THE ONLY GAME IN TOWN? A NEW CONSTITUTION FOR MONEY (*AND* CREDIT) POLICY

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Giving the first Andrew Crockett memorial lecture in June 2013[1], Raghu Rajan concluded "Central banks are now the only game in town". But Mervyn King got close to the feelings of the assembled company of central bankers when he responded, "If central bankers are the only game in town, I'm getting out of town!" (which he literally was, retiring a few weeks later).

That same weekend in Basel, the Bank for international Settlements' annual report set out at length why and how the true heavy lifting of sustainable economic recovery was, in fact, unavoidably in the hands of the governments, banks, households and firms whose balance sheets needed strengthening. Above all, supply side reform was needed to improve future, long-term growth prospects, increasing the spending power that easy monetary policy was bringing forward. By supporting near-term demand for goods and services, the central banks could do no more than create time for those fundamental adjustments and reforms to be effected, and the BIS fretted that things would be even worse if that time was not grasped by governments and others because, perversely, they seemed less urgent. But, I would point out, fretting was all that central banks could do, short of abandoning their statutory mandate to maintain price stability and smooth, as best they could, the path of output.

Whether consciously or not, Rajan was echoing US Treasury Secretary Don Regan nearly a quarter of a century before. But with an ironic twist. Regan had been lamenting the unwillingness of US politicians to rein in the fiscal deficit, putting all the burden of establishing lower long-term *nominal* yields on the Volcker Fed, which was declining to monetize the growing Federal debt and, more generally, was waging a war on inflation[2]. This time round, even in countries with solid public finances and even when standard monetary policy reached the zero lower bound (ZLB) for short-term nominal interest rates, politicians declined to provide sustained discretionary short-term fiscal stimulus. That left central banks having to innovate in order to generate economic recovery and, thereby, avoid deflation. Some of those innovations, notably *direct* interventions in credit markets, have arguably stretched the boundaries of their mandates. Coming on top of accusations that some central bank liquidity-support operations

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[1] Andrew Crockett was head of the Bank for International Settlements from 1994 to 2003. Amongst many other contributions to economic policy, he called in the early 2000s for a macro-prudential approach to banking system regulation.

[2] William L Silber, "Volcker: The Triumph of Persistence", 2012. Volcker was under pressure from the Reagan Administration to relax his fight against inflation in the belief that that would bring down expected long-term interest rates.

during the first phase of the crisis overstepped a critical mark by providing a taxpayer bailout of bust firms and their bondholders, all this has raised questions about central bank independence. For some, it has reinforced pre-existing doubts about the legitimacy of independence. For others, concerned that central banks have got too close to finance ministries during the crisis, it has raised worries about the reality and sustainability of their independence. At the very least, debate is needed about how to frame formal mandates for central banks as they head towards a 'new normal'.

In this lecture, I shall address one core part of that territory: the extent to which central banks should be permitted to intervene in financial markets in pursuit of their macroeconomic stabilization objective[3]. I begin by situating independent central banks within the higher-level separation of political powers in modern democracies, which turns on our societies having adopted *fiat* money systems rather than commodity-based money during the 20th century. Almost equally important, but tragically neglected in the decade or so leading up to the crisis, is that our societies allow *fractional-reserve banking*: private banks issue monetary liabilities and make loans to firms and households, entailing a consequent intertwining of the economy's money and credit systems. I shall argue that that has big implications for the *de facto* role of central banks, which society would do well to recognize *de jure* in framing central bank mandates. That provides the backdrop to an examination of central bank balance-sheet management operations and their role in 'credit policy'. I set out principles for different types of operation and, given inherent obstacles to maintaining purity in monetary/fiscal relations, I argue that an explicit *Fiscal Carve-Out* is needed for central banking, defining clear boundaries to where they can venture with their independence intact. Taken together, this amounts to an outline of a composite *money-credit constitution* for central banking.

Central banking before *the Fall*

Prior to the crisis, all looked well. Monetary policy had achieved low and stable inflation, economic growth had been smooth, and a few nasty bumps in the road --- including the bursting of stock and bond market bubbles --- had been navigated without too much difficulty. Central bank independence was embedded. Indeed, it could even be defended on constitutional grounds.

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[3] A broader review of the conditions for independent-agency legitimacy, providing the underpinnings for this paper, was the subject of my 2014 Harvard Kennedy School Gordon Lecture, "Independent Agencies in Democracies: Legitimacy and Boundaries for the New Central Banks". A parallel paper addresses central banks' LOLR role: "The Lender of Last Resort and Modern Central Banking: Principles and Reconstruction", Bank for International Settlements, 2014.

The constitutional status of central bank independence: fiat money under the Separation of Powers

James Buchanan had, in fact, argued that in the monetary sphere “something analogous to the independent judiciary…seems required, but...bound by the parameters set out in the constitution”[4].

The implied claim that the monetary authority operates at the same level, constitutionally, as elected politicians, or that it constitutes a Fourth Branch, is overdone. Central bank statutes do *not* (a) condition the legal relationship between citizen and state in some general, overarching, manner, or (b) change the scope of fundamental constitutional rights --- the tests for being a constitution-type law endorsed by a former head of the UK’s Supreme Court.

But central bank independence is, I would argue, a corollary of the higher-level separation of powers at the heart of modern constitutional government. The earliest step towards a separation of powers was the demand of medieval Parliaments to approve the king’s desire to levy extra taxes. That separation would be undermined if the executive government could use a power to print money to substitute for legislatively approved taxation. If the executive branch controlled the money-creation power, it could at the very least defer its need to go to the legislature for extra ‘supply’, and at worst could inflate away the real burden of its debts to reduce the amount of taxation requiring Parliamentary or Congressional sanction. In other words, it could usurp the legislature’s prerogatives.

There are only two solutions to this. One is to pass a law tying money to some physical standard, such as gold. But a return to gold is unlikely to be feasible in a world of full-franchise democracy: the expected volatility in output and employment would not be politically sustainable in the modern world. The purpose of the standard was to ensure external convertibility, and thus served those parts of society for which foreign trade and foreign relations mattered a lot.

The other route, where fiat money is accepted, is for the legislature to delegate the management of money to an agency. In a system of fiat money, a central-bank-independence law can protect the rights of Parliament/Congress, and thus of the people they represent, from the short-run temptations of the executive branch of government.

Thus, there is a constitutional basis for both a ‘no monetary financing’ law banning the central bank from funding the government directly *and* a statutory objective of price stability, so that the monetary policy agent is debarred from inflating away the burden of government debt. That, more or less, was where things stood before the crisis.

Parsimonious and pristine: monetary policy before the Fall

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[4] James A Buchanan, “The constitutionalization of money”, Cato Journal, 2010. Similar views were expressed in earlier papers.

As constructed in that world of innocence, standard monetary policy was fairly simple and straightforward. Central banks were given an overriding goal of achieving long-run price stability, generally defined for operational purposes as a low and stable rate of consumer-price inflation. Consistent with that, they sought to maintain a path for aggregate demand broadly in line with the economy's aggregate supply capacity. To that end, deploying their position as the monopoly supplier of the economy's final settlement asset (their money) and exploiting short-term stickiness in prices and wages, they set a very short-term interest rate to steer --- *rough*-tune, not fine-tune --- spending in the economy. Obviously, the effect of any one day's *overnight* rate of interest on its own would be negligible. The potency of monetary policy comes, therefore, from expectations about the future path of the policy rate. For that reason, central banks aimed to pursue a *systematic* policy, based on clear *principles*. It was recognized that those principles might need to be updated from time to time, as lessons were learned about the workings of the economy, but the meta-principle was to remain principled.

In its instruments, therefore, monetary policy was highly *parsimonious*: set the overnight rate of interest and try to convey how policy will respond to different economic circumstances (the 'reaction function'). This was good not only for the effectiveness of policy, but also for its *legitimacy*[5]. That is because it enabled the public and, crucially, their elected representatives in the legislature to monitor without too much difficulty both the outputs and outcomes of policy: the level of interest rates, deviations of inflation from target, and the volatility of output and employment around (estimates of) a steady-state path.

Although the central bank's policy settings influenced asset prices and bank-lending conditions --- and, to be clear, partly *relied* upon doing so --- there was no *direct* intervention in the allocation of credit. That job was performed by capital markets and private sector banks. Anything else would have seemed at odds with a market economy. Further, the central bank's exposure to risk was low; either by virtue of operating in low risk Treasury bills or by lending against (repoing) a wider class of securities but with *excess* collateral. In consequence, the distance from fiscal policy was marked (although not zero, as I shall discuss). Policy might, therefore, have been described as *pristine* as well as *parsimonious*.

Conditions for legitimate delegation to central banks were satisfied

As a result, legitimacy was reasonably embedded.

[5] For a wider discussion of legitimacy, see my HKS Gordon Lecture, *op cit*.

Conditions for *whether* to delegate to an independent agency looked to be satisfied. Society's aversion to inflation was reasonably stable and broad based; and the goal of low inflation could be specified and monitored. It was, therefore, feasible to delegate the operation of policy to an independent agency; and it made sense to do so given the difficulties faced by elected politicians in making credible commitments to stick to a non-inflationary policy regime, on account of the temptation to stimulate an economic boom to generate jobs and popularity. Finally, such delegation would not entail central bankers making 'political' decisions as monetary policy did not involve *first-order* distributional choices[6].

Moreover, principles for *how* to establish an effective regime of delegated powers were mostly met in practice. Purposes, goals and powers were typically framed in primary legislation, or fleshed out by executive government; high-level decision-making procedures were set by the legislature; central banks operated within their set domain according to reasonably clear principles; and transparency was sufficient for both the regime itself and the central bank's stewardship of it to be monitored and debated by the public and, crucially, the legislature[7].

Unfortunately, a fifth good-design precept was not satisfied: clarity about what would happen, substantively and procedurally, during a crisis and, in particular, when a central bank reached the boundary of its authorities.

The Fall

Instead, as the financial and economic crisis progressed, there was unavoidably unscripted innovation, on a grand scale. While the details vary across currency areas, in providing macroeconomic stimulus central banks have been acting *directly* on the whole battery of risk factors incorporated into asset prices --- term premia, liquidity premia, credit-risk premia. They have done so by operating with overwhelming force in long-term government bond markets, corporate and mortgage bond markets, and by subsidizing some kinds of bank lending. In the process, they have come much closer to steering the allocation of credit, and have taken more risk.

'Parsimonious' and 'pristine' are, therefore, hardly epithets that come to mind for central bank policy and operations over recent years. A brief age of innocence passed as central bankers bumped into some of the world's seamier realities.

Innocence lost: fractional-reserve banking and the need for a richer *money-credit* constitution

[6] The 'whether' conditions are adapted from Alesina A and G Tabellini, "Bureaucrats or Politicians?" and "Bureaucrats or Politicians? Part II: multiple policy tasks", 2005 and 2007.
[7] Both the 'whether' and the five 'how' design precepts are discussed in the HKS Gordon Lecture 2014, *op cit*.

The crisis cruelly exposed the standard monetary policy regime as insufficient to preserve stability. Most of the money in today's economies is the deposit-money of private banks. As confidence in their soundness evaporated, their balance sheets cratered, arbitrage between different parts of the financial markets was interrupted, and credit supply atrophied. The adverse shock to the supply of (broad) deposit-money had to be offset by a massively increased supply of (narrow) central bank money. But the transmission of monetary policy into nominal demand was impaired.

Buchanan would not have been surprised. His preferred monetary constitution included a ban on fractional-reserve banking (FRB), with the fragile balance-sheet structure that makes liquidity crises a feature of modern capitalism; the power of money-creation would be reserved for the state [8].

I doubt whether it would be wise to ban fractional-reserve banking, with its combination of maturity transformation and risky lending. The liquidity insurance provided by banks, including through committed credit lines, reduces the need for households, businesses and other financial intermediaries to self-insure by holding stocks of liquid securities. That releases resources for use in the risky enterprises that generate growth and prosperity[9].

Nevertheless, advocates of 'narrow banking' want to separate money and credit, with the new narrow-banks restricted to investing in government bonds or central bank reserves (which would in turn be invested in government bonds). To achieve its goal, any such regime would need to cover 'shadow banking' of all shapes and sizes[10]. There would not be much point in requiring *de jure* banks to hold 100% of their assets in government bonds, if the economic substance of their current liquidity-creation and liquidity-insurance services could be replicated elsewhere, as they would be in a world of endemic regulatory arbitrage. That rules out *open-end* mutual funds replacing banks as the economy's core lenders to households and small businesses. Given that mutual-fund redemptions operate on a first come-first served basis, the opacity of the underlying assets would expose them to runs. Such funds would need to be covered by the ban.

Closed-end unlevered credit funds with no short-term debt liabilities would be immune to runs, and so would become the new mainstay of credit supply. But one wonders whether demand to invest in them would be sufficient given the difficulty of valuing their portfolios and the lack of a redemption discipline on their management. If, in consequence, the supply of credit to the economy were materially impaired, there would likely be calls on the state to fill the gap. It is worth recalling that some of the strongest

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[8] Buchanan 2010, *op cit*.
[9] If the likelihood of deposit withdrawals and credit-facility draw-downs are not highly correlated, the aggregate benefits are greater. Anil Kashyap, Raghuram Rajan and Jeremy Stein, "Banks as liquidity providers: an explanation for the coexistence of lending and deposit-taking", 2002.
[10] For recent advocacy of narrow banking that recognizes this, see John H Cochrane, "Towards a run free financial system", 2014. For an example of the other side of the case, see Stephen G Cecchetti and Kermit L Schoenholtz, "Narrow Banking Won't Stop Bank Runs", Money and Banking Blog 28 April 2014.

support for the 1930s Chicago Plan for 'narrow banking' came from advocates of government deciding how to allocate credit in the economy. As Senator Bronson Cutting put it at the time, "private financiers are not entitled to any profit on credit"[11].
Finally, if banks (or, indirectly, the central bank) were forced holders of government securities, there would need to be some protection against executive government using money creation to fund projects designed to serve their narrow political interests: controlling credit would be a tempting prospect for politicians. Thorough-going narrow banking would need, therefore, to be matched by a robust, credible fiscal constitution, but that has remained elusive. I worry that too few advocates of narrow banking have contemplated where it could lead. Credit-creation in the hands of politicians is no more attractive than imprudent private lending.

Irrespective of whether or not my normative arguments about 'narrow banking' are persuasive, fractional-reserve banking exists today and I doubt very much that it is going to go away. I would venture that where banking does exist, Buchanan would, no doubt with regret, regard its stability as integral to monetary stability. That is certainly my own view.

Indeed, I see 'monetary stability' as having two components: stability of the value of central bank money (base or narrow money) in terms of goods and services; and also stability of deposit money in terms of base money. Put another way, a central bank is going to find it hard to sustain price stability if the banking system implodes. That used to be orthodoxy. Here is Paul Volcker in a 1989 valedictory speech delivered to his central banker peers: "I insist that neither monetary policy nor the financial system will be well served if a central bank loses interest in, or influence over, the financial system[12]."

We need, therefore, not merely a monetary constitution but a *money-credit constitution*. By that I mean rules of the game for banking designed to ensure broad monetary stability[13]. This has important implications for central banks. *Unavoidably*, they are providers of liquidity *re*-insurance to the banking system and, in addition, are involved to some extent in its regulation and supervision. I will explore how each of those functions affects their role in the economy's credit system, as a prelude to discussing the core issue of how central banks should use their balance sheets.

Liquidity re-insurance: the lender of last resort

Fragilities inherent in the workings of the banking system's provision of liquidity insurance to the economy call into existence the central bank's role as a liquidity *re*-insurer. Up to a point, central banks

[11] Phillips R J, "The Chicago Plan and New Deal Banking Reform", 1992.
[12] Paul Volcker, "The Triumph of Central Banking?" Per Jacobsson Lecture, 1990. The question-mark in the title was underlined during the Q&A.
[13] This way of thinking is not uniquely Anglo-American. It would also fit within the German tradition of Ordnungspolitik.

have no choice in the matter. They have to accommodate increases in the demand for their money, as occurs during a run, in order to avoid an unwanted tightening in monetary conditions. And if money markets break down, so that an injection of reserves cannot be distributed by the market to where it is needed, a shortage of liquidity at individual firms has much the same effect as an aggregate shock to the demand for money. By acting as the lender of last resort (LOLR), central banks can in principle reduce the incidence of liquidity runs and, up to a point, contain the fall-out when a run occurs[14].

But their execution of this function during the early phases of the crisis proved controversial. Probably the most serious accusation is that some central banks, including it is alleged the Fed, aided insolvent firms, and that they stretched beyond their legal authority to do so [15]. By contrast, the Bank of England was accused of initially being slow to act and overly conservative[16]. Some big issues lurk here. The LOLR has to make difficult judgments about whether an applicant is *fundamentally* insolvent, taking account of the prospective effects of the liquidity crisis and of their own policy response on the likely path of the economy and thus on the likely value of banks' assets. Whatever that assessment, if it lends the LOLR is unavoidably exposed to risk of losses; if a borrower defaults and the central bank's claims are not covered by its collateral, the losses get transferred to the fiscal authority. And the LOLR must also face the prospect that anyone who thinks they will get access to the liquidity re-insurance will take more risk than otherwise (moral hazard).

Beyond those elemental issues, the events of 2007-09 threw up a heap of hardly less momentous technical questions: should central banks promise to lend against a wide or only a narrow class of collateral; should they provide liquidity assistance to non-banks; should they act as market makers of last resort (MMLR)? They did all of those things, but should they --- and *could* they --- commit to that having been a one-off?

Finally, the apparent absence of principles guiding their LOLR operations made it hard for elected representatives to hold central bankers to account. This stacks up to quite an agenda, much of it covering issues going beyond Bagehot's classic mid-19th century tract.

A generation ago, Alan Meltzer called for rules for the LOLR[17]. I agree that a regime is needed; a regime of *constrained discretion*, where the exercise of discretion can be reviewed *ex post*. At present, even in those jurisdictions that have some components of a framework for the LOLR, they are rarely brought

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[14] These points and what follows are expanded upon in Tucker, "The Lender of Last Resort and Modern Central Banking: Principles and Reconstruction" 2014, *op cit*.

[15] Thomas M Humphrey, Federal Reserve Bank of Richmond, "Lender of Last Resort: what it is, whence it came, and why the Fed isn't it", Cato Journal, 2010. For a somewhat different view, see William R Cline and Joseph E Gagnon, "Lehman Died, Bagehot Lives: why did the Fed and the Treasury let a major Wall Street bank fail?" Petersen Institute, 2013.

[16] " … I could not in practice order the Bank to do what I wanted. Only the Bank of England can put the necessary funds into the banking system… The fact that we had given the Bank independence had a downside as well as an upside.' Alastair Darling, "Back from the Brink: 1000 days at Number 11", 2011, p23.

[17] For a recent statement, see the concluding parts of Allan H Meltzer, "What's wrong with the Fed? What would restore independence?" Cato Journal, 2013.

together in to a coherent and digestible whole. Here I will merely summarize those of my substantive conclusions relevant to the wider discussion of central bank balance-sheet management.

First, so long as fractional reserve banking exists, there is no avoiding central banks providing a LOLR service. Equally unavoidably, that exposes them to risk, and entails choices about counterparties and collateral.

Second, just as 'no monetary financing' is necessary for a securely independent monetary policy, so 'no lending to fundamentally insolvent firms' must be the cardinal principle of an independent LOLR. Never again should major central banks find themselves in a position where they cannot compellingly rebut accusations of "You bailed out firm X". They therefore need to publish a framework for how soundness/solvency will be assessed. Such judgments should be probabilistic and conditioned on the central bank's view of the likely effect of their own actions.

Third, a declared policy of lending against only a narrow class of very high-quality collateral, whatever the circumstances, is not credible. Given the consequences of bank distress on the wider economy, *ex post* central banks will lend so long as they can get hold of decent collateral. But a central bank has no business lending against assets that it cannot understand, value and manage; and it should explain publicly how it values assets and sets haircuts etc.

Fourth, again in the interests of time consistency, central banks should not rule out lending to *solvent* non-banks on a *case-by-case* basis where stability would otherwise be seriously threatened. But they should do so only after consultation with the executive branch of government, and they should give a subsequent (suitably delayed or secret) account to the legislature. There should, moreover, be consequences for the management and board of the borrowing firm; and other firms with similar business models should be forced to become banks or change so that they no longer run the risk of suffering banking-like liquidity distress.

To ensure that they are free to say 'no' to bust firms, central banks have a vital interest, unrecognized until recently, in ensuring that *all* fundamentally *un*sound financial firms can be put into resolution or bankruptcy without taxpayer solvency support (a bailout) being needed to stave off systemic collapse. The rules of the game for finance --- or, if you prefer, the key components of the money-credit constitution --- are being transformed by resolution regimes and strategies that can deliver just that. This is a revolutionary change, so long as the authorities seize it[18].

Summing up, if fractional-reserve banking is permitted, central banking cannot be 'pristine'. As the LOLR, the management of a central bank's balance sheet cannot be pure: principled, absolutely yes; pure, no.

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[18] Tucker, "Regulatory reform, stability and central banking" Brookings Hutchins Center on Fiscal and Monetary Policy, 2014.

Macro-prudential policy: inter-temporal stabilization

Whether or not every detail of those proposed LOLR principles commands universal acceptance, it is clear enough from history that, come a financial collapse, the LOLR will pretty well always be at the 'scene of the disaster', exposing itself to risk as it tries to contain the crisis. Society will expect the central bank to give an account of how things could have come to such a pretty pass. This gives it a vital interest in both supervision and regulation. Supervision, so that it does not find itself having to lend from a standing start with no information. Regulation (and supervision) so that the probability of liquidity crisis, and the economic downturn it can bring, is not unacceptably high. While the central bank does not need to be the sole regulator, it *will* be involved. Much better for society that the *de jure* regime recognizes that reality.

But the objective of the central bank's prudential role should be stability. That is vital to maintaining focus and to constraining the central bank's power. The *macro-prudential twist* to regulation and supervision following the crisis has made such a regime somewhat easier to frame and explain.

Framing the statutory goals of central banks in terms of *maintaining stability of the monetary system* (or financial system) is consistent with their being responsible for *inter-temporal stabilization policy*[19]. Alongside their monetary policy instruments, they therefore need a set of *macro-prudential policy instruments* to make inter-temporal stabilization of the monetary system robust over *different* horizons; credit cycles are sometimes longer than more standard business cycles.

The benchmark instruments are the capacity to *vary* capital, liquidity and collateral requirements in the light of evolving threats to stability. In an important sense, this is *not* about changing the regulatory goalposts. Rather it is about dynamically recalibrating, as needed, to maintain a broadly unchanged degree of resilience in the system.

This is broadly analogous to the operation of monetary policy. In order to keep the path of aggregate demand broadly in line with the economy's productive capacity, the central bank changes its policy rate of interest in a way designed to keep the short-term real rate of interest (r) in line with the underlying equilibrium rate of interest that would maintain the economy in balance if prices and wages were flexible (r*). Thus, in the face of shocks to the economy, the policy rate might change in order to leave demand conditions broadly unchanged after a lag. Returning to the prudential sphere, the parameters of the base regulatory framework are, if only implicitly, determined on the basis of two judgments: the degree of resilience desired, and an assessment of the riskiness of the world. (One could think of these as a normative confidence interval for systemic distress, ie a minimum acceptable probability of a crisis, together with an assumed underlying stochastic process generating systemic threats.) But the risk environment is not stable. For purposes of exposition, one can think of it (the underlying stochastic process) having three variants: normal, exuberant and depressed. If the regulatory regime were permanently calibrated to 'exuberant', there would be a risk of the supply of financial services being

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[19] In terms of boundaries to their mandate, this formulation also implies that central banks should *not* be responsible for consumer protection, competition policy, policy on the structure of the industry, or for sponsoring the industry. I expand on those proscriptions in the 2014 HKS Gordon Lecture, *op cit*.

impaired. If, however, it is calibrated to 'normal', that will not be sufficient to deliver the desired degree of resilience during exuberant phases. Thus, since an exuberant boom in credit and asset markets might temporarily alter the riskiness of the world (change the underlying stochastic process), capital (K) requirements (or minimum collateral requirements) might need to be increased temporarily in order to maintain system resilience in line with an *unchanged* degree of resilience desired by society. (In summary notation, if monetary policy is trying to keep r in line with r*, macro-prudential policy is trying to keep, in this case, K in line with K*, defined as the capital level expected to deliver the desired degree of system resilience.)

In other words, build up an extra buffer during periods of stability-threatening exuberance because, on a forward-looking basis, the resilience of the system would otherwise be eroded. When the 'bubble' bursts, a debt-overhang would still impede the subsequent macroeconomic recovery, but the downturn would be less severe if banking (broadly defined) did not collapse because its resilience had been maintained when the environment was unusually threatening.

Four things can be said about this. First, it is consistent with the responsibility for macro-prudential policy being delegated to an independent agency because, as with monetary policy, a political decision-taker would be tempted to substitute their own interests (re-election) for the country's interests, allowing a potentially destabilizing asset bubble or credit boom to persist in order to harness the 'feel-good factor'[20].

Second, on this view, a central bank would be endowed with a remit and powers *only* to safeguard stability, not to intervene in those market malfunctions, including some asset-price booms, that jeopardize the efficient allocation of resources in the economy but do not materially threaten stability itself. Of course, in practice that distinction involves difficult judgments, but the power of central banks needs to stop somewhere if they are to enjoy substantive legitimacy (as opposed to solely the procedural legitimacy conferred by a legislative act). This is a field where some boundaries are definitely needed.

Third, and crucially for the central thesis of this paper, the central bank's instrument of first choice to preserve systemic stability would be macro-prudential regulation not monetary policy or balance-sheet policy more generally. This is somewhat at odds with the view that monetary policy has the virtue of "getting into all the cracks"[21], which I think holds robustly only in an economy with capital controls. In an open economy, domestic monetary policy does *not* penetrate all risk-taking channels and institutions if risky projects can be financed in foreign currency from abroad; that's why the cross-border carry trade is so important. This is not to deny that loose monetary conditions can affect risk-taking behavior --- I am sure they do. It is about the order in which instruments should be deployed to help preserve stability.

[20] There is not enough work on time-consistency and political-preference problems in macro-prudential policy. Something as pared down as the Barro-Gordon model of price-stability credibility is needed.

[21] Jeremy Stein, Federal Reserve Board, "Restoring household financial stability after the Great Recession: why household balance sheets matter" 2013.

Macro-prudential policy should take priority because it can act directly on the resilience of the financial system. Delegating macro-prudential policy to central banks gives them some tools to mitigate the moral hazard that can be created by the expectation that monetary instruments will be employed to reduce the costs of recession for overly-indebted financial intermediaries, businesses and households[22]. There is, in other words, a case for allocating control of the macro-prudential mitigants to the generator of the monetary moral hazard.

And, fourth, macro-prudential variations in regulatory requirements *will* affect credit conditions. As higher capital, liquidity or collateral are required, credit conditions will tend to tighten, other things being equal. When the exceptional danger has passed, unwinding the macro-prudential tightening may help credit conditions to ease. Thus, in terms of my core subject of central bank balance-sheet management, the availability of macro-prudential regulatory levers should weaken the case for either the monetary authority or the fiscal authority intervening in financial markets directly to influence specific risk premia or the allocation of credit. Macro-prudential instruments would be the favoured instrument for credit policy, with the objective of maintaining the system's resilience.

Central bank balance sheet policy: QE, the MMLR, credit policy, and the *Fiscal Carve-Out*

Let me sum up my extensive scene setting for the core and somewhat fraught issue of what range of balance sheet operations is legitimate for central banks.

Central banks are not independent solely as a matter of expediency, as a means to improving the effectiveness of policy, important though that is. In a fiat-money system, independence is a corollary of the high-level separation of powers in our democracies between executive government and the legislature, which is the fiscal authority. But, I have argued, in the presence of fractional-reserve banking, price stability is an incomplete specification of the economy's need for monetary stability. This gives the central bank an unavoidable role as lender of last resort, and so its balance sheet can never be the pristine thing that purists desire. Nevertheless, constraints are needed on central banks deploying their power in specific markets if they are to stay on the right side of a blurred line between monetary policy and fiscal policy. The advent of macro-prudential regimes helps, as the authorities can act to preserve system resilience --- *indirectly* influencing credit conditions --- through dynamic adjustment of

[22] Emmanuel Farhi and Jean Tirole, "Collective moral hazard, maturity mismatch, and systemic bailouts", 2012. See also Marcus Miller, P Weller and L Zhang, "Moral hazard and the US stock market: analyzing the 'Greenspan Put'", 2002

regulatory measures rather than through targeted balance-sheet interventions relying on weight of money and entailing fiscal risk-taking.

In short, both as LOLR and, to a greater or lesser extent, as macro-prudential regulator, central banks *are* involved in credit policy.

This is a very different starting point to an exploration of balance-sheet policy from the view that the proper scope of monetary policy, and of market operations generally, is and must be limited to exchanging zero interest-bearing central bank money for Treasury Bills. Such operations change the composition of the liabilities of the state as a whole, of the consolidated balance sheet, but do not change its assets; Treasury Bills are effectively retired, with those liabilities replaced by monetary liabilities. That story is a useful analytical benchmark, but not much more.

First, it is not very helpful where the government doesn't have much debt in issue. Partly for that reason, the Bank of England bought and lent against short-term private sector trade-credit claims for over a hundred years. Second, eschewing private sector paper but buying (or lending secured against) state paper can reduce the cost of government funding, which purists of a different colour might regard as creeping in to the sin of monetary financing, or at least as being similarly distortive. Those who reasonably fret about central banks buying private sector paper should not imagine or make-out that buying government paper is untainted; the whole point of central bank independence is precisely to put obstacles in the way of monetary financing being abused by governments. Third, as I have argued already, in its role as LOLR the central bank isn't going to be able to avoid taking a wide range of instruments as collateral from those counterparties that are fundamentally sound. This isn't a new point. As a former Governor of the Bank Of England said of the 1820s crisis, when the LOLR function was first emerging, "we lent in modes that we had never adopted before, …by every possible means consistent with the safety of the Bank"[23] . Fourth, when nominal interest rates are at or very close to the zero lower bound (ZLB), Treasury Bills and money are very close substitutes, so conducting open-market operations in bills won't make much difference. And fifth, since central banks moved to paying the policy rate of interest on reserves, which some did on principled grounds *before* the crisis[24], reserves and Treasury bills have become much closer substitutes even away from the ZLB, so that monetary policy no longer gets implemented in quite the way assumed in the benchmark story. That set of reforms expands central banks' degrees of freedom: the standard policy rate, the size of the balance sheet, and the composition of the asset portfolio become separate choices. The question, therefore, is what the constraints there should be on those choices.

Separately, it seems likely that central bank balance sheets are going to remain unusually large for a while after macroeconomic recovery is secured, and possibly persistently. That is because demand for central bank money (reserves) is liable to remain higher than historically, given perceptions of risk, new

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[23] Quoted in D Kynaston, "The City of London", chapter 4, one volume edition, 2011.
[24] Including the ECB and the BofE.

regulatory constraints, and moves to paying interest on reserves. In consequence, some principles on balance-sheet management are needed, and can't wait until the next full-blown crisis.

High-level principles for balance-sheet policy, and the place of risk premia in monetary policy

I suggest three high-level principles for central bank balance-sheet policy.

First, at least in the upswing of the credit cycle, macro-prudential tools, such as raising firms' capital or liquidity requirements, should be preferred to intervening directly in markets to sustain stability. That is because macro-prudential measures can in principle work through all regulated intermediaries into all markets and, separately, do not entail risk of financial loss (or gain) for the state. In the bust phase, it may *sometimes* be possible and sufficient to unwind the tightening of regulatory policy, but that won't always be so[25].

Second, to help the public and, in particular, the legislature monitor what central banks are doing with their balance sheets, a principle of *instrument parsimony* is attractive *for financial peacetime*. Easier, I would suggest, routinely to ask the central bank to explain why it has changed its short-term interest rate, and possibly a regulatory lever, than to have to make sense of why it is intervening in a whole range of financial markets to influence term premia, liquidity premia and credit-risk premia. So I favour central banks using the fewest instruments consistent with achieving their objectives given the constraints posed by the frictions and imperfections in the real world they seek to influence. In practice, that entails a parsimonious approach when short-term interest rates are above the zero lower bound (ZLB).

Third, the regime needs to incorporate substantive contingency plans for a range of eventualities, including being at the ZLB, together with agreed procedures for how the legitimate scope of central bank operations will be determined when those prior contingency plans are exhausted. A key question here is how far elected politicians should be involved. Whatever choice jurisdictions make, it should be clear and they should stick to it.

The first two principles --- a preference for macro-prudential policy over direct interventions in credit markets, and parsimony in the deployment of balance-sheet instruments --- do not entail that monetary policy should be indifferent to credit conditions or, more broadly, the evolution of risk premia. On the contrary. It is finally becoming accepted, after years of what seemed like denial, that monetary policy can and does affect risk appetite and behaviour over and above the effect of changes in the risk-free component of discount rates on asset values (and so on the availability of pledgable collateral). If that's correct, then monetary policy might sometimes contribute to the build-up of risk within the financial

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[25] Tucker, "Banking reform and macro-prudential regulation: implications for banks' capital structure and credit conditions", Helsinki 2013.

system[26]. In consequence, there *is* a need to reflect on the operation of monetary policy. I shall offer the briefest sketch of a thought here.

Without flipping to using monetary policy actively to prick bubbles, central bankers might usefully examine the extent to which they smooth policy-rate changes[27]. Big picture, the effect of smoothing is to dampen the volatility of longer-term bond yields, and thus plausibly other asset prices. But such contrived asset-market stability could plausibly be associated with greater risk-taking in markets, with the perverse effect of *increased tail risks* of major volatility in the economy and markets. Just as there is a case for central banks being given a *hierarchy* of lexicographic objectives for price stability and full employment, so there is an argument for monetary authorities having a third-ranking objective of avoiding fuelling financial-system risk-taking to the extent consistent with achieving their higher-order objectives of full employment and, pre-eminently, price stability (ie well-anchored medium-term inflation expectations). Even in the US system where the Federal Reserve has a 'dual mandate' for price stability and maximum employment, they should think carefully about dispelling a not narrowly held view that they care a lot about avoiding bond market volatility.

But even with the best achievable performance of monetary policy and macro-prudential policy, crises will recur, and so society needs to decide what range of central bank interventions is permissible. I shall discuss 'vanilla' QE, lending (ie repos) against wide collateral, market maker of last resort operations, and outright purchases of risky instruments. I conclude by advocating that each jurisdiction should determine and promulgate a *Fiscal Carve-Out* for its central bank. Throughout, the emphasis is on political economy rather than the positive economics of different interventions.

Quantitative easing and government debt management

On both sides of the Atlantic, some central banks implemented QE by buying long-term government bonds, with the dual purpose of injecting money into the economy and of lowering long-bond yields, via preferred-habitat effects on term premia. But government debt managers can offset those effects by lengthening the maturity (or duration) of central government debt issuance, ie by changing debt-management strategy, which they have a narrow incentive to do in order to lock-in unusually cheap funding costs. Remarkably, they did just that in the United States[28].

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[26] Jeremy Stein, "Yield-oriented investors and the monetary transmission mechanism" 2013. At the Bank of England, both Governor King and I talked before the crisis about the importance of somehow incorporating risk premia into analyses of the monetary transmission mechanism, drawing on much earlier work by Brunner and Meltzer. The challenge is how to operationalize the sentiment.

[27] The degree of interest-rate smoothing seems to have increased since the late 1990s. See John Y Campbell, Carolin Pflueger and Luis M Viceira, "Monetary policy drivers of bond and equity risks", March 2014 version.

[28] This is documented by HKS MPP-candidate Joshua S Randolph in "The interaction between government debt management and monetary policy: a call to develop a debt-maturity framework for the zero lower bound", 2014. Put another way, absent the injection of money, a government debt-manager can execute the same yield-curve operation by buying long-bonds financed by an increased issue of Treasury bills, reversing the operation later. This

In the United Kingdom, the authorities recognized that co-ordination was needed, and before QE commenced in early 2009 the Bank of England agreed with the Treasury, via a published exchange of letters, that (a) the government would not change its debt management strategy, which had been sufficiently stable for innovations to be identifiable by market experts and Parliament, and (b) they would indemnify the Bank against any losses incurred upon later selling gilts back into the market[29].

Thus, once the *composition* of the consolidated government/central bank (ie the state's) balance sheet is being materially affected by the central bank's choice of what *assets* to operate in, a degree of explicit co-operation and co-ordination is unavoidable if overall policy is to be coherent.

But that need not prompt a reflex alarm about political encroachments on monetary independence, in violation of the executive branch/legislature separation of powers. The key determinant of whether CBI is being compromised is *who* is deciding the amount of money injected into the economy (or, more broadly, the stance of monetary policy and whether it remains directed at achieving price stability)[30]. That the central bank is still in charge of monetary policy is more readily conveyed to public, markets and Parliament if the need for co-ordination with government has been countenanced and telegraphed in advance. Failure to do so invites confusion, and thus inadvertently gnaws away at legitimacy.

The big point here is that monetary independence does not in and of itself preclude cooperation and even coordination with the fiscal authority. It all turns on preserving intact --- and being seen to preserve intact --- the domain of delegated discretion.

Balance-sheet 'credit policy': the problem

That is the easy case. Perhaps the most difficult is the role of central banks in so-called 'credit policy'. This is a vague term. As we have seen, the authorities affect credit conditions through both monetary policy and regulatory policy. The question here is whether central banks should be permitted to intervene *directly* in specific private-sector bond and loan markets, and to what ends? It is the area

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also helps to identify why the QE operation can make a profit or loss, in a narrow sense that ignores macro-economic benefits. What a debt-manager-led operation cannot do is convey signals about the likely path of the central bank's policy rate.

[29] The letters between Mervyn King and Alastair Darling are dated 17 February and 3 March 2009. Darling's concluded "… the Government will not alter its issuance strategy as a result of asset transactions undertaken by the Bank of England for monetary policy purposes." The need for such co-ordination in the then hypothetical circumstances of hitting the ZLB had been flagged by the Bank in speeches a few years earlier: Mervyn King, "The institutions of monetary policy. The Ely Lecture 2004"; and Tucker, "Managing the central bank's balance sheet: where monetary policy meets financial stability", 2004.

[30] M A King, speech to South Wales Chamber of Commerce, 2012.

which Marvin Goodfriend in particular has argued undermines the very idea of an independent central bank[31].

And yet, as the 'only game in town', it is where central banks have been most adventurous and innovative. The operations have varied considerably. The ECB has held regular auctions for loans (repos) against a wide-range of securities; over 30,000 securities are eligible. The Bank of England has lent for a four-year maturity against portfolios of loans to businesses (and previously mortgages), with the interest rate lower the more new lending the counterparty firm undertakes, in order to incentivize greater credit supply. The Bank of Japan has been buying bonds and, indirectly, equities outright. And the Fed has conducted QE in so-called Agency mortgage-backed securities, admittedly paper guaranteed by the federal government but with the avowed intent of reducing the cost of borrowing to buy houses rather than reducing the cost of credit more generally. Each of those operations is intended to stimulate spending in the economy, by reducing the cost of credit in areas where risk premia would otherwise remain high.

At an earlier stage of the crisis, some central banks, including the Fed and the Bank of England, acted as Market Makers of Last Resort, buying private-sector paper outright in order to sustain the liquidity of markets as intermediaries withdrew due to capital constraints[32]. In other words, they substituted themselves as intermediaries when private markets threatened to dry up completely.

So, in spasms of innovation, which may not be over in Continental Europe, there have been differences in the underlying assets, techniques, and purposes.

Putting aside the positive economics of how well any of these operations have worked, there are two big issues so far as legitimacy is concerned. First, doesn't this take central banks into the realm of allocating or steering credit to particular sectors or sub-sectors of the economy, or even to individual firms and households? Second, won't the taxpayer pick up any losses? Seen in that light, shouldn't the policy and the operations belong to the fiscal authority?

Again, some principles are needed, for both techniques and purposes.

Balance-sheet credit policy techniques: repo is preferable to outright purchases of risky private paper

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[31] Marvin Goodfriend, "The elusive promise of independent central banking", Institute for Monetary and Economic Studies, Bank of Japan, Tokyo, 2012. See also Robert L Hetzel, Federal Reserve Bank of Richmond, "The distinctions between credit, monetary and liquidity policy", chapter 14 of "The Great Recession: market failure or policy failure?" 2012.

[32] Tucker, "The Repertoire of Official Interventions in the Financial System: Last Resort Lending, Market-Making, and Capital", at the Bank of Japan International Conference 2009.

On *techniques*, whatever the purpose of the operation, there is a big difference between outright purchases and repo, in both areas that are problematic for legitimacy: credit allocation and risk of loss[33]. Under repo, the central bank effectively finances outright purchases by private sector firms and funds, and it is *they* who make the choices between individual issuers/portfolio bundles. In terms of exposure to risk of loss, rather than the one-shot game of an outright purchase, under repo the central bank can every day (or more frequently if needs be) revalue the collateral, requiring a top-up if the value has fallen; and, further, the central bank can revise its requirement for excess collateral (its haircut) if any of the world, the market in the collateral or its counterparty have become more risky.

Better, therefore, to stick to long-term repos against baskets of diversified portfolios of private sector securities for as long as possible before contemplating outright purchases.
And if the banking sector is badly beaten up, better temporarily to widen the population of counterparties beyond banks. That way, the central bank's provision of financing is more likely to translate into increased underlying demand for the type of securities in question.

Collateral-transformation operations: a caution

This is all a bit more testing than it might sound. If, as some do, a central bank *routinely* conducts wide-collateral, medium-term maturity repo operations, in peacetime as well as during crises, it is in effect in the *collateral-transformation business*. Such operations are the economic equivalent of conducting open market-operations in low-risk government bonds followed by a second operation that swaps the Treasuries for risky illiquid paper. Soft terms, even if inadvertent, would amount to a subsidy to counterparties and/or to issuers of the underlying paper. Central banks should be transparent about how they set haircuts and value securities, both as a disciplining device and to enable democratic scrutiny.

That risk is not imaginary.

Credit policy meets liquidity policy: market malfunctions and Market-Maker of Last Resort operations

As was clear from my examples of central bank interventions in specific markets over the past seven years, they can have two quite distinct purposes. One, discussed below, is *directly* to steer credit in particular directions to stimulate spending in the economy. The other is to repair the functioning of a fundamentally sound market afflicted by temporary problems that are severely impairing the

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[33] I would treat purchases of some kinds of short-term private sector paper, for example the old bankers' acceptances, as similar in some respects to repo.

performance of the economy or, more narrowly, the transmission of monetary policy. That is an *indirect* intervention in macroeconomic conditions, insuring against the broad economic consequences of a severe breakdown in financial markets.

One can think of that as an extension of the LOLR function to capital markets themselves: *market maker of last resort*[34]. A fundamentally sound market might dry up suddenly for two reasons: market makers becoming capital constrained, or unwarranted fears about the integrity of the underlying instruments. In either case, faced with a sudden wave of selling pressure, short-term traders might be unwilling to take the needed inventory risk if they each fear their peers will step back. This collective action problem is effectively a market-maker run.

A market malfunction is only a necessary condition for a MMLR intervention, not a sufficient condition. The authorities would also need to be satisfied that the sudden closure of the market, absent intervention, would be materially harmful to broader welfare; *and* that there were not better solutions, such as quickly permitting new dealers to enter the market or lending secured to a wider class of market participants[35]. Extending the population of repo-counterparties might sometimes be preferable to a MMLR intervention, as it would entail less risk but could bring new traders into a market.

Where an MMLR operation was chosen, the aim would be to keep individual market-makers trading by reducing their inventory risk. But to mitigate the moral hazard risk, the structure should broadly mimic a classic LOLR intervention. Thus, the MMLR should operate with a bid-offer spread wider than that prevailing in normal conditions but narrower than the very wide spreads prevailing in the market crisis.

In principle, an MMLR intervention might be warranted when the monetary policy rate was away from the zero lower bound. But, as with the provision of LOLR liquidity re-insurance to banking businesses, the authorities should be prophylactic, not waiting until the only option is a financial intervention of some kind. If an important market's microstructure is vulnerable, they should use regulatory powers pre-emptively to induce reform. So just as the LOLR function entails a degree of involvement in bank supervision, any MMLR regime entails some involvement in overseeing financial market infrastructure.

But who is the MMLR? Do such interventions properly fall to central banks or to the elected fiscal authority? This is a new area, and boundaries will be blurred until principles are agreed[36].

Central banks can act with great speed: they have the know-how and, unlike Treasury departments, they do not have to raise the needed resources in the markets. That makes it hard for any other body to be a credible MMLR. But the same attributes make central banks a potential solution to every imaginable financial problem. Constraints are needed. Any central bank MMLR intervention should be restricted to

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[34] For others who have raised similar points, see Buiter W and A Sibert, "The central bank as market maker of last resort' 2007; and Perry Mehrling, "The *new Lombard Street*: how the Fed became the dealer of last resort", 2011.

[35] I understand that my former colleague Mark Carney has made a similar point.

[36] See also Tucker 2009 and "The lender of last resort and modern central banking: principles and reconstruction" 2014, *op cit*. The latter refines principles set out in the earlier speech given while I was in office.

'systemically significant' markets, and they should be designed to be short-lived, with a catalytic goal: to revive the market in some way, or to facilitate an orderly unwinding of positions. Nor can a legitimate central bank MMLR operation entail taking the whole of a market on to its books: that is semi-permanently substituting state credit for private sector credit and, as such, has to be a decision for the fiscal authority.

But when it embarks on a MMLR intervention, a central bank cannot know in advance how long it will last or how large its portfolio will become. Since, moreover, the operation entails taking outright risk, the fiscal authority needs to be involved in determining the scope, if any, of the regime governing central bank emergency MMLR operations. That way, it will be clear who is accountable for the regime and who for its implementation. If the executive branch is to be involved in case-by-case decisions, that should be transparent up front. Finally but vitally, absolutely nothing should qualify the central bank's monetary independence, short of open suspension with the formal consent of the legislature.

The big issue of 'pure credit policy': stimulating aggregate demand by steering the supply of credit

The second type of direct credit market intervention --- outright purchase of risky private sector credit instruments with the express purpose of providing macroeconomic stimulus --- can come with or without an expansion of the central bank's balance sheet. And when there is an expansion, it could in principle come via an increase in the central bank's monetary liabilities or be funded in a number of other ways: an issue of bonds or short-term bills or repo-ing out part of its government-bond portfolio. Purchases of risky paper without a monetary expansion could be regarded as 'pure credit policy'. Where monetary liabilities are created, the operation combines monetary and credit elements. But with or without a monetary expansion, the criteria for undertaking any such credit-policy intervention should be exacting.

The following strike me as minimum substantive criteria: the short-term monetary policy rate of interest should be at the zero lower bound and be expected to remain there for a while; vanilla quantitative easing and/or guidance on the prospective path of the policy rate are judged insufficient to stimulate demand and so maintain price stability, or to entail even more unacceptable risks; repo operations in private-sector paper will not suffice, even if eligible counterparties have been extended beyond banks and maturities lengthened. In other words, outright purchases of risky paper should not be contemplated before regular central bank operations have been exhausted.

What then? Well, those would be circumstances where the instruments of the monetary and fiscal authorities were converging. That being so, political-economy, or governance, criteria would be needed.

There are arguments for any such intervention being explicitly on the fiscal authority's books, even if managed operationally by the central bank as agent. But that course might not be preferred or even

feasible for a number of reasons. For example, there might not be a counterpart fiscal authority, as in the euro area. Or the fiscal authority might have the authority to grant guarantees to the central bank but not to purchase paper itself. Or, more fundamentally, it might be judged prudent to have the central bank control the timing and scale of such operations where the objective was to achieve an inflation target. Otherwise, it might be hard for the public and the markets to tell whether government was pursuing price stability or was trying to over-stimulate spending to help them win an election.

Whatever the reasons, where such operations are conducted on the central bank's balance sheet, I suggest four criteria to limit the damage.

First, the central bank should operate in as wide a class of paper as possible. And within each class, its selection of individual instruments should be as formulaic as possible. Those conditions avoid the central bank making detailed allocative choices. Making allocative decisions could all too easily erode its legitimacy amongst businesses and households, and among elected representatives, once economic-peacetime had eventually been restored.

Second, it should be clear that losses (and any profits) would go the fiscal authority. That is almost axiomatic, but it should be made clear to the public upfront.

Third, there should be transparency around how the central bank determines how much to pay for the paper it purchases, and there should not be subsidies. (If the government wants to grant subsidies, it can do so under its own authorities.) An auction format is one possibility.

Fourth, and most vitally for preserving central bank independence, the scale of the operations, including the amount of central bank money created to fund the purchases, must be dedicated to achieving the central bank's statutory objectives and must be decided independently. Alternatively, independence should be *explicitly* suspended by government with the formal consent of the legislature. There should be no pretending.

None of that precludes the fiscal authority setting up schemes to subsidize or direct the flow of credit. In particular, if instead of buying private sector paper the central bank is conducting 'vanilla' quantitative easing by purchasing government securities, the fiscal authority is free to deploy as it sees fit, including via initiatives to subsidize credit supply, the savings on debt-servicing costs it enjoys from lower term premia.

The point here is that the lines between the central bank and the fiscal authority should be drawn as cleanly as possible.

The Fiscal Carve-Out

My discussion of balance-sheet credit policy brings me, therefore, to the same broad place as my discussion of the LOLR.

Yes, central banks take risk. Yes, they can therefore suffer losses, which directly or indirectly are transferred to taxpayers. Yes, they can in principle step in to underpin the liquidity of markets or even, if society wishes, to steer the price of credit temporarily through weight of money.

More broadly, the central bank's ability to achieve nominal stability depends on the sustainability of the public finances.

The boundary between central banking and fiscal policy can, in consequence, be fuzzy. It is a mistake to pretend otherwise. But that doesn't mean that central bank independence is a fiction. It is a convention; a convention that is embedded to a greater or lesser extent in different societies. In this it is no different from other features of the architecture of the state. But if, as I maintain, central banking's insulation from short-term politics turns on conventions, those conventions need to be as clear as possible. Putting it at its lowest, central banks' room for discretion should not be unlimited. Their room for manoeuvre, the boundaries of their domain --- the constraints under which they operate --- can and should be set out in advance, substantively and/or procedurally[37]. It is in the interests of central banks themselves that this be done.

While the lines around central banking are unavoidably blurred in a deep economic sense, the operative lines *can* be drawn for purposes of political economy. Not only can they be drawn, they *should* be.

I call this the *Fiscal Carve-Out.* I use those words to get away from the fiction of a pristine world of central banking purity, and to underline the need for *ex ante* boundaries, principles and accountability in a regime where the central bank *is* insulated from *day-to-day* politics. An economy's Fiscal Carve-Out is part of its *money-credit constitution*.

A jurisdiction's Fiscal Carve-Out for its central bank needs to cover: the kind of assets it can lend against; the kind of assets it can buy, in what circumstances, for what purpose, and whether subject to consultation with the executive government or legislature; how losses will be covered by the fiscal authority, and how communicated to government and legislature.

How much is determined by elected representatives and how much filled out by central banks themselves can, it seems to me, vary across jurisdictions according to their political structures, norms and traditions.

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[37] Marvin Goodfriend first called for a clear regime in 1994: "Why we need an 'Accord' for Federal Reserve credit policy". I suspect that we might draw the substantive lines in slightly different places, but we broadly agree on the significance of the high-level political economy issues, as Marvin and I discussed in the '90s.

On this view, the *form* of a central bank's 'capital' resources is important, for reasons of political economy. At one end of the spectrum, the fiscal authority gives a formal blanket indemnity against loss, but dictates the population of assets eligible as collateral or for purchase and, thus at least indirectly, determines the scope and form of the central bank's market operations. At the other end of the spectrum, the central bank is given a pot of capital and a statement of purposes, and has freedom to choose the form and scope of its operations. There are myriad points in-between those poles. My point is that society should know where it is.

Some steps in this broad direction have been taken. For example, since Spring 2013, the Bank of England's monetary policy remit from the executive government contains provisions to the effect that where unconventional interventions in specific markets or activities have implications for credit allocation or for risk, governance arrangements must be agreed with government. I would add that the Westminster Parliament, probably through the Treasury Committee that oversees the central bank, should endorse this procedure and, probably, review its execution.

In the US, the Treasury and the Federal Reserve issued a Joint Statement in 2009 of points guiding their co-operation: broadly, that the Fed would avoid credit risk and credit allocation; that monetary stability should not be jeopardized by crisis measures; that they would each urge Congress to introduce a comprehensive resolution regime for critical financial institutions; and, in what was in fact the first item in the list, that they would co-operate in managing the crisis[38]. That Joint Statement has not been updated, but I would have thought it needs to be in the light of the subsequent Dodd-Frank legislation, and because there will be no dodging the need for co-operation when the next crisis hits. Easier to achieve that co-operation without blurring or threatening legitimate domains of independence through an *ex ante* articulation of a regime which provides guidance for what happens when the boundaries are reached, *before* they are breached.

Legislatures should oversee such arrangements between central banks and the executive branch, and there should be broad debate on their terms. None of this is easy to get right, but it is no less important for that. Central banks served society well by helping to articulate clear (*de jure* or *de facto*) inflation-targeting regimes for monetary policy. But it turned out that that wasn't enough to pin down the domain of their purposes and operations. The mandate of central banks needs to be fleshed out, with clear boundaries agreed after rich public debate. And, again as with regular monetary policy, central banks need to articulate the principles that will guide them in exercising the degrees of discretion they are granted by the political authorities.

Conclusions: the Only Game in Town, *aka* the Elephant in the Room

[38] Anna J Schwartz was one of the few people to take an interest in this important document: "Boundaries between the Fed and the Treasury", March 2009.

This review was prompted by the extraordinary exercise and accumulation of power by independent central banks in the wake of the global economic and financial crisis. They have used their balance sheets like never before, intervening in almost every part of the bond and loan markets, and lending to non-banks as well as to banks. Many have gained extra regulatory and supervisory powers. For those who favour monetary independence, this expansive activity risks taking central banks into more overtly political waters. For those who were sceptical about monetary independence in the first place, it risks increasing their unease about a 'democratic deficit'.

That unease should partly be seen in the light of results. With fiscal policy largely 'turned off', rightly or wrongly, central banking has been pretty well the only game in town. By anchoring *medium-term* inflation expectations, central bank independence made possible a truly massive monetary stimulus in order to fend off the risk of another Great Depression and, since, to aid recovery. The UK provides a striking example of this: even when cost shocks temporarily took headline inflation up to 5%, exceptional stimulus could be maintained, with a very watchful eye on medium-term inflation expectations. It is hard to believe that monetary policy under the control of elected politicians would have held on to the credibility necessary to permit anything like the amount of stimulus delivered. That should go some way to assuage those who, in good faith, harboured concerns that central banks did not care about economic activity or jobs.

But this debate about the boundaries to legitimate central banking also reveals the elephant in the room, taking us back to where I started. It is harder to construct a new monetary and credit constitution --- new rules of the game for central banking --- if it is destined to be the only game in town.

Society should not settle for that. As economic recovery takes hold, renewed debate is needed on what a robust fiscal framework would look like. Of course it is hard for legislatures to adopt time-consistent strategies for spending and taxation. But that is not a reason to settle for the status quo[39].

Meanwhile, if that is a forlorn hope, if central banks *are* destined, however uncomfortably, to be the only game in town, the big question is whether society would, after all, be better off giving them extensive *de facto* freedom to 'do the right thing' to save the nation in emergencies, sometimes doing the fiscal authority's job for them, and afterwards taking the heat from angry legislators and members of the public. Or is it better for central banks' degrees of freedom to be as well-defined as possible in advance?

I'm in the latter camp: this isn't a one-shot game, so it matters for society that central banks survive to fight future crises with their weaponry intact. Congress' trimming of the Fed's LOLR powers following the crisis illustrates that this risk isn't a figment of my imagination. Moreover, I believe that for the

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[39] For the beginnings of a debate, see "Fiscal Policy AfterThe Financial Crisis", edited by Alberto Alesina and Francesco Giavazzi, NBER 2013.

dispensers of unelected power to enjoy legitimacy, their 'weaponry' must be chosen or blessed by the people's elected representatives.

Many types of exceptional operation can and should be in the standard 'contract' for the central bank. But a fully state-contingent contract can never be written. I favour a procedural solution for when the central bank runs out of road, with the legislature sanctioning *ex ante* that the executive branch can bless (or bar) extraordinary central bank operations, with executive government accountable for its choices.

But there should be constraints on that procedural solution. Any such exceptionally sanctioned operations should still remain within a reasonable definition of central banking. The executive branch shouldn't be able in effect to delegate elements of fiscal policy to the central bank just because it can't get its preferred measures through the legislature. Without that constraint, an equilibrium where elected representatives leave the dirty business to the central bank would be all too likely.

Finally, nothing should invade the central bank's autonomy in setting monetary policy, short of an explicit and open suspension of monetary independence formally approved by the legislature.

A regime with those features is needed to combine independence with the flexibility to meet emergencies. It is needed to combine legitimacy with the rule of law. The choice of regime is vitally important. In democracies, independence within a specified domain having been granted *de jure*, it is incumbent upon central banks not to surrender it *de facto* without due process. To act otherwise, as I believe Chairman Burns of the Federal Reserve probably did during the early 1970s when he conferred with President Nixon on how monetary conditions would affect the re-election campaign, is to put oneself above the law. Of all people, the leaders of powerful independent agencies should be the last to do that because society's core government institutions, amongst them central banks, are no less than an investment in future trust.