pace of QE in America and Britain slowed sharply in 2020 as the immediate crisis subsided, bond yields did not rise much.

If the signalling view is right, then QE's influence on financial markets is not conceptually different from the influence of conventional interest-rate policy. Were central banks able to convince the public that rates would stay low without buying bonds, asset prices would be just as high. And there is nothing "artificial" about low interest rates. Their ultimate cause is the economic conditions central banks face as they try to hit their inflation targets, not the short-term decisions of ratesetters themselves.

The second theory says that QE has so-called "portfolio balance" effects, which allow the supply and demand of assets to work more intuitively. Investors are not all alike, but have "preferred habitats": some are especially keen on government bonds. Should the central

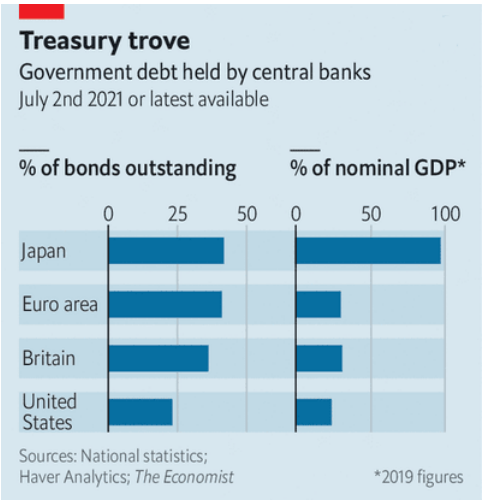
bank start buying up bonds, their scarcity will cause prices to rise and yields to fall, because demand from some investors—pension funds, say, which need a lot of long-term bonds—is unwavering. The empirical evidence that this effect exists at least to some degree in the short-term is compelling.

Yet although the portfolio balance mechanism may allow QE to bring down the yields on government bonds, its spillovers should be self-limiting, argues Michael Woodford of Columbia University. To the extent that investors have preferred habitats, the link between the prices of different types of financial assets is weakened. Investors staying in their respective lanes allows QE to depress government bond yields. But it also means that government bond yields should matter less to the prices of other assets, such as stocks.

Neither theory of QE, therefore, convincingly supports the conventional wisdom that the policy has caused unusual and broad-based rises in asset prices.

Uncomfortable truth 1: Nobody knows how much QE affects interest rates

QE affects long-term bond yields. But by how much? The strength of the signal it sends will depend on what else the central bank has said and is saying. But economists have floated rules of thumb for how much QE works via portfolio balance.



In 2020 Mr Bernanke suggested that in America in 2014 every $500bn of QE reduced ten-year Treasury yields by 0.2 percentage points. The median estimate of a survey of 24 studies conducted in 2016 by Joseph Gagnon of the Peterson Institute for International Economics, a think-tank, suggests that asset purchases worth 10% of GDP reduced ten-year government-bond yields by about half a percentage point.

The vast scale of QE during the pandemic stretches the credibility of these rules of thumb. At present, central banks in America, Britain and the euro area own government debt worth over 35% of GDP (see chart). Mr Gagnon's rule of thumb implies a large effect on long-term yields, of nearly two percentage points. The rules are unlikely to work under extreme conditions. Mr Bernanke writes that the overall effect of QE might be "limited in practice", noting that the largest effect estimated in one study was 1.2 percentage points. Mr Gagnon argues that the Bank of Japan's enormous holdings of government debt, worth around 100% of GDP, might be subject to different rules, because the country has a correspondingly enormous bond market. In places such as Australia and Japan, where the central bank has a policy of yield-curve control, such that it buys whatever is necessary to pin bond yields to a target rate, the quantity of bonds the central bank has to buy to enforce the peg will reflect the credibility of the policy, not the degree of stimulus. And long-term interest rates are unlikely to fall far below zero, given that investors can hold cash instead.

Central bankers appear to have incentives to overstate the effectiveness of QE. A recent working paper by economists Brian Fabo, Martina Janoková, Elisabeth Kempf and Luboš Pástor surveys 54 studies by 116 authors on the effects of QE in America, Britain and the euro area. Whereas only half the papers by academics found a statistically significant effect of QE on output, every paper by central-bank researchers did. Mr Fabo and his co-authors track the employment histories of the researchers and find that central bankers whose papers report larger effects of QE on output get more promotions.

Unsurprisingly, given its uncertain effects, central banks do not explain clearly how they decide what quantity of bonds to buy. A paper by Bank of England economists including governor Andrew Bailey concedes that "it is clearly difficult to estimate the 'per £ impact' of QE on the macroeconomy". Disclosure by the bank is "not sufficient to enable Parliament and the public to hold it to account", wrote the House of Lords committee, which also argued that the bank "should be more open about its 'assessment processes' for calculating the amount of asset purchases needed to achieve a stated objective".

The same goes for most other central banks. Monetary policymaking always combines the application of rules with the discretion of policymakers, but determining the size of QE is especially like a form of art. The reason decisionmaking is not more structured is because QE is too poorly understood to fit easily into a rules-based framework.

Myth 2: QE funds the government

In January a survey by the *Financial Times* of the top 18 investors in Britain's gilt market found that the "overwhelming majority" thought that the purpose of the Bank of England's bond-buying was to finance new debts issued during the pandemic, rather than to support the economy. For a while last year the amount of bonds bought by the central bank mirrored the amount of debt issued by the government. Central bankers are dismissive of the argument that they are funding governments, but the notion of monetary-fiscal co-ordination is certainly in the air. "With high debt, monetary stimulus creates fiscal space by determining favourable borrowing conditions for the treasury," argues the annual Geneva Report on the world economy by the Centre for Economic Policy Research.

It is unquestionable that monetary policy has fiscal spillovers. If QE lowers long-term interest rates, it becomes cheaper for the government to issue long-term debt. But QE does not extinguish debt-service costs. Central banks buy government bonds by creating new money, called reserves, which sits in the banking system. And central banks pay interest on those reserves. Because the central bank is owned by the government, QE replaces one government debt-interest bill, interest payments on bonds, with another, interest payments on reserves. And although the latter are very low today, they will stay so only so long as central banks do not need to raise real interest rates to fight inflation. In such a scenario, far from aiding the government's finances, QE might bring unexpected costs.

Replacing long-term debt with short-term debt, as QE does, is usually profitable. It means avoiding paying the premium attached to all long-term borrowing. And it is particularly profitable if long-term bond yields fall, as they have over the past decade, creating capital gains for the central bank. Between 2011 and 2020 the Fed sent over $800bn in profits to

America's Treasury; the Bank of England's asset-purchase facility transferred £109bn to British taxpayers.

But rising real interest rates could put the effect into reverse. In November Britain's Office for Budget Responsibility estimated that the country's debt-service costs had become twice as sensitive to short-term interest rates as they were at the start of last year, as a result of the combination of QE and increased debt. In large rich countries 15–45% of public debt is "in effect overnight", calculates the Bank for International Settlements.

Uncomfortable truth two: policymakers must choose between QE and locking in low rates

The fiscal risk posed by QE is not really that it might cause a debt crisis. Reserves are perpetual; they do not have to be rolled over, as overnight debt does. There is no risk of auctions failing or of interest rates spiking unexpectedly. Central banks are in control of the interest paid on reserves until their hand is eventually forced by their commitment to their inflation targets. The fiscal danger posed by QE is therefore one of gradual suffocation, not of sudden stop.

But there is no escaping that QE is in essence a debt-maturity operation—one that shifts interest-rate risks from the private sector and to taxpayers. It therefore conflicts with the refrain, common among economic commentators, that governments should "lock in" low long-term interest rates by issuing long-term debt, particularly to fund investment in infrastructure. Such a policy would, by putting long-term debt into the market, look a lot like QE in reverse.

Myth three: QE boosts only the monetary base

The final myth is that QE gets stuck in banks; that the reserves created to buy new bonds are not necessarily matched by a corresponding increase in money held by the public. This view was coloured by the experience of the global financial crisis, when QE caused reserves, but not broad money, to shoot up. Sometimes a failure to understand the distinction between reserves and broad money is said to have been the crucial mistake made by economists who wrongly warned, during the global financial crisis, that QE would cause hyperinflation. "The Fed hugely increased the monetary base, but banks basically just sat on the additional reserves, so that deposits and hence M2 didn't rise much," wrote Paul Krugman in May.

Yet QE does affect broad money. When a central bank buys assets in the secondary market, say from a pension fund, it cannot pay the fund with the electronic money it creates, because only banks can hold reserves. Instead, the fund gets a newly created deposit at its bank, and the bank receives the newly created reserve at the central bank. Aggregate deposits rise.

The reason broad money did not grow much after the global financial crisis is because the credit crunch that accompanied it simultaneously reduced the number of loans being made. Lending, too, creates new deposits. Fewer loans being made (and borrowers' greater propensity to pay down debts) kept broad-money growth in check, offsetting the boost to

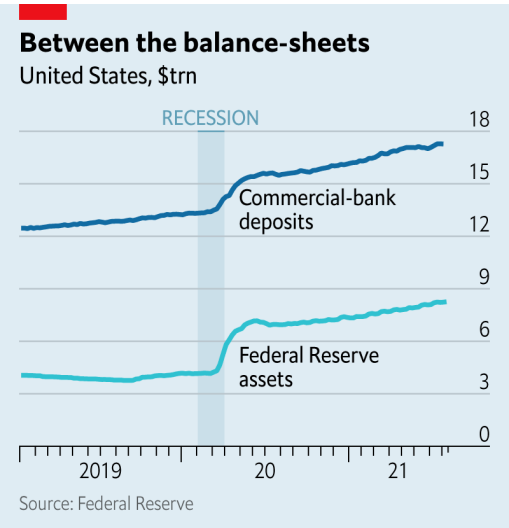
deposits from QE. During the pandemic, by contrast, there has been no prolonged credit crunch. QE's effect on broad money is on full display.

Sometimes the increase in bank deposits during the pandemic is attributed to fiscal stimulus, or linked to the "excess savings" that built up in households' bank accounts during lockdown as they cut their spending. Yet bank deposits can only be created or destroyed via specific mechanisms, such as banks making loans, the public repaying debts, and bank customers withdrawing or depositing physical cash. Without QE, the government issuing bonds and sending money to households in effect reshuffles deposits from investors to the broader public, but it does not increase their net supply. Likewise, consumer spending causes deposits to circulate, not to disappear. Both fiscal stimulus and excess savings matter only insofar as they change the public's demand to take out loans, repay debts, withdraw physical cash, or engage in other activities that create or extinguish deposits.

QE, by contrast, has a direct effect. Central banks might not be able to use the policy to control broad money reliably, given the many other forces at work (as the experience of the global financial crisis showed). But QE does create both narrow and broad money.

Uncomfortable truth three: QE swells the banking system

The creation of new money makes banks bigger (see chart). They get new assets, central bank-reserves, and new liabilities, deposits. The balance-sheet of JPMorgan Chase, America's biggest bank, grew from $2.7trn to $3.4trn in 2020 as deposits rose by 35% owing to QE.



A swollen banking system can have weird effects. One is that it forces down interest rates in short-term money markets. From mid-March to mid-June, America's secured overnight financing rate fell to just 0.01%. Analysts feared that it might turn negative, forcing money-market funds to "break the buck", returning to investors less than they put in.

Another problem is its interaction with bank regulation. QE leaves banks with a lower ratio of equity capital to assets, making it harder to comply with minimum capital requirements set by regulators. One rule is the "supplementary leverage ratio" (SLR), which requires big banks to fund themselves with equity worth at least 5% of their total assets. In March 2020 America's regulators exempted both cash reserves and Treasuries from the SLR, recognising that the Fed's emergency actions, by expanding bank assets, had made it bind more tightly. The exemption, however, was allowed to expire at the end of March this year. (In Britain, reserves are permanently excluded from the leverage ratio.)

As a result JPMorgan has speculated that it might begin to turn away new deposits in an attempt to contain the growth in its balance-sheet. And analysts have worried about the threat to the Treasury market. An easy way for a bank to shrink quickly is by selling assets to investors. Were a big bank or two to approach regulatory capital limits and start shunning Treasuries, the market could go into a tailspin. In late February, amid a global bond-market sell-off, an auction of seven-year Treasuries suffered record low demand, feeding fears that abundant cash was causing problems.

The Federal Reserve has forestalled these problems for now by taking the limit off its overnight reverse-repo facility, which allows investors to park excess cash at the Fed overnight, rather than in banks. On 30th July investors parked $1.04trn in the facility—an all-time high and the first time the use of the facility ran to thirteen figures. Reverse repos in effect drain the financial system of the abundant cash that QE has created.

The usual worry about letting investors have direct access to a central bank's balance-sheet is that it disintermediates banks, and, by providing a new haven for cash, makes bank runs easier. Today, though, draining banks of liquidity seems to be precisely what is needed for financial stability. A combination of QE and bank regulation has turned monetary economics on its head.

What next for QE?

Central banks face both a short-term and a long-term challenge. In the short term they must unwind QE as economies recover and inflation rises, without a misstep like the taper tantrum.

The long-term challenge is operating in an environment in which QE is the main tool of monetary policy (if, as expected, interest rates remain near their lower bound). The original vision for independent central banks was that they would wield a single, transparent tool—interest rates—to manage the economic cycle. The more opaque the policy instrument, however, the more vulnerable it becomes to capture.

Myths about QE persist because of the policy's complexity and opacity. Until they are dispelled, and without a clear sense of the policy's effects, the public cannot easily tell whether monetary policy is being set to hit the inflation target or to achieve other objectives, be it financing the government, bailing out investors, or propping up banks. It does not help that politicians in many places are enlisting central banks in the fight against climate change, hoping, it seems, that they might offer backdoor subsidies to green firms and impose implicit taxes on polluters. Nor does it help that QE's true effect on the public finances is lost in the institutional division between central banks and debt-management offices.

Are the risks of QE worth it? It has proved its worth in the heat of a financial crisis. As a tool to stimulate the economy, however, the trade-off seems more finely balanced. If QE is mainly about sending signals, then central banks are paying a high price to convince markets that they are serious about their future plans; is there really no other way to convince them? Even if QE has effects beyond signalling, fiscal stimulus is a ready alternative. And it is

within the gift of governments to issue short-term debt without relying on central banks to do the dirty work of maturity transformation. The future of QE may lie in policymakers being explicit about its uncomfortable truths—and rethinking the distribution of institutional responsibilities accordingly.