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INTERNATIONAL MACROECONOMICS



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CENTRAL BANKS: POWERFUL, POLITICAL AND UNACCOUNTABLE?[†]

Abstract

Central banks' economic and political importance has grown in advanced economies since the start of the Great Financial Crisis in 2007. An unwillingness or inability of governments to use countercyclical fiscal policy has made monetary policy the only stabilization tool in town. However, much of the enhanced significance of central banks is due to their lender-of-last-resort and market-maker-of-last-resort roles, providing liquidity to financially distressed and illiquid financial institutions and sovereigns. Supervisory and regulatory functions – often deeply political, have been heaped on central banks. Central bankers also increasingly throw their weight around in the public discussion of and even the design and implementation of fiscal policy and structural reforms - areas which are way beyond their mandates and competence.

In this lecture I argue that the preservation of the central bank's legitimacy requires that a clear line be drawn between the central bank's provision of liquidity and the Treasury's solvency support for systemically important financial institutions. All activities of the central bank that expose it to material credit risk should be guaranteed by the Treasury. In addition, central banks must become more accountable by increasing the transparency of their lender-of-last-resort and marketmaker-of-last resort activities. Central banks ought not to engage in quasi-fiscal activities. Finally, central banks should stick to their knitting and central bankers should not become participants in public debates and deeply political arguments about matters beyond their mandate and competence, including fiscal policy and structural reform.

JEL Classification: E02, E42, E52, E58, E61, E62, E63, G18, G28 and H63

Keywords: accountability, independence,, legitimacy, monetary policy, quasi-fiscal, regulation, seigniorage, and supervision

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1. Introduction

Central banks' economic and political importance has grown in advanced economies since the start of the Great Financial Crisis (GFC) in 2007. An unwillingness or inability of governments to use countercyclical fiscal policy has made monetary policy the only stabilization tool in town. However, much of the enhanced significance of central banks is due to their lender-of-last-resort and market-maker-of-last-resort roles, providing liquidity to financially distressed and illiquid financial institutions and sovereigns. Supervisory and regulatory functions – often deeply political, have been heaped on central banks. Central bankers also increasingly throw their weight around in the public discussion and even the design of fiscal policy and structural reforms - areas which are way beyond their mandates and competence. In this lecture I argue that the preservation of the central bank's legitimacy requires that a clear line be drawn between the central bank's provision of liquidity and the Treasury's solvency support for systemically important financial institutions. All activities of the central bank that expose it to material credit risk should be guaranteed by the Treasury. In addition, central banks must become more accountable by increasing the transparency of their lender-of-last-resort and market-maker-of-last resort activities. Central banks ought not to engage in quasi-fiscal activities. Finally, central banks should stick to their knitting.

Central banks' fiscal and quasi-fiscal roles have grown dramatically during the GFC as their balance sheets have swollen and their seigniorage revenues have increased. The reversal of the pre-GFC tendency to take financial regulatory and supervisory tasks away from central banks has further enhanced the responsibilities and powers of central banks, most dramatically in the United Kingdom, but also in the euro area. The delegation to central banks of an expanding list of quintessentially political interventions and responsibilities and the expansion of their arsenals of policy instruments with important redistributive impacts has not been matched by an increase in central bank accountability, either formal or substantive. In a representative democracy this matters because without accountability there can be no legitimacy and without legitimacy institutions eventually fail. Even those who believe that the 'output' legitimacy conferred by good performance is more important than 'input' or 'process' legitimacy should worry that the accumulation of heterogeneous responsibilities has proceeded to the point that it outstrips the capacity of a single institution to discharge them effectively.

It appears that central banks did not actively seek their additional roles and responsibilities; rather they were thrust upon them. However, a growing number of central bank officials are as keen to defend the independence of their institution against all comers, including governments and parliaments, as they are uninhibited in lecturing the political classes on fiscal policy and structural reform. Some central bank interventions have even been made conditional on the implementation of specific fiscal policies and structural reforms. Central banks should stick to monetary policy and desist from activities, including participating in public discourse, outside their mandates.

The increased power and, at times, arrogance of unelected and unaccountable technocrats is largely due to established political institutions and processes failing to handle the GFC effectively. Elected officials played a prominent role in creating the political, legislative, regulatory and supervisory failures that allowed the GFC to

happen. They also failed to formulate an effective response from the legitimate institutions once it had erupted. Few elected politicians have been willing to take responsibility for the creation and accountable oversight of institutions, and for the promulgation and enforcement of laws and rules to prevent/reduce the likelihood and severity of future financial crises or mitigate the effects.

A significant reduction in the scope and scale of central bank responsibilities is necessary to prevent a crisis of legitimacy that could leave the advanced economies even less prepared for the next financial crisis than they were for this one. Ideally, the central bank should stick to monetary policy, defined here as *narrow monetary policy*, that is choosing a (rule for) the policy interest rate, the size of the monetary base or the value of an exchange rate and managing the size and composition of its balance sheet in the absence of lender-of-last-resort- and market-maker-of-last-resort interventions. The only, further role of the central bank would be its *legitimate financial stability role* in providing funding and market liquidity to systemically important institutions and markets as lender of last resort and market maker of last resort. It might even make sense, as suggested by Buiters (2008e) and Sibert (2012), to split the narrow monetary policy role from the legitimate financial stability role, by entrusting the narrow monetary policy role to a body (the Monetary Policy Committee (MPC), say) that is independent of and located outside the central bank.

The central bank should take the least possible amount of credit risk. Conducting effective lender-of-last-resort or market-maker-of last-resort operations may entail taking on material credit risk through outright purchases of risky securities or by lending to counterparties that are at risk of insolvency against collateral issued by entities that are also at risk of insolvency. But, when this is the case, the central bank should only take on unavoidable credit risk with a full sovereign guarantee, as is the case for with the Bank of England's Special Liquidity Scheme (now closed) and Asset Purchase Facility.² The Fed's Term Asset-Backed Securities Loan Facility, was an example of how a central bank ought not to take on credit risk, as only 10% of the \$200 bn facility benefited from a US Treasury guarantee.

There is no obvious reason why the central bank should manage wholesale payment, clearing and settlement systems. Any institution with a credit line from the central bank, guaranteed by the Treasury, could do this equally effectively. Institutions other than the central bank should supervise and regulate financial institutions and markets, provide deposit insurance and resolve systemically important financial institutions. The central bank should not manage or supervise macroprudential instruments or arrangements. As with other fiscal matters, the inevitable fiscal roles of any central bank in managing its assets and liabilities and having a monopoly over the issuance of domestic currency legal tender must be subject to careful legislative oversight.

Central bankers should not participate in or attempt to influence fiscal policy or structural reforms, let alone attempt to oust elected politicians. There is a fine line between trying to influence fiscal policy and structural reforms and making sure that those legitimately in charge of these policies and reforms understand how the central

² In the context of the ECB, whose fiscal counterparty in the euro area consists of 18 (from 2015 on 19) national Treasuries, any credit risk taken on by the ECB/Eurosystem should be jointly and severally guaranteed by all euro area national sovereigns.

bank, in pursuit of its mandate, would react to different fiscal policies or structural reforms. In recent years it is apparent that central banks, perhaps because they believed it was necessary to prevent calamity, have overstepped this line. The unwillingness or inability of other political and economic institutions to assume responsibility and to act effectively in the face of potential or actual financial disaster must be corrected if central banks are to revert to being solely monetary policy makers.

There is a case for elected (or otherwise politically legitimate) officials to specify a monetary policy goal, such as an inflation target, and then allowing central banks independence in choosing their narrow monetary policy to attain this goal. However in performing other roles – including their legitimate financial stability role – central banks must be subject to substantial substantive accountability. It can be problematic, however, to allow the same officials independence in one area while requiring them to be accountable in others. Unfortunately, if central banks continue to act independently in areas where they should not, they may end up losing their independence in the area where it may be desirable for them to have it: in making monetary policy, narrowly defined.

2. The growing scope and scale of central bank activities, powers and responsibilities

The range of activities undertaken by central bank has expanded since the GFC. This section exams the stabilization policy, lender-of-last-resort and market-maker-of-last-resort activities, supervisory and regulatory powers, fiscal and quasi-fiscal roles, and the increasingly invasive and pervasive interventions in areas of policy making that are well beyond the expertise, comparative advantage and mandate of the central bank.

2.1 Stabilisation policy

In many advanced economies, monetary policy has become the only available macroeconomic stabilization instrument. Fiscal policy is not used for a number of reasons. German official anti-Keynesianism prevents the largest euro area member state with the largest amount of fiscal space from employing fiscal policy to stimulate demand. Political gridlock in the United States makes discretionary fiscal stabilization policy impossible, although it does not so far interfere materially with the operation of the automatic fiscal stabilizers. Fiscal stimulus would probably be most effective in the EA periphery (Ireland, Spain, Portugal, Italy, Greece and Cyprus), but these countries either have only limited market access or would be likely to encounter market resistance if a debt-funded discretionary fiscal stimulus were to wake euro area sovereign debt markets from the stupor they fell into on July 26, 2012, when Mario Draghi uttered the magical words: *“Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough.”* (Draghi (2012a)). Moreover, some of these unfortunate countries also face external political constraints imposed by supranational entities such the European Commission, the Troika (the European Commission, the European Central Bank (ECB) and the International Monetary Fund (IMF)).

Given a mandate that has been chosen by a process that is seen as legitimate, narrow monetary policy is sufficiently apolitical to be entrusted to expert unelected technocrats. In practice such operational independence includes (limited) goal

independence when the objective or objectives of monetary policy are qualitative rather than quantitative/numerical. This is the case for the ECB, the Bank of Japan, and the Fed. The former two central banks are to attain price stability and the Fed is to pursue stable prices, maximum employment and moderate long-term interest rates. Given their qualitative mandates, these (limited) goal-independent three central banks then choose their own numerical targets. In contrast, the goal-dependent Bank of England is to pursue price stability and the Chancellor of the Exchequer assigns it a specific numerical inflation target.

Although some governments, such as the United Kingdom's, provide numerical inflation targets, no government makes any attempt to lay down verifiable quantitative targets for real economic objectives such as the unemployment rate or economic growth. The central banks too tend to avoid measurable, verifiable targets for the unemployment rate or for GDP growth. The short-lived attempts at 'forward guidance' through quantitative thresholds/knock-outs or triggers for the unemployment rate by the Fed and the Bank of England were abandoned when the real economy forward guidance thresholds were crossed but the conditions for raising the official policy rate were nevertheless deemed not to be satisfied by the FOMC and the MPC. (See Buiter (2013)). Forward guidance was replaced with 'fuzzy guidance' expressed in terms of unobservable and non-measurable concepts such as 'economic slack'.³ Thus, when it comes to real objectives, central banks are given de-facto quantitative goal independence by default.

During the GFC and the mostly sub-par subsequent recovery, the FOMC has followed a sensible monetary policy, although it may be slow in raising its target Federal Funds rate, both in regard to its employment and inflation mandates and in regard to financial stability. UK monetary policy too has been adequate, although there was a rather surprising tolerance towards the persistent and predictable overshooting of its two percent inflation target from December 2009 till November 2013. Prior to the appointment of Governor Haruhiko Kuroda in March 2013 the Bank of Japan was far too restrictive. After a good start on its escape from deflation, the BoJ underestimated the downward effect of the April 2014 sales tax on demand and is behind the curve once more. The ECB may have saved the euro in July 2012 when Mario Draghi said 'whatever it takes', but its policies have been persistently too restrictive since the crisis began. This may in part be due to its 'consensus' model of decision making, where policy is changed only if a majority of the Governing Council wants a policy change and the dissenting minority is not too unhappy with it – especially if the dissenting minority includes the German members of the Governing Council. Another contributing factor is Article 123 TFEU which, in the interpretation common in Germany and the rest of the Teutonic fringe, means that the ECB/Eurosystem cannot directly purchase euro area sovereign debt and is also constrained in its ability (or at least inhibited as regards its willingness) to buy euro area sovereign debt in the secondary markets.

Since their official policy rates were near or at the zero lower bound, the communication strategies of the Fed, the ECB and the Bank of England have been ineffective and confusing. Forward guidance about changes in the size and composition of the balance sheet, about the timing of the first official policy rate

³ See Bank of England, Forward Guidance, 7 August 2007, <http://www.bankofengland.co.uk/monetarypolicy/Pages/forwardguidance.aspx>

increase, about, in the case of the Fed and the Bank of England, the observable thresholds whose crossing would be necessary and perhaps sufficient to trigger the first rate increase, about the speed of subsequent increases or about the central bank's view of the likely level of the neutral policy rate has been incoherent, contradictory and at times inconsistent. In part this is the unavoidable by-product of "communication by committee" (see Buiter (2013a) and Buiter et. al. (2014)).

2.2 Financial stability

2.2a The Twin Delusions

The Twin Delusions of modern central banking are, first, that monetary policy is best made by an operationally independent central bank and, second, that the objective of monetary policy is either price stability or price stability along with some real economic activity target such as unemployment. The pursuit of price stability is generally operationalized as targeting a low rate of inflation for some price index over a medium term of, say, two or three years. A minority favours targeting a path for the price *level* that grows at a moderate rate, or a targeting the growth rate of or a path for nominal GDP. The price index whose stability is sought is generally some broad index of consumer prices, such as the CPI, the HICP or the personal consumption expenditure deflator. Two percent annual inflation became the norm for many advanced economy central banks. Some central banks adopted a form of *flexible* inflation targeting, which traded off deviations of inflation from target against deviations of output from potential output or deviations of the actual from the natural rate of unemployment. The Fed's so-called 'dual mandate' of maximum employment and stable prices is an example of flexible inflation targeting.⁴ The ECB and the Bank of England have a lexicographic or hierarchical mandate. Price stability comes first and subject to that, or without prejudice to that, these central banks can support growth and full employment.

The Great Moderation, the period from the mid-1980s till the onset of the Great Financial Crisis in mid-2007, was characterized by robust and stable real growth in the global economy and low and stable inflation. For the second time in my life as an economist, I heard central bankers, other economic policy makers and academic economists declare victory over the business cycle: the dawning of an era of economic stability.⁵ Lucas (2003) professed that the "central problem of depression-prevention [has] been solved, for all practical purposes" and Gordon Brown proclaimed "no return to boom and bust" (Summers (2008)). When the GFC hit there was too much

⁴ The Fed's monetary policy mandate is really a triple one. Section 2A of the Federal Reserve Act calls for the growth of monetary and credit aggregates to promote 'the goals of maximum employment, stable prices, and moderate long-term interest rates.' Somehow, the third wheel on the bicycle, moderate long-term interest rates gets lost in the official statements of the monetary policy objectives of the Fed. In a way that is a pity, because it is the dimension in which the Fed has been most successful since the onset of the GFC.

⁵ In Council of Economic Advisors (2000), Section 3 of Chapter 2 has the heading: 'The End of the Business Cycle?'. The academic economists that made up this Clinton CEA (Martin N. Baily, Robert Z. Lawrence and Kathryn L. Shaw) did not quite declare the US business cycle dead ('Of course, it is premature to declare the business cycle dead' (Council of Economic Advisors (2000) page 79). The reader is, however, left with the firm impression that if the business cycle is not dead, it is at least seriously incapacitated. See also Burns (1960) and Romer (1999).

familiarity with Dynamic Stochastic General Equilibrium modeling in central banks (see e.g. Buiter (2009) and MathWorks (2014)) and in the economics profession at large, and too little familiarity with the work and insights of Hyman Minsky (1986, 1992).

In the world of advanced economy central banking, this hubris manifested itself as the Twin Delusions of central banking: economic stability was best served by an operationally independent central bank that targeted price stability or a dual mandate with price stability as one of the desiderata. The analytical foundations for operational independence of the central bank are effectively non-existent. The most common justification for independence is that it overcomes a commitment problem (or time-inconsistency problem) that results in an inflation bias when monetary policy is run by the Treasury. Kydland and Prescott (1977) and Barro and Gordon (1983) assume that the natural unemployment rate is higher than the socially optimal unemployment rate, that the flexible inflation targeting central bank wants to maximize society's welfare and that the central bank cannot credibly commit itself to a monetary policy rule that will govern its future policy actions. They demonstrate that the result is an inflation bias: equilibrium inflation under the time-consistent (that is, no commitment) monetary policy will be higher than the optimal inflation but the unemployment rate will be at the natural rate. Their logic is impeccable.

Unfortunately, this has nothing to do with central bank independence. Unless we *assume* that making the central bank independent will somehow allow it to credibly commit itself to a monetary policy rule, then an independent central bank will produce the same inflation bias as a non-independent central bank. This was pointed out by McCallum (1995, 1997). Only if, as suggested by Rogoff (1985), we take away the root cause of the inflation bias by appointing central bankers who do not care about unemployment and are solely interested in producing the socially optimal inflation rate will the inflation bias be eliminated and the optimal inflation rate be achieved (see also Besley (2005)). But operationally independent central banks with an objective function that trades penalizes deviations of inflation from its optimum value and deviations of unemployment from its optimum value will produce an inflation bias if the optimum unemployment rate is below the natural rate. Independence and an inability to commit are fully compatible. What is the invisible commitment technology that somehow prevents an independent central bank from renegeing on its commitments? Operational independence of a person or committee means that no other person, committee or institution can force it to do things it does not wish to do or not to do things it wishes to do and that would be feasible but for the outside interference. It does not mean that the independent entity is capable of commitment. The belief that an operationally independent central bank overcomes the commitment problem and thus eliminates the inflation bias inherent in time-consistent monetary policy is based on proof by repeated assertion, a popular mode of proof in the social sciences but not quite on a par with proof by induction or deduction. That said, I have considerable sympathy for the view expressed by Blinder (1999), that one problem that never reared its head during his time on the Federal Reserve Board was the problem of credible commitment.

Operational independence of the central bank can also make sense of the design and conduct of monetary policy, narrowly defined, can be viewed as a technical business that can be performed only by highly trained technical experts, rather like performing a root canal job on an abscessed tooth. If conducted properly and professionally, it

does not involve overtly political matters of redistribution and reassignment of property rights. Those without the right training as well as the right sense of civic duty, especially elected politicians, can be blinded by myopia, motivated by political ambition and distracted by emotions, and as a result pursue monetary policies that are likely to be excessively expansionary and therefore inflationary. In the end everyone loses. Better therefore to take monetary policy out of the hands of the ambition-driven and emotion-ridden politicians and entrust it to the disinterested trustees of economic stability and guardians of financial virtue – the leaders of the operationally independent central bank.

Later in this Lecture I will address the issue of the political economy of central bank independence in some depth. What I want to emphasize here is that maintaining financial stability all but disappeared as a central bank responsibility in some key countries during these years. In the United Kingdom this was formalized when Gordon Brown stripped the Bank of England of all its regulatory and supervisory responsibilities and powers in 1997. When I joined the first MPC as an external member in June 1997, financial stability was the last thing on my mind. When I left, three years later, the only fleeting consideration of financial stability matters had come during the Russian financial crisis of August 1998 and its aftermath when we briefly monitored corporate credit risk spreads to track possible spillovers/contagion from the Russian turmoil into the Sterling markets. For me, monetary policy involved one instrument, the Bank Rate, and one primary objective, price stability (operationalized as a specific inflation target) and subject to that the promotion of growth and employment. Simple really.

The ECB was created in 1999 with just one tiny, throwaway reference to financial stability in the European Treaties and Protocols. It was to be an operationally independent central bank focused on price stability. It had no regulatory or supervisory powers and no micro-prudential or macro-prudential instruments. Article 25.2 of the Protocol (No 4) on the Statute of the ESCB and the ECB permitted the Council to assign the ECB “tasks concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings”.⁶ The Fed never lost its regulatory or supervisory role, which it shared with a bewildering array of other institutions. Just at the federal level there are the Federal Deposit Insurance Corporation (FDIC), the Office of the Comptroller of the Currency (OCC), the Office of Thrift Supervision (OTS) and the National Credit Union Administration (NCUA), the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), the Federal

⁶ In the Protocol (No 4) On the Statute of the European System of Central Banks and of the European Central Bank (part of the Consolidated version of the Treaty on the Functioning of the European Union), Chapter V, Prudential Supervision, Article 25, Prudential Supervision, reads:

25.1. The ECB may offer advice to and be consulted by the Council, the Commission and the competent authorities of the Member States on the scope and implementation of Union legislation relating to the prudential supervision of credit institutions and to the stability of the financial system.

25.2. In accordance with any regulation of the Council under Article 127(6) of the Treaty on the Functioning of the European Union, the ECB may perform specific tasks concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings.

Housing Finance Agency, among others and, since 2010, also the Financial Stability Oversight Council (FSOC).⁷ The Fed had (and has), however, no macro-prudential instruments at its disposal other than margin requirements for stocks, something that has been set at the same level for these past 40 years. It is sometimes argued that the Fed's army of bank inspectors can be given countercyclical macroprudential instructions, but evidence on the use and effectiveness of this instrument is hard to come by. In addition, the Fed and the Bank of England – and to a lesser extent the ECB – were blinded by the light of the Efficient Markets Hypothesis. Under Greenspan and under Bernanke until mid-2007, self-regulation was often assumed and indeed asserted to be the best form of regulation. Few understood that self-regulation is to regulation as self-importance is to importance and self-righteousness to righteousness. Only the Bank of Japan had financial stability as an objective on a par with (or even ahead of) price stability.⁸

2.2b Bagehot's Revenge

Central banks and Treasuries (or Ministries of Finance) are the two ultimate guarantors of financial stability and, with the benefit of hindsight, it is incomprehensible that the financial stability role of the central bank was so comprehensively forgotten. Although guaranteeing financial stability was not their oldest role, which was funding the war efforts of the sovereign, it was emphasized by Bagehot (1873). Although he was not the first to use the phrase 'lender of last resort' in its modern sense, he did provide the first characterization of the job of the lender of last resort during a financial panic: lend freely, at a penalty rate of interest against good collateral.^{9,10} Bagehot's lender of last resort was hamstrung somewhat by the gold standard, which required convertibility on demand of legal tender fiat money into gold. A modern central bank in a fiat money economy in which the vast majority of public and private contracts are denominated in domestic currency and can be settled in domestic currency, has a unique ability to provide open-ended domestic currency funding liquidity to banks and other systemically important counterparties. In an economy where much financial intermediation bypasses banks and instead takes place through arms-length transactions in financial markets, the provision of funding liquidity by the central bank is not enough to forestall or mitigate financial crises. The central bank must act as market maker of last resort as well, providing domestic currency market liquidity for markets trading systemically important financial instruments.

The financial stability role of the central bank should at least be on a par with its macroeconomic role of providing price stability and possibly promoting some aspect(s) of real economic performance. I have some sympathy for the argument that, if one takes a long enough view, macroeconomic stability requires financial stability, because the inevitable consequences of financial instability are economic crisis,

⁷ The FSOC is a mainly consultative body, chaired by the Secretary of the Treasury that brings together federal and state regulators of financial and credit institutions and an insurance expert appointed by the President.

⁸ The Bank of Japan Act mentions financial stability as a purpose of the Bank of Japan in Article 1(2). Price stability appears as a purpose in Article 2. Bank of Japan (1997).

⁹ It was probably Sir Frances Baring (1797).

¹⁰ Presumably this means "against collateral that would be good during normal times, or if held to maturity".

unemployment, excess capacity, volatile inflation and the risk of deflation. With most central banks not looking further ahead than two or three years in their analyses of macroeconomic prospects, they tend to lose sight of financial cycles, which usually have much longer duration than the typical business cycle (see Borio (2012)). Emphasizing the financial cycle in its own right therefore makes practical sense. I would go further than that and argue that if there is a conflict between acting to halt incipient financial froth and excess and supporting the dual mandate over a two to three year horizon, financial stability should be given priority. Whether the pursuit of financial stability requires just the use of macro-prudential tools or in addition calls for leaning against the wind in asset market and credit markets, raising the official policy rate to dampen incipient financial excess when the dual mandate at a two to three year horizon does not call for such rate increases, is an exercise I leave to the reader (see Stein (2012, 2013, 2014) for an eloquent argument in support of the use of the policy rate in pursuit of financial stability as well as the dual mandate).

There should be a clear distinction between the liquidity-providing role of the central bank and the solvency support that should only be provided by the Treasury. Therefore, it is essential that any credit risk that the central bank takes on when it acts as market maker of last resort or lender of last resort be covered by a full sovereign guarantee. Ideally, the non-sovereign-guaranteed assets of the central bank should only be Treasury debt and loans secured against Treasury debt. Such a 'Treasury only' approach to the assets of the central bank that are not sovereign guaranteed, establishes a clear division of responsibility between the Treasury and the central bank. The central bank provides the funding liquidity and market liquidity; the Treasury fills solvency gaps. With a sovereign guarantee, the central bank is able to purchase the necessary assets outright and lend against whatever collateral may be offered by systemically important but at-risk counterparties. Because few Treasuries write blank cheques, there would likely have to be an agreement between the Treasury and the central bank on the kind of risky securities the central bank could purchase outright, on the counterparties it can deal with and on the collateral it can accept. Positive or negative lists that would evolve over time could fulfill that role.

After years of lending to borderline insolvent banks that frequently offered as collateral debt issued by borderline insolvent euro area periphery sovereigns, the ECB has stated that when it initiates its purchases of asset-backed securities (ABS) later this year it will only buy the higher-risk 'mezzanine' tranches if they are covered by a sovereign guarantee. In principle it is right to make such a demand. Indeed, I would argue that the guarantee should be a joint and several one by all euro area sovereigns. However, if some or all of the euro area sovereigns are unwilling to provide such guarantees or if the guarantee is not worth much because of the precarious fiscal position of the sovereign providing the guarantee, the ECB is faced with an unpleasant dilemma. Either it goes ahead and purchases the risky ABS without a sovereign guarantee or with a sovereign guarantee that is not worth much, thus engaging in fundamentally inappropriate quasi-fiscal activities, or it does not purchase the high risk ABS and increases the risk that the Eurozone will fall in a deflationary trap or even into secular stagnation (see Summers (2014) and Buiter et. al. (2014)).

2.2c Central banks and liquidity

Financial assets are liquid if they can be bought and sold quickly, the transactions cost and the bid-ask spread are small and the price is not significantly below that

justified by the fundamentals. Liquidity depends upon the subjective beliefs of market participants; any store of value will be liquid if there is trust, confidence and optimism. If enough people believe an asset is liquid then it will be, even bitcoin. Conversely, when there is mistrust, lack of confidence, fear and pessimism, any store of value can become illiquid.

Commercial banks are characterized by a mismatch between liabilities and assets as regards maturity or duration and liquidity. The same is true for governments, whose main asset, the ability to tax, is not highly liquid. In the absence of central bank intervention, bank runs – both the old-style depositor type and the new-style wholesale creditor type – and sovereign debt runs are always possible, even when banks and sovereigns are fundamentally solvent. As the unique provider of potentially unlimited domestic currency funding and market liquidity, the central bank must stand ready to act as lender of last resort and market maker of last resort for banks and sovereigns.

Unfortunately, central banks are unable to stop a bank run or a run on the sovereign if the debts of the bank or the sovereign are denominated in foreign currency. Iceland provides a spectacular example of this for the case of banks (see Buiter and Sibert (2008)). And, even a central bank's base money liabilities can become illiquid if faith in the domestic currency is lost. In open economies, direct currency substitution between a rapidly depreciating domestic currency and foreign currency is a not uncommon phenomenon in emerging markets and developing countries where the authorities have lost control of the public finances and force the central bank into aggressive deficit and debt monetization. Hyperinflations are another means of making base money illiquid.

2.2d Central banks and solvency

As we shall see below, modern central banks are highly profitable businesses that can command vast resources, even if they are constrained by inflation targets. This makes them an obvious source of cheap funding for weak banks (or other financial firms) that need to fill a solvency gap. The Treasury too will tend to prefer what is effectively an off-budget and off-balance-sheet quasi-fiscal financing mode through the central bank to an on-budget and on-balance-sheet open fiscal intervention.

In principle, the division of labor between the central bank, the shareholders and unsecured creditors of a bank and the Treasury is clear. The central bank provides funding liquidity and market liquidity to help banks that are solvent but illiquid. Shareholders and unsecured creditors take haircuts when a bank is insolvent. The Treasury steps in if and only if the bank is systemically important and the imposition of the maximum possible haircuts on shareholders and unsecured creditors is not enough to restore it to solvency. At that point either the Treasury comes up with the capital necessary to restore the bank to solvency or secured creditors and special, protected categories of unsecured creditors such as deposit holders, possibly even insured ones, take a haircut.

In practice, the tax payer is frequently subordinated to both senior and junior unsecured creditors. Central banks have provided large back-door injections of capital into capital-deficient banks by using a variety of clever mechanisms to underprice their loans. Paying over the odds for assets banks are trying to get rid of is another common way in which central banks effect a quasi-fiscal subsidy. This is partly

because of the practical problem of distinguishing institutions that are illiquid but fundamentally solvent from institutions that are both illiquid and fundamentally insolvent. Often, however, it has been a reflection of a widespread belief that some large banks are too important, too systemically connected or too politically connected to fail. This is slowly changing. Mechanisms to permit an orderly resolution of systemically important financial institutions (SIFIs) are being cobbled together in the US, where there was considerable experience resolving smaller and less complex banks through the FDIC, and in the EU, through the reinterpretation of state aid rules by the European Commission, the Bank Recovery and Resolution Directive and the Single Resolution Mechanism with its Single Resolution Fund and Single Resolution Board. If these efforts are successful we will be closer to a world in which any financial support for banks from the tax payers is provided through legitimate, open and transparent procedures, with control and responsibility residing with accountable, elected officials.

2.3 Enhanced financial stability, supervisory and regulatory responsibilities of central banks

One point virtually all disinterested observers will agree on is that, when it comes to the GFC, no central bank saw it coming until well after it had started. Our leading central bankers did not anticipate it; they did not act pre-emptively to prevent or mitigate it; they did not have a clue. This cognitive vacuum was shared by virtually all observers and analysts outside the central banks as well, including those who have been widely credited with seeing the GFC coming. In every case I know of, the allegedly successful prophets were either professional doomsayers or they had been predicting a crisis every year for years on end – sometimes for well over a decade. They failed to gauge not just the timing but also the magnitude and scope of the crisis that was about to engulf the North Atlantic region, and they did not provide any coherent argument supporting their predictions of doom. Diagnosing a boom or even a bubble in the US housing market or predicting looming problems in the securitization of subprime mortgages is deserving of credit but it does not make the diagnostician the canary in the GFC coalmine.¹¹

During the crisis years of late 2007 through 2009 the performance of central banks as lenders of last resort and market makers of last resort was mixed (see e.g. Buiter (2008c)). However, on average it was better than their crisis-preventing and -anticipating performance.

Since the crisis started, every leading central bank has seen its regulatory and supervisory responsibilities enhanced. The Fed has been given supervisory powers over non-bank SIFIs and is a prominent member of the Financial Stability Oversight Committee. The ECB dominates the European Systemic Risk Board. This is despite the failure of both banks to anticipate the crisis and despite their failure to use the regulatory and supervisory powers that they already possessed to prevent or mitigate the crisis.

The most impressive enhancement of the central bank responsibilities and powers has occurred in the United Kingdom. Having concluded that the tripartite arrangement

¹¹For a contrary opinion – that there were many who predicted the GFC with a reasonable degree of accuracy, see Bezemer (2009a,b) and Katz (2014).

between the Treasury, the Bank of England and the Financial Services Authority (FSA) of 1997 (amended in March 2006), did not function properly, most of the responsibilities of the FSA have been transferred to the Bank of England.¹² In addition, quite a few macro-prudential instruments that in other countries are often controlled by the Treasury, including the maximum loan-to-value ratio or loan-to-income ratios for residential mortgages, are now under the control of the Bank of England or about to be transferred to it. The central bank now includes and dominates the macro-prudential regulator (the Financial Policy Committee) and the micro-prudential regulator/supervisor (the Prudential Regulation Authority (PRA) and the Prudential Regulation Authority Board). It plays a central role in bank resolution a process for which the role of the custodian of the fiscal deep pockets – the Treasury – is specified with far too little precision. In addition, through the PRA it is also responsible for the oversight of and rules relating to the Financial Services Compensation Scheme, the UK deposit insurance scheme. This institutional responsibility overload is a clear example of the ‘central planning fallacy’: this is the common belief that, when a decentralized regime is not working properly, the solution is to centralize authority. It is also worrying that the new ‘bi-partite’ Bank of England and Treasury arrangement to address financial stability in the UK fails to recognize the central role of the Treasury in bank resolution and in maintaining financial stability. This role is essential whenever systemically important institutions are threatened with insolvency and this problem cannot be addressed adequately through the bail-in of equity owners and unsecured creditors. Only the deep fiscal pockets of the Treasury are legitimate sources of funding for a bail-out by the tax payer.

2.4 The fiscal and quasi-fiscal roles of the central bank

No matter how independent a central bank is and despite formal ownership structures which are often bizarre, the Treasury is the beneficial owner of its country’s central banks and it is entitled to receive its stream of profits, less reserves or provisions. In the United Kingdom the Treasury has owned the stock of the Bank of England (technically a joint stock company) since 1946. The ECB is owned beneficially by the central banks of the member states of the euro area and these national central banks are in turn owned beneficially by their national Treasuries.¹³

¹² This excludes ‘conduct’ or consumer protection responsibilities which have been assigned to the Financial Conduct Authority.

¹³ The Federal Reserve System is indeed a federal institution consisting of a central, governmental agency, the Board of Governors and 12 regional Federal Reserve Banks. The 12 regional Federal Reserve Banks - the operating arms of the Federal Reserve system, are owned by their member banks. Reserve Bank stock may not be sold, traded, or pledged as security for a loan and dividends are fixed at 6 percent per year, which makes this ‘stock’ look rather like a fixed rate perpetuity. The Board of Governors and the Federal Reserve System as a whole aren’t ‘owned’ by anyone. The Federal Reserve System describes itself as an independent entity within government (see Federal Reserve System (2005)). Since the US Treasury gets the profits of the Federal Reserve System, it would minimize confusion if the private ‘ownership’ of the Federal Reserve Banks were abolished and the entire system (Board and Regional Reserve Banks) were explicitly owned by the US Treasury. The Banca D’Italia is owned by banks, insurance companies and social security institutions (see Banca D’Italia (2013)). Although these shareholders are not supposed to influence the policies of the Banca D’Italia, this pseudo-private ownership structure is by no means innocuous. By revaluing its equity from a notional amount of euro 156,000 to euro 7.5 bn, the Banca D’Italia made a large quasi-fiscal

The present discounted value of the future profits of central banks in the advanced economies is large. I present some estimates below. In addition to distributing its profits to the Treasury, central banks can provide a wide range of hidden subsidies or impose hidden taxes on the financial counterparties they deal with. Reserve requirements on commercial bank deposits, for instance, unless they are remunerated at a rate that is the same as the best alternative risk-adjusted rate of return the banks could earn on these reserves, are an implicit tax. The terms on which the central bank lends to eligible counterparties, including the interest rate charged, the maturity of the loans, the collateral that is accepted, the haircuts on the market value or fair value of the collateral and the margin requirements over the life of the loan, can involve implicit subsidies, as can the terms on which the central bank purchases securities outright from banks and other counterparties. The two three-year Longer-term Refinancing Operations (LTROs) of the ECB in December 2011 and February 2012 provide an example of this.

The two three-year LTROs were made at an interest rate linked to the official policy rate, the refi rate. This rate was 1.00 percent when the LTROs were initiated, but has since come down to 0.05 percent in September 2014. Over the three years of the LTRO, the banks' borrowing cost (should they hold the LTROs to maturity) could therefore average as little as 40 basis points. In addition, collateral requirements for the loans were weakened dramatically compared to previous practice. There can be little doubt that these LTROs involved a significant subsidy from the ECB to the borrowing banks, in my view at least 3.00 percent per year. With just over 1 trillion worth of LTROs undertaken, the annual subsidy would be 30 billion euros. Over three years the present discounted value of the subsidy would be almost 86 billion euros, using a four percent discount rate for the calculations. Of course, there have been partial pre-payments of these LTROs, so the actual subsidy calculation is smaller. The new Targeted LTROs are provided, if the conditionality is met, for four years at a fixed rate of interest of ten basis points over the refi rate, which will likely mean 15 bps. Again hefty implicit subsidies are involved, especially when these loans are taken out by borderline insolvent banks offering low quality collateral, as will undoubtedly occur.

Unfortunately, no central bank publishes estimates of the flow of implicit subsidies it provides to private and public counterparties, let alone of their present discounted value. The subsidies are buried in the yields on assets and liabilities that are paid or charged, for which a subsidy-free benchmark is often not available. Indeed, central banks do not publish and refuse to reveal the actual yields on many of their assets and liabilities and refuse to say who the counterparties were in their financial transactions, even after commercial sensitivity is no longer an issue, because sufficient time has passed since the transactions took place. Many appear to view

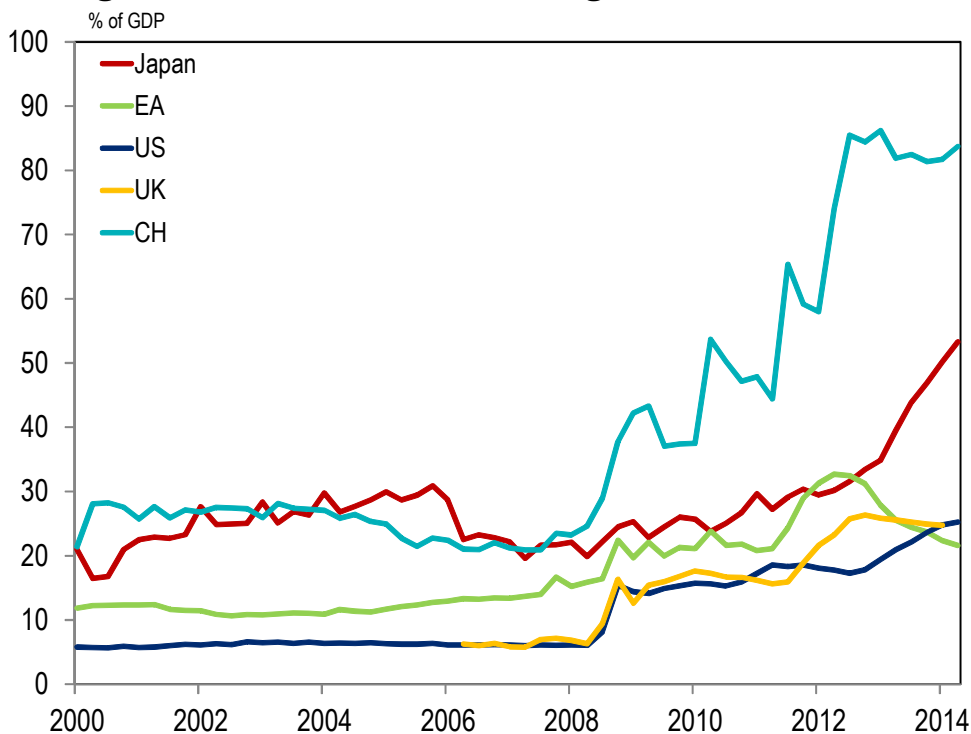
capital transfer to its shareholders in 2014 – boosting their capital from 2015 on. The Bank of Japan is capitalised at 100 million yen and about 45 percent of the stock is held privately (see Bank of Japan (2014)). The stock trades in the over the counter market – quite possibly the most astonishing ownership structure I have come across.

accountability and transparency, even *ex post*, as the enemy of effectiveness and even of financial stability.¹⁴

These payments of implicit subsidies or imposition of implicit taxes represents the quasi-fiscal role of the central bank. It can reduce or increase the profits the central bank remits to its beneficial owner, the Treasury, or it can redistribute income and wealth between different counterparties.

A first view of how the fiscal and quasi-fiscal roles of the central bank have increased since the start of the GFC is gauged by looking at the size of the central banks' balance sheets – what I shall refer to as its conventional balance sheet of financial (and some real) assets and liabilities. The balance sheet data in Figures 1 and 2 are not complete, even if we restrict ourselves to the consideration of conventional financial and real assets and liabilities, because central banks keep some assets and liabilities off-balance sheet. Swap lines, for instance, like the currency swap lines created by the Fed and the other leading central banks in the dark days of 2008 and after, are (contingent) off-balance sheet assets and liabilities. In a perfect world they would be priced using option pricing or contingent claim pricing tools and techniques, but we are a long way from that.

Figure 1. Total assets of the leading central banks as a share of GDP



Note: GDP is measured as a four-quarter moving sum. Source: Haver Analytics.

¹⁴ The ECB and the BoE still refuse to provide any information on counterparties and the terms of transactions with individual counterparties. The Fed tried to prevent disclosure of the names of its counterparties to whom it provided emergency loans, and the terms of these emergency loans, made between 2007 and 2010. Fear of counterparty stigmatization is a frequently given excuse. The Fed was finally (in March 2011) forced to provide the information under the Freedom of Information Act, following a lawsuit by Bloomberg.

As seen in Figure 1, the balance sheets of the leading central banks have exploded in size since the start of the GFC. The assets of the Fed and the Bank of England have roughly quadrupled as shares of annual GDP from around six percent to 24 percent. The slight decline in the Bank of England's assets as a share of GDP since the fourth quarter of 2012 is the result of economic growth rather than a shrinking of assets. The ECB almost tripled the assets of the Eurosystem between the onset of the crisis and June 2012. However, no sooner had Mario Draghi spoken the magical words 'whatever it takes' on 26 July 2012, or the assets of the Eurosystem began to contract, thus far by just over € 1 trillion since their peak of €3,094 bn on July 27, 2012.¹⁵ The ECB's rather disingenuous explanation for its extraordinarily pro-cyclical monetary policy is that it merely accommodated banks' desire to pre-pay their November 2011 and February 2012 LTRO loans. But, the ECB chose to be passive; it chose to permit this 'endogenous' decline in the size of its balance sheet. Either through renewed, more attractive LTROs, such as the Targeted LTROs that it is belatedly about to initiate, or through outright purchases of private and public securities such as euro area sovereign debt and possibly even US and Japanese government debt, it could have made the size of its balance sheet anything that it wanted it to be. To put it even more simply: when you fix the price (as the ECB did) the quantity becomes endogenous. If you want to set the quantity, the price will be endogenous.

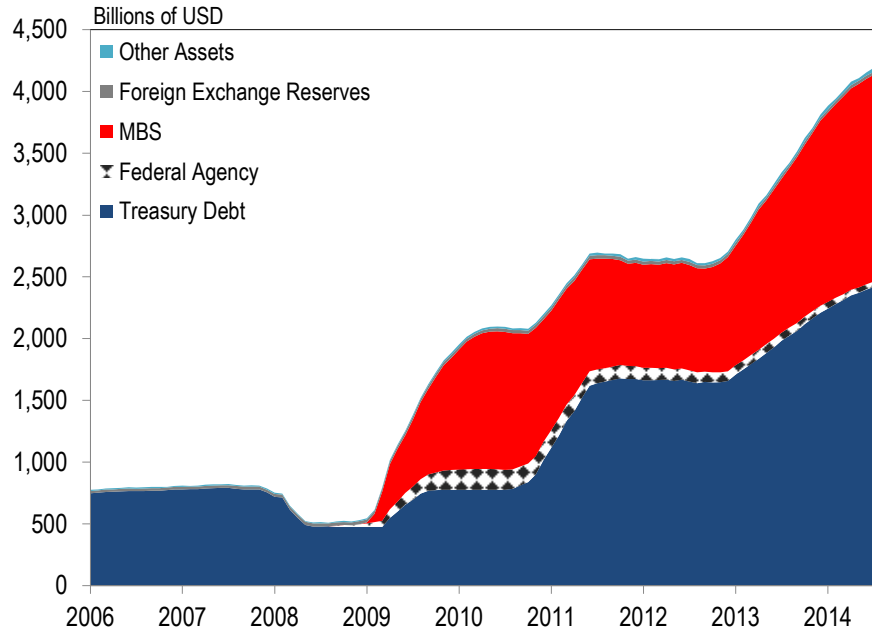
The growth of the balance sheet of the Bank of Japan has been steady since the beginning of the GFC and has been explosive since Kuroda became Governor in the first quarter of 2013. By the second quarter of 2014 it had reached 53 percent of GDP and I expect it to rise a lot further before Japan completes its escape from deflation. How large can central bank balance sheets grow? In theory there is no limit on the size of the central bank's balance sheet relative to GDP. Any (finite) level can be sustained without this representing an inevitable inflationary threat. As of the second quarter of 2012, the Swiss National Bank leads the pack with assets equal to 84 percent of annual GDP.

When markets are disorderly and systemically important financial entities are at risk of being forced into insolvency because of lack of funding liquidity and/or market liquidity, even if they are fundamentally solvent if only the markets believed they were most likely solvent, the composition of the central bank's balance sheet matters as much as its size. During the height of the crisis the Fed, the Bank of England and the ECB lent freely to banks that often had lost market access and that could only offer collateral the markets were not willing to accept without unreasonable haircuts. All three institutions also made outright purchases of asset-backed securities and other instruments that could not be traded at survivable prices in unsupported private markets. The scale of this qualitative easing, credit easing or enhanced credit support – where the central bank increases its exposure to illiquid securities and accepts a higher degree of credit risk in its collateral and in the counterparties it is willing to deal with – can be inferred from Figures 2a through 2d.

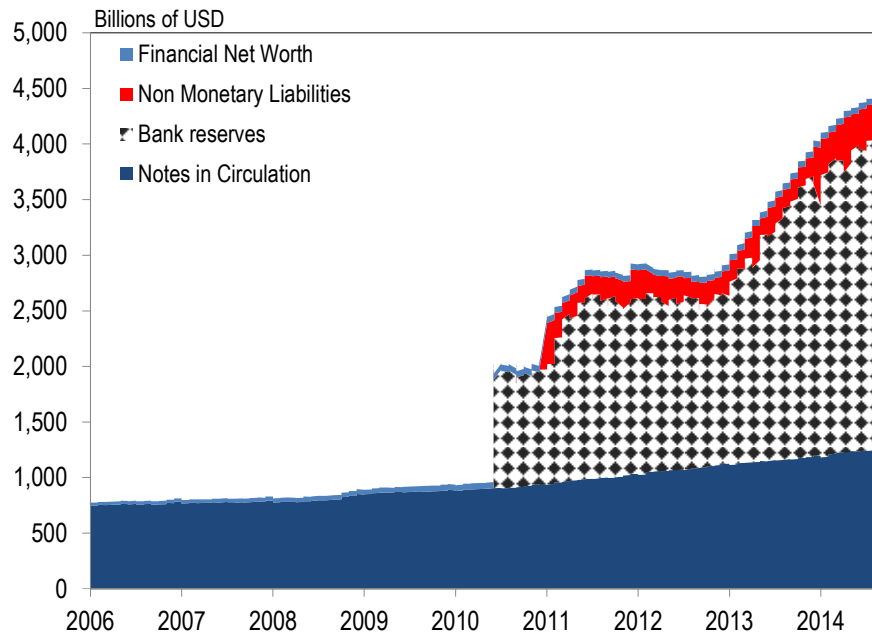
¹⁵ See e.g. ECB <http://www.ecb.europa.eu/press/pr/wfs/2014/html/fs141014.en.html>

Figure 2a. Assets and liabilities of the Federal Reserve

Assets:



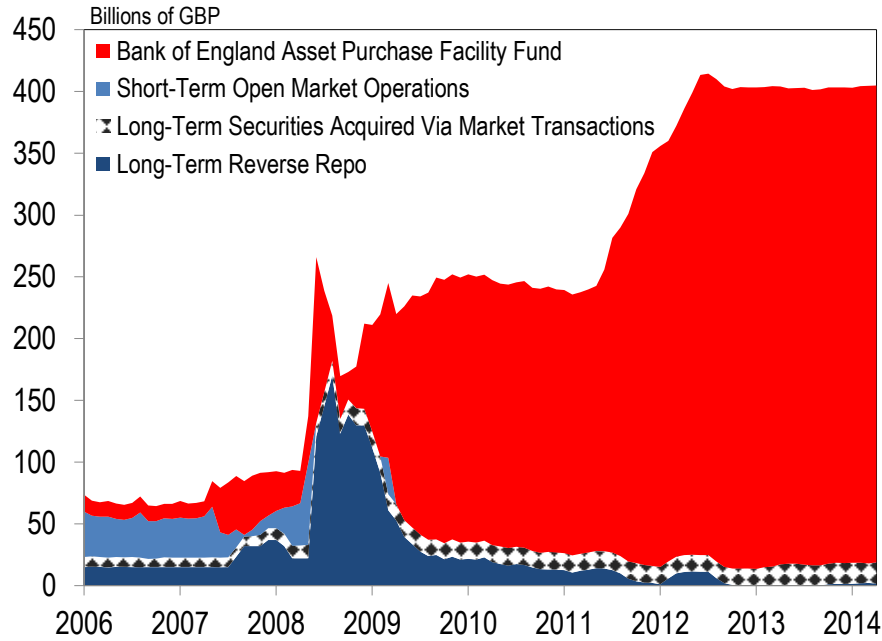
Liabilities:



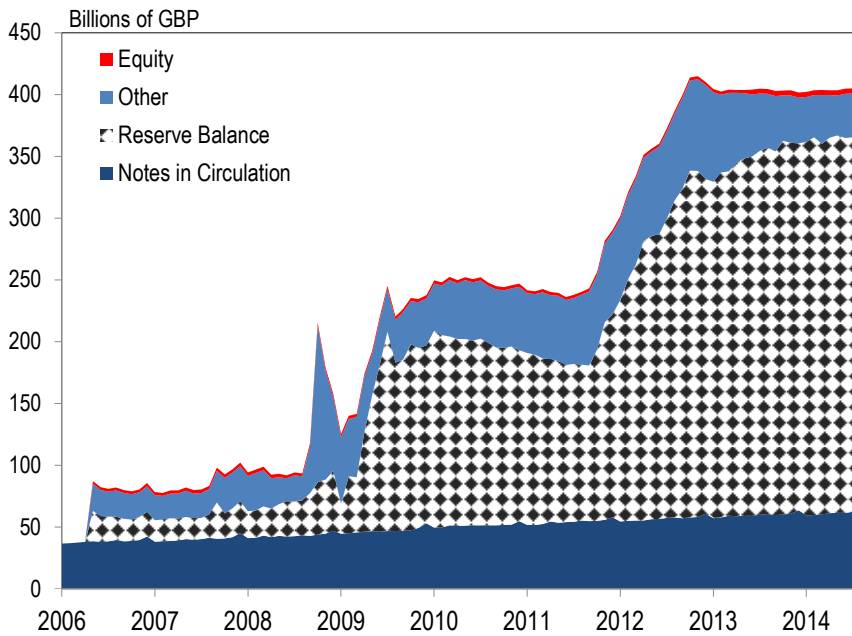
Source: Federal Reserve Board

Figure 2b: Assets and liabilities of the Bank of England

Assets



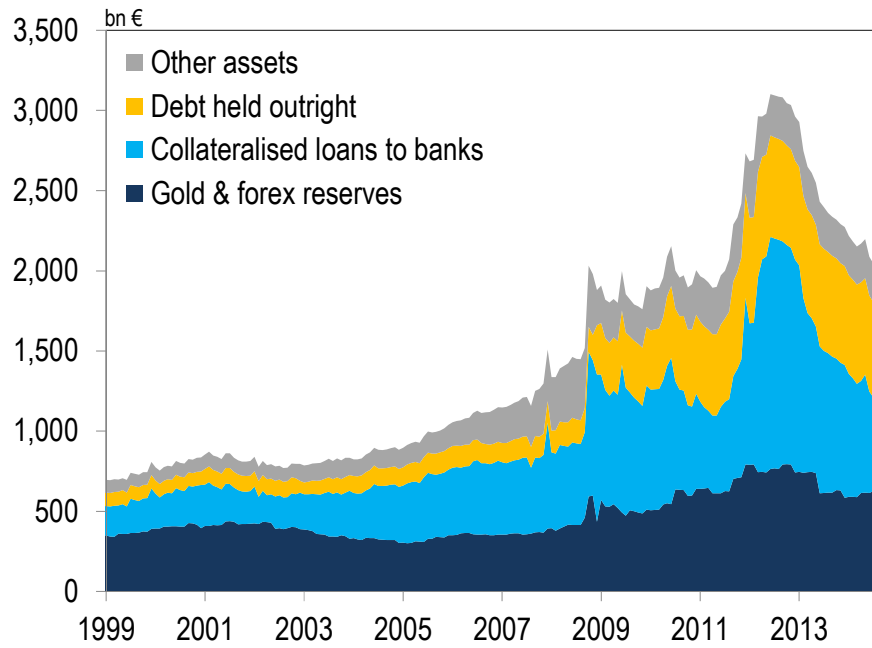
Liabilities



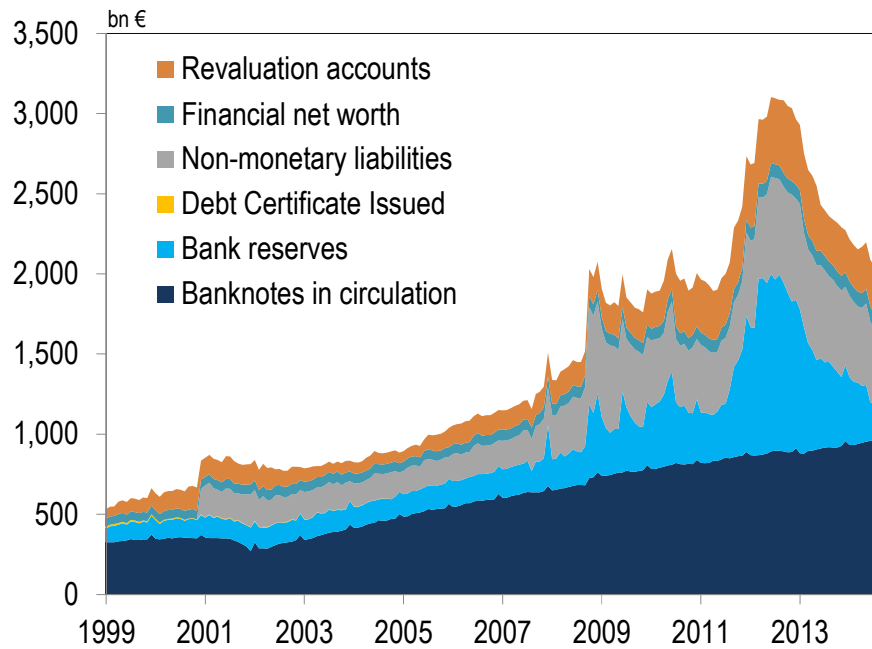
Source: Bank of England

Figure 2c: Assets and liabilities of the Eurosystem

Assets



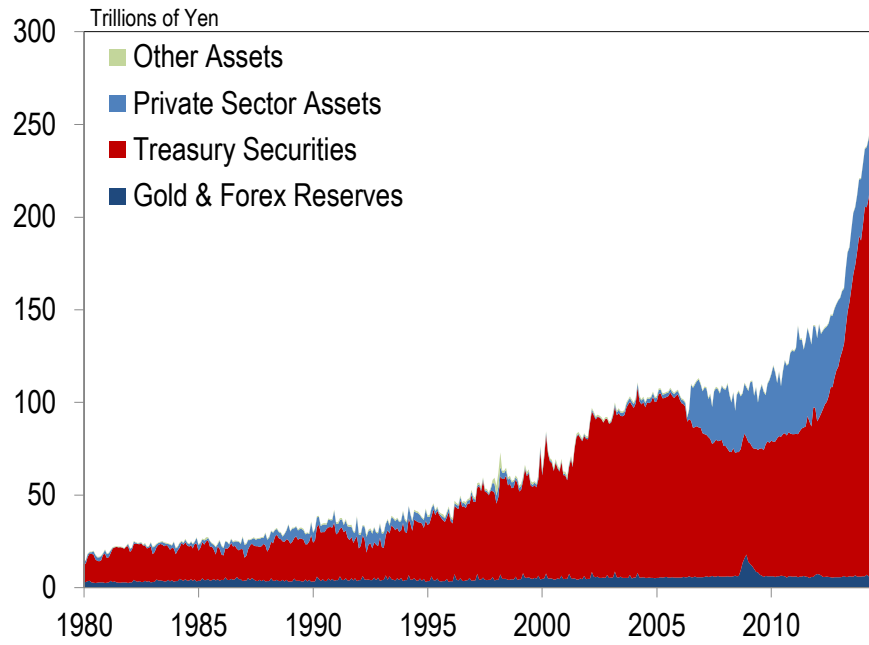
Liabilities



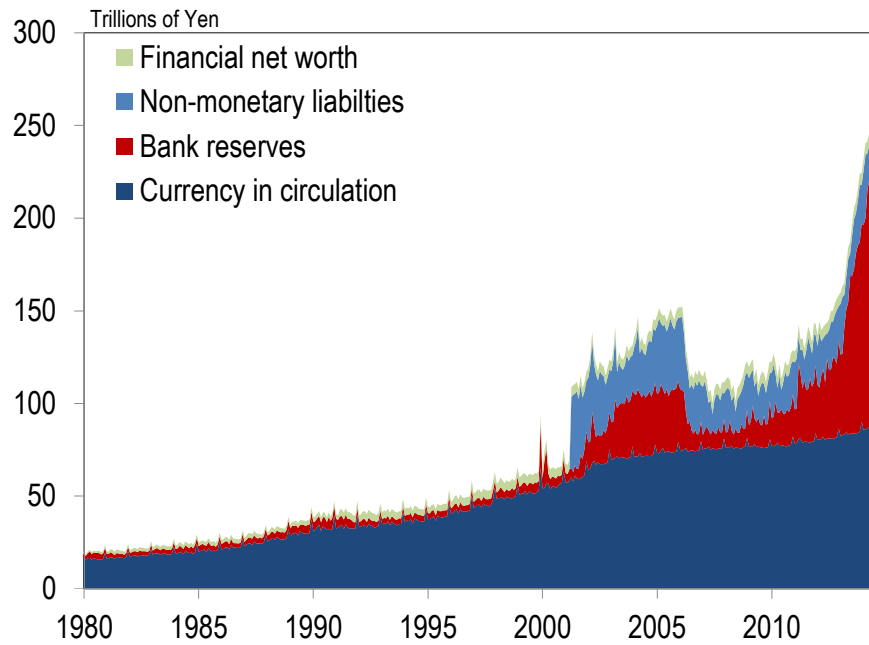
Source: European Central Bank

Figure 2d: Assets and liabilities of the Bank of Japan

Assets



Liabilities



Source: Bank of Japan

2.4a From conventional balance sheet to comprehensive balance sheet – the intertemporal budget constraints of the central bank and the Treasury.

To see how deep the central bank's pockets are the conventional balance sheet is rather uninformative. Shown in Figure 3, the assets in this stylized balance sheet are gold and foreign exchange reserves, Treasury debt held by the central bank and central bank claims on the private sector, both securities and collateralized loans. The liabilities are the base money stock (the sum of currency in circulation and commercial bank reserves held with the central bank) and non-monetary liabilities (such as term deposits and central bank bills and bonds). Conventional central bank net worth W^{cb} equals the value of the assets minus the value of the liabilities.

Figure 3: Stylised central bank conventional balance sheet			
Assets		Liabilities	
R	Gold and foreign exchange holdings	Base money	M
B^{cb}	Treasury debt held by central bank	Non-monetary liabilities	N
L	Private sector debt and loans to private sector held by central bank	Central bank conventional net worth	W^{cb}

In Figure 4, I show the rather sparse stylized conventional balance sheet of the Treasury – the beneficial owner of the central bank. We can think of the Treasury in this context as the general government sector – the consolidated central/federal, state/provincial and local government sectors.

Figure 4: Stylised Treasury conventional balance sheet			
Assets		Liabilities	
K	Value of real assets, equity in public enterprises and other financial assets owned by Treasury	Treasury debt held by central bank	B^{cb}
		Treasury debt held by public	B^p
		Treasury conventional net worth	W

The excess of the value of Treasury conventional assets over conventional liabilities is conventional Treasury net worth, W .

The conventional balance sheet omits the most interesting assets and liabilities of the central bank and the Treasury. Figure 5 shows the comprehensive balance sheet of

the central bank. Economists will recognize it as the intertemporal budget constraint of the central bank.

Figure 5:
Stylised central bank comprehensive balance sheet

Assets		Liabilities	
R	Gold and foreign exchange holdings and other investments	Base money	M
B^{cb}	Treasury debt	Non-monetary liabilities	N
L	Private sector debt and loans to the private sector	PDV of current primary expenditure by central bank	$V(\{G^{cb}\})$
$V(\{I_2\})$	PDV of interest saved by central bank through issuance of base money	PDV of payments made by central bank to Treasury	$V(\{T^{cb}\})$
$V(M_\infty)$	PDV of terminal base money stock	PDV of transfer payments by Central Bank to private sector (helicopter money)	$V(\{H\})$
		PDV of implicit net subsidies paid by central bank	$V(\{S^{cb}\})$
		Central bank comprehensive net worth	\hat{W}^{cb}

The comprehensive balance sheet of the central bank includes two intangible assets and several intangible liabilities not included in its conventional financial balance sheet. Consider Figure 5 and contrast it with Figure 3. The additional asset of the central bank is the present discounted value (PDV) of the sequence of current and future interest saved by having borrowed through the issuance of base money rather than through the issuance of non-monetary debt instruments $V(\{I_2\})$ and the present

discounted value of the terminal money stock $V(M_\infty)$.¹⁶ The additional liabilities of the central bank are (1) the present discounted value of the payments made by the Central Bank to the Treasury, $V(\{T^{cb}\})$, which we shall also encounter as an asset of the Treasury in Figure 7, (2) the present discounted value of the helicopter money drops made by the Central Bank, $V(\{H\})$ (zero in most real-world economies) and (3) the present discounted value of the implicit, quasi-fiscal subsidies paid by the Central Bank on its financial assets, $V(\{S^{cb}\})$.

What makes a central bank so interesting is that one of its liabilities, base money, has three unique characteristics that make the monopoly of its issuance so valuable. The first is that, because base money, or at any rate central bank currency, is legal tender, it is uniquely attractive as a liquid store of value (and to some extent also as a means of payment). It will therefore be willingly held by private agents at an interest rate that is lower than the interest rate on otherwise similar financial instruments. Currency pays a zero interest rate. Central bank excess reserves tend to earn a rate of interest below the interest rate paid by credit-worthy commercial banks that borrow from the central bank against high-quality collateral. The present discounted value of the interest savings the central bank makes by borrowing through the issuance of base money rather than through the issuance of non-monetary interest-bearing instrument, $V(\{I_2\})$, can be a significant number. Because the Treasury is the beneficial owner of the central bank, the present discounted value of this flow of current and future seigniorage income is ‘tax payers’ money’ or rather, money belonging ultimately to the tax payers and to the beneficiaries of public spending.

The second unique property of base money is that it is irredeemable. The holder of a £20 pound note should not be comforted by the inscription “I promise to pay the bearer on demand the sum of twenty pounds”. At most he will be able to exchange an old, worn-out £20 note for a crisp new one, or even for two £10 notes. But there is no claim by the holder of a Sterling currency note on the issuer for anything other than one or more currency notes adding up the same Sterling face value. Thus currency is an asset to the holder but not a liability to the issuer. This is why the PDV of the terminal stock of base money is an asset of the central bank, and, in a fully articulated general equilibrium model, constitutes net wealth to the economy as a whole: an ‘outside’ asset for which there is no matching liability, like the gifts from nature and physical capital.

The third unique property of modern central bank money – base money – is that it is fiat money, that is objects, tokens or bits without intrinsic value - either paper money or ledger entries in an account with the central bank (electronic entries these days). The marginal cost of increasing the stock of base money is therefore effectively zero – unlike Bitcoin, which, like gold, is expensive to ‘mine’.¹⁷

Figure 6 presents the Treasury’s comprehensive balance sheet, which also features the intangible assets and liabilities that are omitted from its published financial or conventional balance sheets. The comprehensive balance sheet of the Treasury (or

¹⁶ I use curly brackets to indicate sequence from now till infinity. The absence of curly brackets and the presence of a subscript indicates a single element of the sequence in a particular period.

¹⁷ Unlike gold, Bitcoin does not have any intrinsic value.

general government) is its intertemporal budget constraint. The most important intangible asset in Figure 7 is the present discounted value of taxes net of transfers, levies net of subsidies and social security contributions net of benefits and other cash entitlements paid by the private sector $V(\{T^p\})$. I also single out for future reference one particular stream of general government revenues: the PDV of central bank payments to the Treasury, $V(\{T^{cb}\})$. The present value of exhaustive primary (non-interest) current Treasury spending, $V(\{G\})$, appears on the liability side.

Figure 6:
Stylised Treasury comprehensive balance sheet

Assets		Liabilities	
K	Value of real assets, equity in public enterprises and other financial assets	Marketable and non-marketable Treasury debt	$B^p + B^{cb}$
$V(\{T^p\})$	PDV of taxes, levies and social security contributions net of transfers and cash benefits and entitlements	PDV of Treasury primary exhaustive current expenditure	$V(\{G\})$
$V(\{T^{cb}\})$	PDV of payments made by central bank to Treasury	Comprehensive Treasury net worth	\hat{W}

As noted earlier, the main asset of the Treasury is highly illiquid: the PDV of future taxes, levies and social security contributions net of transfer payments, denoted $V(\{T^p\})$. It may be possible to securitise some future tax flows and thus turn the PDV of such taxes into tradable instruments, but this has only been attempted on a limited scale and the resulting financial instruments have not been widely traded in liquid markets.

Among the revenue sources of the Treasury are the bulk of the profits of the Central Bank, $V(\{T^{cb}\})$. The actual stream of payments made by the Central Bank to the Treasury in any given period need bear little relationship to economic profits earned in that period. The value of T^{cb} in one or more periods and even of $V(\{T^{cb}\})$ could be negative if the Treasury makes transfers to the Central Bank, say to recapitalize it.

The economic logic of the intertemporal budget constraints and the solvency constraints that lie behind the intertemporal budget constraints implies that the Treasury is solvent if and only if its comprehensive net worth is non-negative, $\hat{W} \geq 0$. Likewise, the Central Bank is solvent if and only if its comprehensive net worth is non-

negative, $\hat{W}^{cb} \geq 0$. These solvency conditions are, of course, quite consistent with the conventionally defined financial net worth of the Treasury, W , and/or the conventionally defined financial net worth of the Central Bank, W^{cb} , being negative.

In the case of the Central Bank, for instance, even if its conventional financial net worth (regulatory net worth or regulatory capital) were negative, comprehensive net worth could be positive if the present discounted value of future interest saved because of the Central Bank's monopoly of the issuance of domestic base money plus the present discounted value of the terminal stock of base money exceeds the present discounted value of its future running costs, $V(\{G^{cb}\})$, its future payments to the Treasury, $V(\{T^{cb}\})$, its future helicopter money drops, $V(\{H\})$ and its future quasi fiscal subsidies on its lending and other assets, $V(\{S^{cb}\})$.

Finally, Figure 7 presents the conventional balance sheet of the State – the consolidated Treasury and Central Bank, and Figure 8 the comprehensive balance sheet of the consolidated Treasury and Central Bank. The conventional financial net worth of the consolidated Treasury and Central Bank is denoted \tilde{W} .¹⁸ And the comprehensive net worth of the consolidated Treasury and Central Bank is denoted \hat{W} . The state is solvent if and only if its comprehensive net worth is non-negative, that is, i.e. $\hat{W} \geq 0$.

Figure 7			
Conventional balance sheet of consolidated Treasury and central bank			
Assets		Liabilities	
K	Market value of real assets, equity in public enterprises and other financial assets	Base money	M
		Non-monetary liabilities of the central bank	N
		Marketable and non-marketable Treasury debt held by public	B^p
		Consolidated Treasury and central bank conventional or financial net worth	$\tilde{W} = W + W^{cb}$

¹⁸ So $\tilde{W} \equiv W + W^{cb}$, $\hat{W} \equiv \hat{W} + \hat{W}^{cb}$ etc.

Figure 8:
Comprehensive balance sheet of consolidated Treasury & Central Bank (State).

Assets		Liabilities	
K	Value of real assets, equity in public enterprises and other financial assets	Base money	M
$V(\{T^p\})$	PDV of taxes, levies and social security contributions	Non-monetary liabilities of central bank	N
$V(\{I_2\})$	PDV of future interest saved through the issuance of base money	Treasury debt held by the public	B^p
$V(M_\infty)$		PDV of State primary current exhaustive expenditure	$V(\{\tilde{G}\})$
		PDV of transfer payments by central bank to private sector (helicopter money)	$V(\{H\})$
		PDV of implicit subsidies paid by central bank	$V(\{S^{cb}\})$
		Comprehensive State net worth	$\hat{W} = \hat{W} + \hat{W}^{cb}$

Note that the comprehensive net worth of the consolidated Treasury and central bank, \hat{W} , can be positive even when either the conventional financial net worth of the Treasury or the conventional financial net worth of the central bank, or both, are negative.

2.4b Seven obvious propositions

The preceding accounting framework can be used, with a bit of additional analysis which I shall skip here, (but see Buiter (2010, 2014) to establish a number of propositions. The only substantive assumptions I need is that the Treasury is the beneficial owner of the central bank and that financial markets are reasonably efficient, or at least orderly.

Proposition 1: A central bank can be solvent with negative conventional equity or net worth.

Provided the PDV of future seigniorage is sufficiently large relative to the PDV of the central bank's operating costs, the PDV of the future payments it makes to the Treasury, the PDV of any future helicopter money drops it bestows on the private sector and the PDV of the quasi-fiscal subsidies it pays out, a central bank can have negative conventional net worth, capital or equity. It may make tradition-steeped accountants, financial market operators, analysts and central bankers uncomfortable to have a (conventional) net worth, equity or capital that is negative, but that is no reason for not making use of this possibility, should it turn out to be desirable for the conduction of monetary policy or the pursuit of financial stability.

The objection that a central bank with negative net worth would immediately have to fill the hole in its balance sheet with base money issuance equal in magnitude to the hole in its balance sheet is incorrect. All that is required is that the PDV of future base money issuance be sufficient to fill the hole. In the short run the central bank could issue non-monetary liabilities, servicing them in the future through more gradual new base money issuance.

Proposition 2: Central bank current and future resources are 'tax payers' money', regardless of whether the central bank is dependent, operationally independent or operationally and goal independent.

All that is required for this is the assumption that the Treasury is the beneficial owner of the central bank.

As beneficial owner of the central bank, the Treasury appropriates (anything up to) the comprehensive net worth of the central bank. Thus, to the extent that the current and future citizens/residents of the jurisdiction covered by the Central Bank are – as tax payers and beneficiaries of public spending - the beneficial owners of the Treasury, central bank resources are, through the Treasury's beneficial ownership of the central bank, indirectly beneficially owned by the tax payers and the beneficiaries of public spending.

Proposition 3: Consider the purchase of additional Treasury debt by the central bank funded by the permanent/irreversible issuance of additional base money. The cancellation (wiping out/forgiving) of that additional Treasury debt purchased by the central bank is equivalent to the central bank holding that additional Treasury debt forever (rolling it over as it matures). Both actions improve the solvency of the Treasury, the central bank or the consolidated State.

Proposition 4: A permanent increase in the monetary based used by the central bank to purchase additional private domestic or foreign assets is equivalent to an equal size permanent increase in the monetary base used by the central bank to purchase Treasury debt.

Because the Treasury is the beneficial owner of the central bank, the Treasury can receive the PDV of the stream of current and future profits from monetary base issuance by the central bank in three ways. First, by the central bank repaying the Treasury the interest the central bank earns on its holdings of Treasury debt; second,

by the central bank cancelling the Treasury debt and, third, by the Treasury receiving from the central bank the return on the central bank's investments in private or foreign assets.

So why do some economists recommend Treasury debt forgiveness by the central bank as a unique way of boosting the resources of the Treasury and why are sovereigns often happy to sell their debt to the central bank? One possibility is that these economists and politicians don't understand the logic of the equivalence argument. Another answer is that the logic fails because financial markets are not sufficiently liquid and orderly. Liquidity constraints on the Treasury may make an actual bird in the hand today worth more than the same PDV of future birds in the bush, when the PDV is calculated using the central bank's discount rates, which, because the central bank is not liquidity-constrained (when it comes to domestic currency financing), are lower than those of the Treasury.

Politically, also, getting the free funding up front may be more attractive to a myopic government than having to wait to accrue the same PDV of interest costs saved. Borrowing from the market by the Treasury against the 'security' of the future stream of profits to be transmitted to the Treasury by the central bank may also be less straightforward than Treasury borrowing the same amount from the central bank and having the central bank cancel the debt or hang on to it forever.

Proposition 5: Permanent/irreversible QE is equivalent to a deferred helicopter money drop.

By permanent QE I mean an irreversible increase in the monetary base used to purchase either sovereign debt or private or foreign securities. A helicopter money drop is an up-front temporary tax cut or increase in public spending financed through a permanent increase in the monetary base. QE is a permanent increase in the stock of base money brought about through an up-front increase in asset purchases by the central bank.¹⁹ The profits generated by this operation (equal to the present discounted value of the interest saved plus the present discounted value of the increase in the terminal monetary base stock) relax the intertemporal budget constraint of the state and thus permit (indeed necessitate) *future* tax cuts, increases in transfer payments or increases in public spending on goods and services. The helicopter money drop is deferred in the sense that the monetized balance sheet expansion by the central bank occurs first and the fiscal stimulus permitted because of the increase in state revenues generated by the monetized balance sheet expansion of the central bank follows later, that is, is deferred.

Whether the increase in the base money stock is brought about through a purchase of Treasury bonds, through a purchase of private securities, with the increase in public spending or the tax cut occurring in later periods (deferred helicopter money drops) or through a contemporaneous tax cut, transfer payment increase or increase in exhaustive spending (helicopter money drops) makes no difference from the

¹⁹ Defining QE as a *permanent* increase in the monetary base through central bank asset purchases and helicopter money drops as a temporary fiscal stimulus funded through a *permanent* increase in base money, is more restrictive than is strictly necessary and I use the '*permanent*' restriction only for expositional simplicity. Even a temporary (reversible) increase in the stock of base money will result in a positive PDV of interest saved.

perspective of the intertemporal budget constraint of the State. For economic activity, of course, an immediate fiscal stimulus (which boosts demand in normal circumstances) is very different from the anticipation today of a future fiscal stimulus, which will tend to depress demand.

Proposition 6: Assume the interest rate on base money is zero. A helicopter money drop today boosts demand even in a permanent liquidity trap, when the nominal interest rate is at the *zero lower bound* (ZLB) forever. It relaxes the intertemporal budget constraint of the state by an amount equal to the permanent increase in the stock of base money

Because of the irredeemability of base money, the State can use the (notionally discounted but effectively undiscounted) increase in the terminal base money stock to fund tax cuts or public spending increases, even in a permanent liquidity trap. If base money is interest-bearing, and the safe nominal interest rate is forever at the *effective lower bound* (ELB) given by the interest rate on base money, the proposition that in a world with a zero interest rate on base money, a permanent increase in the monetary base today (no matter how it is brought about) relaxes the intertemporal budget constraint of the state by an amount equal to the up-front increase in the monetary base and is therefore equivalent to a helicopter money drop generalizes easily. An increase in the base money stock today, no matter how it is brought about, with the base money stock subsequently growing at a proportional rate equal to the ‘own’ interest rate on base money, relaxes the intertemporal budget constraint of the State by an amount equal in present discounted value to the increase in the base money stock today.

What this means is that, in an economy with fiat base, the fiscal channel of monetary policy always works. This is worth restating as a proposition:

Proposition 7: Lack of effective demand is a policy choice or the result of a failure of cooperation and coordination between the central bank and the Treasury, not an unavoidable fate, even for an economy apparently stuck at the ELB. The same holds for ‘secular stagnation’ caused by persistent lack of demand.

2.5 What’s your *NILAC*? The non-inflationary loss absorption capacity of the central bank

I next want to discuss some guestimates as to the likely magnitude of the PDV of future interest saved through the issuance of base money – the key off-(conventional) balance sheet asset of the central bank. For reasons that need not detain us here, the calculation of the PDV of future seigniorage income of the central bank was conducted not in terms of the future interest saved, the PDV of $\{I_2\} = \{(i - i^M)M\}$ but in terms of the future issuance of base money, net of any interest paid on base money, that is, in terms of the PDV of $\{I_1\} = \{\Delta M - i^M M\}$. Here i is the safe one-period nominal interest rate on non-monetary financial instruments, i^M is the one-period own interest rate on base money and $\Delta M = M - M_{-1}$ is the first difference of the base money stock. Fortunately the two are closely related, and we can readily translate the results for the one into the other using the intertemporal seigniorage identity: $V(\{I_2\}) + V(M_\infty) - M \equiv V(\{(i - i^M)M\}) + V(M_\infty) - M \equiv V(\{I_1\}) \equiv V(\{\Delta M - i^M M\})$.

As I am not considering a permanent liquidity trap in what follows, I will bypass the case where the growth rate of the stock of base money is always at least as high as the interest rate used to compute the PDVs. I will therefore assume in what follows that the PDV of the terminal base money stock is zero.²⁰

The empirical implementation of the calculation of the PDV of current and future seigniorage is a heroic task, which I simplify by making the heroic simplification of stationarity. Specifically, I assume that the proportional growth rate of the monetary base is a constant μ and that the short safe nominal interest rate on non-monetary securities is a constant i . I also restrict the consideration of the monetary base to the currency component, omitting required and excess reserves issuance as a source of seigniorage. By effectively assuming that commercial bank reserves held with the Central Bank, both required and excess reserves, earn the full risk-free rate, we therefore err on the size of underestimating the size of the PDV of future seigniorage.

It follows that, in this stationary environment, the PDV of current and future currency issuance is given by:

$$V(\{I_1\}) = \left(\frac{1+i}{i-\mu} \right) \mu M_0$$

Where M_0 is the initial value of the stock of currency.

A standard Cagan-style demand function for currency take the form

$$\frac{C}{P} = kY^\alpha e^{-\beta i}$$

$$k, \alpha, \beta > 0$$

It follows that, at a constant nominal interest rate, the growth rate of the stock of currency, μ , the rate of inflation, π and the growth rate of real GDP, γ are related as follows:

$$1 + \mu = (1 + \pi)(1 + \gamma)^\alpha$$

The NPV of current and future currency issuance can therefore be written as

$$V(\{I_1\}) = \left(\frac{1+i}{1+i-(1+\pi)(1+\gamma)^\alpha} \right) \left((1+\pi)(1+\gamma)^\alpha - 1 \right) M_0$$

The Global Economics team at Citi have produced estimates of long-run currency demand functions for the euro, the US dollar, the Pound Sterling and the Japanese Yen, based on the Cagan-style money demand equation. The details of the statistical implementation of the estimation of the currency demand functions for the euro, the US dollar, the Yen and the Pound Sterling can be found in Buiters and Rahbari (2012).

Figure 9 presents the estimates for the value of Eurosystem seigniorage based on these benchmark assumptions as well as a number of alternative assumptions for

²⁰ That is, $V(M_\infty) = 0$

growth rates and interest rates. As the table indicates, the resulting value would be just over €2trn at a 1% average real growth rate and with a discount rate of 4%. Raising the average growth rate of real GDP to 1.5% almost doubles the estimate of the value of seigniorage. Note that the relevant growth rate here is the average growth rate in the future, with the horizon being very long (infinite, actually),

Figure 9

Present Discounted Value of future seigniorage in the euro area ($\alpha= 0.8$; $\beta=2.9$)

EUR (bn) Real Growth Rate (γ)	Interest/ Discount Rate (i)				
	3.5%	4.0%	4.5%	5.0%	5.5%
0.5%	€1,886	€1,273	€956	€763	€632
1.0%	€3,717	€2,065	€1,421	€1,078	€865
1.5%	€13,090	€3,817	€2,216	€1,553	€1,189
2.0%	Infinite	€10,966	€3,888	€2,345	1,670

Note: α represents the long run income elasticity of the money demand function, and β the corresponding interest rate semi-elasticity.

Source: Citi Investment Research and Analysis

The corresponding estimates and calculation for US dollar, Sterling and Yen currency demand are given in Figures 10, 11 and 12, respectively.

Figure 10

Present Discounted Value of future seigniorage in the United States ($\alpha= 0.8$; $\beta=7.2$)

USD (bn) Real Growth Rate (g)	Interest/ Discount Rate (i)				
	3.5%	4.0%	4.5%	5.0%	5.5%
0.5%	\$1,727	\$1,150	\$849	\$664	\$540
1.0%	\$3,186	\$1,795	\$1,226	\$918	\$724
1.5%	\$8,669	\$3,096	\$1,839	\$1,285	\$974
2.0%	Infinite	\$7,077	\$3,005	\$1,864	\$1,329

Note: α represents the long run income elasticity of the money demand function, and β the corresponding interest rate semi-elasticity

Source: Citi Investment Research and Analysis

Figure 11**Present Discounted Value of future seigniorage in the United Kingdom ($\alpha=0.8$; $\beta=1.7$)**

GBP (bn) Real Growth Rate (g)	Interest/ Discount Rate (i)				
	3.5%	4.0%	4.5%	5.0%	5.5%
0.5%	£98	£67	£51	£41	£34
1.0%	£182	£105	£74	£56	£46
1.5%	£514	£183	£111	£79	£62
2.0%	Infinite	£432	£183	£116	£85

Note: α represents the long run income elasticity of the money demand function, and β the corresponding interest rate semi-elasticity

Source: Citi Investment Research and Analysis

Figure 12**Present Discounted Value of future seigniorage in Japan ($\alpha=0.7$; $\beta=12.1$)**

Yen (trn) Real Growth Rate (y)	Interest/ Discount Rate (i)				
	3.5%	4.0%	4.5%	5.0%	5.5%
0.5%	¥136	¥90	¥65	¥50	¥40
1.0%	¥225	¥131	¥89	¥66	¥51
1.5%	¥457	¥203	¥125	¥88	¥66
2.0%	¥2,438	¥360	¥185	¥120	¥86

Note: α represents the long run income elasticity of the money demand function, and β the corresponding interest rate semi-elasticity

Source: Citi Investment Research and Analysis

By any standards, these estimates of the PDV of non-inflationary seigniorage are large numbers. For the euro area, at 2 percent inflation, 1 percent real GDP growth and a 4 percent nominal interest rate, it comes to more than €2 trillion (see Figure 9). For the US, with 2 percent inflation, real GDP growth at 2 percent and a 4 percent nominal discount rate, the PDV of future non-inflationary seigniorage is more than \$7 trillion (see Figure 10). For the UK, with 2 percent inflation, 1.5 percent real growth and a 4 percent discount rate, the PDV is £183bn. With two percent real growth this becomes £432bn.

These numbers underestimate the non-inflationary loss-absorbing capacity or *NILAC* of the central bank for a number of reasons. First, it ignores required reserves or assumes they are paid the market opportunity cost and therefore don't represent a source of profit to the central bank. Even if this were correct currently, it is at the discretion of the central bank, which sets both the reserve requirement and the rate of remuneration on required reserves. The required reserve ratio for the euro area was

lowered (on December 8, 2011) to 1 percent of eligible deposits from 2 percent. The UK has no required reserves other than those required to be held under the *de minimis* Cash Ratio Deposit Scheme

Second, it ignores excess reserves or assumes they too are paid their market opportunity cost. Again, their remuneration rate, as well as the remuneration rate on all the central bank's non-monetary liabilities are instruments of the central bank, although the availability of private and other sovereign substitutes limits the ability of the central bank to extract rents from these liabilities.

Third, it ignores the conventional loss-absorption capacity of central banks. In the case of the Eurosystem this amounts, as of August 8, 2014, to about €95 bn of capital plus reserves plus probably around €301 bn of gold and foreign exchange revaluation gains. For the Bank of England on February 28, 2012, capital plus reserves was just over £3bn. There is not enough detail in the published accounts to uncover the existence and valuation of the Bank of England's revaluation gains.²¹

Finally, from the intertemporal seigniorage identity and Figure 5 (see also Buiter (2007)), the intangible asset that has to be added to the conventional balance sheet of the central bank to obtain its non-inflationary loss absorption capacity is not just the PDV of future currency issuance but the sum of the PDV of future currency issuance and the initial stock of base money, about €973bn for the euro area stock of banknotes.²² This means that the non-inflationary loss-absorption capacity of the Eurosystem with $\gamma = 1\%$, $\pi = 2\%$ and $i = 4\%$ is at least €3.4 trillion. For the Bank of England, with $\gamma = 1.5\%$, $\pi = 2\%$ and $i = 4\%$, the total contribution to the NILAC from seigniorage is £246 bn, of which about £60 bn comes from the outstanding stock of currency (as of February 28, 2014) and about £3 bn from capital and reserves.²³

We must of course, subtract the PDV of the operating cost of running the monetary authority. For these purposes, we should estimate the cost of running the central bank acting as a narrow monetary authority, stripping out the cost of its supervisory and regulatory functions.

In November 2012, the UK Treasury and the Bank of England estimated that the Bank of England would have accumulated about £35 bn in profits in the cash reserve associated with its Asset Purchase Facility by March 30, 2013.²⁴ The APF had been created in 2009 to purchase high-grade financial instruments (in practice overwhelmingly gilts) as part of its QE. The APF currently holds £375 worth of securities. The annual interest on this account is currently about £11 bn per annum. The latest Annual Report of the APF shows that during the accounting year 2013-2014 (up to 28 February 2014) the Bank of England transferred about £42.4 bn of APF

²¹ Bank of England (2014).

²² I assume for the purpose of these calculations that the NPV of the terminal stock of base money is zero.

²³ Bank of England, Annual Report 2014, page 54,

<http://www.bankofengland.co.uk/publications/Documents/annualreport/2014/boereport.pdf>. I could not make heads or tails of the treatment of the £41 bn off-balance sheet Funding for Lending Scheme item, including whether this was an asset, a liability or both, so it has been ignored in the calculation.

²⁴ HM Treasury (2012), *Press Release, Changes to cash management operations*, 9 November, <https://www.gov.uk/government/news/changes-to-cash-management-operations>

profits to the Treasury.²⁵ In 2012, the Fed sent a payment of \$88.9 bn to the US Treasury. In 2013 the payment was a mere \$77.7 bn.

These numbers are large enough to get excited about. These resources are, of course, tax payers' resources and should be accounted for properly.

2.6 Central banks not 'sticking to their knitting'²⁶

The notion that central banks should focus exclusively on their mandates and not be active participants in wider public policy debates, let alone be active players in the negotiations and bargaining processes that produce the political compromises that will help shape the economic, social and political evolution of our societies is, I believe, sound. Alan Blinder described this need for modesty and restraint for central bankers as sticking to their knitting.

Central banks and central bankers sticking to their knitting – the design and conduct of monetary policy in the pursuit of macroeconomic stability and financial stability – has become the exception rather than the rule since many advanced economy central banks achieved a measure of operational independence, starting with the Reserve Bank of New Zealand in 1989.²⁷ The RBNZ was also the first to introduce inflation targeting, in 1989 and 1990, as the primary objective of the central bank and the operational expression of the pursuit of price stability.²⁸

A straightforward brace of illustrations of the kind of “extra-territorial” or “extra-curricular” activities of central bankers that I consider to be inappropriate and a threat to the operational independence of central, even where this make sense – in the conduction of monetary policy, narrowly defined - can be found in the October 17, 2014 Web edition of the Financial Times. It carries two prominent headlines about central bankers. The first one says “Yellen bemoans rising US inequality”. The subheading is “Boston speech highlights Fed chair’s liberal sympathies”.²⁹ The speech does not deal with monetary policy or other aspects of central banking. It does not even discuss the impact of monetary policy on inequality or the implications of inequality for the conduct of monetary policy. The second headline reads “Bundesbank hits back at calls for stimulus”. The subheading is “Weidmann says Germany needs to maintain a balanced budget”.³⁰ In the speech to which the FT headline refers, Weidman picks a public argument with the Chief Economist of the IMF, Olivier Blanchard about the benefits to the rest of the euro area from a German

²⁵ Bank of England Asset Purchase Facility Fund Limited, Annual Report 2013-2014, <http://www.bankofengland.co.uk/publications/Documents/other/markets/apf/boeapfannualreport1407.pdf>

²⁶ I originally attributed this phrase to Alan Blinder, only to discover, first, an earlier use of a central bank should stick to its knitting by David Laidler (2004) and then a reference from 1920 (Trust and Estates, Volume 31, page 120

²⁷ The Bundesbank had a high degree of operational independence ever since its inception in 1957.

²⁸ See Buiter (2006).

²⁹ See <http://www.ft.com/intl/cms/s/0/12574e90-55f9-11e4-a3c9-00144feab7de.html#axzz3GQJRuf72> ; the whole speech can be found at

³⁰ See <http://www.ft.com/intl/cms/s/0/f182cfd2-55e9-11e4-a3c9-00144feab7de.html#axzz3GQJRuf72>

fiscal stimulus through an increase in German public investment (see Weidman (2014)).

It does not matter whether the themes developed and statements made by these two distinguished central bankers are right or wrong, or whether we agree with them or not. Both are using – I would say mis-using – the high profile and visibility they possess as a result of their central bank positions to speak out, in their official capacities, on issues that are far from their mandates and (probably) from their domains of expertise and competence. As private individuals or as scholars, they are certainly entitled to their views on these and any other issues. But they cannot use the prominent pulpit provided by their official position to engage in overt political speech making or other political activities. They ought to wait to speak out on non-central banking issues until they leave their official central bank positions. The central bank should not be used as a political bully pulpit.

There is a long history of central bankers going beyond their mandates and competence to lecture the world on deeply political issues. Former Fed Chairman Bernanke routinely lectured the Congress and the White House on fiscal sustainability and appropriate fiscal stimulus measures. He played a prominent, high profile public role in gathering support for a fiscal stimulus package to counteract the US slowdown/recession from late 2007 through to 2009. On Thursday, January 17, 2008, for instance, in testimony to the House Budget Committee, he backed calls for a fiscal package to stimulate economy, but stressed such a plan should be "explicitly temporary." "Any program should be explicitly temporary, both to avoid unwanted stimulus beyond the near-term horizon and, importantly, to preclude an increase in the federal government's structural budget deficit,". He went on to say that the nation faced daunting long-run budget challenges associated with an aging population, rising health-care costs, and other factors, and that a fiscal program that increased the structural budget deficit would only make confronting those challenges more difficult. "Fiscal action could be helpful in principle, as fiscal and monetary stimulus together may provide broader support for the economy than monetary policy actions alone,".

Chairman Bernanke may be right or wrong about the usefulness of this kind of fiscal policy package at the time (for what it is worth, I believe he was largely right), but it is an indictment of the American political system that we have the head of the central bank telling members of Congress how they ought to conduct fiscal policy. Fiscal policy is not part of the Fed's mandate. Nor it is part of the core competencies of the Chairman of the Federal Reserve Board to make fiscal policy recommendations for the US federal government. It is true that Bernanke acting *ultra vires* was likely the lesser of two evils: usurping the constitutional roles of the Congress and the Executive versus permitting a re-run of the Great Depression. The point is that political institutional reforms are required in the US (and elsewhere) to prevent a recurrence of this 'rule by technocrats'.

This is not the first time the Chairman of the Fed has strayed into controversial policy issues that are none of his and the Fed's business. He has lectured, as Chairman of the Fed, on free trade, on aspects of globalisation that are not relevant to the conduct of monetary policy, and on equality, equality of opportunity, educational achievement and teenage pregnancy (see Bernanke (2007a,b,c)).

The President of the ECB, Mario Draghi, like his predecessor Jean-Claude Trichet, is actively trying to influence and shape EA policies in the areas of fiscal stimulus and structural reform, using a range of possible monetary policy interventions (mostly unconventional) as sticks or carrots to get national governments and the European Commission to do what he considers to be ‘the right things’. His recent address at the Jackson Hole Conference organized by the Federal Reserve Bank of Kansas demonstrates how broad the range of economic issues is on which the President of the ECB feels comfortable to lecture, some might say badger, the political leadership of the EA (Draghi (2014)). Regardless of the economic merits of Draghinomics, there is something worrying, from a constitutional/legal/political/legitimacy perspective, if unelected central bank technocrats become key movers and shakers in the design and implementation of reforms and policies in areas well beyond their mandate and competence.³¹ Indeed, when Italian Prime Minister Silvio Berlusconi resigned on November 12, 2011, it was widely reported that the ECB supported his replacement with Mario Monti.³² Some reports go further and allege that the President of the ECB played an active, albeit indirect, part in Berlusconi’s resignation, by restricting the ECB’s buying of Italian sovereign debt during the days leading up to the announcement of his resignation.³³ This certainly has a ring of plausibility, as on September 29, 2011 the then President of the ECB, Jean-Claude Trichet and the ECB President-in-waiting, Mario Draghi both signed a letter to Berlusconi that contained a detailed list of fiscal and structural reforms the Italian government ought to implement *asp*. The words ‘or else’ were not part of this missive, but were clearly implied.³⁴

I don’t wish to assign all or even most of the blame for this usurpation of parliamentary and executive power to the individual central bankers involved. The blame for this intolerable situation lies mainly with the defective institutional design of the monetary union in the euro area and the unwillingness and/or inability of the euro area political class to correct the manifold deficiencies of the EMU and the European Treaties. Banking union is proceeding only slowly and incompletely; there is no sovereign debt restructuring mechanism; there is no European Monetary Fund with mutualized sources of funding from the member state sovereigns capable of providing conditional liquidity to sovereigns on a scale sufficient to avoid the risk of fundamentally unnecessary sovereign debt restructuring or to mitigate the trauma associated with unavoidable sovereign debt restructuring; there are no adequate mutualized ‘fiscal pots’ to back up the Single Resolution Mechanism for systemically

³¹ The Term Draghinomics (by analogy with the three arrows of Abenomics) due to Nouriel Roubini (2014).

³² See e.g. the New York Times of November 12, 2011, which reported: “Mr. Monti met on Saturday with Mr. Berlusconi and earlier in the day with Mario Draghi, the recently installed president of the European Central Bank, reinforcing the notion that financial and European institutions supported Mr. Monti’s appointment.” (New York Times, Europe, “Berlusconi Steps Down, and Italy Pulses with Change”, http://www.nytimes.com/2011/11/13/world/europe/silvio-berlusconi-resign-italy-austerity-measures.html?_r=0”; also the Wall Street Journal November 13, 2011, “Berlusconi Bows Out; Austerity Lies Ahead”, <http://online.wsj.com/news/articles/SB10001424052970204358004577033703085619754> and NPR, July 13, 2012, “The European Central Bank’s Guide to Influence”, <http://www.npr.org/blogs/money/2012/07/13/156705409/the-european-central-banks-guide-to-influence>

³³ See Financial Times, November 7, 2011, “Berlusconi fights to the end as debt costs soar”, <http://www.ft.com/intl/cms/s/0/62b7533c-095b-11e1-a2bb-00144feabdc0.html#axzz3DPMNHbHF>

³⁴ The text of the letter (in English), which was leaked to the Italian press, can be found here: http://www.corriere.it/economia/11_settembre_29/trichet_draghi_inglese_304a5f1e-ea59-11e0-ae06-4da866778017.shtml

important banks or the Single Deposit Guarantee Scheme which may one day materialize. The ECB was and is therefore stuck with the uncomfortable choice between letting the euro area collapse and taking on responsibilities and acting in ways that are well beyond its mandate. It is time to correct this situation.

2.7 Legitimacy and accountability of central bank power

In liberal democracies, where political office is achieved through free and fair elections, the fighting of wars is nevertheless delegated to unelected technocrats - the military. The elected, legitimate politicians decide whether or not to fight wars. They do not typically fight wars themselves, but leave the conduct of wars to the specialists. Likewise, the task of intelligence gathering for national security purposes is delegated to unelected technocrats in the public sector and increasingly sub-contracted to private entities. I still hope that elected, legitimate politicians will continue (or perhaps at last begin) to make the decisions on what kind of information is to be sought and retained, which individuals or which kind of people and organisations are to be monitored or have their communications intercepted, and what constitute acceptable and unacceptable practices and procedures.

I have long described the notion of an independent central bank - even just an operationally independent central bank - as a mythos (Buiters (2004, 2005, 2008d)). Both the traditional definition of mythos, myth or mythology - a traditional or recurrent narrative theme or plot structure (in literature), or a set of beliefs and assumptions about something (in philosophy or science) - and the modern meanings of myth as a folk tale, legend, fable, and fairy tale, or a widely held but false belief or idea, are appropriately associated with the notion of an (operationally) independent central bank.

Since the early 1990s central banks in most advanced economies have been viewed as operationally independent, and have often viewed themselves as operationally independent, in part because, through some cosmic coincidence, what central banks would choose to do if they really were operationally independent coincided with what the consensus among the political classes and in the polity at large wanted them to do: pursue low inflation, act symmetrically in a countercyclical manner, tightening monetary policy in the upswing and loosening during downturns. Do not use interest rates to tackle credit and asset market booms. At most lean against the wind a little in the credit markets and financial markets, if this could be done without prejudice to the price stability mandate or the dual mandate.

I am convinced that, should it come to a direct conflict between the monetary policy priorities of the central bank and those of the Treasury, there is likely to be no such thing as central bank operational independence, except to some degree in the euro area today and in Germany before the start of the monetary union in 1999. Except in highly unusual circumstances, there is, in the final analysis, likely to be fiscal dominance when a single national central bank faces a single national Treasury. The game of chicken between an operationally independent central bank and the Treasury can only have one outcome: the central bank swerves or gives way.

The reasons why the ECB today and formerly the Bundesbank are exceptions to the rule that fiscal dominance is the norm and monetary dominance the exception, make it clear that the ECB is likely to be the only exception in the foreseeable future. The

ECB as monetary authority faces not one but eighteen national fiscal authorities. There is no supranational or federal euro area fiscal authority or Treasury. The 18 (19 when Lithuania joins on January 1, 2015) national Treasuries of the euro area are internally divided and, despite the existence of the Eurogroup of EA finance ministers, seldom act in a coordinated, purposeful manner. Even the most powerful of the individual EA finance ministers, German finance minister Wolfgang Schäuble is therefore much less powerful when dealing with the ECB than his pre-1999 predecessors were in dealing with the German Bundesbank. The relatively high degree of de-facto operational independence enjoyed by the Bundesbank from when it was established in 1957 till the start of the common currency in 1999 was due to the unique historical circumstances preceding its birth. The Weimar Republic hyperinflation between 1921 and 1924, the Great Depression, the rise of Nazism, the defeat in World War II and the dismemberment of Germany that followed it created a unique and virtually impossible to replicate intensity of popular political support for keeping everyday politics out of the running of the central bank.

The divine coincidence between what operationally independent central banks want to do and what their political masters would like them to do was in part a result of (1) the high inflation episodes experienced by many advanced economies that accompanied the 1973 and 1979 oil price shocks and the collapse of the Bretton Woods system between 1971 and 1973 and (2) the Great Moderation. In addition, the operational independence of the greatly enhanced central banks since the onset of the GFC also reflects the dysfunctional politics and unfit-for-purpose political and economic institutions of the euro area, the US and, perhaps to a lesser extent the UK (although the near-exit of Scotland from the UK suggests otherwise). It is an interesting question, and one I am not sure I know the answer to, whether it makes sense to reduce the scope of central bank power and influence when these wider political and institutional dysfunctions have not been corrected. In a second-best or third-best world, eliminating one distortion when many other distortions remain does not necessarily improve efficiency or welfare. It does, however, make sense to plead for the retreat of central banks from activities that they are not in their comparative advantage, to argue for greater accountability of central banks in those activities where they are essential, and to call for the deeper political, institutional and perhaps constitutional reforms that will ensure that the duties relinquished by the central banks are discharged efficiently by legitimate alternative institutions: when second-best analysis is inconclusive, go for the first best!

The reason for the prevalence of fiscal dominance outside the special cases of the ECB and the old Bundesbank is obvious. The only form of legitimacy a central bank can aspire to is 'output legitimacy': how well does it perform its assigned tasks, or how successful is it in its pursuit of its mandate. Central banks and those who serve in them have little or no 'input legitimacy'. Input legitimacy refers to procedural legitimacy – the design of the institution (notably the manner in which the decision makers are selected), the manner in which decisions are made and communicated, and the sources of whatever authority the institution commands. In the words of Sharman (2008, pp. 6-7), *"Both forms of legitimacy express public assessment of the worth of an institution, but input legitimacy is a matter of the design of the institution while output legitimacy must be earned by the institution's performance."*

Central banks tend to be short on input legitimacy. The origins of the Bank of England are found in the war financing needs of King William III (an expatriate Dutchman who successfully invaded England in 1688 and took the crown in 1689 (which he shared with his wife, Mary II)). The Fed is a Johnny-come-lately among advanced economy central banks, established in 1913 through an Act of Congress (The Federal Reserve Act). The ECB derives its even more recent right of existence from the Treaty on European Union and the Treaty on the Functioning of the European Union - both documents whose length and opacity render them abject failures as sources of input legitimacy among the wider population in the EU or the EA.

Central bankers are appointed officials. They therefore lack the unique input legitimacy of being elected to the public offices they occupy. Although many central bankers have outstanding character and intellect, the selection processes involved are only partly based on merit and qualifications. Often partisan political infighting causes both type I and type II errors in the selection of central bankers.

Output legitimacy of central banks is fragile. Inevitably there will be periods with bad outcomes for the economic variables the central bank is targeting. Sometimes this bad performance may be due to bad performance by the central bank, sometimes it will be due to circumstances beyond the control of the central bank (bad luck) and most of the time even a well-informed and disinterested observer won't be able to assign bad outcomes confidently to bad performance or bad luck. To avoid the risk of central bank independence being swept away on a groundswell of popular and political discontent, even where operational independence makes sense, it is important to enhance the input legitimacy of central banks.

This requires, in my view, the return to a narrow view of the central bank as the monetary authority, in charge of conventional and unconventional monetary policy and as lender of last resort and market maker of last resort for sovereigns and systemically important financial institutions. All balance sheet activities of the central bank should either involve sovereign debt or be guaranteed by the sovereign (jointly and severally by all EA sovereigns in the case of the ECB). There is even a case for taking the Monetary Policy Committee (the body setting the policy rate and choosing the size and composition of the balance sheet of the central bank under orderly market conditions) out of the central bank completely. The central bank would implement the rate and balance sheet decisions of the MPC and would alone decide on lender-of-last-resort and market-maker-of-last-resort operations (see Buiter (2008e) and Sibert (2012)).

Beyond that the central bank should have no regulatory or supervisory functions (macro-prudential, micro-prudential or conduct related). It should not play a significant role in bank resolution and none in deposit insurance. It should be part of something like FSOC, the supreme financial stability council, headed by the Treasury, that brings together the central bank and all financial supervisors and regulators. Unlike the real-world FSOC, this FSOC+ should be able to take decisions that are binding on all institutions that participate in it.

The reason for getting the monetary authority out of the supervision, regulation and resolution business is that these are inherently political tasks, in which property rights are re-assigned and re-allocated routinely and redistributive decisions are taken

all the time. No unelected technocrats should be in charge of such decisions without the kind of close parliamentary scrutiny, oversight and interference that would make an operationally independent monetary policy impossible. Clearly, if the Governor of the central bank is both in charge of setting interest rates and of the regulation and supervision of the key banks, it is not possible to fire him for incompetence in the performance of his supervisory and regulatory responsibilities while retaining him as the head of the monetary policy making committee.

Even if the central bank were to become the limited monetary authority I favour (with or without the lender-of-last-resort and market-maker-of-last-resort responsibilities), its operational independence, even in these restricted domains, would be at risk unless it is highly accountable.

2.7a Formal and substantive accountability

Formal accountability is the aspect of responsibility involving giving, ex-post, a statistical or judicial explanation for events, actions and outcomes. Such formal accountability requires that those to whom account is given (the Principal) can properly monitor the actions of the Agent (Trustee or Custodian). The Principal must have enough information to be able to make an informed judgment as to how well the party held to account has performed. Clear objectives for the Agent and the most complete possible information about the actions of the Agent are necessary for formal accountability to be possible.

Formal accountability requires openness and transparency, at least *ex-post*. I will focus in what follows on the formal accountability of the least formally accountable central bank in the visible universe, the ECB. It is clear from its own website, that the ECB has a minimalist interpretation of accountability as the least demanding kind of formal accountability only. Until recently, it identified accountability with the (written and oral) reporting obligations of the ECB to the European Parliament, the European Commission and the European Council. Published staff forecasts, press conferences with prepared statements and Q&A, speeches, interviews and other forms of communication by members of the Executive Board and by the Governors of the national central banks with the wider public supplemented these Treaty-based communication requirements. In the view of the ECB, public knowledge of the objectives of the ECB and the ability to observe some of the actions taken by the ECB would suffice, together with the communication channels just outlined, to make the ECB fully accountable. Of course, the central bank policy actions that are publicly observable (interest rate decisions, some of the decisions concerning the size and composition of the balance sheet) are but a subset of the total set of central bank policy actions. We don't know the identity of the counterparties of the ECB in their financial transactions or the terms on which these transactions were conducted – not even with an appropriate time lag that would respect legitimate commercial sensitivities about pending or recent transactions.

Recently, the ECB has decided to start publishing (as of 2015) minutes of its Governing Council policy meetings, following the Fed and the Bank of England. These would be unattributed minutes, not transcripts, and they would not contain individual voting records. As the ECB seldom if ever has a formal vote on monetary policy decisions, not having the individual voting record of a vote that did not place may not seem to be much of an issue. I believe this logic to be wrong (see e.g. Buiters (1999))

and Issing (1999)). The reason is that, unless votes are taken on every material policy decision, and unless formal accountability includes the individual voting records of all Governing Council members, substantive accountability cannot be achieved.

The standard ECB-stalwart's objection to publishing the individual votes of Governing Council members is that it would leave the national central bank Governors (and possibly the members of the Executive Board as well) open to improper pressures from their national constituencies to vote not in the euro-area interest, as they are supposed to do according to the Treaties, but in the national interest where the two are thought to be in conflict. I believe this arguments gets it exactly backwards. Voting the national rather than the European interest is a lot easier if one cannot be held to account for such mandate-violating votes because these votes are not in the public domain. Any formal political or judicial sanctions against such mandate violations become impossible if there are no formal votes or if the individual votes remain a secret.

Substantive accountability means that, following such reporting, explanation and justification, judgment (or other pleasant or unpleasant consequences) may follow. There is substantive accountability if the reporting, explanation and justification is 'payoff-relevant' for the party doing the reporting, that is, if there can be punishments, sanctions or rewards for those deemed responsible for actions or outcomes.

Logically, truly operationally independent central banks can have no substantive accountability at all. Central bank operational independence requires the following:

- Political independence (don't take or seek instructions).
- Technical independence (does the central bank have the tools to do the job?).
- Financial independence and security from external raids on its financial resources, to the extent that these are necessary to fulfill its mandate.
- Security of tenure and of terms of employment.
- An independent body (a court, say) to settle disputes.

Independence has to mean that those in charge of monetary policy cannot be fired except for incapacity or serious misconduct, and that financial remuneration and working conditions likewise cannot be used to reward or punish them. It ought to mean also that monetary policy makers cannot be sued in civil courts or be dragged into criminal courts for actions taken in their capacity as monetary policy makers.³⁵ Operationally independent central banks are therefore not substantively accountable.

I have come around to the view that the very high degree of operational independence sought and thus far achieved by the ECB is not necessary for the design and implementation of effective monetary policy. Substantive accountability of a central bank can be enhanced by making it possible for members of the central bank's monetary policy making committee to be fired for reasons other than incapacity or serious misconduct. The parliament that the central bank is formally accountable to

³⁵ In the advanced industrial countries we have not (yet) witnessed recourse to the law by those disgruntled with the conduct of monetary policy – in emerging markets many such instances can be found. The legal immunities and liabilities of central bankers in the performance of their monetary policy making tasks are, however, an uncharted area.

(in the case of the ECB this would be the European Parliament) should be able to fire/dismiss any member of the policy making committee if a qualified majority (say two thirds plus 1) of those entitled to vote are in favour of this. Policy disagreement between the Parliament and the central banker in question would be a valid ground for dismissal.

The absence of substantive accountability for central banks and individual central bankers means that it is difficult to provide them with the proper incentives to do the best possible job. Although many central bankers may be motivated in their approach to the job by a sense of public service, by duty and by unflinching commitment to the central bank's mandate, one would like to see these higher motives reinforced by such primitive and crass but frequently more reliable motives as the desire for power, prestige, wealth, comfort and leisure.

This problem is especially acute when the monetary policy decision is a group decision; it gets more severe the larger the monetary policy making committee. This is because when monetary policy is made by a committee, two further factors can adversely influence the quality of the decision making. The first is the problem of free riding and shirking by individual members whose incremental contribution to the joint product (the interest rate decision, say) cannot be identified clearly (see Blinder (1999, 2007a, 2007b), Sibert (2003, 2006), Mihov and Sibert (2006)). The second concerns some well-known problems and pathologies associated with small-group decision making, of which 'groupthink' is a well-known example. (see Sibert (2006); for a more optimistic perspective on group decision making see Blinder (1999, 2005), and Blinder and Morgan (2005)).

How can one incentivise monetary policy makers in operationally independent central banks to pull their finger out? Linking pay to performance would be one obvious mechanism. For a 'lexicographic' inflation targeting central bank this would be rather straightforward. Members of the Governing Council of the ECB would currently be having a rather Spartan year, with inflation undershooting the 'below but close to two percent' target consistently and persistently. It is true that the inflation outcome (and the behavior of all other nominal and real economic variables of interest) is driven by many forces other than monetary policy. Most of these other drivers are not under the control of the monetary authority. Some cannot even be observed or measured. Payment by result rewards good luck as well as good policies and punishes bad luck as well as bad policies. That, however, is the case with most real-world incentive pay systems that base pay on the behavior of performance indicators that are only partially under the control of the payee. Elsewhere I have made proposals to provide financial incentives for better forward guidance about the timing and speed of future increases in the policy rate and about its long-run neutral level, by making monetary policy makers' pay a function of the behavior of financial options that would pay off handsomely if actual future policy rates pan out in line with the forward guidance but would inflict losses if the forward guidance turns out to have been a poor guide to the future behaviour of rates (see Buiter (2013a)).

Proposals for linking central bankers' pay to performance have not been wildly successful. Without this, the only consequences of poor individual performance (if it can be identified), are damage to reputation (shame and embarrassment), poorer prospects for honours and impaired career prospects following one's term of office with the monetary authority.

Employment prospects in the public sector or the prospect of honours would not be morally appropriate, legitimate or even legal incentives to induce central bankers to put their shoulder to the wheel, but this does not mean they play no role. Post-central bank employment prospects in the private sector would, however, subject to the appropriate safeguards and purdah/garden leave/cooling-off-periods, be a useful way of incentivising central bankers.

If we grant the assumption that the outside world's perception of one's competence is a major determinant of one's future employment prospects, it is essential that the most complete information about each monetary policy maker's contribution to the monetary policy decision is publicly available. This is not an issue when monetary policy is made by one person, as is the case in New Zealand. It is an issue when monetary policy is made by a committee, as it is now in the majority of central banks. Revealing the individual votes of all members of a monetary policy committee as soon as practicable following a monetary policy decision, is an effective way of structuring incentives and represents a tiny step towards substantive accountability.

The obvious fact that a high degree of operational independence is inconsistent with any material degree of substantive accountability should be recognised openly; lack of substantive accountability is a price one has to pay for operational independence. The sight and sound of the ECB describing itself as the most accountable central bank in the world, when the truth is zero substantive accountability and a minimal and inadequate set of formal reporting duties (even if non-attributed minutes will now be released), is not a pretty one. I also do not think it is politically sustainable. Either the ECB will become more open, or its independence will be taken from it.

How would the operational independence of central banks be destroyed? In Japan most likely with the central bank maintaining the appearance of operational independence while shedding its substance. This process appears to be underway already. Overt political confrontation between the Ministry of Finance (or the Prime Minister) and the Bank of Japan is not the way things are done. The emergence of an 'occupy the BoJ' movement is also unlikely.

In the US the Fed has always lived, to a greater or lesser extent, in fear of what the Congress could do to it. The US Senate not confirming Presidential nominees for the Federal Reserve Board or delaying their confirmation are small pin pricks. Legislative initiatives to 'Audit the Fed', although perfectly legitimate and indeed desirable in my view, are other ways for the US Congress to harass the Fed. Some members of Congress have gone further than that. In 2007, Congressman Ron Paul sponsored a Federal Reserve Board Abolition Act (H.R. 2755 (110th)). The bill died, but undeterred Ron Paul wrote a book in 2009 with the self-explanatory title 'End the Fed'.³⁶ The book spent time on the New York Best Seller list. It may be viewed as the work of a crank, but if there are enough cranks, surprising and disturbing things can happen. More importantly, the Fed is a "creature of Congress", created by an ordinary federal law, the Federal Reserve Act, without any Constitutional protections. The threat of Congressional legislation undermining the operational effectiveness of the Fed, despite the safety valve of a presidential veto, is a real one. The 'Kill the Fed' movement is a sideshow at the moment, but could go mainstream under the right (or rather, wrong) set of circumstances.

³⁶ See Paul (2009).

In the UK, the Chancellor can change the inflation target of the Bank of England without even a Parliamentary vote. The Treasury also has reserve powers that permit the Chancellor take over the power to set interest rates from the Bank of England's Monetary Policy Committee, again without the need for a prior vote in the Commons, although the House of Commons has to endorse this decision within 28 days.

In the euro area, the ECB may appear safer from political interference than the Fed, the BoE or the BoJ, because of the extreme difficulty of amending the European Treaties that define the tasks, competencies, rights and obligations of the ECB and the European System of Central Banks (the Eurosystem, for all intents and purposes). This is correct in a legal, or perhaps legalistic sense. The protection provided by a Treaty, a Constitution or any other piece of paper, no matter how many significant signatures it contains, is limited. As Stalin is supposed to have said to French Prime Minister Pierre Laval in 1935: "How many divisions does the Pope have?".³⁷ There have been demonstrations in Greece and Spain against Germany and its leadership. Not, thus far, I believe, against the ECB and its leadership. But this could change.

Individual euro area member states can, as continuing members of the euro area, exercise pressure on the ECB to change its policies. They can do this at the level of the Eurogroup or at the street level. Those desperate enough can exercise pressure by using the threat of exit from the Eurozone. The credibility of such a threat depends on complex local and Eurozone-wide political dynamics that are hard to predict. Eurozone exit by a disgruntled member state must however be more than a tail risk, however: if Scotland can get within an inch of exiting a 307 years-old political union with England, Ireland and Wales, it is not inconceivable that any Eurozone member state could exit from a 15-year old monetary union. I believe that Mario Draghi was speaking the truth when he said that the ECB would, within its mandate, do 'whatever it takes' to keep the euro area together. Even if 'whatever it takes' includes surrendering the substance of operational independence. The formal trappings of operational independence can of course be retained to keep the legal eagles satisfied.

3. Conclusion

Central banks in most of the advanced economies have become too powerful, mainly as a result of systemic political failures in Western Europe and North America. In particular, they have accrued a host of deeply political responsibilities and powers. They have neither the legitimacy nor the capability or skills to discharge all these responsibilities effectively. I propose a return to narrow central banking. In its purest version, narrowly defined monetary policy could be decided outside the central bank. Even if the Monetary Policy Committee remains part of the central bank, the central bank is just the monetary authority, narrowly defined, and the lender of last resort and market maker of last resort for sovereigns and systemically important financial institutions. It should have no regulatory or supervisory functions. Its fiscal role should be transparent. Its quasi-fiscal actions should be minimized through a sovereign guarantee for all balance sheet transactions carrying credit risk, and a transparent accounting for each transaction with every counterparty.

³⁷ This was in response to Stalin being asked by Laval whether he could influence Russian Catholics to help Laval win favour with the Pope, to counter the increasing threat of Nazism. See Wikipedia, Joseph Stalin, Quotes, http://en.wikiquote.org/wiki/Joseph_Stalin.

As central banks exit many of their current responsibilities and activities other institutions, better qualified and more legitimate must take their place. A vacuum is not an attractive alternative to an over-reaching central bank. In practice, this means the following:

- National Treasuries (in the euro area, 18 (19 as of 2015) national Treasuries) provide sovereign guarantees for the credit risk central banks take on as a result of their lender-of-last-resort and market-maker-of-last resort operations.
- Macro-prudential regulation, micro-prudential regulation, conduct regulation, recovery, resolution and recapitalization of SIFIs and deposit insurance are assigned to institutions other than the central bank. Anything that puts public money at risk (notably recovery, resolution and recapitalization of SIFIs) has to involve the Treasury as an actor with veto powers.
- A body similar to the former Tripartite arrangement of the UK, or to the FSOC in the US today, must be created to coordinate the financial stability policies of the central bank, the Treasury and the other regulatory and supervisory bodies. The fact that the UK's Tripartite arrangement failed and that FSOC thus far appears to be little more than a talk-shop or paper tiger does not mean we should stop trying to create a variant that works. There is no alternative that has any chance of being both reasonably effective (output legitimate) and input legitimate.

Even a minimalist central bank will have considerable power to influence the path of inflation, output and employment and to redistribute resources through its fiscal and remaining quasi-fiscal instruments. Substantive accountability is incompatible with operational independence. For the minimalist central bank there is not much to choose between operational independence and granting parliament the power to dismiss members of the central bank's policy making committee for reasons other than incapacity and malfeasance, provided a qualified majority of those eligible to vote supports the dismissal. Any lack of substantive accountability should be compensated for with maximum formal accountability, including full procedural transparency, mandatory voting on all policy decisions with the individual voting records in the public domain.

Operational independence will be taken away from the ECB, the Bank of England and the Fed if they continue to perform their current broad range of regulatory, supervisory and (quasi-) fiscal tasks. Even the operational independence of the minimalist central bank I favor is likely to be tested severely in the years to come. It is likely that the short interlude of operational independent central banks will not last in most countries much beyond the end of the current decade.

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