# Minimizing Monetary Policy

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## Introduction

Crises demand rapid policy responses from existing institutions but eventually give way to a more reflective period during which the flaws exposed in the previous architectural arrangements are inevitably scrutinized. The role of central banks, particularly their relationship with national treasuries, has been controversial from the dawn of the current crisis. The rapid central bank response to increased liquidity demand and willingness to absorb fiscal risk in so doing undoubtedly lessened systemic risk. However, the juxtaposition of the operational freedom enabling bold central bank responses and direct legislative control over conventional fiscal policy—that some might argue hamstrung the response of national treasuries—has sparked a debate over appropriate central bank governance structures that might ultimately lead to a legislative curtailment of central bank operational independence with adverse consequences for monetary policy execution.

The two primary questions relating to central bank fiscal risk examined in this paper are:

- Might central bank losses take on a macroeconomic dimension and interfere with the execution of monetary policy? This is essentially an empirical question, examined in the next section.
- Could the perception that central banks have executed quasifiscal policies, such as credit allocation to select institutions or sectors, lead to an eventual legislative curtailment of monetary policy independence—even if material losses do not occur? This issue, and how monetary policy independence may be preserved through a shrinking of the monetary authority balance sheet and transfer of market intervention responsibilities to an alternative governance structure will be examined in the latter sections of the paper.

## Assessing the magnitude of central bank fiscal risk

Prior to the crisis, monetary policy in the advanced countries was undertaken almost exclusively through indirect influence on short term money market rates. Financial market interventions requiring the injection of large amounts of central bank liquidity had become rare. Confronted with the "zero lower bound" on interest rates, central banks during the crisis have resorted to unconventional policies or balance sheet management to achieve policy goals. Financial market stress has also been remedied by historically large interventions by central banks. Even in those cases where the monetary base has not expanded, central banks have expanded their role in financial intermediation.

In their unconventional operations central banks have taken on greater risk of a fiscal nature than had heretofore been the case and exposed themselves to potential losses. The question discussed in this section is whether the size of potential losses could take on a macroeconomic dimension, i.e., become so large that they must be financed with money creation beyond what is compatible with the monetary authority's inflation target[2].

[2] For a theoretical discussion of this issue in the context of a fiscal theory of the price level model, see Sims(2003).

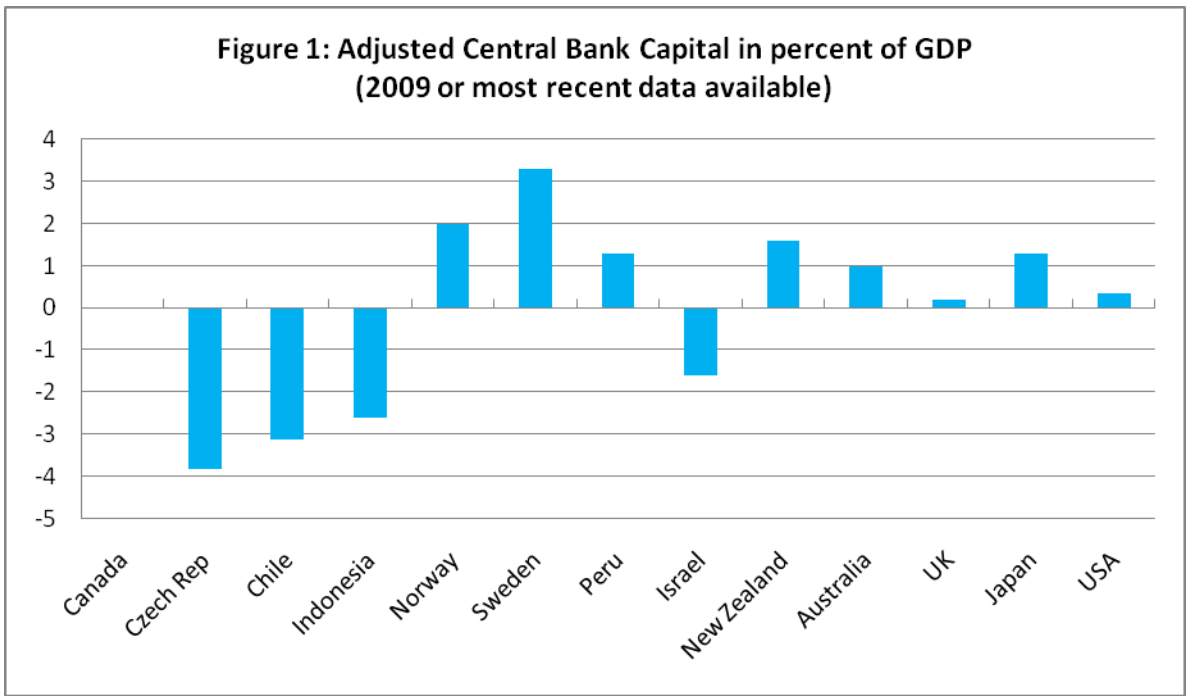
While there have been a number of cases worldwide where central bank losses have contributed to a loss of macroeconomic stability[3], it is not obvious whether a similar scenario is currently realistic in the major developed country central banks. Stella (2009) examined this possibility in the case of the Federal Reserve (FR) and found that even under very adverse macroeconomic and financial assumptions, the FR's ability to generate seigniorage owing to its very large stock of banknotes outstanding would enable it to easily recover from a significant shock without losing control of inflation. In this section I take another look at this question for the FR and 12 other central banks.

Before proceeding with the analysis, it should be emphasized that we are not concerned here with whether the central bank might be exposed to a period of negative capital. This is largely irrelevant from a policy context—as witnessed by the cases of Chile and the Czech Republic both of whose central banks have successfully adopted inflation targeting while suffering from negative capital. What we are concerned about is whether a central bank retains a level of financial strength (CBFS) consistent with attaining its policy goals. That is, a central bank has sufficient financial strength if, in most future states of the world, it can achieve its *policy* objectives without recourse to treasury financial resources[4].

Figures 1-3 provide basic snapshots of central bank financial strength to provide some sense of the empirical likelihood that advanced and emerging market country central banks would come under pressure in the wake of a sizeable shock.

Although I have argued elsewhere that capital can be a very misleading metric for CBFS, it may provide a useful starting point for the analysis when adjusted for cross-country differences in accounting methodologies[5]. Figure 1 provides a comparison of capital—adjusted to the extent possible to International Financial Reporting Standards (IFRS)—for a select group of central banks. Although some banks have negative adjusted equity, it should be noted that this is only one component of CBFS. A second important component of the strength of the balance sheet, the volume of currency outstanding, will now be examined.

[3] See Stella (2005) for a discussion of some of those cases.
[4] Ideally, this issue should be examined empirically for each central bank in light of its objectives and unique macroeconomic environment. For ease of cross-country comparison here I adopt a simpler approach.
[5] See Stella (1997) for the original argument.




In a floating exchange rate environment, currency and non-interest bearing deposits at the central bank play a financial role very similar to capital. To illustrate this, consider the hypothetical central bank balance sheet shown in Table 1.

**Table 1: Illustrative central bank balance sheet**

(in local currency units)

| Assets | | Liabilities | |
|---|---|---|---|
| Foreign Exchange | 1300 | Currency | 860 |
| Domestic Credit | 640 | Non-interest bearing deposits | 40 |
| | | Interest bearing debt | 1000 |
| Other Assets | 70 | Other liabilities | 70 |
| Liquidity providing repo agreements | 60 | | |
| | | Capital | 100 |
| Total Assets | 2070 | Total Liabilities | 2070 |

Total liabilities may be divided into those that bear no interest—currency, non-interest bearing deposits and capital—and those that are costly, primarily interest bearing debt. Assuming that the domestic currency equivalent interest rate on all interest-bearing assets and liabilities is the same, the respective assets and liabilities may be netted against one another to arrive at the simplified balance sheet shown in Table 2[6]. It is evident that for the central bank intertemporal budget constraint to hold, the revenue obtained in the steady state from net interest-earning assets must be sufficient to finance central bank operational expenditures at the target inflation rate.

**Table 2: Simplified illustrative central bank balance sheet**

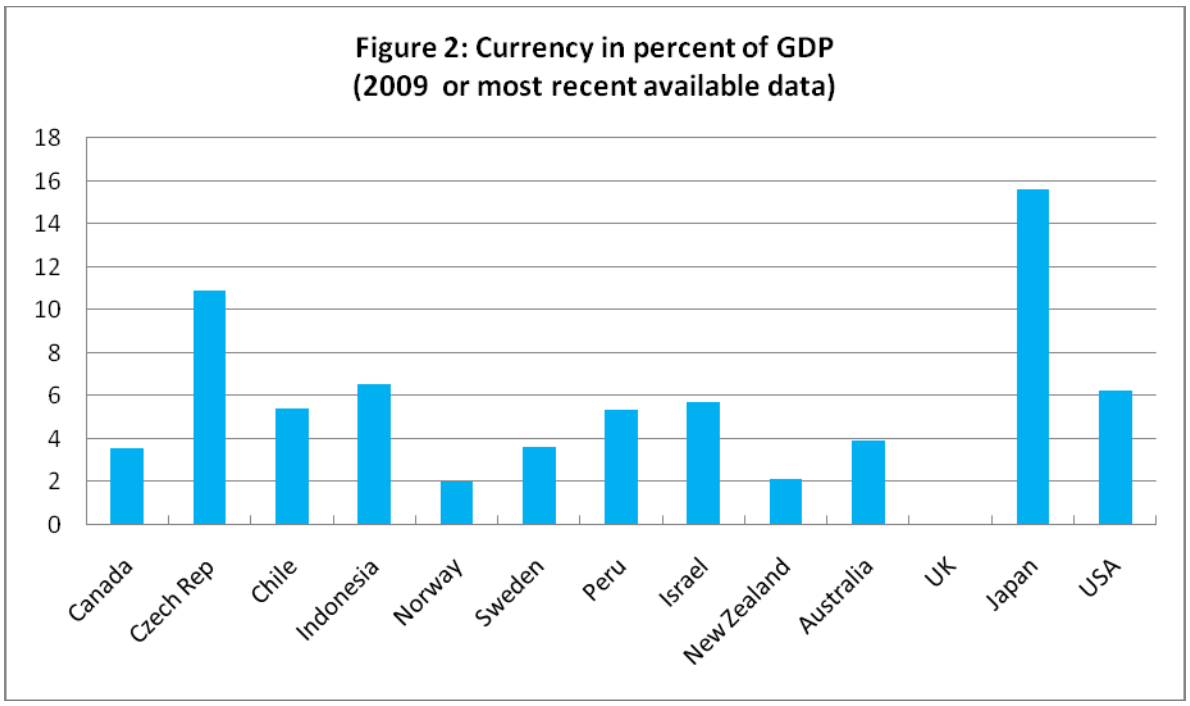
(in local currency units)

| Assets | | Liabilities | |
|---|---|---|---|
| Net interest earning assets | 1000 | Currency | 860 |
| | | Non-interest bearing deposits | 40 |
| | | Capital | 100 |
| Total Assets | 1000 | Total liabilities | 1000 |

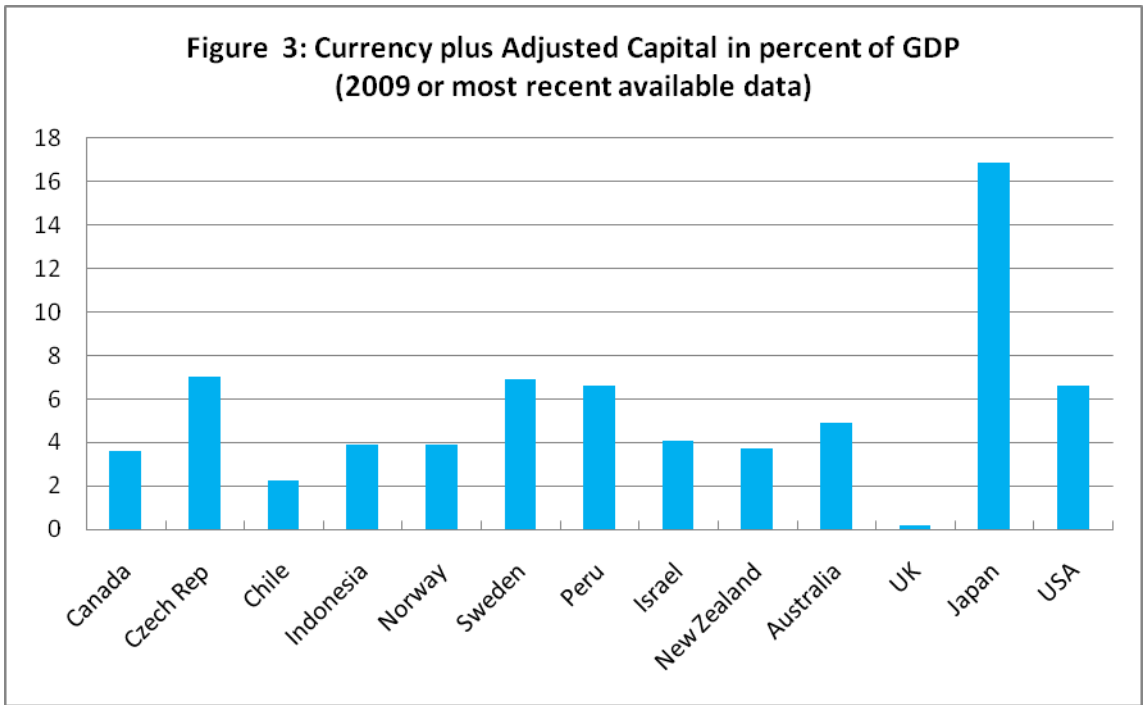
If interest revenue is consistently inadequate to cover operating expenditures either of five outcomes are possible: currency issuance is increased in order to generate additional seigniorage thereby jeopardizing the attainment of the inflation target; the inflation target is relaxed for similar reasons; an injection of capital is obtained which may impair central bank independence; operational expenditures are reduced to bring the central bank budget back into a sustainable equilibrium; or more risk is taken in the management of central bank assets which may not be prudent.

Figure 2 provides data on currency as a ratio to GDP for the selected central banks.

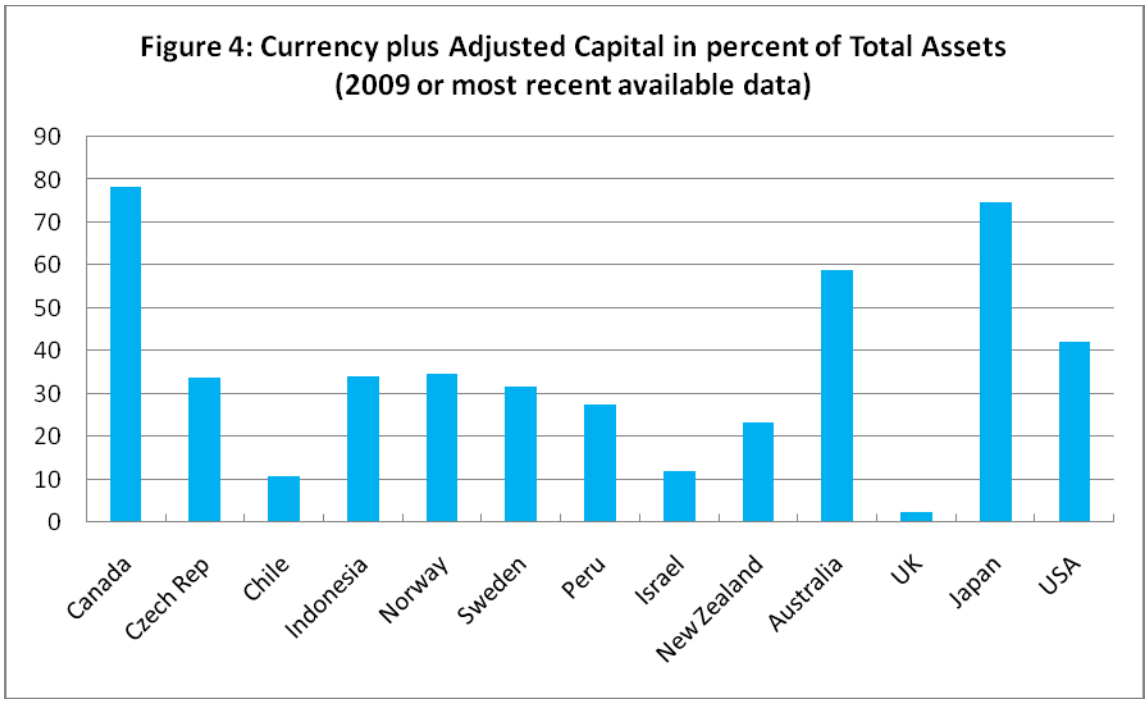
[6] In countries where the sovereign risk premium is high and foreign reserves comprise a large component of central bank assets, this assumption cannot legitimately be made and the calculation of the sustainable balance sheet is more complicated. Nevertheless, the principle discussed here—that capital and currency play equivalent financial roles—remains valid.




In Figure 3 currency is added to capital to obtain a superior measure of the ability of the central bank to generate seigniorage and finance its operational and quasifiscal expenditures.



For all countries in the sample this summary measure exceeds zero and, for many, it exceeds 30 percent of balance sheet assets (Figure 4), suggesting that there exist significant buffers to withstand losses.[7]

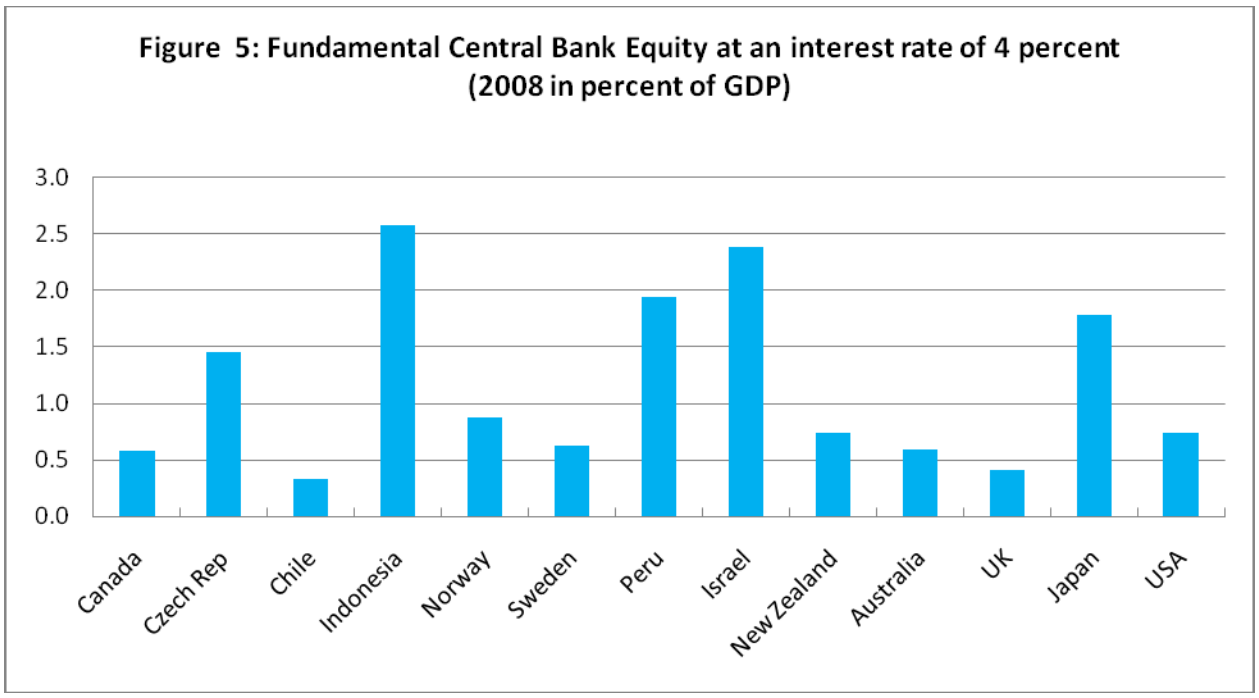



Sources: Various Central Bank Annual Reports and author's calculations.

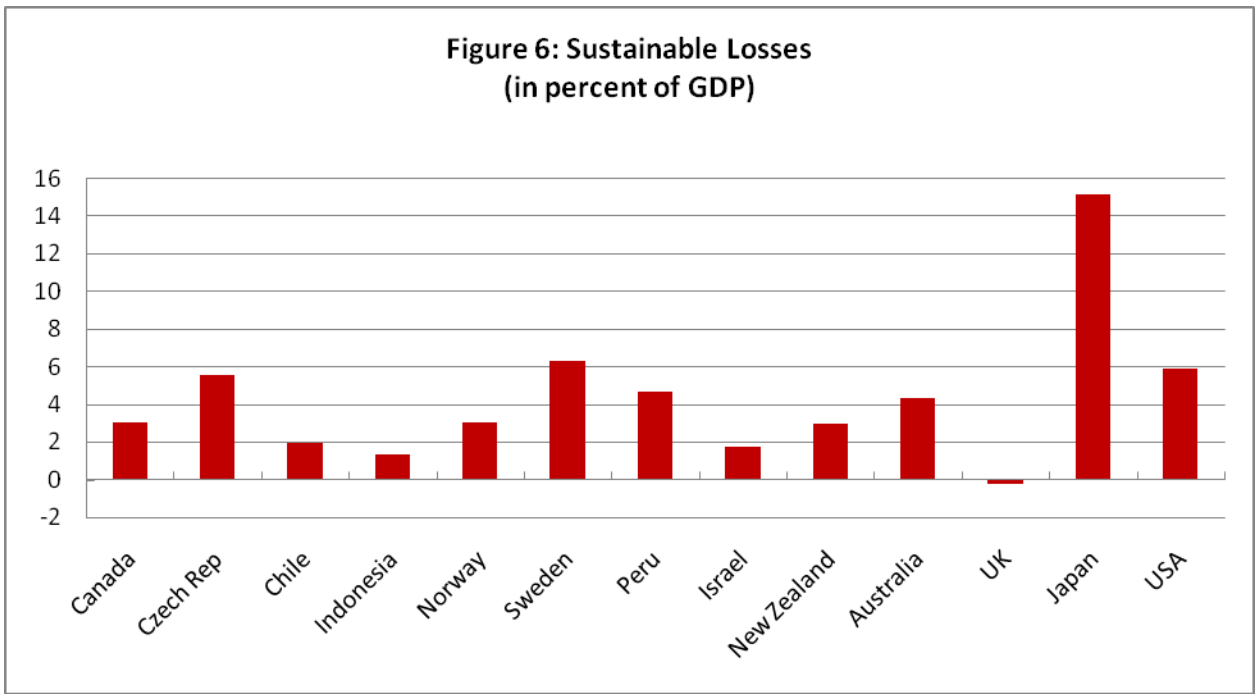
In order to determine whether the calculated buffers are adequate it is necessary to determine first the minimal level of currency plus capital that is necessary to sustain central bank operational expenditures and then subject the balance sheet to a robust stress test.

*Fundamental equity* is defined as the level of capital plus currency that is sufficient to finance normal operating expenditures at a given interest rate. Combining an assumed average rate of return on net assets of 4 percent (a 2 percent real return plus 2 percent inflation) with knowledge of the current balance sheet structure and operational expenditures, fundamental equity for each country can be calculated and is shown in Figure 5.

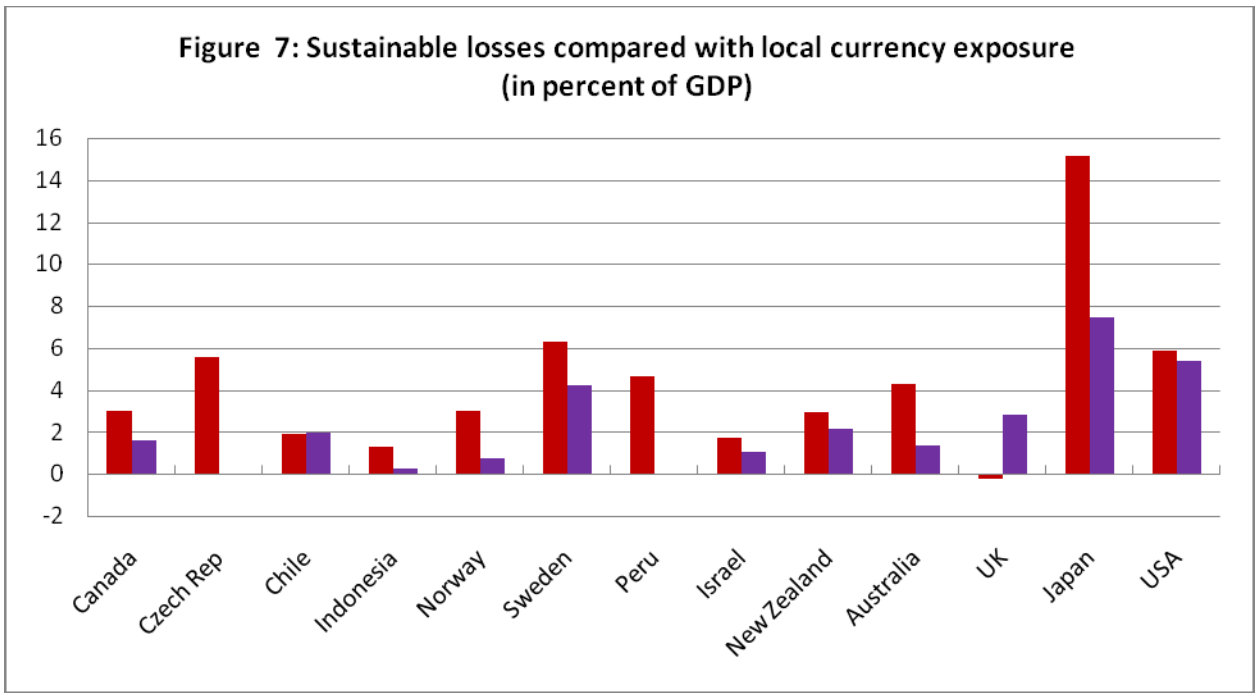
[7] As has been argued extensively elsewhere, it is impossible to meaningfully discuss the necessary degree of central bank finance strength absent knowledge of the policy regime. A monetary authority with an inflation target of two percent cannot generate the same amount of seigniorage as one willing to live with higher inflation and consequently must have a relatively stronger balance sheet.




For each country, the difference between the current level of capital plus currency and fundamental equity is equal to the present discounted value of exceptional losses that may be sustained without violating the central bank budget constraint. This is shown in Figure
6.



It is then necessary to determine the risk actually facing each central bank from conventional and unconventional losses. As a very strong stress test, a hypothecated 35 percent loss on total local currency assets (in purple below) is compared with sustainable losses (in red, see Figure 7)[8].




Even in this incredibly high loss scenario, in only the case of the Bank of England (BOE) is there reason to be concerned with the macroeconomic level of losses. However, the BOE is largely indemnified by the UK Treasury for potential losses thus it is not plausible that it would have to assume losses of that magnitude. In presenting the data for the UK I have used an adjusted combined Bank of England balance sheet which excludes currency[9]. As seigniorage from banknote issue is directly transferred to HM Treasury, it cannot be considered as financing the Bank. Consequently, the BOE has the lowest currency plus capital within the sample and sustainable losses are actually negative as calculated here (see Figures 3 and 6). On the other hand, the UK Treasury explicitly indemnifies the Bank of England for its lender of last resort operations[10]. During the current crisis it has also indemnified other unconventional operations. From the financial standpoint the BOE is essentially operating under a Treasury agency

[8] Only losses on domestic assets are considered owing to the high probability that an idiosyncratic financial crisis in a given country would likely lead to a depreciation of the local currency and generate gains in the local currency value of the foreign reserve portfolio. It is furthermore assumed that foreign reserves are invested in assets with little credit risk denominated in strong currencies. In that respect, it is illustrative that the best performing asset class during 2008—during the depth of the current crisis—was US Treasury securities, a very conventional choice for central bank asset managers.

[9] The combined balance sheet includes both the Issue and Banking Department balance sheets. I have subtracted banknotes and the assets backing the banknote issue (held by the Issue Department).

[10] The Treasury may also take LOLR operations on to its own balance sheet such as in the case of Bradford & Bingley plc. "By 28 February 2009 the responsibility of providing the working capital facility had been transferred to HM Treasury and no facility with the Bank remained outstanding". See Bank of England (2009), page 86.

arrangement and consequently need not hold capital against the imputed fiscal risks. The UK also explicitly sets an unremunerated reserve requirement held by eligible commercial banks in the form of "Cash Ratio Deposits" (CRD) to generate the income necessary to fund BOE operations so that significant funding capital is not required. Adding the CRD (approximately 2.5 billion pounds in 2008) to the calculated BOE currency plus adjusted capital yields sustainable losses very close to zero.

In sum, it would seem that the central banks examined here are not in significant danger of witnessing losses that would prevent them from attaining their inflation targets[11]. I will therefore turn to an examination of the other element of fiscal risk that is perhaps more relevant.

**Political Governance Risk**

The second important dimension of fiscal risk is political. That is, the issue is not that central bank losses would directly interfere with the attainment of monetary policy goals but that political pressure might be brought to bear on operational independence as a consequence of the central bank straying into what would appear to be expenditures of a fiscal nature. Therefore, even if central bank operations are fully collateralized and generate ex post profits, legitimate questions may be raised as to why, for example, the housing market was supported and not automobile manufacturers, airlines, or farmers. Similarly, why were certain institutions perceived to have been "rescued" and others allowed to fail?

Along this dimension of fiscal risk the key difference between central bank and fiscal policies is neither the nature of the operations nor their fiscal impact, it is that the scope of central bank policy is unrestricted by budgetary considerations—independent of the budget process—while fiscal operations are so restricted. The very absence of distinguishing characteristics between fiscal and unconventional monetary policy makes all the more apparent the absence of logic that they be directed by different governance structures. In these circumstances the *size* of central bank balance sheets becomes important as an indication of the extent of extrabudgetary financial market intervention.

"There is one significant difference between lending performed by the U.S. Treasury and lending performed by the Federal Reserve Banks, however. The Treasury can lend only under explicit authorization from Congress. The Federal Reserve, in contrast, has independent control of its balance sheet and funds itself outside of the normal appropriations process." [12]

If no clear distinction can be made between monetary and quasifiscal operations legislatures may, with some justification, wish to bring central bank operations under their control much as they govern fiscal policy. This may lead to an unintended and undesired constriction of monetary policy operational independence. This issue, as Bank of Japan Governor Shirakawa recently posed it, is who should ultimately be responsible for actions that fall into the gray area between monetary and fiscal policy:

"…when central banks try to create 'productive' policy measures, in an environment where the effectiveness of traditional monetary policy is constrained, they naturally come close to the area of fiscal

[11] Somewhat ironically, a need to create money to finance losses could be helpful to achieve an inflation target in an economy facing deflationary pressures.
[12] Lacker (2009), page 6.

policy. As a result, the policymakers need to face up to the issue of who should be responsible for such policy actions in a democratic society."[13]

**Monetary, Fiscal and Financial Market Intervention Policies**

In most cases it is not difficult to separate monetary and fiscal policies, particularly in recent years as monetary authorities have increasingly—and in the last 15 years almost exclusively—utilized indirect instruments at market based prices for monetary policy implementation[14]. In some cases, such as the 1992 Central Bank of Peru Law, quasifiscal operations previously widely used by the central bank were explicitly prohibited in new legislation while in other countries the revision of monetary policy philosophy was sufficient to lead to changes in operating procedures emphasizing the minimization of the impact of monetary policy on relative prices and the allocation of credit. In the United States, the implication of this approach for the Federal Reserve (FR) balance sheet has been called "Treasuries only". This worldwide trend had a counterpart in the adoption of interest rate operating targets and instruments at the expense of quantitative approaches; the "divorce" of money from monetary policy; and a decline in the weight of monetary operations in overall financial market transactions.[15]

During the current crisis, the previously broad line between fiscal and monetary policies in the advanced economies became extremely thin and in some cases invisible, when financial stability concerns led to the adoption of unconventional central bank operations[16].

To quote again Governor Shirakawa: "Measures to take on individual credit risk such as corporate debt are extraordinary steps for a central bank since they come close to the area of fiscal policy which deals with resource allocation at the micro level….since it is in essence close to the realm of fiscal policy, a clear understanding of which authorities are taking on the risk involved is indispensable. This is also important from the perspective of maintaining public confidence in the financial strength of the central bank. If the central bank's financial strength is perceived to be weakened, concerns may arise, subtly through various channels, with regard to its ability to effectively fulfill its monetary policy mandate."[17]

In the United States, the FOMC statement of December 16, 2008 essentially announced the attainment of the zero lower bound on the fed funds rate and the end to conventional operations: "…the Federal Reserve will purchase large quantities of agency debt and mortgage-backed securities to provide support to the mortgage and housing markets…" "The Federal Reserve will continue to consider ways of using its balance sheet to further support credit markets and economic activity." Indeed the System

[13] See Shirakawa (2009), page 3.
[14] See Borio (1997). Directed credit and unremunerated reserve requirements had decidedly fallen out of fashion by the mid-1990s. See page 314 on reserve requirements.
[15] In commenting on the draft papers soon to comprise the new Handbook on Monetary Economics, one participant at a 2009 Federal Reserve conference remarked how infrequently the papers mentioned "money".
[16] Some of these issues were foreshadowed in policy debates before the crisis in the advanced countries. Whether the US discount rate provided subsidized credit is one example. Another is Small and Clouse (2004): "…even if the Federal Reserve could take more credit risk onto its balance sheet, any social benefits from the Federal Reserve doing so would need to be balanced against the potentially substantial drawbacks associated with placing the Federal Reserve squarely in the process of allocating credit among private sector borrowers." (page 16).
[17] See Shirakawa (2009), pages 5-6. See also Stella (2009) regarding the Federal Reserve's assumption of fiscal risk.

Open Market Account desk did not conduct a single conventional repurchase operation in 2009 whereas prior to 2007 this was virtually the only actively used instrument.[18]

In the United States, there has been a good deal of controversy over the nature of the assets acquired as the result of unconventional operations. Kohn (2009) argues that "…our nontraditional policy actions…remain consistent with the traditional goals and principles of monetary policy…we have structured these policies with the aim of accomplishing our objectives with few, if any, fiscal consequences."[19]

On the other hand, Plosser (2009) argues that "Our lending programs were created for extraordinary times…but they run contrary to a long-standing and sound Fed practice of trying to minimize the effect of its actions on the allocation of credit across market segments. In my view, such programs are not, and should not, be part of the normal operation of a central bank….My third and final suggestion is to draw a clear distinction between monetary policy and fiscal policy and to ensure that the Federal Reserve retains its independence to conduct sound monetary policy."[20]

Note that here the focus is not on the potential quasifiscal cost of the operations but on their allocative nature and the extent that they may favor one sector or market segment over another.

Taylor(2009) has argued for an end to unconventional policies (which he describes as "monoindustrial") and the return to the previous monetary policy framework: "If we are to have an extensive industrial policy, it should be approved by the Congress with the purposes stated and debated transparently."[21] "If policy does not go back to a monetary policy framework, then questions must be raised about the fundamental role, independence, and governance structure of the Federal Reserve."[22]

Lacker (2009) is similarly direct. Citing Goodfriend (1994), he argues "credit policy" is "…a form of fiscal policy in that it uses the public sector's balance sheet to alter the allocation of resources."[23] Furthermore, "Government lending, whether by the Fed or Treasury, fundamentally represents fiscal policy in the sense that it channels taxpayer funds to private sector entities. The presumption ought to be that such lending is subject to the checks and balances of the appropriations process laid out in the Constitution. Using the Fed's balance sheet is at times the path of least resistance, because it allows government lending to circumvent the Congressional approval process. This risks entangling the Fed in attempts to influence credit allocation, thereby exposing monetary policy to political pressures."[24]

Goodfriend (1994) defines "credit policy" as policy-directed changes in the composition of the monetary authority's asset portfolio without a change in the quantity of central bank liabilities. The policy of the Federal Reserve seems to fit neatly within this definition during two distinct periods. From late 2007

[18] See Federal Reserve Bank of New York (2010), page 6.
[19] See Kohn (2009), page 1.
[20] See Plosser (2009), page 3.
[21] Taylor (2009), page 22.
[22] Ibid, page 3.
[23] See Lacker (2009), page 6.
[24] Ibid, page 7.

through mid-September 2008 the FR provided credit through various innovative programs while simultaneously sterilizing the impact on systemic liquidity with sales from its government securities portfolio. Following an interlude between mid-September and end-year 2008 when the monetary base was permitted to expand enormously, the FR again stabilized the size of its balance sheet while engineering another dramatic change in the composition of its assets as more than $1 trillion of its "new" operations were replaced with holdings of MBS and Agency debt.

Bernanke (2009a) described this policy as "credit easing": "…the Federal Reserve's credit easing approach focuses on the mix of loans and securities that it holds and on how this composition of assets affects credit conditions for households and businesses."[25]

Thus one perspective on separating unconventional monetary and fiscal policies focuses on the nature of the *assets* acquired. A second perspective from which to view this debate is that it is the nature of the *liabilities* that finance the operations that distinguishes monetary from fiscal policy. That is, operations financed with monetary base are considered monetary and those that are financed with debt are fiscal. Those latter operations, when they involve government debt exclusively amount to debt management[26].

Separating monetary and fiscal policy by describing actions only the monetary authority can perform requires the identification of operations that are financed with monetary base. That is, the distinguishing feature is not on the asset side of the balance sheet but on the liability side. Unfortunately, it can be very difficult to trace a one-to-one correspondence between those policies financed with money and those with debt, and even more difficult to draw a correlation with the degree of their fiscal nature. If we consider the most prima facie quasifiscal FR policies—the establishment of Maiden Lane I, II and III[27], and the funding provided directly to AIG—MLI was essentially financed by debt in order to keep the fed funds rate at target (225 bps at the time—March 18, 2008). In contrast, the direct loan to AIG and the creation of MLII and MLIII (after Lehman Brothers filed for Chapter 11 bankruptcy protection on September 15, 2008) were financed by base money creation[28].

In sum, it is very difficult to conclude that the nature of financing is particularly relevant. Under these circumstances, when it is not possible to draw a fine line in this gray area, it would seem advisable to consider the possibility of a third intermediate governance structure to reign the gray area that would enable a clear line to be drawn between conventional monetary and fiscal policies.

In the following section I will discuss preserving monetary policy operational independence by isolating it from what I term market intervention (MI) activities which should, in turn, have a greater conformity to the national budgetary process.

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[25] Bernanke (2009a), page 5.

[26] Analytically, it is virtually impossible to differentiate a central bank sale of short term government debt used to finance the purchase of long term government debt in the secondary market from the same purchase by government financed in the primary market. See McCauley and Ueda (2009) for a discussion of the similar possibilities open to "quantitative easing" and debt management at low interest rates.

[27] MLI was formed March 24, 2008 to facilitate the acquisition of Bear Sterns by JP Morgan. ML II and III were set up to finance the acquisition of certain assets and liabilities of AIG and its subsidiaries.

[28] Excess commercial bank reserves rose from $2 billion in August to $798 billion by end-December, 2008.

**The False Identity Equating Central Banking with Monetary Policy**

In this section I discuss the difference between central banking and monetary policy functions and governance structures. In so doing I set aside the many activities and functions of central banks apart from monetary and financial intervention policies[29]. To simplify the conceptualization of the issue, from this point on we may think of *monetary policy* as "interest rate policy" the process by which an operational interest rate target is set and liquidity conditions managed to achieve a close correspondence between a market rate and the target rate so as to achieve an inflation objective. *Central banking* may be thought of as intervening in identified markets or institutions to impact relative prices or to provide liquidity and thereby improve market or institution functioning.

Common language equates central banking (the central bank) with monetary policy (the monetary policy authorities). The use of these two terms interchangeably leads directly to the assumed identity of central bank independence and monetary policy independence—as if these were logically inseparable.

I believe much of the current controversy surrounding central bank independence within informed circles has little to do with monetary policy independence—about which there remains a consensus in favor—and very much to do with the ability of the central bank to engage in unconventional market interventions which bear a high similarity to fiscal policy. This functional similarity of powers raises the very legitimate question as to why there should exist two, quite different, governance structures, one determining central bank interventions and another government budgetary interventions.

In tracing the history of modern theoretical contributions to the idea of central bank independence the development of its identity with monetary policy independence becomes apparent.[30] The first models were largely silent about how monetary policy is implemented. The seminal academic articles arguing the case for monetary policy rules did not mention the "central bank" and gave slight recognition to the existence of a monetary authority not to say monetary "policy".

Nobel Laureate Robert E. Lucas' "Expectations and the Neutrality of Money" does not mention central banks. In his model, fiat money is "…issued by a government which has no other function…unspent cash balances revert…to the monetary authority."[31] Nor do Nobel Laureates Finn Kydland and Edward Prescott mention central banks in their "Rules Rather than Discretion: The Inconsistency of Optimal Plans", apart from a footnote acknowledging the support of the Bank of Norway. Although they provide illustrations of their theory using patent policy, flood insurance, constitutional law, windfall taxes on oil companies and the "inflation-employment example", monetary policy is mentioned explicitly only twice. The first reference compares their "inflation-employment example" to the description of monetary policy in Taylor (1975), the second reference is in the penultimate sentence of the paper: "One possible institutional arrangement is for Congress to legislate monetary and fiscal policy rules…". Thus monetary

[29] This means, inter alia, I will not be discussing the central bank's role in payments systems, nor financial market regulation and/or supervision.

[30] Although Bernanke (2004) discusses only Kydland and Prescott (1977), Rogoff (1985), and Walsh(1995), I include Lucas (1972) as he was clearly influential in the work of Kydland and Prescott. Interestingly, in footnote 1, Kydland and Prescott cite Chris Sims as the person whose comments led them to their path breaking results.

[31] Journal of Economic Theory 4 (April 1972).

policy in both cases is portrayed as a written rule or computer algorithm that generates the value of a stylized model variable largely without human intervention.

Central banking first appears in what might be termed the classic second generation references. This literature was concerned with how to ensure rules were followed, that is, how to solve what was known as the "precommitment" problem in a practical way—recognizing human intervention would be required to set the policy instruments. Both Rogoff (1985) and Walsh (1995) discussed how to create an institution or governance structure to ensure the independence of monetary policy from short run political influence. Rogoff's solution was to rely on a "conservative" central banker, that is, endow in the governance structure a natural desire for tight monetary policy (compared with an "average" person) combined with the ability to freely manipulate a policy instrument to maximize their private objective function (independence). Walsh's solution was essentially the agreement of a contract with the "central banker" to maximize the socially optimal objective function given instrument independence.

The identity of central bank independence and monetary policy came from the identification of the central bank(er) as the agent governing the monetary authority. In these important theoretical contributions, the "subsidiary" functions of central banking were set aside and, indeed, until the current crisis the alternative powers of central banks and the delineation of the difference between central bank and fiscal functions was not emphasized[32]. Thus the argument in favor of monetary policy independence became the argument in favor of independence of the governance structure for monetary policy which, in some cases inadvertently gave the central bank autonomy in subsidiary policies. The exercise of those powers in a very politically charged atmosphere—particularly in countries where the budget restricted those very same powers from being employed by the fiscal authorities—has now placed monetary policy independence in jeopardy.

A corollary derived from the assumed identity of central banking and monetary policy is that there is only "one" central bank, that is, there is only one identical governance structure setting all central bank policies. This is clearly not the case (neither formally nor informally) as is evidenced by the diverse experience of many countries[33]. This derivative error strengthens the belief that the same degree of political independence must be given to all central bank functions.[34]

Not only are different central bank functions frequently subject to different governance arrangements but the use of committees to govern provides an opportunity to fine tune the degree of independence given to any particular function. As noted by Blinder: "My experience as a member of the FOMC left me with a strong feeling that the theoretical fiction that monetary policy is made by a single individual maximizing a well-defined preference function misses something important. In my view, monetary theorists should start paying attention to the nature of decision-making by committee, which is rarely

[32] It should be noted that in the many developing and emerging market countries suffering banking crises in the 1980s this issue was very actively discussed and researched.
[33] See BIS (2009).
[34] Fischer (1995), and in his work comparing operational and goal independence clearly points out that different central bank functions are subject to different governance regimes, in particular to the frequent controlling interest of government in exchange rate policy.

mentioned in the academic literature."[35] Indeed, the representation of the Ministry of Finance on the governing bodies of the central bank has been one of the more controversial issues over the years.

In this section I have argued the importance of recognizing the distinction between central banking and monetary policy. In the remainder of the paper I will focus on the distinction between financial market intervention (MI) and monetary policies and draw out the sharply different implications for their appropriate governance and balance sheet structures.

**Governance structures and balance sheets**

Once we admit the difference between central banking (MI) and monetary policies, we can entertain the possibility of different governance structures with different degrees of independence. That is, we can conceive of a "third" governance structure operating in the gray area between monetary and fiscal policies. We can also begin to differentiate among the different policy instruments that may be assigned to those governance structures, the corresponding financial resources with which they may be endowed, as well as their accountability frameworks.

*Monetary policy: Governance structure*

The ability to issue money exclusively and without budgetary limitation and the freedom to set a short term interest rate are among the most frequently cited elements of monetary policy independence. The trend toward central bank independence has largely focused on creating an institutional framework to enable operational independence. Consequently, the task going forward is not so much the refinement of current *monetary* frameworks but that of reforming residual central banking frameworks and governance structures. Separating the monetary authority and MI decision making structures would allow more focused boards dedicated to the two tasks but would not necessitate their isolation from one another. For example, some persons might sit on both boards but monetary specialists would hold the predominance of voting power on monetary policy issues while financial stability specialists would dominate voting on MI issues.

Separating the monetary policy and central banking authorities may also in some cases enable the unification of disparate monetary policy governance structures. In the United States, the FOMC determines the policy rate and directs open market operations while the Board of Governors has the authority to set required reserves and authorize changes in the discount rate. The Board also has the exclusive power to invoke the provisions of section 13.3 under the Federal Reserve Act (see below)[36].

*Monetary policy: Financial and Accountability structures*

The balance sheet of a monetary authority may be very small provided that operational procedures are well defined and communications advanced. Just how small will be discussed in the following section. Corresponding to a small focused balance sheet, the "capital" required to fund the monetary authority

[35] See Blinder (1998), page 22 and also Vandenbussche (2006) for a survey of this issue.
[36] Since the Board does not have any direct capacity to intervene in financial markets one of the FR Banks must originate the lending permitted under section 13.3.

may also be very small. “If a central bank’s monetary, exchange rate and financial arrangements expose it to very little risk, it arguably needs very little capital. Such central banks include those with floating exchange rates, those that manage foreign exchange reserves only as an agent for the government, and those that would be indemnified for losses resulting from loans of last resort.”[37]

Accounting for monetary policy performance would be facilitated by a very small balance sheet. The current emphasis on goal-based reporting through “inflation reports”, published minutes of policy meetings, widely given speeches and testimony before legislatures would continue. The existence of very small seigniorage profits and small “boring” balance sheets would limit interest in financial results reporting, beyond what is legitimate for a correspondingly sized autonomous government agency.

*Financial Market Intervention policy: Governance structure*

The market intervention authority (MIA) would aim to preserve market stability through interventions in financial markets. It would not issue money but would have the authority to issue government-guaranteed debt within confines determined through integration with the government budgetary process. Although it might—in the steady state—have a modest size balance sheet it would need to have the capacity to scale up relatively quickly. The authority would take responsibility for lender of last resort operations, could take on credit and interest rate risk and would, in so doing, likely impact the allocation of credit within the economy. Although experience during the current crisis suggests it would have to extend its operations beyond strictly banking borders, its objectives and operations would be similar to those undertaken by central banks during the gold standard era—before the advent of modern monetary policy. In this respect, the discussion of the appropriate extent of market operations in the First US FR Board Annual Report is illustrative: “…to influence the market a Reserve Bank must always be in the market, and in this sense Reserve Banks will be active banking concerns when once they have found their true position under the new banking conditions”[38]

Whether the MIA would be lodged within current central banking structures or take a more independent life would doubtless depend on country-specific considerations. What is essential is that its governance structure differ from that of the monetary policy authority. Along the independence spectrum, monetary policy should be more independent from the treasury and political processes than the MIA. In this respect, legislators in many countries have already recognized the difference between market intervention and monetary policies and have created separate governance structures to authorize or trigger MI under exceptional circumstances. In other countries, MI is taken on by central banks in an agency role, or is considered the role of the treasury.

Authority granted the Fed in the Federal Reserve Act under section 13.3 “in unusual and exigent circumstances” to provide discounts to individuals, partnerships and corporations, requires “...the affirmative vote of not less than five [out of seven] Board members...”[39] . Similarly, Argentina, Chile,

[37] BIS (2009), page 125.
[38] Federal Reserve Board (1914), page 18.
[39] In contrast, FOMC voters consist of all 7 Board members, the President of the FRBNY and 4 Reserve Bank presidents alternating among the remaining 11 FRBs.

Costa Rica, Korea, the European System of Central Banks, and the Philippines require a super majority vote to authorize extraordinary or emergency central bank operations. Legislation signed by President Obama on July 21, 2010 requires that lending under the aforementioned Federal Reserve Act section 13.3 be approved in advance by the Secretary of the Treasury[40].

In Japan, BOJ emergency lending must be approved by the Prime Minister and the Minister of Finance. In Thailand, both the Bank of Thailand Financial Institutions Policy Board and the Cabinet must approve emergency lending. Such operations must be approved in Jordan by both the central bank board and the Council of Ministers. In both Korea and the Philippines, the Monetary Policy Board, not the general board, holds power in an emergency.

"The voting rule of the [ECB] Governing Council gives each member an equal vote; but when the Governing Council decides on financial matters of the institution, it uses a special procedure set out in the statue in which the vote of each national central bank is weighted according to its share in the subscribed capital of the ECB." [41]Thus when fiscal risk is at stake, the ECB provides for voting power proportional to the share of the risk being borne by each country.

Although some of the governance structures outlined above enhance the influence of the State in unusual circumstances, the precise allocation of authorities and financial responsibilities is often unclear.

When the central bank operates under an agency arrangement, as in the United Kingdom, financial responsibilities tend to be clearer, as is the political legitimacy of the operations. However, retaining the operations within the same institutional framework as the monetary policy authority can lead to certain confusions and, in any event, coordination between the MIA and government must be ensured.[42]

In other countries, MI is under direct fiscal control. In Norway the principle that operations implying a fiscal or quasifiscal risk must be financed by the central government was affirmed during the current crisis, when the government assumed the risk onto its own balance sheet: "…funding support for banks came from the government's balance sheet, not as loans from Norges Bank. This provided transparency….The Norwegian measures were designed in such a way that Norges Bank's balance sheet has not increased to the same extent as that of a number of other central banks."[43]

During the 1990s Swedish financial crisis, Sweden's Debt Management Office (DMO) became responsible for managing the fiscal risk associated with financial sector crisis interventions. Owing to its long-standing independence from the Ministry of Finance, the DMO balances the need to integrate

[40] This legislation also terminated the FR's power under 13.3 to lend to "individuals, partnerships or corporations" . Such lending is now restricted to "participants in any program or facility with broad-based eligibility".
[41] BIS (2009), page 82.
[42] The Bank of England established a new company to undertake transactions under the Asset Purchase Facility. However, extending the scale and operation of the Facility to permit its use for monetary policy purposes requires the authorization of the Chancellor of the Exchequer. See King (2009).
[43] See Gjedrem(2009) for a discussion about the Norges Bank response to the current crisis in 2008-09.

financial market stability concerns within the overall fiscal environment while maintaining political distance from Government.

Although the Central Bank of Chile bore the brunt of the financial intervention undertaken during the Chilean financial crisis in the early 1980s, in 2009 the Ministry of Finance intervened by repatriating foreign assets and auctioning the foreign exchange to local banks and injecting capital into the state-owned BancoEstado.

This review of country experience shows that the MIA could be part of the existing central bank simply with a different governance structure that carries greater political legitimacy and operates within certain budgetary or risk control parameters. Alternatively, it could take the form of a separate institution or, lastly, MI functions could be assigned to the Treasury. In concept, the MIA would be intended to be active in capital markets—as the founders expected the Bank of England and Federal Reserve Banks to be in the money market. While in normal times it would engage in a modest amount of activity, in a panic it would need to quickly scale up. Its capital structure should therefore allow for scalability—relatively small paid in capital with legislative pre-authorization to expand under certain conditions. The risks and profit from the MIA should be clearly on the fiscal accounts—avoiding potential conflict with monetary operations.

The speed with which the central bank can act without legislative approval is frequently posed as the reason for locating emergency power there. Consequently, this power would need to reside with the MIA, with the parameters of operations established by the legislature well in advance of a crisis. This emphasis on speed is perhaps no more colorfully put than by Bagehot quoting from the Governor of the Bank of England regarding the panic of 1866: "'It was not unnatural that in this state of things a certain degree of alarm should have taken possession of the public mind, and that those who required accommodation from the Bank should have gone to the Chancellor of the Exchequer and request the Government to empower us to issue notes beyond the statutory amount, if we should think that such a measure was desirable. But we had to act before we could receive any such power, and before the Chancellor of the Exchequer was perhaps out of his bed we had advanced one-half of our reserves, which were certainly thus reduced to an amount which we could not witness without regret. But we could not flinch from the duty which we conceived was imposed upon us of supporting the banking community...'" (*Lombard Street*, page 158).

*Financial intervention policy: Financial and Accountability structures*

Until 2007, major central banks had managed quite successfully through operations of minimal size to steer short term interest rates to influence economic activity and inflation. Intervention in the crisis, however, required an immense balance sheet expansion and important changes in asset composition. This intervention quickly expanded to encompass not only conventional monetary operations counterparties but also more distant institutions—including investment banks and insurance companies—and more distant markets such as those for commercial paper and ABS.

Central banks have effectively placed their capital at risk to become market makers to the broader financial system. In this role they have attempted to replace the withdrawn capital of bankrupt or

diminished market intermediaries, in order to curtail the widening of spreads. The theoretical basis for this approach is clear in Shleifer and Vishny (1997). In practice, however, it is not necessary for the intervention to take the form of money, that is, be conducted by the monetary authority. The private traders who are being replaced are not able to create central bank money. Therefore a MIA with an ability to issue high quality securities—backed by government—could undertake this role.

Taking risk will be inevitable in fulfilling the MIA role as will activity in markets well beyond the money market within which the monetary authority would be expected to act. Legal authority will need to be commensurate with the market stability and intervention role. Bernanke (2009b) pointed to the constraints on FR lending and the lack of an adequate resolution authority for US investment banks as the decisive factors in the Lehman crisis-discussions[44].

In light of the nature of its role and operations—and in contrast with monetary authority financial reporting—the MIA would need to provide risk-adjusted financial performance measures and a careful quantification of the quasifiscal impact of its MI operations. In that respect IFRS based accounting will be much more amenable for adoption than it has been for monetary authorities.

**How small can a monetary authority be?**

In this section I examine 13 advanced and emerging market central bank balance sheets to determine the current sizes of the MI and monetary authority functions. I start by constructing an analytically streamlined and standardized balance sheet for each central bank using the latest available audited accounts. I then subtract from the liability side of the balance sheet banknotes and capital and from the asset side a proportional reduction is imposed, that is, foreign and domestic financial assets are reduced in proportion to their original size on the balance sheet[45]. This provides us with a balance sheet consisting only of assets used for policy purposes and deposit and debt liabilities. (Cash is assumed to be managed passively while capital is the residual accumulation of retained earnings which should play no role in the policy management of the bank).[46] Policy assets may be classified as comprising foreign reserves, conventional (monetary policy), and unconventional (MI) instruments.

The next step hypothesizes that the central bank manages the foreign reserves under an agency arrangement with government. I consequently remove from assets the remaining foreign exchange reserves. The resulting balance sheet I consider to be the consolidated central banking (market intervention) and monetary authority balance sheet. From this latter balance sheet I subtract the amount of identified crisis-related market intervention operations. These are the MI function assets. The remaining balance sheet is called the "Minimal Monetary Policy" balance sheet.

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[44] "…the company's [Lehman] available collateral fell well short of the amount needed to secure a Federal Reserve loan of sufficient size to meet its funding needs. As the Federal Reserve cannot make an unsecured loan, and the government as a whole lacked appropriate resolution authority or the ability to inject capital, the firm's failure was, unfortunately, unavoidable.", page 2.

[45] In this step I exclude assets identified as unconventional.

[46] "Cash is purely demand-determined, automatically accommodated by the central bank, and plays no substantive role in policy implementation." Borio and Disyatat (2009), footnote 8, page 7.

The starting size of the balance sheets in relation to GDP is provided in Figure 8.

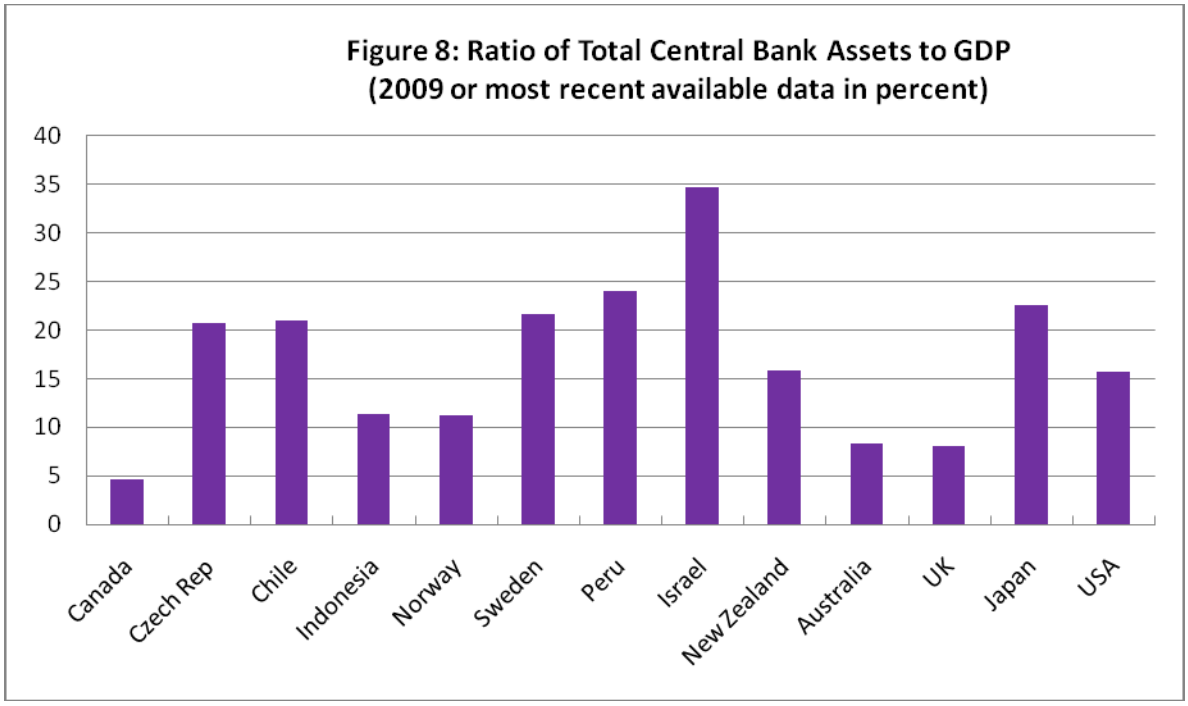



Figure 9 shows the size of the balance sheet after the adjustment for currency and capital.

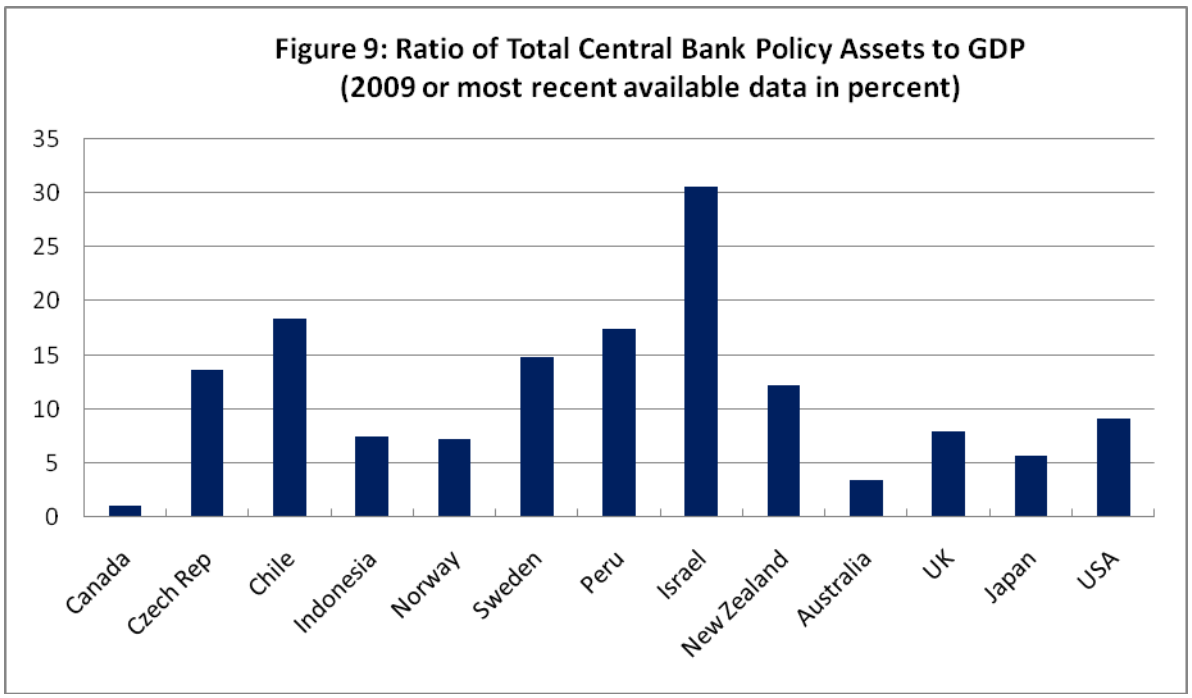
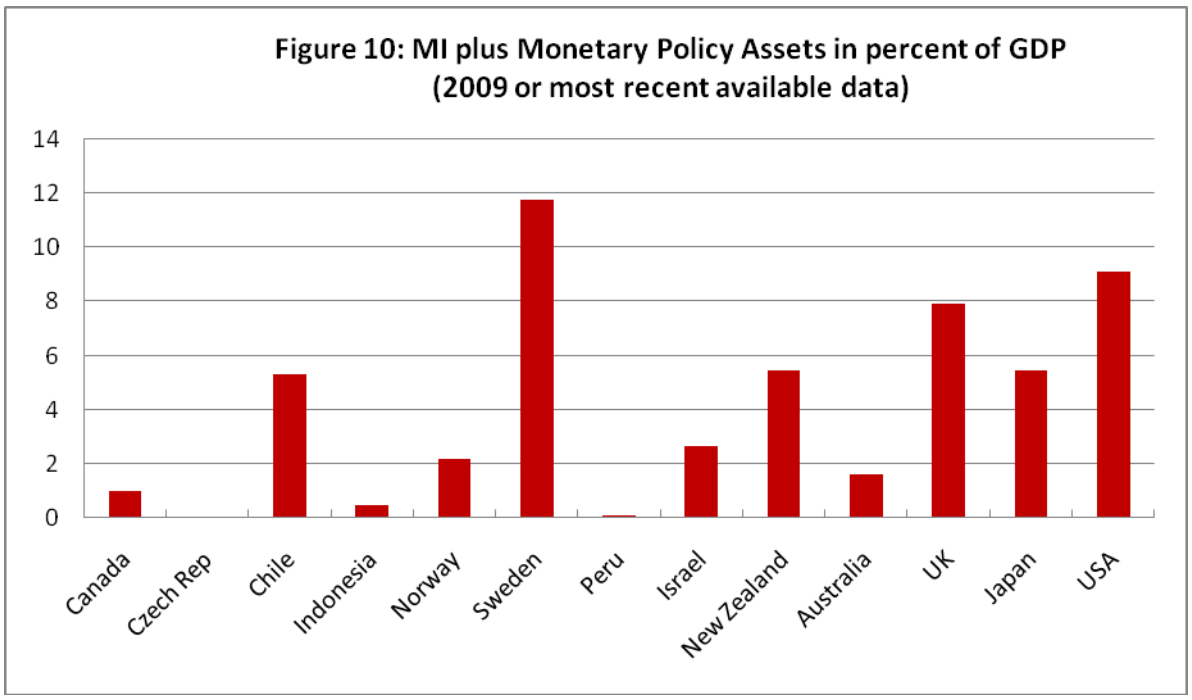



Figure 10 provides the comparative size of the balance sheets subtracting the foreign reserve function.




This is what I have called the consolidated monetary and market intervention policy balance sheet. Figure 11 shows the comparison of the size of the latter balance sheet with the original starting point.

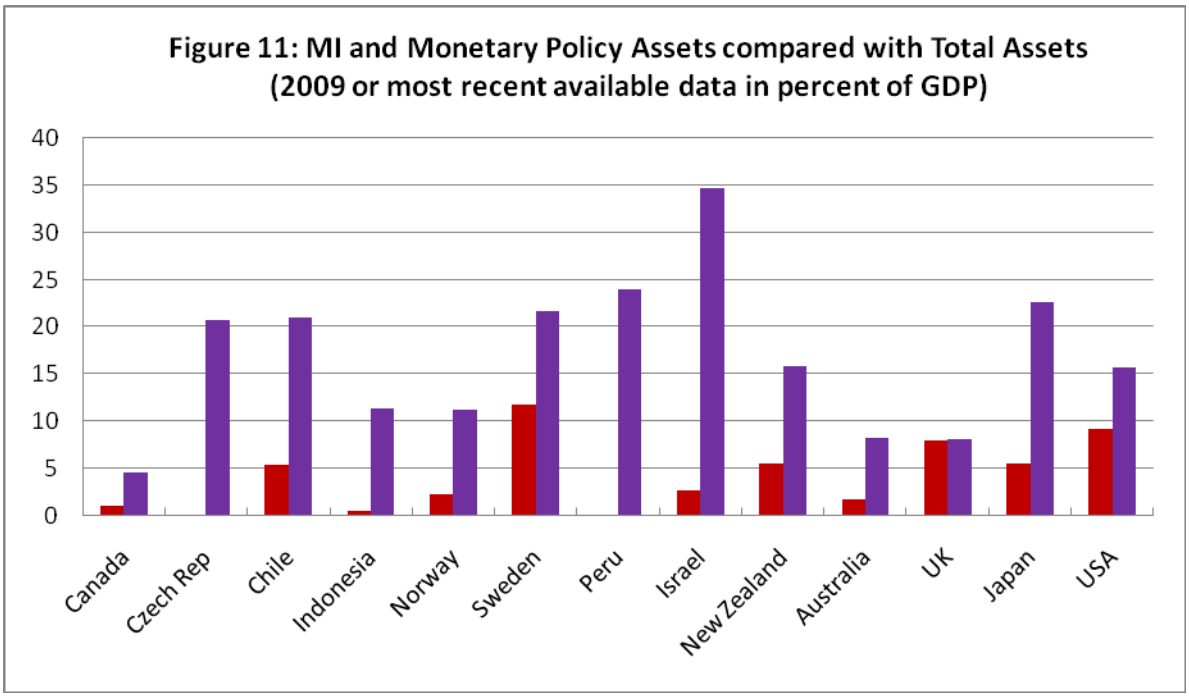
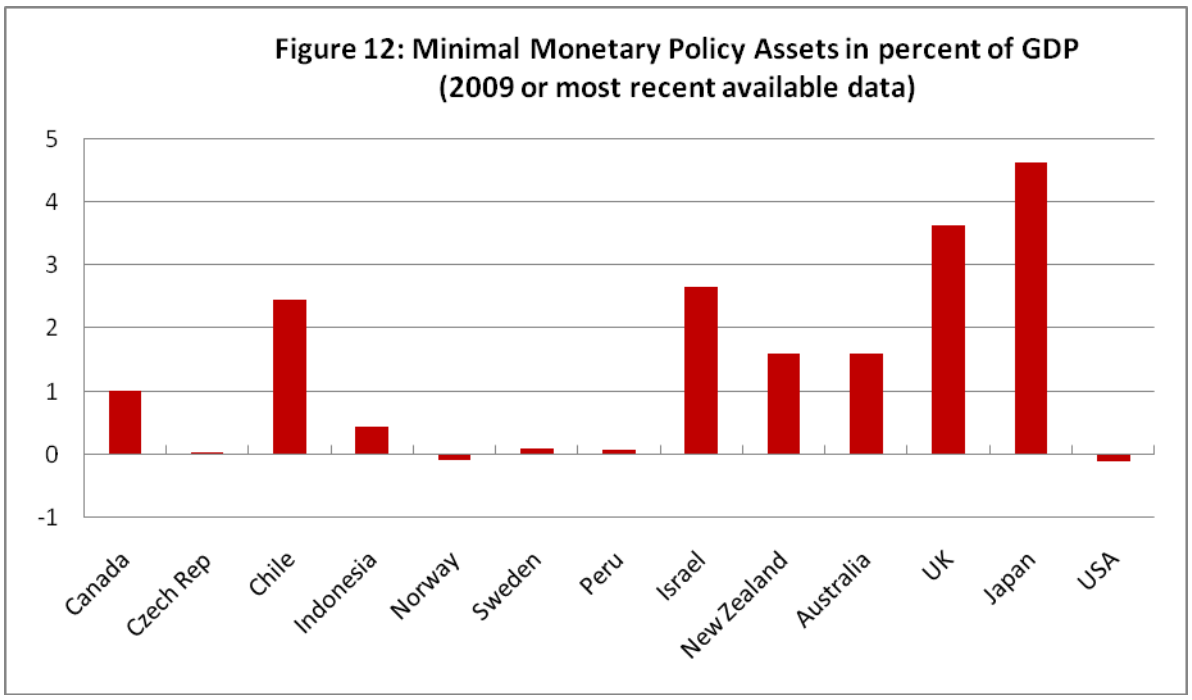


Figure 12 shows total assets of the conceptualized minimal monetary authority, which is obtained after subtracting from the balance sheets in Figure 10 those assets identified as unconventional (MI). As can be seen, these balance sheets are, for the most part, very small[47].




Constructing the minimal monetary authority balance sheet is complicated when considering a crisis-impacted situation. To the extent that quantitative easing actions have been taken (an expansion of excess bank reserves resulting from the purchase of government debt) or conventional lending has expanded owing to the crisis interventions, the minimal monetary authority balance sheet may be overstated. In other words, a smaller balance sheet may have been adequate to enable monetary operations to attain the zero lower bound.

**Transitioning to the new arrangements**

Most existing central banks have very large excess assets and capital compared to the minimal size monetary authority. Those excess assets and capital could provide the financial basis to establish an MIA where one is needed. The precise modalities of creating the MIA would naturally be country specific.

In the United States, Congress has appropriated FR capital on at least three occasions. In 1933, Congress required the Reserve Banks to subscribe an amount equal to one-half their accumulated surplus ($ 140

[47] The value of assets identified as MI is shown in Figure 13 in Annex I. Minimal monetary policy assets may be negative in Figure 12 if the central bank balance sheet expanded by less than the expansion in MI assets, that is, if conventional monetary policy was used to contract part of the expansion in the monetary base caused by the MI actions. In the USA, this occurred as FR outright sales of its short term Treasury securities and elimination of repos absorbed part of the monetary base created by the purchase of MBS and expansion of other innovative facilities. In 2006, average FR repo operations outstanding were 25 billion dollars which may be considered to be indicative of the “normal” size of US minimal monetary policy assets.

million) for non-dividend stock of the Federal Deposit Insurance Corporation[48]. Sixty years later, the 1993 Omnibus Budget Reconciliation Act required the Federal Reserve to make transfers from its surplus to the Treasury in fiscal years 1997 and 1998 and Congress amended the Federal Reserve Act in 1999 to require the FR to make a transfer from surplus to the Treasury in fiscal year 2000[49].

In the US, the transfer of capital from the FR to the MIA would enable the new entity to take on the Maiden Lane facilities as well as the FR holdings of MBS[50]. This would remove both the credit and interest rate risks from the monetary authority balance sheet.

Both the UK and the European Union have preempted the need to transfer certain assets from the monetary authority balance sheet by creating separate companies to handle the related MI activities from the outset[51].

**Conclusions**

Limiting the risk to monetary policy independence requires that those central bank assets and operations not intimately related to conventional monetary policy be removed rapidly from the monetary authority balance sheet and placed with national treasuries or a MIA. More fundamentally, devolving market crisis intervention powers to a new and separate authority responsible for financial market stability—absent the power to create money—would enable the preservation of monetary policy independence. The careful design of the new authority, its governance structure and role within a revised supervisory and regulatory framework represent a key challenge for the designers of the new financial architecture.

The global consensus that has emerged over the past two decades stressing the benefits of independent monetary policy is worth preserving. But it is essential to draw a distinction between "central bank" and "monetary policy" independence. While the case for an independent monetary authority is clear, the case for central bank autonomy in the field of crisis intervention—when fiscal resources are placed at risk outside the national budgetary framework—is much less so. In light of contentious political debates over fiscal policy it is not evident that the political champions of central bank independence intended to provide central banks "fiscal" independence[52]. Should political authorities find current central bank activism an affront to their legislative authority a backlash may ensue whereupon monetary policy independence is curtailed. For this reason, it may be wise to develop an alternative governance structure to handle the "banking" or, in the modern financial system, "market making" roles that central banks have taken on during the current crisis and thereby preserve monetary policy independence.

[48] Banking and Monetary Statistics of the United States, page 329. FR Bank of St. Louis, FRASER online database.
[49] Stella (2005), page 348.
[50] Alternatively the US Treasury could directly remove the Maiden Lane facilities from the FR balance sheet as it so pledged in March 2009.
[51] The European Financial Stability Facility (EFSF) was established as a limited liability company under Luxembourg law. Shareholdings in the EFSF will correspond to the founding countries' paid-in capital contribution to the ECB.
[52] See Cukierman (2008) for further discussion of the development of the idea of central bank independence.

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ANNEX I

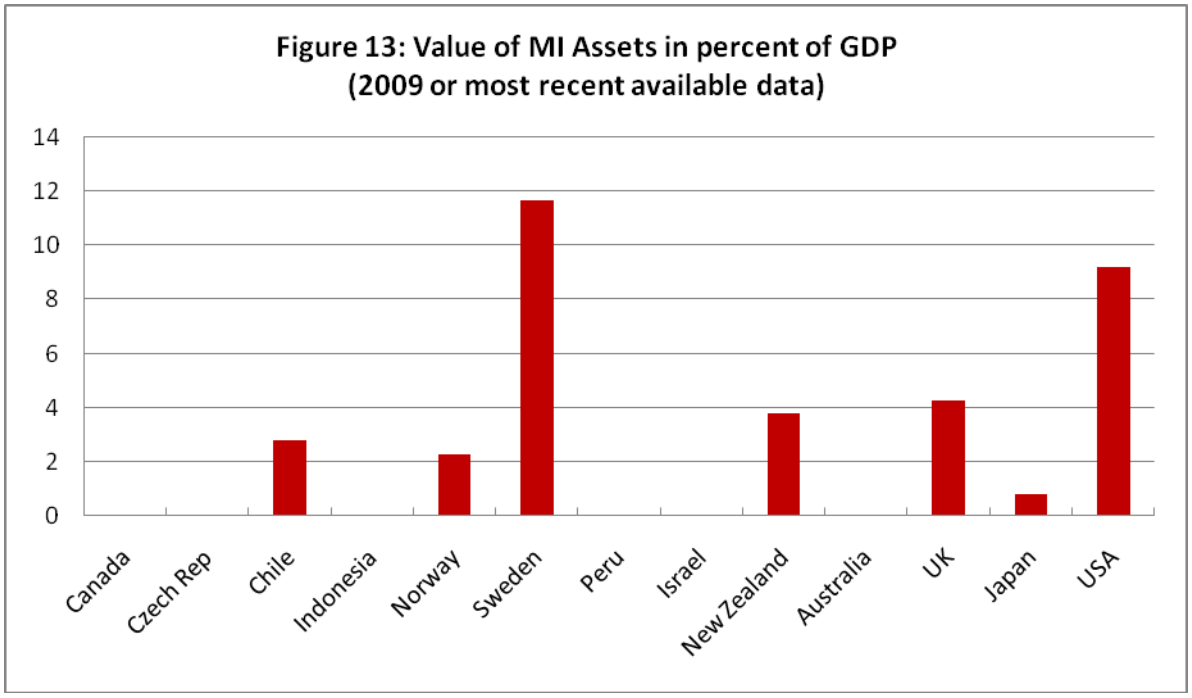
Figure 13: Value of MI Assets in percent of GDP
(2009 or most recent available data)
14
12
10
8
6
4
2
0
Canada
Czech Rep
Chile
Indonesia
Norway
Sweden
Peru
Israel
NewZealand
Australia
UK
Japan
USA