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ABSTRACT

Reversing unconventional monetary policy: technical and political considerations

There are few if any technical problems involved in reversing the unconventional monetary policies - quantitative easing, credit easing and enhanced credit support - implemented by central banks around the world as short-term nominal interest rates became constrained by the zero lower bound.

The two main obstacles to an early and easy exit from unconventional monetary policies are political. The first is a potential conflict between the central bank and the fiscal authority about the role of monetary financing in the fiscal-financial-monetary programme of the state. If there is a conflict about the role of seigniorage in closing the government's solvency gap, the likely outcome is a win for the fiscal authority, except in the case of the ECB.

The second political impediment to a prompt and painless exit from unconventional monetary policy is that scaling down the size of the central bank's balance sheet and the scale and scope of its other interventions in financial markets and institutions is likely to reveal the true extent of the central bank's quasi-fiscal activities during the crisis and its aftermath. The large-scale ex-ante and ex-post quasi-fiscal subsidies handed out by the Fed and to a lesser extent by the other leading central banks, and the sheer magnitude of the redistribution of wealth and income among private agents that the central banks have engaged in could (and in my view should) cause a political storm. Delay in the dropping of the veil is therefore likely.

JEL Classification: E4, E5, E6, G1 and H6
Keywords: credit easing, enhanced credit support, quantitative easing, quasi-fiscal policy and regulatory capture

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(1) Introduction

Monetary policy during normal times, when markets are orderly and systemically important clusters or networks of banks and other financial institutions are solvent, is not particularly complicated from a technical perspective. The appropriate course of behaviour for the central bank during a systemic financial crisis, when systemically important financial institutions are at risk of failing and key financial markets are seizing up is even simpler from a purely technical point of view. Monetary policy at the zero lower bound for short nominal interest rates may not be particularly effective, but it certainly is not technically complicated. Indeed, the only technical issue associated with monetary policy at the zero lower bound is the need to recognise that, far from being an insurmountable constraint, the zero lower bound is a figment of the (lack of) imagination of the economics profession. Minor changes in the monetary and financial instrumentarium and in central bank operating procedures can remove the zero lower bound completely, thus making the domain of the official policy rate symmetric around zero (see Buiter (2009)).

Likewise, unwinding or reversing unconventional monetary policies that were prompted either by large-scale lender-of-last-resort and market-maker-of-last-resort interventions, and/or by quantitative easing, credit easing or enhanced credit support at the zero lower bound is technically easy.

Assets acquired through repos and similar secured lending operations disappear from the balance sheet as the loans in question (which are mostly at maturities of a year or less) mature and are not renewed. Indeed, the monetary authorities can be largely passive and let the balance sheet compression be demand-determined if, like the ECB, they set the official policy rate (at 1.00 percent currently) and provided unlimited liquidity against suitable collateral for maturities of up to one year at that rate. In the case of the ECB, the €442 bn

fixed-rate longer-term refinancing operation (LTRO) of 25-06-2009 was followed by an LTRO of 'just' €75 bn on 01-10-2009 (see European Central Bank (2009a))

Assets acquired outright by the central bank, e.g. the €20 bn of covered bonds purchased by the ECB under a €60 bn facility (European Central Bank (2009a,b), can be sold at any time in the secondary markets if they are liquid. If they are illiquid, it may take time to arrange a sale at a price anywhere near fair value. At worst, the illiquid assets in question have to be held to maturity. Reverse repo operations – where the central bank borrows from the private sector by selling some of its assets and at the same time making a commitment to repurchase them at a known future date at a price fixed today – are another way for the central bank to drain central bank liquidity from the system. Although reducing the size of the central bank's balance sheet is technically easy, this does not necessarily mean that it will be executed well by the central banks.

But technical considerations are not central concerns when it comes to an unwinding of the unusual monetary policies implemented by the central banks during the past year or so. Three kinds of further obstacles stand it the way of a graceful exit from unconventional monetary policy.

The first obstacle is that an end to quantitative easing and credit easing requires that, collectively, the other actors in the macroeconomic game – the general government (henceforth the Treasury), the domestic private sector and the rest of the world (foreign central banks, other foreign state actors and foreign private agents – change the composition of their financial asset portfolios to accommodate the planned reduction in the size of the central bank balance sheet. In some countries, the portfolio reshuffling that is the logical, unavoidable counterpart to the reduction in the size of the central bank's balance sheet - reduced holdings of base money by the domestic private sector and the rest of the world and the associated reduction in central bank holdings of domestic private securities, government

debt and net foreign assets (including official foreign exchange reserves) - can create serious funding problems, especially for the domestic private sector and the national Treasury.

The problem is aggravated if the reduction in the size of the central bank balance sheet is accompanied by an increase in the financial deficit of the central bank. This is likely to be the case if the interest rates on the assets the central bank holds (which are positive and higher than the current very low official policy rate) remain constant. With a zero nominal interest rate on currency liabilities and a rate equal to or below the official policy rate on bank reserves held with the central bank, a reduction in the size of the balance sheet will reduce the central bank's net interest income and thus increase its financial deficit (reduce its financial surplus). If, however, the reduction in the size of the central bank balance sheet is associated with an increase in the average interest rate on their assets (and it is all but certain that at least short-term nominal rates will be rising as quantitative easing (QE), credit easing (CE) and enhanced credit support (ECS) unwind), the effect of a decision to reduce the size of the central bank balance sheet on the central bank's financial deficit is ambiguous.

If the exit from unconventional monetary policy is associated with an increase in the financial deficit of the central bank, the remaining actors will, in the aggregate, have to reduce their financial deficits. This need not be a problem if it is in the perceived self-interest of these actors to reduce their financial deficits. For the private sector in the US and the UK this is certainly the case today. For the public sector, the obvious need for sharply lower financial deficits in the medium and long term (from a fiscal-financial sustainability perspective) is not matched by any political willingness to implement the necessary public spending cuts or tax increases any time soon.

This first obstacle to a timely balance sheet contraction by the central bank is likely to manifest itself as a conflict between the fiscal authorities and the monetary authorities. The fiscal authorities in a number of countries, including the USA and the UK, are likely to want

a slower or more limited contraction in the size of the central bank balance sheet because this would either result in an increased supply of Treasury debt in the market (if the asset side of the central bank balance sheet contraction takes the form of a reduction in its Treasury debt holdings and/or a refusal to add to this stock) or a reduction in the demand for Treasury debt in the market (if the central bank contracts is balance sheet by reducing its holdings of private securities and the private sector is, as a result less willing and able to hold Treasury debt).

A second obstacle to the smooth unwinding of unconventional monetary policy could be the cognitive impairment of key central bankers. Even though the issues are simple, a peculiar professional blindness may prevent one or more of the key central bank governors from fully grasping the issues. A rich and embarrassing series of monetary policy errors, including during the years leading up to the financial crisis that erupted in August 2007 and during the early stages of the crisis suggests that even monetary policy makers whose conventionally measured intelligence is unbounded from above may exhibit persistent and highly damaging forms of professional blindness. Examples include the sequence of credit- and asset market boom and bubble promoting policy blunders since 2003 by the US monetary authorities and, to a slightly lesser extent, by the Japanese, Euro Area and British monetary authorities); the ECB's decision to raise the official policy rate in July 2008 and the Bank of England's initial blindness to its market-maker-of-last-resort responsibilities as key wholesale financial markets seized up in August and September 2007

The third obstacle to a smooth exit from unconventional monetary policy is political. Reversing the unconventional policies is likely to bring out into the open the extraordinary quasi-fiscal role played by some central banks during this crisis (most notably by the Fed), their usurpation of budgetary powers assigned to the legislative branch of government by constitutions, laws or deeply embedded conventions, and the extraordinary (and unnecessary) financial largesse bestowed by some central banks on a small number of financial institutions

and a limited number of stakeholders in these institutions. This 'quiet coup' (to borrow the felicitous phrase of Simon Johnson (2009)) by a body of unelected technocrats has political and constitutional consequences that have to be considered fully when a comprehensive evaluation of this episode is attempted.[2]

If some central bankers, during the years that led up to the crisis that started in August 2007 and in their lender-of-last-resort and market-maker-of-last-resort operations since August 2007, failed to do the technically appropriate thing, despite the simplicity of the problems they were faced with, this implies that at least one of the following two explanations has to be correct. Either these central bankers were singularly inept and incompetent or there were non-cognitive factors that prevented them from doing the right thing. Either external pressure was brought to bear on them or they knowingly, for reasons of their own which one can only guess at, chose a course of action that was inferior as regards their public mandates, to manifestly available alternatives.

(2) The inextricable interdependence and intertwining of central bank and Treasury.

Whatever its legal or *de facto* degree of operational and goal independence, the central bank is part of the state and subject to the authority of the sovereign. Sometimes central bankers speak and act as if the Principal(s) on whose behalf they act as agents in a Principal-Agent relationship (or the Beneficiary on whose behalf they act as Trustees in a Fiduciary relationship) is not the state or the sovereign but the wider community or society - the citizens in the domain of the central bank *directly* rather than as filtered through the executive and legislative organs of the state. I don't believe, however, that such a belief rests

[2] 'Quiet Coup' echoes the earlier 'Silent Coup' phrase used by Colodny and Gettling (1991) to characterize Watergate and its aftermath. An early attempt to interpret the behaviour of the Fed during the first year of the crisis from the perspective or regulatory capture, and specifically from that of *cognitive* regulatory capture can be found in Buiter (2008).

on a thorough understanding of the power relationship between the central bank and the fiscal authority.

Specifically, the state (through the Treasury) can tax the central bank, even if these taxes may have unusual names. In many countries, the Treasury formally owns the central bank. This is the case, for instance, in the UK although not in the US and in some Euro Area countries. The ECB is owned by the national central banks (NCBs) of the EU member states; more precisely, the ECB's capital is subscribed by all EU NCBs, but paid up only by the Euro Area NCBs. Subscribed capital of the ECB is € 5 billion – a very small amount indeed. The NCBs that own the ECB themselves have a range of formal ownership arrangements, but are ultimately under the financial control of their national fiscal authorities, because the national fiscal authority can always tax the NCB. The Treaty establishing the European Community formally grants the ECB and the NCBs of the Eurosystem some immunity against being raided by national Treasuries, as the ECB has its own budget, and its financial arrangements are kept separate from that of the European Community.

The ability of the ECB and the Eurosystem to resist a raid by the fiscal authorities of the Euro Area, severally or jointly, is not primarily due to the text of the Treaty, which in any case nowhere prevents a national Treasury from taxing a national central bank. If national Treasuries can put a financial squeeze on national central banks, then they can indirectly put the squeeze on the ECB, which is wholly owned by these NCBs. What makes the ECB more independent than any other central bank is the fact that it has 16 national Treasuries as its counterparties rather than a single national Treasury. Should a European fiscal federal authority ever emerge, the anomaly of the ECB as a *de facto* as well as a *de jure* financially independent central bank would probably come to an end.

Unlike most other state agencies, the central bank can engage in quasi-fiscal actions, that is, actions that are economically equivalent to levying taxes, paying subsidies, or

engaging in redistribution of income and wealth. Examples are non-remunerated reserve requirements (or required reserves remunerated at below-market rates, which are a quasi-fiscal tax on banks), loans to the private sector at an interest rate that does not at least cover the central bank's risk-adjusted cost of non-monetary borrowing (a quasi-fiscal subsidy), accepting overvalued collateral (a quasi-fiscal subsidy) or outright purchases of securities at prices above fair value (a quasi-fiscal subsidy).

To determine how the use of the central bank as a quasi-fiscal agent of the state affects its ability to pursue its macroeconomic stability objectives, a little accounting is in order. In what follows, I disaggregate the familiar 'government budget constraint' into separate budget constraints for the central bank and the Treasury. I then derive the *intertemporal budget constraints* for the central bank and the Treasury, or their 'comprehensive balance sheets'. The contrast between the familiar conventional balance sheet of the central bank and its comprehensive balance sheet is highly informative.

My stylised central bank has two financial liabilities: the non-interest-bearing and irredeemable monetary base $M \geq 0$ and its interest-bearing non-monetary liabilities (central bank Bills), $N \geq 0$, paying the risk-free one-period domestic nominal interest rate i.[3] On the asset side it has the stock of international foreign exchange reserves, R^f, earning a risk-free nominal interest rate in terms of foreign currency, i^f, and the stock of domestic credit, which consists of the sum of central bank holdings of nominal, interest-bearing Treasury bills, $D \geq 0$, earning a risk-free domestic-currency nominal interest rate i, and central bank claims on the private sector, $L \geq 0$, with domestic-currency nominal interest rate i^L. The stock of Treasury debt (assumed to be denominated in domestic currency) held outside the central bank is B; it pays the risk-free nominal interest rate i; T^p is the real value of the tax payments by the domestic private sector to the Treasury; it is a choice variable of the

[3] For descriptive realism, I assume that the nominal interest rate on currency (shorthand in what follows for all of the monetary base) is zero.

Treasury and can be positive or negative; T^b is the real value of taxes paid by the central bank to the Treasury; it is a choice variable of the Treasury and can be positive or negative; a negative value for T^b is a transfer from the Treasury to the central bank – an example would be the resource transfer from the Treasury to the central bank when the Treasury recapitalises the central bank; $T = T^p + T^b$ is the real value of total Treasury tax receipts; P is the domestic general price level; e is the value of the spot nominal exchange rate (the domestic currency price of foreign exchange); $C^g \geq 0$ is the real value of Treasury spending on goods and services and $C^b \geq 0$ the real value of central bank spending on goods and services. For expositional ease, public spending on goods and services is assumed to be for consumption only.

Equation (1) is the period budget identity of the Treasury and equation (2) that of the central bank.

$$\frac{B_t + D_t}{P_t} \equiv C_t^g - T_t^p - T_t^b + (1+i_t)\left(\frac{B_{t-1} + D_{t-1}}{P_t}\right) \tag{1}$$

$$\begin{aligned}\frac{M_t + N_t - D_t - L_t - e_t R_t^f}{P_t} \equiv{}& C_t^b + T_t^b \\ &+ \frac{M_{t-1} - (1+i_t)\left(D_{t-1} - N_{t-1}\right) - (1+i_t^L)L_{t-1} - (1+i_t^f)e_t R_{t-1}^f}{P_t}\end{aligned} \tag{2}$$

The solvency constraints of, respectively, the Treasury and central bank are given in equations (3) and (4):

$$\lim_{N\to\infty} E_t I_{N,t-1}\left(B_N + D_N\right) \leq 0 \tag{3}$$

$$\lim_{N\to\infty} E_t I_{N,t-1}\left(D_N + L_N + e_N R_N^f - N_N\right) \geq 0. \tag{4}$$

Here I_{t_1,t_0} is the appropriate, state-contingent nominal stochastic discount factor between periods t_0 and t_1.

These solvency constraints, which rule out Ponzi finance by both the Treasury and the central bank, imply the following intertemporal budget constraints for the Treasury (equation (5)) and the central bank (equation (6)).

$$B_{t-1} + D_{t-1} \leq E_t \sum_{j=t}^{\infty} I_{j,t-1} P_j (T_j^p + T_j^b - C_j^g) \tag{5}$$[4]

$$D_{t-1} + L_{t-1} + e_{t-1} R_{t-1}^f - N_{t-1} \leq E_t \sum_{j=t}^{\infty} I_{j,t-1} \left(P_j \left(C_j^b + T_j^b + S_j \right) - \Delta M_j \right) \tag{6}$$

where

$$P_j S_j \triangleq (i_j - i_j^L) L_{j-1} + \left(1 + i_j - (1 + i_j^f) \frac{e_j}{e_{j-1}} \right) e_{j-1} R_{j-1}^f \tag{7}$$

The expression S in equation (7) stands for the real value of the flow of quasi-fiscal implicit interest subsidies paid by the central bank. If the rate of return on government debt exceeds that on loans to the private sector, there is an implicit subsidy to the private sector equal in period *t* to $\left(i_t - i_t^L \right) L_{t-1}$. If the rate of return on foreign exchange reserves is less than what would be implied by Uncovered Interest Parity (UIP), there is an implicit subsidy to the issuers of these reserves, given in period *t* by $\left(1 + i_t - (1 + i_t^f) \frac{e_t}{e_{t-1}} \right) e_{t-1} R_{t-1}^f$.

For future reference, the present discounted values of current and future central bank operating expenses Γ^b, of central bank taxes paid to the Treasury Θ^b, and of central bank quasi-fiscal subsidies paid on its asset portfolio Λ, are given by, respectively,

[4] Note that $E_t E_{t-1} I_{t,t-1} = E_{t-1} I_{t,t-1} = \frac{1}{1 + i_t}$.

$$\Gamma_t^b \triangleq E_t \sum_{j=t}^{\infty} I_{j,t-1} P_j C_j^b$$

$$\Theta_t^b \triangleq E_t \sum_{j=t}^{\infty} I_{j,t-1} P_j T_j^b \tag{8}$$

$$\Lambda_t \triangleq E_t \sum_{j=t}^{\infty} I_{j,t-1} P_j S_j$$

When comparing the conventional balance sheet of the central bank to its comprehensive balance sheet or intertemporal budget constraint, it is helpful to rewrite (6) in the following equivalent form:

$$\frac{M_{t-1}}{1+i_t} - \left(D_{t-1} + L_{t-1} + e_{t-1} R_{t-1}^f - N_{t-1}\right) \leq E_t \sum_{j=t}^{\infty} I_{j,t-1} \left[P_j \left(-C_j^b - T_j^b - S_j\right) + \left(\frac{i_{j+1}}{1+i_{j+1}}\right) M_j \right] \tag{9}$$

To get from (6) to (9), we use the identity given in (10) relating two common measures of seigniorage - the resources saved or extracted by the monetary authority through its capacity to issue non-interest-bearing fiat money (base money). Generalisations to the case where base money or some of its components pay interest look very similar (see Buiter (2007)). The first measure of seigniorage is the change in the monetary base, ΔM ; the second is the interest saved by being able to issue zero interest-bearing base money rather than securities bearing the risk-free nominal interest rate i, that is, $\left(\frac{i}{1+i}\right) M$. Let

$H_t^1 \triangleq E_t \sum_{j=0}^{\infty} I_{t+j,t} \left(\frac{i_{t+j+1,t+j}}{1+i_{t+j+1,t+j}}\right) M_{t+j}$ and $H_t^2 \triangleq E_t \sum_{j=1}^{\infty} I_{t+j,t} \Delta M_{t+j}$, then

$$H_t^2 \equiv H_t^1 + E_t \lim_{T \to \infty} I_{t+T+1,t} M_{t+T} - M_{t-1} \tag{10}$$

I also assume that $E_t \lim_{T \to \infty} I_{t+T+1,t} M_{t+T} = 0$.

We can now rewrite the intertemporal budget constraint or comprehensive balance sheet of the central bank more compactly as follows:

$$\left[D_{t-1}+L_{t-1}+e_{t-1}R^f_{t-1}-\left(\frac{M_{t-1}}{1+i_t}+N_{t-1}\right)\right]+\left[H^1_t-\Theta^b_t-\left(\Gamma^b_t+\Lambda_t\right)\right]\geq 0 \tag{11}$$

or equivalently:

$$\left[D_{t-1}+L_{t-1}+e_{t-1}R^f_{t-1}-N_{t-1}\right]+\left[H^2_t-\Theta^b_t-\left(\Gamma^b_t+\Lambda_t\right)\right]\geq 0 \tag{12}$$

Summing (1) and (2) gives the period budget identity of the government (the consolidated Treasury and central bank), in equation (13); summing (3) and (4) gives the solvency constraint of the government in equation (14) and summing (5) and (6) gives the intertemporal budget constraint of the government in equation (15).

$$\begin{aligned} M_t+N_t+B_t-L_t-e_tR^f_t \equiv\ & P_t(C^g_t+C^b_t-T_t) \\ & +M_{t-1}+(1+i_t)\left(B_{t-1}+N_{t-1}\right)-(1+i^L_t)L_{t-1}-e_t(1+i^f_t)R^f_{t-1} \end{aligned} \tag{13}$$

$$\lim_{N\to\infty} E_tI_{N,t-1}\left(B_N+N_N-L_N-e_NR^f_N\right)\leq 0 \tag{14}$$

$$B_{t-1}+N_{t-1}-\left(L_{t-1}+e_{t-1}R^f_{t-1}\right)\leq E_t\sum_{j=t}^{\infty}I_{j,t-1}\left(P_j\left(T_j-S_j-(C^g_j+C^b_j)\right)+\Delta M_j\right)$$

or equivalently

$$\begin{aligned} &\frac{M_{t-1}}{1+i_t}+B_{t-1}+N_{t-1}-\left(L_{t-1}+e_{t-1}R^f_{t-1}\right) \\ &\qquad\leq E_t\sum_{j=t}^{\infty}I_{j,t-1}\left[P_j\left(T_j-S_j-(C^g_j+C^b_j)\right)+\left(\frac{i_{j+1}}{1+i_{j+1}}\right)M_j\right] \end{aligned} \tag{15}$$

Let Π denote the present discounted value of current and future conventional primary (non-interest) surpluses of the consolidated general government and central bank, that is,

$$\Pi_t \triangleq E_t\sum_{j=t}^{\infty}I_{j,t-1}P_j\left(T_j-(C^g_j+C^b_j)\right) \tag{16}$$

We can rewrite the intertemporal budget constraint or comprehensive balance sheet of the consolidated general government and central bank as follows:

$$\left[L_{t-1}+e_{t-1}R^f_{t-1}-(B_{t-1}+N_{t-1})\right]+\left[\Pi_t-\Lambda_t+H^2_t\right]\geq 0$$

or equivalently

$$\left[L_{t-1}+e_{t-1}R^f_{t-1}-\left(B_{t-1}+N_{t-1}+\frac{M_{t-1}}{1+i_t}\right)\right]+\left[\Pi_t-\Lambda_t+H^1_t\right]\geq 0$$

Consider the conventional financial balance sheet (at book value) of the Central Bank in Table 1,

Table 1

Central Bank Conventional Financial Balance Sheet

Assets	**Liabilities**
D	$\frac{M}{1+i}$
L	N
eR^f	
	W^b

The Central Bank's conventional financial net worth or equity, $W^b \triangleq D+L+eR^f-N-\frac{M}{1+i}$, is the excess of the value of its financial assets (Treasury debt, D, loans to the private sector, L and foreign exchange reserves, eR^f) over its non-monetary liabilities N and its monetary liabilities $M/(1+i)$.

The first term on the left-hand side of (11) is the conventionally measured equity of the central bank. The second term on the left-hand side of (11) contains a number of implicit assets (sources of income) and liabilities (commitments) of the central bank that don't appear in the conventional balance sheet. The key implicit asset is H^1_t, the present discounted value

of current and future seigniorage (interest saved by the ability to issue non-interest-bearing base money). It is non-negative. The implicit liabilities are Θ_t^b, the present discounted value of future net tax payments by the central bank to the Treasury. This can be either positive or negative. When the central bank gets recapitalised by the Treasury, the resource transfer is from the Treasury to the central bank for at least one period. Another important implicit liability is the present discounted value of the quasi-fiscal subsidies paid by the central bank to its debtors, Λ_t. In more general models this could be negative – the central bank can impose quasi-fiscal taxes, for instance through non-remunerated reserve requirements. In the recent financial crisis, Λ_t is likely to be a very large number, especially in the US and the Euro Area. The final implicit liability is the present discounted value of the cost of running the central bank, Γ_t^b. It is non-negative.

We can represent the intertemporal budget constraint (11), as a comprehensive balance sheet of the central bank, as in Table 2 below. Comprehensive net worth is denoted $\hat{W}^c$.

Table 2

Central Bank Comprehensive Balance Sheet

Assets	**Liabilities**
D	$\frac{M}{1+i}$
L	N
eR^f	Γ^b
	Θ^b
H^1	Λ
	$\hat{W}^b$

Even if the conventionally defined net worth or equity of the central bank is negative, that is, if $W_{t-1}^b \triangleq D_{t-1} + L_{t-1} + e_{t-1}R_{t-1}^f - N_{t-1} - \frac{M_{t-1}}{1+i_t} < 0$, the central bank can be solvent provided comprehensive central bank net worth, $\hat{W}^c$ is non-negative, that is, provided

$$\hat{W}_{t-1}^b \equiv W_{t-1}^b + H_t^1 - \left(\Gamma_t^b + \Theta_t^b + \Lambda_t\right) \geq 0 \tag{17}$$

Conventionally defined financial net worth or equity excludes the present value of anticipated or planned future non-contractual outlays and revenues (the right-hand side of equation (17). It is therefore perfectly possible for the central bank to survive and thrive with negative financial net worth. If there is a seigniorage Laffer curve, however, there always exists a sufficient negative value for central bank conventional net worth, that would require the central bank to raise so much seigniorage in real terms, $\{\frac{\Delta M_j}{P_j}; j \geq t\}$, or $\left\{\left(\frac{i_{j+1}}{1+i_{j+1}}\right)M_j; j \geq t\right\}$ through current and future nominal base money issuance, that, given the demand function for real base money, unacceptable rates of inflation would result (see Buiter (2007e, 2008a).

While the central bank need never go broke (that is, (17) will not be violated unless the central bank wants it to be violated) as long as the financial obligations imposed on the central bank are domestic-currency denominated and not index-linked, the central bank could go broke if either foreign currency obligations or index-linked obligations were excessive. I will ignore the possibility of central bank default in what follows, but not the risk of excessive inflation being necessary to secure central bank solvency without recapitalisation by the Treasury, if the central bank's conventional balance sheet were to take a sufficiently large hit.

This situation can arise, for instance, if the central bank is used (or volunteers to act as) a quasi-fiscal actor to such an extent that the present discounted value of the quasi-fiscal subsidies it provides, Λ_t, is so large, that its ability to achieve its inflation objectives is impaired. In that case (if we rule out default by the central bank on its own non-monetary obligations, N_{t-1}), the only way to reconcile central bank solvency and the achievement of the inflation objectives would be a recapitalisation of the central bank by the Treasury, that is, a sufficient large increase in $-\Theta_t^b$.[5]

The conventional and comprehensive balance sheets of the general government and central bank are shown in Tables 3 and 4; W^g is the conventional financial net worth of the consolidated general government and central bank; $\hat{W}^g$ is the comprehensive net worth.

Table 3

Conventional Financial Balance Sheet

consolidated general government and central bank

Assets	**Liabilities**
L	$\frac{M}{1+i}$
	N
eR^f	B
	W^g

[5] Central bank current expenses C^b can at most be cut to zero.

Table 4 **Comprehensive Balance Sheet** **Consolidated general government and central bank**	
Assets	**Liabilities**
L	$\frac{M}{1+i}$
eR^f	N
Π	B
H^1	Λ
	$\hat{W}^g$

(3) The same chicken (almost) always wins

The budget constraint interdependence and balance sheet interdependence of the central bank and the Treasury are not symmetric. Virtually everywhere, Sargent's (1986) game of chicken between a central bank wanting to meet its inflation target and a Treasury unwilling or unable to make a credible commitment to raise the present discounted value of its primary surpluses is determined in favour of the Treasury when push comes to shove. In terms of the accounting framework of the previous section, T^b and its present discounted value Θ^b are decided by the Treasury (possibly by the legislature), not by the notionally operationally independent central bank.

The only *prima facie* exception to this rule is the ECB, which is pretty much insulated from political pressures to change T^b and Θ^b in favour of the ECB's shareholders (the

national central banks) and through them in favour of the national Treasuries of the EMU member states. As argued in the previous Section, this immunity is bestowed not so much by the letter of the Treaty and Protocols as by the 'logic of collective action': a single supranational central bank will be able to hold its own against 16 (let alone 27) national fiscal authorities even when a single national central bank would yield to a single national fiscal authority (see Olson (1965)). This would not, of course, reverse the game of chicken by making the monetary authority the dominant player – but neither player has the capacity to tax the other, which is effectively equivalent to telling it what to do. There would be a stalemate.

I believe that this *prima facie* extraordinary degree of independence of the ECB, including its capacity to resist raids on its resources, it unlikely to survive a true test. The (input) legitimacy bestowed on the ECB through the Treaty is unlikely to be sufficient for it to be able to resist for long the more urgent claims to legitimacy of elected national and supranational authorities. Central banks are likely to submit to the sovereign, when all is said and done. The multimorphous nature of sovereignty in the EU and EMU has provided the ECB with an unprecedented degree of independence. I conjecture that unless the ECB achieves a much greater degree of output legitimacy than it has thus far, it too will end up on the losing side of the game of chicken between the fiscal and monetary authorities, possibly even before a supranational fiscal authority is established for the EU.[6]

If the central bank's desire to reduce the size of its balance sheet (and possibly to run smaller financial surpluses) is incompatible with the fiscal objectives of the Treasury, then the unwinding of the unconventional monetary policies could be delayed for years, because the Treasury would prevent the central bank from reducing the size of its balance sheet and

[6] According to Schimmelfennig (1996), "The principle of input legitimacy claims that a democratic system of rule achieves its legitimacy by the way decisions are made (and not by the results these decisions produce)." and "The output legitimacy of a political system depends on its capacity to achieve the citizen´s goals and solve their problems effectively and efficiently. The higher this capacity, the more legitimate the system."

from raising the official policy rate in the manner preferred by a politically unconstrained central bank. In the US such restrictions on the freedom of action of the central bank would not require any formal changes to the monetary policy framework, although it may require some changes in the composition of the memberships of the Federal Reserve Board and the FOMC. There is ample precedent (outside the US) for countries increasing the size of the monetary policy making body, or changing nomination and/or appointment procedures for membership of the monetary policy making body, to pack it with loyal administration hacks.

In the UK, the government could, if the central bank's desired pace of monetary policy normalisation were faster than that of the government, invoke the Reserve Powers of the Bank of England Act which permits the Chancellor of the Exchequer to repatriate the rate setting powers and other monetary policy competencies currently exercised by the Monetary Policy Committee and the Bank of England. This would not even require a Parliamentary vote *ex-ante*.[7]

For a variety of legal and historical reasons, the degree of independence of the Fed from the Administration and from the Congress is lower than that of the Bank of England from the executive and Parliament. The degree of independence of the ECB from national and EU-level executive and legislative authorities is higher yet, although not as high as the letter of the Treaty would suggest. It is therefore likely that for a given *solvency gap* (calculated for existing plans and projections for general government primary surpluses and

[7] The relevant sections of the Bank of England Act 1998 read as follows:
Treasury's reserve powers
19 Reserve powers
(1) The Treasury, after consultation with the Governor of the Bank, may by order give the Bank directions with respect to monetary policy if they are satisfied that the directions are required in the public interest and by extreme economic circumstances.
(2) An order under this section may include such consequential modifications of the provisions of this Part relating to the Monetary Policy Committee as the Treasury think fit.
(3) A statutory instrument containing an order under this section shall be laid before Parliament after being made.
(4) Unless an order under this section is approved by resolution of each House of Parliament before the end of the period of 28 days beginning with the day on which it is made, it shall cease to have effect at the end of that period.

given the central bank's inflation target) the pressure to fill this gap through inflation rather than through higher primary surpluses (public spending cuts and tax increases) is likely to be stronger in the US than in the UK and the EMU (in that order). It is when some national governments in the EMU will be faced with an unmoving ECB and the choice between sovereign debt default and some combination of deep public spending cuts and steep tax increases, that we will have the first true test of ECB independence.

(4) Should central banks be quasi-fiscal actors?

There are in my view two reasons why the Fed, or any other central bank, should not act as a quasi-fiscal branch of the government, other than paying to the Treasury in taxes, T^b, the profits it makes in the pursuit of its mandated macroeconomic stability objectives (maximum employment, stable prices and moderate long-term interest rates in the case of the Fed) and its *appropriate* financial stability objectives. The appropriate financial stability objectives of the central bank are those that involve providing liquidity, at a cost covering the central bank's opportunity cost of non-monetary financing, to illiquid but solvent financial institutions.

Any action going beyond that, such as the recapitalisation of insolvent banks through quasi-fiscal subsidies, ought to be funded by the Treasury. The central bank should be involved only as an agent of the Treasury – an expert assistant. It should not put its own conventional or comprehensive balance sheet at risk.

The two arguments against the central bank acting as a quasi-fiscal agent are, first, that acting as a quasi-fiscal agent may impair the central bank's ability to fulfil its macroeconomic stability mandate and, second, that it obscures responsibility and impedes accountability for what are in substance fiscal transfers. In the US such actions subvert the Constitution, which clearly states in Section 8, Clause 1, that the power to tax and spend rests

with the Congress: *"The Congress shall have Power to lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States; but all Duties, Imposts and Excises shall be uniform throughout the United States."*.

If, as happened in the USA on a vast scale, the central bank allows itself to be used as an off-budget and off-balance-sheet special purpose vehicle of the Treasury, and refuses to provide to the Congress some of the information essential for the quantification of the fiscal transfers it has made, the central bank not only subverts the constitution. By attempting to hide contingent commitments and to disguise *de-facto* subsidies by not divulging relevant information on the terms on which the central bank has offered financial assistance, it undermines its own independence and legitimacy and impairs political accountability for the use of public funds – 'tax payers' money'. It is surprising that a country whose creation folklore attributes considerable significance to the principle of 'no taxation without representation' would have condoned without much outcry such a blatant violation of the equally important principle of 'no use of public funds without accountability'. This indeed amounts to a quiet coup by the central bank.

When the crisis started in August 2007, the Fed's conventional balance sheet was just under $ 1 trillion - about seven percent of annual US GDP. At its peak, towards the end of 2008, the Fed's conventional balance sheet was just over $2 trillion, about fifteen percent of annual US GDP. The Bank of England tripled the size of its balance sheet (as a share of GDP) over the same period. I see no problem at all with the size of the balance sheet *per se*. It is the logical consequence of the central bank, in a liquidity crisis, providing funding liquidity to systemically important financial entities (the lender-of-last-resort function) and market liquidity to markets for systemically important financial instruments (the market-maker-of-last-resort function (see Buiter (2007a,b,c,d, 2008), Buiter and Sibert (2007, 2008)).

The problem is not the size of the balance sheet but the size of the quasi-fiscal transfers the Fed has made to some of its private counterparties in its myriad interventions since the crisis started.

Let me start by restating that I believe there is no quasi-fiscal role for the Fed other than the one inherent in the pursuit of its macroeconomic objectives and of its legitimate financial stability objectives. The Fed should fund liquidity operations targeted at solvent counterparties. If it is required to deal (as agent of the Treasury) with potentially insolvent counterparties, the credit risk and counterparty risk should be assumed fully by the Treasury. This is not the practice of any of the leading central banks today; prior to the crisis, only the Bank of England came close.

The benchmark for the central bank should be a "Treasuries only" policy of balance sheet and liquidity management. Under a "Treasuries only" policy, the central bank only buys Treasury securities outright. In repos and other collateralised lending operations, it only accepts Treasury securities as collateral.

In an emergency, where the government requires the good offices of the central bank to stop systemically important institutions from collapsing, the form but not the substance of the 'Treasuries only' policy can be relaxed. The UK shows the way as regards outright purchases by the Bank of England of private securities. The UK Treasury and the Bank agree on an upper limit on the amount of private securities that can be purchased by the Bank (currently £ 50 bn) and on the nature of the private securities that can be bought outright. Then the Treasury provides the Bank of England with a full indemnity (guarantee) for any private securities purchased by the Bank up to that limit. That is the right way to separate fiscal policy from monetary and liquidity policy.

The ECB, which is committed to buy a very limited number of private securities outright (it has set itself a limit of €60 bn for covered bond purchases of which, as noted

earlier, only €20 bn has been used thus far), does not have such an indemnity from the 16 national Euro area fiscal authorities. The ECB therefore takes credit risk on these outright purchases. Even if this credit risk is priced appropriately ex-ante, the realisation of the risk could blow a hole in the balance sheet of the ECB and reduce its capital. This is not a problem with the current scale of the outright purchase programme, but it puts the camel's nose firmly in the tent.

The Fed has been taking massive credit risk in its outright purchase programmes. In the original TALF, for instance, up to $1 trillion could be guaranteed by the Fed, but the Treasury indemnity for the programme was capped at $100 bn, leaving the Fed with a potential credit risk exposure of $900 bn. Other Fed programmes too have involved actual or potential exposures to private credit risk that were not guaranteed by the Treasury.

As regards repos and collateralised loans, the most extreme departure from the 'Treasuries only' model has been the ECB. The Eurosystem accepts as collateral in repos and at the discount window an astonishingly wide range of private securities, including most asset-backed securities, as long as they have a rating of at least BBB-. This collateral policy has been implemented in such a loose and generous way, that international banks with subsidiaries in the Eurozone have packaged and wrapped securities they could not use as collateral anywhere else in formats that made them eligible collateral at the Eurosystem.[8]

Only when the bank that borrowed from the Eurosystem has become insolvent, as in the case of Kaupthing's Luxembourg subsidiary and Lehman Europe, has the ECB had to write down its risky exposure. But with many technically insolvent or near-insolvent banks as counterparties (including quite a few of the German Landesbanken and the Spanish Cajas), the true exposure of the ECB is bound to be higher than it is willing to own up to. The

[8] A bank cannot offer its own loans or other debt instruments as collateral to the Eurosystem. So two or more dodgy banks can a

Eurosystem has on its books large amounts of loans to dodgy banks secured against poor collateral. The resulting credit risk falls entirely and entirely inappropriately on the ECB.

The Bank of England and the Fed now also accept private securities as collateral in repos at the discount window and at many of the special facilities that were created to resolve the crisis. None of these loans by the central banks to private entities and collateralised against private securities are guaranteed by the national Treasuries.

What makes the problem worse is that all the leading central banks are not just faced with the possibility that, having make a properly priced collateralised loan to a private counterparty, a bad state of the world is realised, the counterparty goes broke and the collateral turns out to be impaired also. When such a double default occurs, the central bank acts in an *ex-post* quasi-fiscal capacity if there is no full Treasury guarantee.

There are good grounds for suspecting that many of these loans were not even priced properly *ex ante* to reflect the associated credit risk, but were instead handed out on terms that implied an *ex-ante* quasi-fiscal subsidy. None of the three central banks, the Fed, the ECB or the Bank of England have been willing to reveal how they value illiquid collateral. Requests to make public either the pricing models or the actual valuations of all illiquid private securities offered as collateral have been systematically stonewalled by the central banks. That makes it impossible for external assessors to determine whether an *ex-ante* subsidy was involved in the terms and conditions of the loans.[9]

The Fed went well beyond even this. In its bail-out of AIG, it refused for a long time even to reveal who the counterparties of AIG were that were made whole because of the Fed's emergency loans to AIG. They were forced to reveal the information in the end, but

[9] Some spokespersons for the central banks have stated that since they provide information on the haircuts applied to all collateral, including illiquid private assets, all relevant information is in the public domain. That is incorrect. The haircuts are supposed to apply to the price or valuation of the security, not to its notional or face value. Unless we know the valuation to which the haircut is applied, we know nothing.

this does not undo the earlier attempt to hide the identities of the beneficiaries of the Fed's largesse.[10]

Exiting from unconventional monetary policy means revealing the true extent of the quasi-fiscal transfers handed out and quasi-fiscal taxes imposed by the central banks in their financial operations. At the moment, we really see not much more than the conventional balance sheet shown in Table 1. The Fed's claims on the private sector (*L*) are valued in ways that cannot be verified. We know from the reports on the former Bear Stearns assets tucked away in a Delaware-based special purpose vehicle (Maiden Lane) and from the AIG assets stowed in Maiden Lane II and III, that the Fed has got at least some rubbish in exchange for the loans it has provided.[11] How much more write-downs and write-offs will we see?

It is true that central banks can be expected to make a profit on their lender-of-last-resort loans to solvent but illiquid counterparties. There is a wide gap between the liquidation value of the assets offered as collateral in times of stress and the present value of their held-to-maturity cash-flows. Central banks do exploit this situation to charge effective interest rates that are not just above the risk-free rate, but also at times above the default-risk adjusted opportunity cost of non-monetary funds to the central bank. The Fed just reported a provisional $14 bn profit from such lending activities.[12] It is good to know that when liquidity is scarce, the source of ultimate liquidity knows how to make a profit. This profit has no bearing on the question as to which counterparties benefited from quasi-fiscal subsidies from the Fed and from other central banks and in what amount. It is not just the aggregate or net

[10] On August 25, 2009, Manhattan Chief U.S. District Judge Loretta Preska ruled against the Fed in a Freedom of Information Act lawsuit brought by Bloomberg News. She rejected the argument that loan records are not covered by the law because their disclosure would harm borrowers' competitive positions. The Fed for the first time had to identify the companies in its emergency lending programs.
[11] See *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet* .
[12] See *Fed makes $14bn profit on loans provided during financial turmoil*, Financial Times, August 31, 2009.

quasi-fiscal subsidy of the central bank that matters. The redistributive quasi-fiscal activities of the central bank don't necessarily require any net subsidies to the private sector.

(5) Conclusion

There are few if any technical problems involved in reversing the unconventional monetary policies – quantitative easing, credit easing and enhanced credit support – implemented by central banks around the world as short-term nominal interest rates became constrained by the zero lower bound.

The two main obstacles to an early and easy exit from unconventional monetary policies are political. The first is a potential conflict between the central bank and the fiscal authority about the role of monetary financing in the fiscal-financial-monetary programme of the state. If there is a conflict, the likely outcome is a win for the fiscal authority, except in the case of the ECB. The second political impediment to a prompt and painless exit from unconventional monetary policy is that scaling down the size of the central bank's balance sheet and the scale and scope of its other interventions in financial markets and institutions is likely to reveal the true extent of the central bank's quasi-fiscal activities during the crisis and its aftermath. The large-scale *ex-ante* and *ex-post* quasi-fiscal subsidies handed out by the Fed and to a lesser extent by the other leading central banks, and the sheer magnitude of the redistribution of wealth and income among private agents that the central banks have engaged in could (and in my view should) cause a political storm. Delay in the dropping of the veil is therefore likely.

Central banks don't have a redistributive mandate. That job should be left to the Treasury and the legislature. This encroachment of unelected technocrats on the domain of distributive politics is simply not acceptable in an open democratic society. That much of the redistribution effected by the Fed and other leading central banks is consciously hidden by the agency and kept under a cloak of secrecy in the name of counterparty confidentiality,

market sensitivity or stigma effects makes it worse. Exiting from unconventional monetary policy will assist a fuller revelation of the exact nature of the quasi-fiscal actions of the Fed (and to a more limited extent the ECB and the Bank of England). The political benefits from the cleaning of the stables that will, I hope, result from this, will in my view dwarf the economic significance of a successful exit strategy.

References

Bernanke, Ben S (2009), "Reflections on a Year of Crisis", Speech given at the Federal Reserve Bank of Kansas City's Annual Economic Symposium, Jackson Hole, Wyoming, August 21, 2009. http://www.federalreserve.gov/newsevents/speech/bernanke20090821a.htm

Buiter, Willem H. (2007a) "Central Banks as Market Makers of Last Resort 2", 17 August, FT.Com, Maverecon blog.

Buiter, Willem H. (2007b), "Central Banks as Market Makers of Last Resort 3; Setting the prices", 21 August, FT.Com, Maverecon blog

Buiter, Willem H. (2007c), "Central banks as market makers of last resort 4; liquidity, markets and mechanisms", August 23, FT.Com Maverecon blog.

Buiter, Willem H. (2007d), "Central banks as market makers of last resort 5: a restatement", September 2, FT.Com Maverecon blog.

Buiter, Willem H. (2007e), "Seigniorage ", *economics* - The Open-Access, Open-Assessment E-Journal, 2007-10.

Buiter, Willem H. (2008), "Central banks and financial crises", paper presented at the Federal Reserve Bank of Kansas City's symposium on "Maintaining Stability in a Changing Financial System", at Jackson Hole, Wyoming, on August 21-23, 2008. in Federal Reserve Bank of Kansas City, *Maintaining Stability in a Changing Financial System*, pp. 495 -693.

Buiter, Willem H. (2009), "Negative Nominal Interest Rates; three ways to overcome the zero lower bound", Paper presented Center for Financial Studies at the Goethe University, Frankfurt on 6th May 2009, at the European Central Bank on 18th May 2009, and at the 13th International Conference on Macroeconomic Analysis and International Finance at the University Campus of the University of Crete in Retymno Crete, May 28-30, 2009.

Buiter, Willem H. and Anne C. Sibert (2007), "The Central Bank as Market Maker of Last Resort 1", 12 August, FT.Com, Maverecon blog.

Buiter, Willem H. and Anne C. Sibert (2008), "A missed opportunity for the Fed", 17 August, FT.Com, Maverecon blog.

Colodny, Len and Robert Gettling (1991), *Silent Coup: The Removal of a President*, St. Martin's Press

European Central Bank (2009a), Open market operations.

European Central Bank (2009b), "Decision of the European Central Bank of 2 July 2009 on the implementation of the covered bond purchase programme".

Johnson, Simon (2009), "The Quiet Coup", *The Atlantic Magazine*, May; http://www.theatlantic.com/doc/200905/imf-advice .

Olson, Mancur Lloyd Jr. (1965), *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press, 1st ed. 1965, 2nd ed. 1971

Sargent, Thomas J. (1986) *Rational Expectations and Inflation,* Harper Collins Series in Economics.

Schimmelfennig, Frank (1996), "Legitimate Rule in the European Union". (Working Paper 1.45), Berkeley: University of California, Center for German and European Studies, also Tübingen University Working Papers in International Politics and Peace Studies, No.27.