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WP/97/83

INTERNATIONAL MONETARY FUND

Monetary and Exchange Affairs Department

Do Central Banks Need Capital?

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July 1997

Abstract

Central banks may operate perfectly well without capital as conventionally defined. A large negative net worth, however, is likely to compromise central bank independence and interfere with its ability to attain policy objectives. If society values an independent central bank capable of effectively implementing monetary policy, recapitalization may become essential. Proper accounting practice in determining central bank profit or loss and rules governing the transfer of the central bank's operating result to the treasury are also important. A variety of country-specific central bank practices are reviewed to support the argument.

JEL Classification Numbers: E58

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¹The author would like to thank John Dalton, Charles Enoch, and Alain Ize for their thoughts on various aspects of this project. Anil Bhatia provided research assistance.

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SUMMARY

Central banks in many countries have suffered chronic losses that eventually interfere with the effective conduct of monetary policy. In many of these cases, the issue of whether or not the central bank should be recapitalized has arisen. Unfortunately, the discussion of proposed solutions has frequently been clouded by imprecision in what is meant by "recapitalization"-- most prominently whether it is merely an accounting device or necessitates the transfer of real resources.

This paper analyzes the concept of "central bank capital" and the conditions under which a central bank may need to be recapitalized. Although it finds that central bank capital as conventionally defined is not strictly necessary, weak central bank balance sheets invariably lead to chronic losses, an abandonment of price stability as a primary policy goal, a decline in central bank operational independence, and the imposition of inefficient restrictions on the financial system in an attempt to suppress inflation. The paper concludes that if society values an operationally independent central bank capable of attaining price stability without resorting to financial repression, the transfer of real resources to recapitalize the central bank becomes necessary when chronic losses are sizable.

The paper also looks at related issues that are important for all central banks. In particular, proper accounting practice in determining central bank profit or loss and rules governing the transfer of the central bank's operating result to the treasury are discussed. It reviews a variety of actual country practices in these regards, discussing the relative merits and disadvantages of each. It notes that different accounting presentations are appropriate for addressing different questions and that, as a result, no one solution can satisfy all requirements. Central banks therefore need to transparently present several views of their operations using appropriately tailored accounting conventions.

I. INTRODUCTION

Recently, central banks in such diverse countries as Ghana, Bolivia, Uganda, El Salvador, and the Philippines have been recapitalized and the issue is under active discussion in others where central bank losses have become problematic, e.g., Costa Rica, Guatemala, Haiti, Honduras, Hungary, Jamaica, Liberia, Peru, Romania, Sierra Leone, Tanzania and Zambia. In some cases, the underlying problem was obscured by the practice of declaring and transferring sizeable profits to government, although under more careful accounting practice, large losses would have been recognized and the transfers suspended or reversed. Ignorance or neglect of this situation over a sustained period of time led to a deterioration of the balance sheet to a point where further losses became virtually inevitable. These losses eroded central bank independence and made the effective conduct of monetary policy difficult or impossible.

Whether government assistance should be provided to central banks—and how—has been a controversial issue and the discussion of proposed solutions has often been characterized by imprecision in what is meant by "recapitalization." In particular, the confusion has centered on whether recapitalization is merely an "accounting" device or necessitates a real transfer of resources to the central bank.

This paper examines several questions. Do, in fact, central banks need capital and if so, how much? If central banks, or more broadly, the government, should be concerned with the level of central bank capital, what implications does this have for proper central bank accounting and profit/loss distribution rules? What general guidelines can be drawn and how do they relate to conventional government finance statistics and generally accepted accounting principles (GAAP)?

Although these issues have risen to greatest prominence in pathological cases, they are relevant for all central banks. Indeed, the appropriate central bank profit transfer policy has been the subject of discussion in countries including Estonia, Israel, Kazakstan, Kyrgyz Republic, Lebanon, Lithuania, Mauritius, Norway, Russia, the United States, and Yemen, among others. The United States Federal Reserve System has been requested to review the appropriate level of its capital,² while the European Monetary Institute Council, in light of differences among national central bank accounting rules, has recently approved the accounting principles for the financial accounting of the European System of Central Banks. Earlier on, following the 1992 turmoil in the European Monetary System (EMS), the

²See United States General Accounting Office, *Federal Reserve System: Current and Future Challenges Require System-wide Attention*, June 1996.

Bundesbank raised the issue of how losses related to the defense of EMS parities should be shared among participants.³

The issue of retaining or distributing central bank profits and the appropriate level of capital has become particularly relevant in the Baltics, Russia, and other states of the former Soviet Union (BRO). These nascent central banks are currently facing important issues stemming from their emerging profitability. Many are generating substantial net operating income from a shift to positive (or higher) real interest rates on their lending in economies where they provide the bulk of the financing (or refinancing). That said, the state of the financial system in most of these countries is precarious and one could question the prudence of accruing income from many BRO commercial banks. Perhaps the most dubious practice is that of some central banks treating penalty charges on illiquid and insolvent banks' reserve overdrafts as income without taking adequate provisions against the rather likely event of a default. This combination has led to calculated profit far in excess of what would be obtained under more prudent accounting standards. The distribution of such profit leaves the central bank vulnerable to a large reversal of fortune in the event of a banking crisis.

The following section of this paper examines the meaning of capital and draws a crucial distinction between balance sheet capital and actual net worth, particularly relevant for evaluating central bank balance sheets. The third section examines the rationale for commercial bank capital and assesses its validity for central banks. In the final analysis, it concludes that central banks do not have the same need for capital as commercial banks. A large negative net worth, however, would impair the central bank's ability to conduct monetary policy or make it dependent on the treasury for support. Section four reviews a variety of country practice relating to maintenance of capital, profit distribution rules, and various accounting practices. It highlights areas where the conventional accounting treatments for government and central bank operations differ. The last section offers a conclusion and policy recommendations.

II. CAPITAL AND NET WORTH

Bank **capital** may be defined as the amount directly invested by shareholders plus accumulated retained earnings minus losses.⁴ From the outset, it is important to note the close relationship between capital and how earnings (profits) and losses are determined. If profits are not correctly stated, inappropriate distributions to shareholders may take place, capital will

³See Deutsche Bundesbank, 1993, *Annual Report*, page 84.

⁴Commercial bank capital is usually precisely defined by the bank supervision agency and in some countries includes other items such as subordinated debt. Capital excludes any specific reserves that may be held against identified anticipated losses.

be misrepresented and the balance sheet become an unreliable indicator of the financial condition of the bank.

Net worth may be defined as the price a fully informed risk neutral investor would pay to purchase the bank under normal market conditions. Although at first glance it might seem the concept of central bank net worth is not very relevant, it actually provides a very useful lens through which to examine the central bank balance sheet.⁵ In particular, it is far superior for predicting central bank profitability than is capital. With central banks, great divergences can persist between capital and net worth.

There are two broad reasons why net worth, as defined here, and capital could differ. One, as noted above, is simply that improper accounting principles may have been applied, distorting past profitability. Capital, therefore, does not reflect the difference between assets and liabilities valued according to GAAP. For example, experience has shown that substandard accounting practices related to treatment of assets and liabilities that fluctuate in value but remain on the books of the central bank throughout the accounting period have often obscured the true state of the balance sheet.⁶ When changes in the values of assets and liabilities are not recognized, this creates the possibility of "hidden" reserves or losses. The extent to which such reserves (if positive) can be used to offset unexpected losses depends on the certainty with which the undervalued assets could be liquidated at their currently assessed values. If hidden reserves are negative, i.e., they represent unrecognized losses, they clearly should be considered to impair capital.

Second, GAAP differ from those that might be applied by a well informed investor. For example, intangible assets such as "franchise value" or "name recognition" may be valuable but not reflected in the balance sheet. More importantly, projections of future profitability tend to drive the market valuation of net worth, but have little, if any, immediate impact on capital. GAAP tend to require that profits be realized before being recognized in the profit and loss account and capital, therefore, is much more a reflection of past trends than future prospects. In the main, however, central bank capital and net worth differ owing to "off balance sheet" rights and responsibilities. The prime reason is the central bank monopoly over provision of domestic currency. This monopoly, enshrined in law and enforced by government, provides the central bank with a very significant "franchise value" that is not

⁵The situation in Switzerland, where shares of the Swiss National Bank are publicly traded, is rare, if not unique. A propos of the discussion here, the share price recently jumped, apparently in response to news that the SNB would revalue its gold holdings (Cohen and Morgan, 1977).

⁶Central banks frequently are exposed to substantial foreign exchange risk.

reflected on the balance sheet.⁷ Most central banks also have the right to create a demand for their liabilities through the imposition of reserve requirements on commercial banks. Thus, the net worth of the central bank, unconstrained by quasi-fiscal obligations, is far in excess of conventionally defined capital, i.e., the original government contribution plus accumulated retained profit. This aspect of central banking is crucial to understanding the issue of recapitalization.

That said, central banks, as well as other public financial institutions, often engage in quasi-fiscal operations.⁸ The net result of these operations, such as forced lending to unqualified borrowers, bank rescue operations, and exchange system taxes and subsidies usually reduces bank profitability. However, just as with the monopoly privilege to create money, the present discounted value of quasi-fiscal commitments is not reflected in the balance sheet yet has an important bearing on net worth and profitability.

In addition to quasi-fiscal obligations which are usually imposed by an external agency, and often somewhat clandestine, central banks are subject to numerous "self-imposed" restrictions on their behavior, in the sense that their actions must reflect official government policy goals. Here the common cases are the primacy of internal price stability as a goal or a government commitment to an exchange rate target.⁹ The latter has recently led to substantial expenditures by several emerging market central banks that have attempted to sterilize capital inflows.

The implication of these myriad off-balance sheet rights and obligations is that, although the concept of **commercial** bank capital is fairly well defined and is generally correlated with net worth, for **central** banks the divergence is often so great as to make the conventional concept of capital virtually meaningless. Central banks with "large" capital forced to operate under multiple constraints could easily have a zero franchise value in the sense that no private investor would pay a positive price to obtain the rights and obligations of

⁷See Maxwell Fry (1993), for a discussion of the potential size of this franchise value. He estimates that an average central bank—aiming to generate the maximum steady state level of seignorage—would have net worth on the order of 100 percent of GDP.

⁸See Mackenzie and Stella, 1996, *Quasi-Fiscal Operations of Public Financial Institutions*, IMF Occasional Paper number 142 (Washington: International Monetary Fund), and Watanagase, 1990, *Banks in Distress—The Case of Bangladesh*, IMF Working Paper 90/81 (Washington: International Monetary Fund). The quasi-fiscal operations of central banks, undertaken on behalf of government are well known and have an impact on central bank profit and loss accounts (see Robinson and Stella (1987), Leone (1991), and Vaez-Zadeh (1993).

⁹As put by the Federal Reserve Bank of New York "... earnings and any gains or losses resulting from the sale of such currencies and securities are incidental to the open market operations and do not motivate its activities or policy decisions." Annual Report 1996.

the central bank as currently specified. Alternatively, central banks with little or no capital can be quite profitable and have a high net worth.

In sum, one can here give a short answer to the question posed by the title of this paper—"Do central banks need capital?" Clearly no, if what is meant is that for all central banks the sum of the government's capital contribution and retained net earnings must exceed zero. Indeed, as discussed in section IV, the Federal Reserve System, the Bank of Canada, and the Bundesbank could all operate with zero capital without any material impact on their policies or profitability. Moreover, it is well known that many central banks with enormous negative net worth continue to operate—albeit usually ineffectively. This reality, however, points to a more revealing question—"For what might central banks need to be recapitalized?" As will be discussed further, central banks cannot operate effectively with arbitrarily large negative net worth and/or under conflicting constraints. To foreshadow another conclusion of the paper, the answer to the question "Do some central banks need to be recapitalized," is definitely "yes."

III. CAPITAL REQUIREMENTS

A. Commercial Bank and Central Bank Capital

This section reviews economic reasons for the existence of commercial bank capital and the justification for requiring commercial banks to maintain a minimum capital standard. It then examines whether the same logic is applicable for central banks.

Capital serves as a buffer against commercial bank losses. First, it provides an initial supply of funds to enable the bank to cover start up costs. Second, it serves as a sign of shareholder commitment that is important when the bank is attempting to attract borrowed resources. This partially addresses the well known moral hazard problem—negative shocks to the balance sheet would be absorbed first by the shareholders and only then by the bank's creditors.

Banks, in contrast with other enterprises, find it especially important to have fluid access to short-term liquidity. What is special about commercial banks is their extensive reliance on very short-term liabilities—often repayable on demand—largely backed by assets that are more difficult to liquidate. In addition, whereas nonfinancial enterprises can delay suppliers' payments in response to temporary liquidity shortages without—in most circumstances—dire consequences, banks cannot similarly delay requests for payment—prompt payment being the very essence of banking service. As a consequence, banks find it important to have access to borrowing to cope with short-term liquidity needs (rather than liquidating assets). Capital serves to reassure potential lenders that the bank will be able to meet its obligations. For this reason, and the contagion effects related thereto,

regulators require banks to maintain a minimum level of capital. In addition, bank supervisors sometimes place direct restrictions on the activities of undercapitalized banks.¹⁰

Central banks, on the other hand, owing to their capacity to create domestic liquidity are generally deemed reliable obligors in their own currency and hence would not appear to need capital as a guarantee for borrowing.¹¹ In fact, in most cases, payments finality is defined as receipt of central bank money—either banknotes or deposits. This is not to deny there is a limit to the real resources that can be obtained by central banks. The implicit limit is expressed by the possibility of the market indirectly constraining the central bank, in the extreme by refusing to transact in and demand domestic monetary base.¹² Nevertheless, liquidity per se, is almost never an issue in the domestic market. If foreign borrowing is the issue, while a strong balance sheet would prove helpful, central bank borrowing is likely to be treated as sovereign borrowing and thus counterparty concerns would be focussed on the overall government position, presuming that the bank would have either the explicit or implicit backing of government.

This section has looked at several arguments that might justify maintaining a minimum level of central bank net worth. The first is to cover start up costs. While a valid reason (the Federal Reserve System made losses in 1914 and 1915), it is not of much practical relevance. A second is to provide confidence that the central bank will meet its domestic obligations. Again valid, but only pertinent in rather extreme cases. An implicit or explicit government guarantee could, in some cases, solve this problem, as could a transfer of real resources from the treasury. Similar reasoning applies to a situation where the central bank may have difficulty establishing itself as a reliable foreign counterparty. Foreign borrowing, for example, could be undertaken directly by the treasury—presuming it is financially reputable—and the

¹⁰For example, in the United States, banks that are not well capitalized must obtain a waiver from the FDIC in order to accept brokered deposits. To be classified as well capitalized, a bank must have total capital of at least 10 percent of risk-weighted assets, tier 1 capital of at least 6 percent of risk-weighted assets, and tier 1 capital of at least 5 percent of total assets (see *Federal Reserve Bulletin*, July 1993).

¹¹As an exception to this general rule, the National Bank of Liberia, during the country's civil conflict, was removed from the Monrovia Clearinghouse Association for failure to meet its settlement obligations in local currency cash.

¹² As Keynes (1924) put it "A government can live for a long time, even the German Government or the Russian Government, by printing paper money." However, "In the last phase, when the use of the legal tender money has been discarded for all purposes except trifling out-of-pocket expenditure, inflationary taxation has at last defeated itself."

central bank need not intermediate.¹³ Again, a government guarantee could be provided to the central bank.

One situation, which is not relevant for commercial banks, does deserve closer attention. This is the case where losses interfere with monetary policy. While central banks might not need to be concerned about liquidity, it is quite clear that the power to create money to finance losses quickly runs into conflict with the goal of domestic price stability. To take one example, during the fiscal years 1988/89 through 1991/92, the Bank of Jamaica's annual cash losses averaged 53 percent of the beginning of the year's stock of reserve money. This clearly made it difficult to control inflation. If price stability is a concern, the conflict must be resolved in some fashion. The following subsection examines whether this problem can be handled through a transfer of government securities to the central bank or alternative means.

B. Treasury Financing Versus Recapitalization

Some central banks need not have capital because they are inherently profitable. The examples of the United States and Canada are clear. There, annual profits are virtually guaranteed by the structure of the balance sheet.¹⁴ In other cases, mentioned in the introduction, central banks have balance sheets leading to frequent losses where recapitalization may have a role to play.

Losses for a central bank become an immediate problem when they interfere with the conduct of monetary policy. As losses either lead to an injection of reserve money—if in cash—or portend future cash injections if they are unrealized, they have either an immediate impact on domestic liquidity or influence expectations about future monetary growth.¹⁵ If the reserve money injection is consistent with the monetary program then no immediate difficulty

¹³On the asset side, the government could retain title to international reserves and thus bear the foreign exchange risk. For example, in Canada, the country's foreign assets are not on the books of the Bank of Canada.

¹⁴While true on an annual basis, the frequency of Federal Reserve transfers to the Treasury (weekly) has led, on occasion, to a need for capital to absorb losses over a short period of time. For example, in February 1985, a large unrealized foreign exchange loss led to a temporary fall in the capital of two Federal Reserve Banks as their current income was insufficient to cover their share of the loss. It could also be argued that the Federal Reserve System is exposed to considerable risk by permitting substantial commercial bank intra-day overdrafts on its books. See Juncker and Summers (1991) and Folkerts-Landau and Garber (1996).

¹⁵That the latter situation could lead to immediate inflation is shown in Sargent and Wallace (1981).

ensues. If, however, the monetary injection is not consistent with the central bank's monetary policy, ¹⁶ it will need to be offset with countervailing action.

Here the central bank has a choice. One avenue is to suppress the impact of the monetary injections by direct means involving repression of the financial system. However, in light of increasing recognition of the efficiency losses associated with such policies, the use of more market friendly indirect instruments is gaining wider acceptance.¹⁷ Accomplishing the withdrawal of liquidity through "market-friendly" means requires the central bank to induce a voluntary action on the part of the public. The central bank will need to offer the market an asset from its own portfolio bearing a market return in exchange for reserve money.¹⁸ This will lead to further operational expenses or loss of revenue. There are clearly limits to this approach as eventually the central bank will exhaust its supply of valuable liquid assets.

The next step sometimes is to issue central bank own liabilities. This runs the risk, however, of the central bank accumulating an unsustainable debt burden. The sustainability of central bank debt issuance is a function of the same factors that determine the sustainability of government debt in general. These include expectations of the future income and expenditure stream of the central bank, the growth rate of demand for the securities being purchased from the central bank, the reputation of the issuer of the security, macroeconomic developments, the government's commitment to guarantee obligations of the central bank, budgetary developments, etc. Central bank losses are often accompanied by high inflation leading to the proliferation of indexed debt instruments. In these circumstances, what might be called the central bank's "trump card," surprise inflation, does not reduce the real value of its debt.¹⁹

In light of the above, one option is for the government to cover losses through transfers from the treasury of government debt instruments that could be used to sterilize the monetary injection. Alternatively, the treasury could permit the central bank full discretion in determining the quantity of government securities to auction and redeem in cases where such institutions and securities exist.

¹⁶For the sake of completeness it should be noted that central bank **profits** may also interfere with monetary policy although the problem is easily remedied. For example, a profitable central bank wishing to maintain price stability in the context of a growing real economy and constant velocity of money would need to inject more reserve money than it would otherwise need do in the absence of profits.

¹⁷See Alexander, Baliño, and Enoch (1995), and Giovannini and De Melo (1993).

¹⁸This neglects the possibility that primary auctions of government debt may be used for monetary policy purposes. We will return to this issue later in the paper.

¹⁹The Central Bank of Argentina, for example, made losses during most of the period of high inflation in the latter half of the 1980s.

The first problem with this solution is that treasuries are rarely so flexible that they can provide or issue an indefinite amount of securities to the central bank on a timely basis.²⁰ It could also legitimately request that interest be paid on its sterilized deposits. The second problem is that it is often precisely because the treasury has been reluctant to face the interest cost of market rates on its own debt that the central bank has become a loss maker in the first place. Lastly, even if the treasury had the capability to cover losses on a timely basis, this essentially would place monetary policy at the whim of the treasury rather than the central bank unless it were well established that the central bank had virtually automatic access to treasury funding. If institutional independence is desired for the central bank, it is difficult to see how this can be maintained when the central bank relies on the constant goodwill of the treasury to undertake policy implementation.

In essence, then, central banks need not have capital nor even positive net worth to function in a technical sense. Eventually, however, their balance sheets may deteriorate to a point where they either must abandon control over inflation, repress the financial system, become reliant on constant infusions from the treasury, or—the last alternative—be recapitalized. These options, save the last, either force the abandonment of an important central bank objective or jeopardize its independence. An independent central bank must therefore be mindful of developments in its balance sheet and in its profit and loss statement. Most directly, rules governing the accounting practices followed by the bank, and those determining the annual transfer of profit and coverage of losses must be clear and adequate to prevent a serious deterioration in central bank net worth. The following section reviews a sample of central bank practice in these areas.

IV. A SAMPLE OF COUNTRY PRACTICE

This section reviews a sample of central bank policies, most importantly with respect to capital and profit transfer rules.

A. Capital and Transfer Rules

Canada

Canada is an example of a central bank with a very strong balance sheet yet minimal capital. The authorized capital of the Bank of Canada is Can\$5 million. The shares are held by the Minister of Finance, who holds them on behalf of Canada. The "rest fund" or general reserve of the bank was accumulated out of its net revenue until it reached the stipulated maximum of Can\$25 million in 1955. The total of these two reserves amounts to 1/10 of

²⁰Normal budget procedures would require a specific allocation for interest expenditure during the year and frequently place a limit on government debt outstanding.

1 percent of total assets or, alternatively, the ratio of assets to capital was 968 as of end-December 1993.

Out of total assets of Can\$29 billion, the bank holds Can\$23 billion (81 percent) in securities issued or guaranteed by Canada.²¹ Of its liabilities, Can\$27 billion (94 percent) consist of notes in circulation. Under these circumstances, the bank is virtually assured a profit. Furthermore, as the bank's securities portfolio is valued at cost adjusted for amortization of purchase discounts and premiums it does not vary sharply. Net revenue in 1993 amounted to approximately Can\$1.55 billion (5 percent of assets), paid entirely to the Department of Finance.

In this light, it is clearly immaterial whether the bank's capital is Can\$30 million or zero. It is difficult to envisage losses in any one year exceeding average net revenue.²²

United States²³

The Federal Reserve Act requires that member commercial banks subscribe an amount of capital equal to 6 percent of the member bank's capital and surplus. One half of the subscribed amount is paid in cash, the remaining half subject to payment on demand. Federal Reserve surplus is maintained at a level that matches the member banks paid in capital.²⁴ The Federal Reserve Act requires the Federal Reserve to pay a six percent dividend to member banks on their paid-in capital.

The consolidated accounts of the Federal Reserve System (each Reserve Bank maintains its own balance sheet), provide another example of a strong balance sheet with very low capital. Capital amounts to about 1.75 percent of total assets or an assets to capital ratio of 57. Profits during the period 1981-1995 averaged US\$18.5 billion (Table 1).

²¹Canada's foreign reserves are held in the Exchange Fund Account. Although managed by the Bank of Canada, they are not on its balance sheet.

²²One could argue that the counterpart to the decapitalization of the Bank, in real terms, was payment of the "inflation tax" to the Department of Finance in the guise of ordinary nontax revenue. Inflation in Canada has averaged approximately 5 percent per annum over the last thirty years.

²³Unless otherwise noted, figures are for 1995.

²⁴The Omnibus Budget Reconciliation Act of 1993 directs Federal Reserve Banks to transfer surplus funds (in addition to their residual profits) to the U.S. Treasury of US\$106 million in FY 1997 and US\$107 million in FY 1998. The first transfer took place on October 1, 1996 (see Federal Reserve Bank of New York, Annual Report 1996). Federal Reserve Banks are not permitted to retain earnings to make up for their depleted capital during this time.

Table 1. United States: Consolidated Federal Reserve System
Selected Balance Sheet and Profit and Loss Accounts

(In millions of U.S. dollars)

	Capital	Revaluation gains 1/	Profit	Transfer to Treasury	Total assets
1981	2,558	(223)	14,175	14,024	176,847
1982	2,714	(64)	15,357	15,205	190,120
1983	2,928	(435)	14,420	14,229	198,575
1984	3,252	(406)	16,314	16,054	208,524
1985	3,562	1,309	18,051	17,797	237,578
1986	3,747	2,038	18,005	17,804	267,366
1987	4,094	1,797	18,030	17,739	275,566
1988	4,226	(488)	17,556	17,364	293,675
1989	4,486	1,284	21,907	21,646	304,423
1990	4,846	2,201	23,929	23,608	327,577
1991	5,303	498	21,158	20,779	353,060
1992	6,108	(958)	17,348	16,774	367,901
1993	6,802	304	16,530	15,987	409,971
1994	7,366	2,364	20,964	20,470	436,896
1995	7,932	858	23,903	23,389	455,235

Source: Annual Report of the Board of Governors of the Federal Reserve System, various issues.

1/ Includes profit on sales of U.S. Treasury and federal agency securities and realized and unrealized gains on assets dominated in foreign currencies.

Of its assets, 87 percent are holdings of U.S. Treasury securities and Federal Agency obligations, which are virtually risk-less. The remainder is largely gold (valued at a constant accounting rate) and foreign assets.²⁵ On the liability side, Federal Reserve Notes outstanding amount to 90 percent of total liabilities (excluding capital and surplus). Deposits of financial

²⁵The Federal Reserve shows only part of the stock of U.S. international reserves on its balance sheet. Part is held on account of the Treasury Exchange Stabilization Fund.

institutions—which are non-interest bearing—account for a further 7 percent implying that Federal Reserve liabilities generate virtually no cost.²⁶

Profits and losses on realized and unrealized gains related to foreign currency operations are added to current net income to determine profit. As can be seen in Table 2, however, such gains and losses have had only a marginal impact on the profit outcome, averaging slightly more than 5 percent of profit over the period 1981–1995 and not exceeding 11.3 percent of profit in any one year over the same period. Consequently, although not the preferred accounting practice in general, treating unrealized gains and losses as current income does not lead to significant fluctuations of the reported results.

Table 2. United States: Consolidated Federal Reserve System
Descriptive Statistics

(In percent)

	Capital /Assets	Revaluation gains/ Profits	Profit/Reserve money
1981	1.45	-1.57	8.63
1982	1.43	-0.42	9.03
1983	1.47	-3.02	7.95
1984	1.56	-2.49	8.52
1985	1.50	7.25	8.78
1986	1.40	11.32	7.96
1987	1.49	9.97	6.93
1988	1.44	-2.78	6.45
1989	1.47	5.86	7.63
1990	1.48	9.20	8.01
1991	1.50	2.35	6.50
1992	1.66	-5.52	5.15
1993	1.66	1.84	4.51
1994	1.69	11.28	4.82
1995	1.74	3.59	5.27

Source: Annual Report of the Board of Governors of the Federal Reserve System, various issues.

²⁶The Federal Reserve Banks, during any given day, are exposed to large contingent liabilities in that they permit unsecured daylight overdrafts on their books. The extent to which this risk should be provisioned against is beyond the scope of this paper. The Fed could eliminate this risk, as have other central banks, by reforming the manner in which the payments system functions.

Norway

The Norwegian Government has agreed guidelines with the central bank that serve to safeguard the bank's capital and make the annual profit transfer to the treasury known at the start of the fiscal year. The latter is made possible by the lag structure employed to calculate the transfer. The process of determining the annual transfer is illustrated in Figure 1.

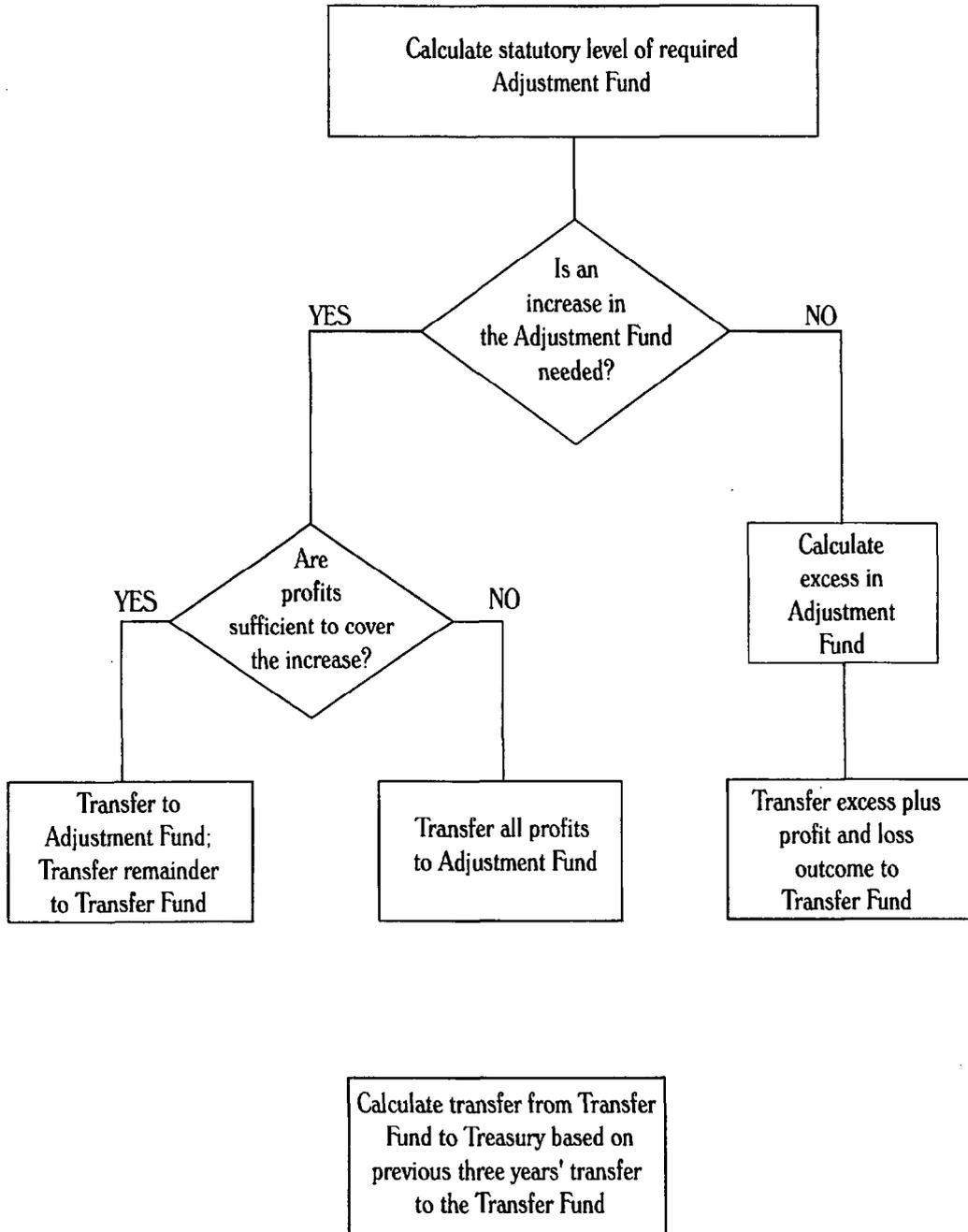
To determine the basis for the moving average that eventually determines the transfer to the treasury, the first step in the process is to determine the required level of the "Adjustment Fund." Prior to an important change that became effective on February 17, 1995, the Adjustment Fund was to equal 20 percent of the bank's net foreign exchange reserves and 10 percent of the bank's holdings of Norwegian securities.²⁷ The intent of the fund is to provision against potential losses from fluctuations in asset values. Such fluctuations are deemed to be virtually the only way the Norges Bank could sustain a loss. Following the calculation, if the Adjustment Fund is **below** the minimum level, that portion of profit necessary to meet the minimum is allocated for that purpose. The remaining profit, if any, is transferred to the "Transfer Fund." If the Adjustment Fund is **over-funded**, the full amount of the profit is transferred to the Transfer Fund and the excess amount in the Adjustment Fund is also transferred to the Transfer Fund. In the event that profits are not sufficient to cover the amount required in the Adjustment fund, all profits are transferred to it and no transfer is made to the Transfer Fund. However, the transfer from the Transfer Fund to the Treasury proceeds according to the standard formula.²⁸

In Figure 1, the box "transfer to the treasury" is not connected to the other boxes. This reflects the fact that in any given year, T , the annual transfer to the treasury (actually paid in the beginning of year $T + 1$ after the accounts for year T are approved), is based on the average "transfer to the Transfer Fund" in years $T - 1$, $T - 2$, and $T - 3$. It is therefore not affected by the profit and loss outcome in year T .

²⁷Based on the guidelines adopted in the Council of State on February 7, 1986 as revised on January 28, 1994.

²⁸The guidelines for the Adjustment Fund were changed on February 17, 1995 following the earmarking of a portion of the Norges Bank holding of foreign exchange reserves in a "hedging portfolio." The hedging portfolio is designed to match the currency composition and maturity of the central government's foreign debt. (This necessitated a change in the currency composition and maturity of the Norges Bank foreign exchange reserve portfolio.) The hedging portfolio is henceforth to be excluded from the foreign assets included in the calculation of the appropriate level of the Adjustment Fund. Therefore, following the establishment of the portfolio (amounting to NOK 69.2 billion out of total net foreign reserves of NOK 135.2 billion at end-1994), a special transfer from the Adjustment Fund to the treasury of NOK 6 billion (2/3 of one percentage point of GDP) was made in 1995.

Figure 1. Norway: Central Bank Profit Distribution Rule



The bank counts both the Adjustment Fund and the Transfer Fund as part of capital and reserves. However, under current rules, the Transfer Fund cannot be used to cover Norges Bank losses. Only the Adjustment Fund can be used to cover losses. Although the scheme ensures that profit transfers to the Transfer Fund are suspended until the Adjustment Fund reaches the required level, transfers from the Transfer Fund to the treasury cannot be impeded. Therefore, the Norges Bank could record a loss (as in 1994) yet transfer funds to the government (see Figure 2). The Norges Bank had considered proposing changes to the procedures that would permit the Transfer Fund to be used to cover losses should the need arise. It could then more properly be counted toward the bank's capital. It was decided, however, that the infrequency and magnitude of potential losses did not warrant such a change.

The Norges Bank system is interesting in several respects. One is that it sets up a target for capital based on its exposure to risk based on objective criteria. It may, therefore, be viewed as a compromise between a system where capital is predetermined and one where it is determined each year following a full scale review of the bank's exposure to risk—as would be the case for a commercial bank. Although the latter would have certain benefits, it would be more difficult for the treasury to control and monitor.

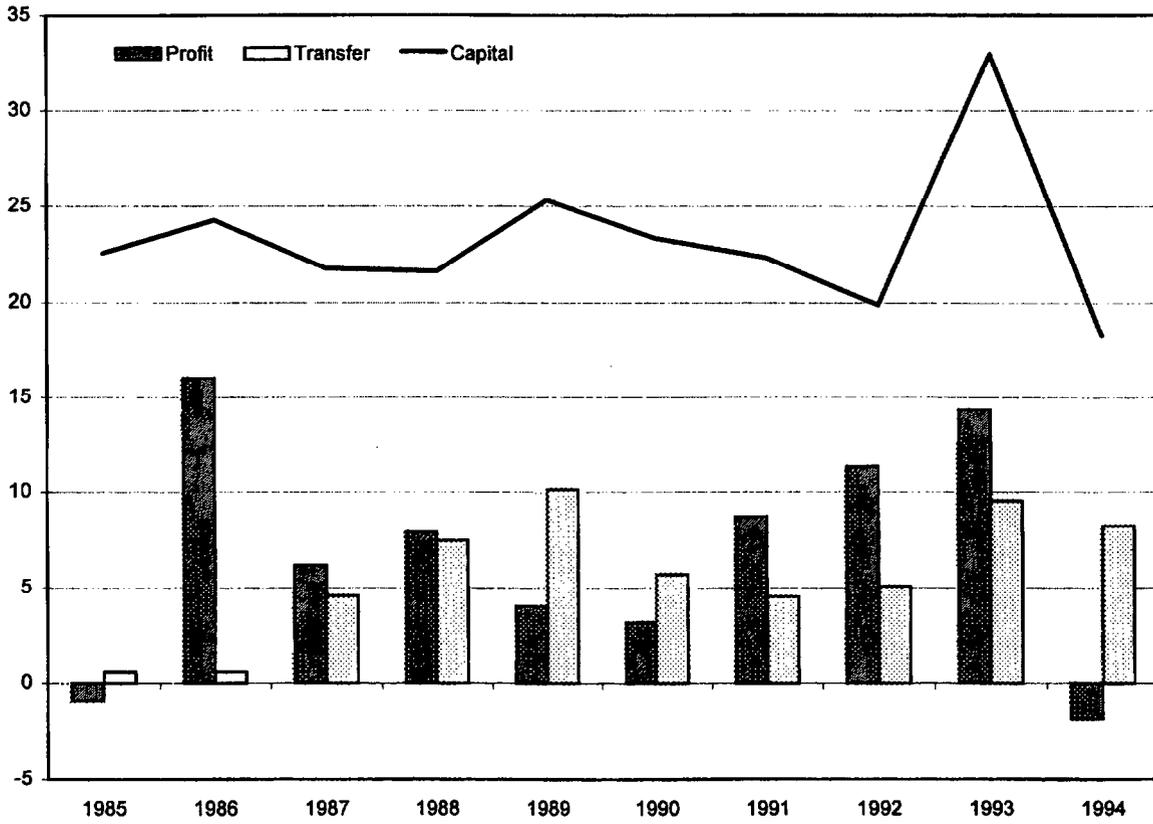
A second interesting feature is that the averaging of the annual results smooths the treasury transfer and thereby limits the impact of the often substantial revaluation gains and losses, which are brought to the profit and loss accounts (see Figure 3). It does so, however, in a way that effectively divorces the actual profit and loss outcome of the bank from the amount transferred to the treasury in any given year. Thus there are two elements that lead the profit and loss outcome to differ from the appropriate cash measure of non-tax revenue transferred from the central bank to government—the timing, and the consideration of unrealized gains and losses on assets as current income. The operation of the accounts opens the possibility that the transfer to the treasury for a given year may be quite different from (even opposite in sign to) the central bank profit outcome for that year.

The nature of the conflict between what may be proper accounting for central bank profit and what may be the correspondingly appropriate measure for government non-tax revenue receipts will be discussed in a later subsection. The point to recognize here is that the appropriate amount to transfer to government as profit may conflict with what would be an appropriate amount to transfer if the integrity of the central bank's balance sheet is to be maintained.

To illustrate this point, take a relevant example from the BRO countries where a central bank finds itself generating increased profit (before provisions) but with higher risk. From simply the cash fiscal accounting point of view, an increased transfer of cash profit from the central bank to the treasury is justified (provided that profits are appropriately calculated). From the standpoint of maintaining capital at an appropriate level, a smaller transfer, following an addition to reserves, would clearly be warranted.

Figure 2. Norway: Central Bank Profits, Capital and Transfer to Treasury 1/

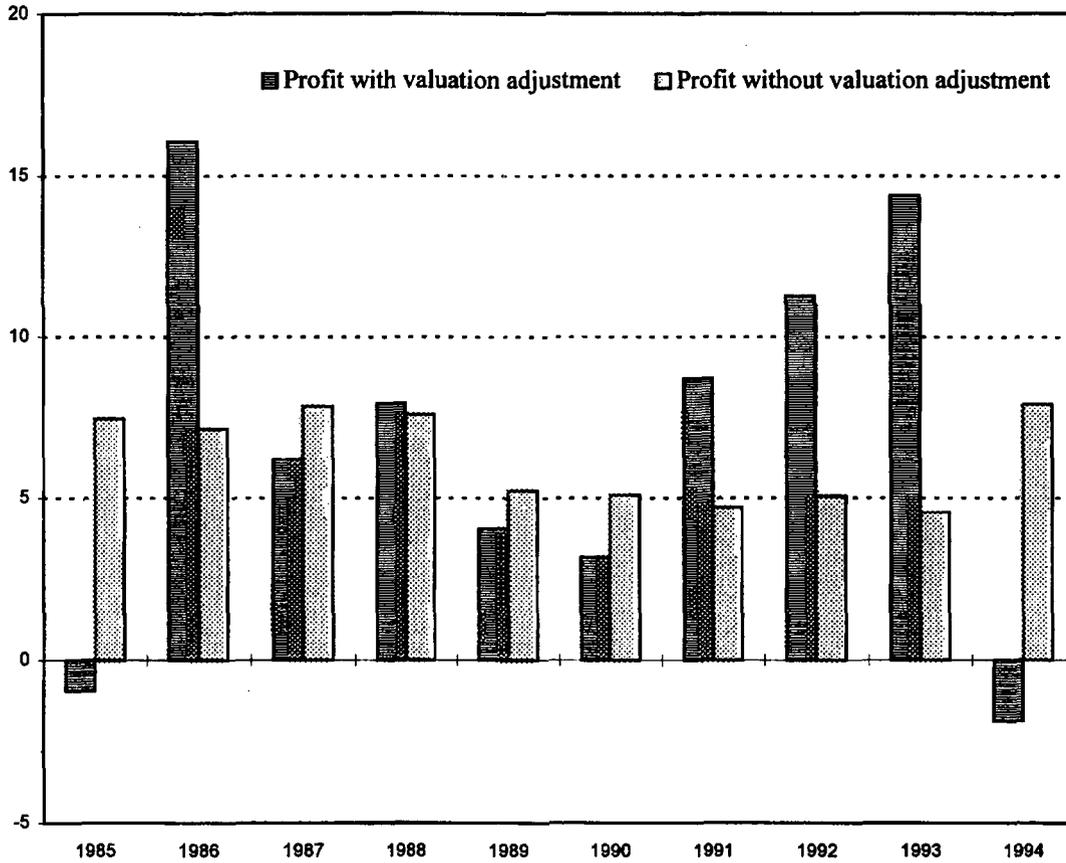
(billions of Kroner)



1/ Excludes extraordinary transfer in 1994 of NoK 6.1 billion.

Figure 3. Norway: Central Bank Profits with and without Valuation Adjustment

(billions of Kroner)



In comparison with Canada and the United States, a large portion of the Norges Bank assets are international reserves and other foreign assets—87 percent at end-1994. On the liability side, notes and coins in circulation account for a relatively modest 23 percent. Treasury deposits account for the largest single category of liability at 47 percent of total liabilities. These liabilities bear market related interest rates (three-month T-bill rate). In 1994, deposits from the treasury, the central government and social security administration carried an annual interest rate of 5.5 percent.

The structure of the Norges Bank balance sheet implies that domestic interest costs frequently exceed domestic interest income (true for every year since 1989). Consequently income from foreign operations is necessary to cover the domestic losses. The loss in 1994 was occasioned by exchange rate losses and capital losses on foreign securities virtually wiping out foreign interest earnings. Profit over the last five years averaged 4.05 percent of assets or approximately Kr 7 billion. Profit distributed to the government averaged slightly less—3.63 percent of assets—over the same period.

The greater profit variability experienced by the Norges Bank justifies the maintenance of a substantial level of capital and reserves. Excluding the Transfer Fund (by the reasoning provided above), at end-1994, capital and reserves were equal to 10 percent of total assets or an asset to capital ratio of 10.

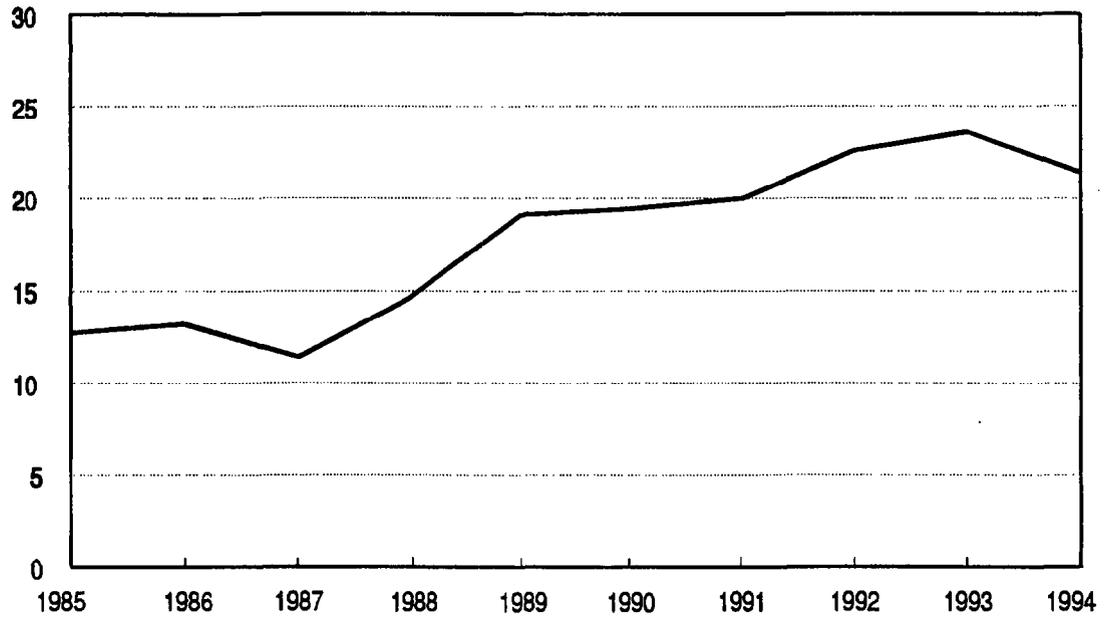
Iceland

The Central Bank of Iceland pays an annual tax to the treasury. The tax is set at 50 percent of the average profit over the previous three years with the outcome for the two prior years indexed according to the "Credit Terms Index." The remainder after tax goes to augment central bank capital. If the average profit over the previous three years is less than zero, no tax is paid and the amount of balance sheet capital is reduced by the amount of the loss.

In determining net income before State tax, the profit and loss statement is charged with an item under interest expenditure called "net price level adjustment." This subtraction from net income is calculated as the beginning year stock of central bank capital multiplied by the percentage change in the credit terms index during the year. This has the effect of subtracting from earnings an amount equal to the market rate of return on capital invested at the beginning of the year. It also indirectly provides some insurance that the bank's capital is not eroded by inflation. The remaining profit might thus be viewed as the "monopoly rent" obtained by the central bank.

Obviously, this rule does not prevent capital from declining in nominal terms from year to year. For example, the level of capital declined in 1987 when losses, (after charging the profit and loss account Kr 760 million in price level adjustment), amounted to Kr 1.095 billion (1/2 of one percentage point of GDP) (see Figure 4). No transfer to government took place.

Figure 4. Iceland: Central Bank Capital as a Percentage of Total Assets



Similarly, the profit distribution rule implies that tax paid to the treasury can exceed profit in a given year. In 1990, after providing for price level adjustment of Kr 593 million, a loss of Kr 118 million resulted. Despite the loss, tax paid to the treasury amounted to Kr 770 million owing to favorable outcomes in 1989 and 1988.

It should be noted, however, that the provision for price level adjustment does not involve a cash expenditure. It is an accounting device to protect the level of bank capital by ensuring that profit transfers are not excessive. In the 1990 case, assuming that all other items were roughly on a cash basis, the central bank actually made a cash profit of approximately Kr 475 million. In this light the transfer to government was not excessive.

General profitability and the fact that the treasury receives only 50 percent of the central bank's profit has led to a fairly steady increase in capital (Figure 4). Capital amounted to 23.9 percent of total assets or an asset to capital ratio of 4.2 in 1993. Net income before tax transferred to the State averaged 3.81 percent of assets over the last five years (1989–93). Tax paid to the treasury averaged 1.57 of assets during the same period and contributed, on average, 3/4 of one percent of treasury revenue.

Foreign exchange revaluation gains have accounted for a large fraction of net income before tax in recent years in light of the fact that a relatively large portion of bank assets are invested abroad (56 percent) (see Figure 5). Notes and coin constitute only 8 percent of liabilities (10 percent of liabilities excluding capital and reserves). As a consequence, domestic interest expenditure frequently exceeds domestic interest income, as in 1993, 1992, and 1989.

Iceland is particularly interesting in that it implicitly indexes the value of central bank capital as well as lagging the payment to the treasury. This undoubtedly reflects adaptation to recent high inflation—averaging 38 percent per annum during the 1980s. Indexation, in combination with the provision that only 50 percent of net income is paid to the treasury has led to a growth in central bank capital.

Portugal

Owing primarily to the cost of remunerating required reserves and absorbing excess liquidity, the Banco de Portugal's operating results were negative from 1988 through 1992. Nevertheless, the Bank officially reported positive net income owing to extensive resort to depletion of provisions that had earlier been established to cover potential losses. Provisions for general credit risks and for exchange rate fluctuations fell from a level of almost ESC 300 billion (7 percent of GDP) in 1986 to ESC .072 billion in 1992 (Figure 6). The decline was particularly sharp during the years 1990–92 as provisions fell by over ESC 274 billion while profit continued to be paid to the treasury, averaging approximately ESC .85 billion per year. The evolution of profits including and excluding the use of provisions (for the years 1986–92) is illustrated in Figure 7. The bank's losses in 1991 and

Figure 5. Iceland: Central Bank Profit

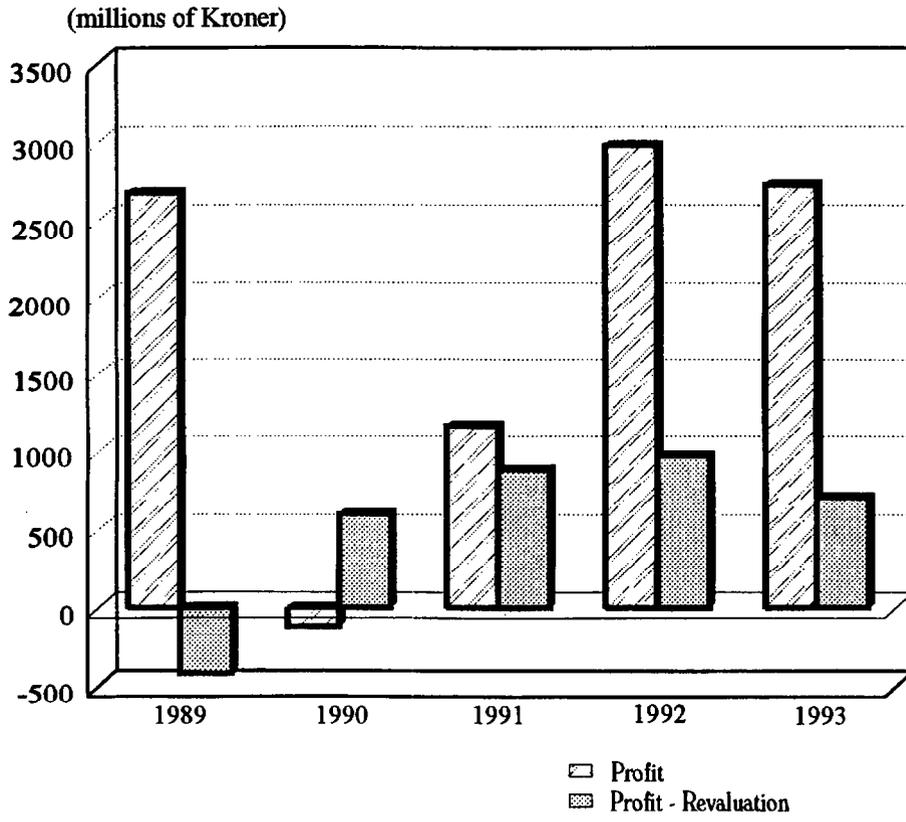


Figure 6. Portugal: Central Bank Capital, Provisions, and Reserves

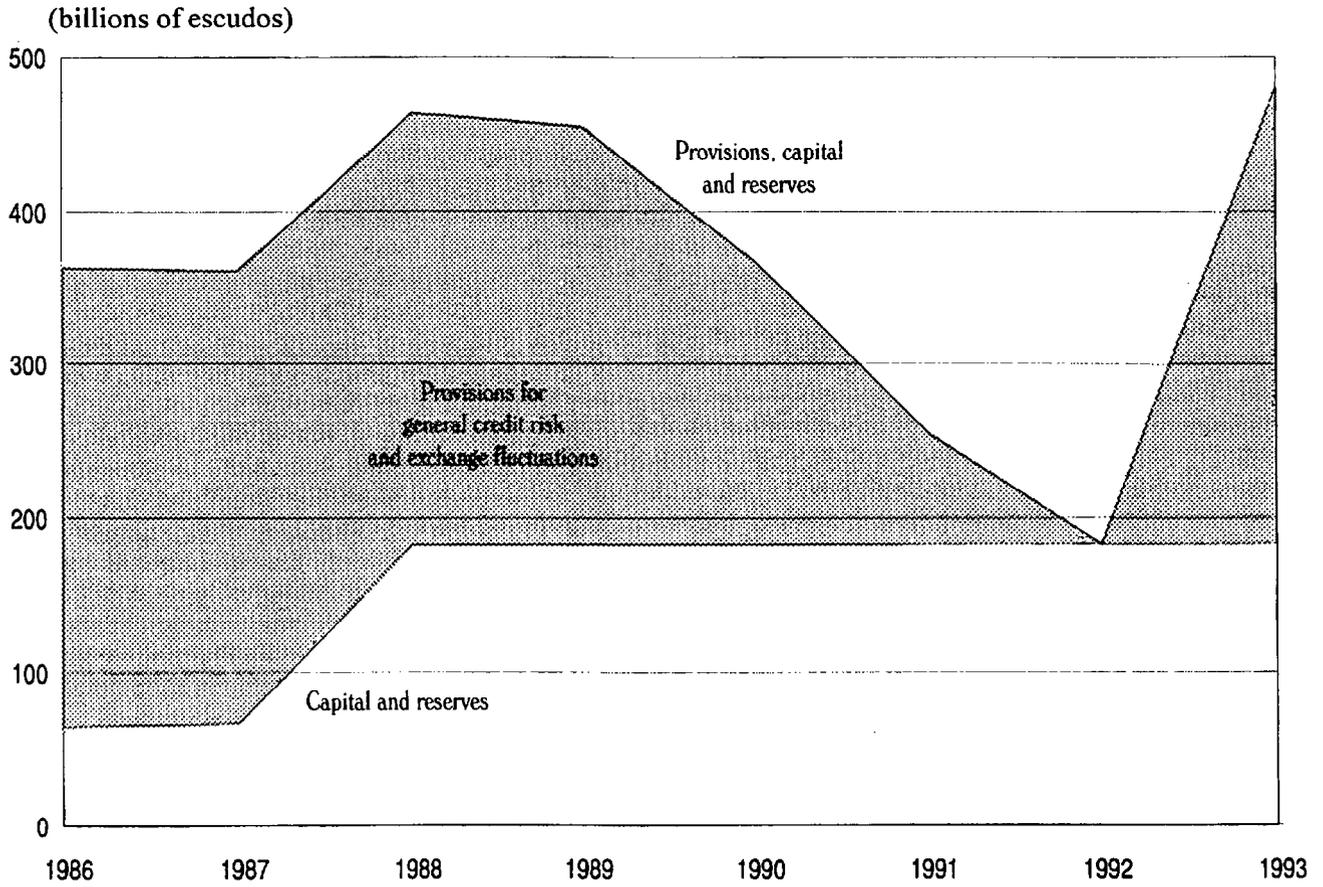
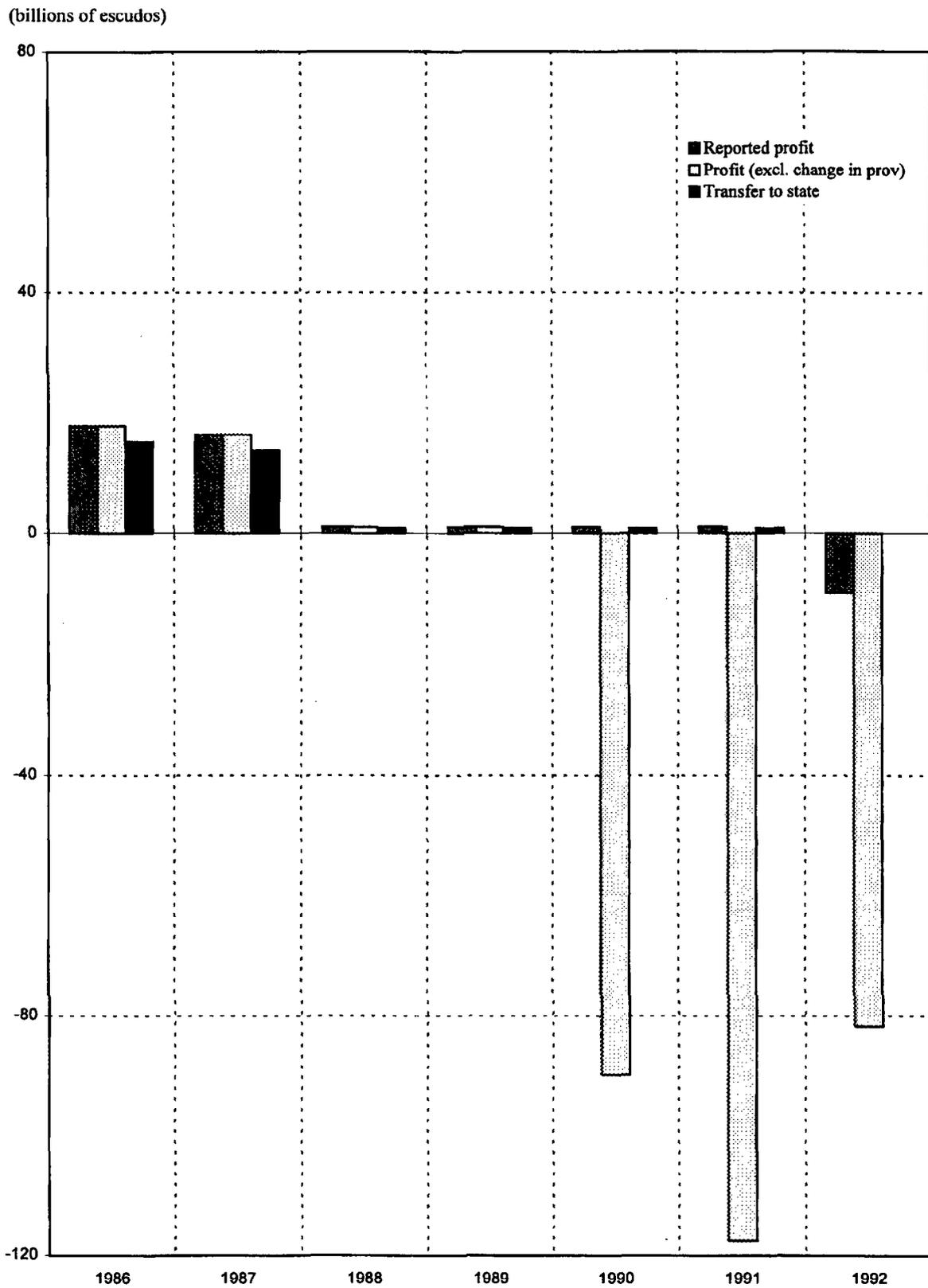


Figure 7. Portugal: Central Bank Profits and Transfer to State



1992 resulted from substantial negative net interest income amounting to ESC 92 billion (0.9 percent of GDP) in 1991 (4.6 percent of the beginning period stock of reserve money, or 19.3 percent of the increase in reserve money) and ESC 136 billion (1.2 percent of GDP) in 1992 (5.5 percent of the beginning period stock of reserve money, or 51.3 percent of the increase in reserve money). In 1992, the bank's operating loss amounted to 0.7 percent of GDP. Although the treasury had been insulated up to this point from the losses, provisions (which covered most of the loss) were exhausted by this result and the bank reported an overall loss amounting to ESC 9.8 billion. In the Board of Directors' notes to the accounts, it was stated that since the "...Bank's Organic Law makes no reference to the manner in which losses are to be covered, it is proposed that this result be retained until next year, and that in the interim consideration be given to means by which it may be made up" (page 62, 1992 Report).

In 1993, a substantial profit was realized largely owing to the impact of the escudo's depreciation on the Bank of Portugal's foreign reserves. The result (including the set aside of ESC 290 billion in increased provisions) permitted the bank to write off the previous year's loss. The provisions were deducted as an expenditure in the calculation of profit.

Summary

This selective review illustrates a wide variation in practice vis-à-vis central bank capital. In cases where profitability is virtually assured, capital is low. In cases where profitability is subject to wide swings, and stability of revenue is important to the treasury, central banks tend to hold a buffer stock of capital and reserves to absorb the swings. In some cases, a mechanism has been created to make transfers to the government based on a moving average of profit. This approach has the defect of separating the profit transfer from the time period during which the profit is made, thus proper fiscal accounting would require an adjustment to correctly reflect current revenue on a more timely basis. It was also noted that the existence of reserves can provide the means by which to obscure a series of annual losses by the central bank. As losses have also been hidden in the absence of reserves, this is not an indictment of holding reserves. It does, however, point to the importance of transparency in the accounts.

B. Accounting Practices

Revenues and expenses

In accounting for revenues and expenses, the issue of consistency with government accounting practice immediately arises. Government accounts generally are on a cash basis

while central banks follow variants of GAAP.²⁹ In contrast with government accounts, GAAP treat revenues and expenses on an accrual basis, depreciate capital assets, and account for the revaluation of assets and liabilities.

Another issue, relevant in many countries, is accounting for interest revenues and expenses during times of high inflation (Tanzi, Blejer, and Teijeiro (1993)). Interest expenses that incorporate a component that compensates for the reduction in the real value of principal overstate the real cost of borrowing. Obversely, cash receipts on credits extended during periods of high inflation can overstate true economic revenue. This could be quite important for a central bank during periods of high inflation. In some BRO states during the early years of transition toward a market-based economy, for example, with most credit intermediated by the central bank, and nominal interest rates and inflation well into three digits per annum, central bank interest income had the potential to attain a significant level of GDP. In Kazakstan, the authorities' 1994 adjustment program explicitly recognized the "nominal" nature of the profits by providing for the retention of a significant portion of the profit as an addition to the capital of the National Bank of Kazakstan rather than paying it to government.

Another extremely important issue, again particularly important in the BRO states but also in cases where central bank rescue operations are important, is providing for loan losses. GAAP call for provision for possible loan losses to be made during the period during which the potential loss is identified. Worthy of particular attention is the nature of the profits being generated by central banks in the FSU and Baltic states. If these large profits are generated by accrued interest on uncollateralized loans to banks with serious problems with the quality of their assets, provisions should be made to prevent these profits from being transferred to government (technically provisioning would reduce profit rather than reduce the portion of profit transferred to government). Care should also be taken to ensure that the central bank does not capitalize interest that is not being paid or adopting other measures to finance the flow of interest payments.

While extensive central bank provisioning might be resisted by treasuries, one could argue that such a treatment is actually quite "lenient" by some standards. The IMF GFS treats net lending by government as expenditure. Credits from the central bank to many commercial banks could easily fall into the category of directed credits of a quasi-fiscal nature which Robinson and Stella (1987) have argued should be transferred to the government accounts with a corresponding increase in central bank credit to government. Excluding these credits from government expenditure is already a divergence from fiscal prudence. An additional benefit of placing the loan on the government's account would be that only cash interest would be counted as part of government revenue.

Despite calls for consistency with the accounting principles of the U.S. Federal Government (see, e.g., Hamilton (1986), the **Federal Reserve System** employs accounting in

²⁹See *A Manual on Government Finance Statistics (GFS)*, 1986.

accordance with the Financial Accounting Manual for Federal Reserve Banks which closely resembles GAAP with respect to accounting for operational expenditures and revenues. **Norway** also applies accrual standards to revenues and expenses, as does the **Bank of Canada** although the latter does not accrue interest on loans to banks ordered to be liquidated. Interest on such loans is credited when received.

Another major area where government and GAAP differ is with the treatment of capital expenditure. For government, the GFS recommends including capital purchases as expenditure. For public enterprises, although it suggests that **depreciation** of fixed capital assets be treated as expenditure in their accounts, when discussing consolidating government and nonfinancial public enterprise accounts to arrive at a presentation of the nonfinancial public sector accounts, certain adjustments are suggested to bring the operations of the nonfinancial public sector to an "Approximate Cash Basis" (see GFS page 311). In the adjustment, depreciation is subtracted from enterprise cost and acquisition of capital assets is added.³⁰

In the steady state, when gross capital formation equals depreciation, the outcome from both methodologies is the same. In cases where the capital stock of the enterprise is rising, capital expenditure will exceed depreciation, and vice versa.³¹ It is also the case that if capital expenditure is "lumpy," the variance of expenditure and, consequently, the variance of profit will be higher with cash accounting for capital expenditure than with depreciation. If the purpose of the consolidation of the accounts is to determine the financing needs of the public sector, then cash is appropriate. It is not useful for analysis of enterprise performance, however.

Central bank practice is varied in this respect. **Canada**, the **United States**, the **Netherlands**, **Norway**,³² **Botswana**, **Germany**, and **Ireland** follow methods consistent with GAAP and show fixed assets on the balance sheet and annual depreciation as a cost. The practice of depreciating capital assets over their useful life was defended by the U.S. Federal Reserve Board as (1) in accord with generally accepted accounting practice for "business operations;" (2) necessary to correctly price services provided by the Federal Reserve Banks to commercial banks; and (3) necessary to preserve the intelligibility of the profit and loss statement to the wider public (Hearings of the 99th Congress 1986). In contrast, the practice in **Finland** and **Iceland** is to show expenditure on capital items totally in the year of acquisition. This latter practice also implies that fixed assets do not show up on the balance

³⁰As of the date of this paper, the GFS was under revision and will likely adopt accrual basis accounting. See Efford (1996).

³¹See Stella (1993) for further discussion.

³²Norway adopted this practice starting with the 1994 accounting year.

sheet. Consequently, to the extent that the fixed assets have a residual value, these central banks have, effectively, a hidden capital reserve.³³

Valuation of securities holdings

Another important difference between central bank and government accounts is the treatment of changes in the value of the stock of assets and liabilities resulting from changes in their market valuation. Governments, in general, do not keep balance sheet accounts and therefore record no valuation changes. Central banks generally do, however, revalue periodically their assets and liabilities.

Central bank practice varies as to whether the valuation changes are permitted to have an impact on the central bank profit or loss outcome. In some cases, valuation gains or losses are offset by an entry in a valuation account and have no impact on the profit and loss account. In other cases, valuation changes are simply not recognized (this is frequently the treatment applied to gold stocks). GAAP call for revaluation losses to be charged to the profit and loss account when identified, but gains acknowledged only when realized.³⁴

The IMF's GFS requires that only cash based profits be included in government non-tax revenue. The GFS is quite clear in stating that the proportion of central bank profit resulting from noncash sources is to be treated as central bank financing of government. In cases where the central bank transfers profits based partially on revaluation gains, non-tax revenue must be revised downward accordingly.

The difference in central bank and treasury practice, i.e., the recognition of valuation changes on the central bank's accounts and not on the government's, can lead the fiscal numbers to vary significantly, depending on the particular institutional arrangement between the government and central bank. In the common developing country case, where government foreign liabilities exceed assets, a devaluation will lead to an increase in the net debtor position recorded in local currency. If the government's foreign liabilities have been intermediated through the central bank, and the central bank assumed the foreign exchange

³³To give one example, in **Iceland**, the assessed value of land and buildings owned by the central bank (off balance sheet) amounted to Kr 1.4 billion or 2.5 percent of total balance sheet assets.

³⁴Traditionally, commercial banks were not forced to mark-to-market their holdings of securities. More recently there has been a movement in this direction. In the United States, for example, the Financial Accounting Standards Board has issued Statement of Financial Accounting Standards number 115 which requires that securities inventories be separated into "trading," "available for sale," and "held to maturity." Only for the first category are unrealized gains and losses included in earnings.

risk, a devaluation would have a negative impact on central bank net worth and the profit and loss statement (and consequently on government revenue) if prepared according to GAAP. If, instead, the government assumed the foreign exchange risk, the devaluation would have no impact on central bank net worth—if properly measured—and would have no immediate impact on the government's fiscal balance as conventionally measured.

Similarly, the central bank may hold net foreign assets that partially offset government net foreign debt. A depreciation would lead the local currency value of government foreign debt to rise while the central bank accounts would show a revaluation gain and—to the extent it is realized—a profit in the profit and loss account. The true impact of the change on the consolidated public sector might be quite different from that registered in the central bank accounts. This points to the need to exercise caution when assessing the appropriate magnitude and sequencing of the fiscal response to unexpected valuation gains or losses brought to the profit and loss account.

The **Bank of Canada** values securities at amortized cost, with changes brought to the profit and loss account. The **Bundesbank** maintains securities at the lower of cost or market value, as does **Botswana** (booked at market value but provisions made if less than cost).

The **Norges Bank** has changed its method for valuing securities several times in the recent past. Prior to 1985, securities were valued at the lower of market price or redemption value. However, following the purchase of a substantial portfolio of foreign bonds (Nkr 36 billion) in 1985—much at prices above par—the valuation principle was changed to market value in the 1985 accounts. This policy continued in place through 1990. Beginning in 1991, the principle shifted to the lower of cost or market value. This last change necessitated a charge to the profit and loss statement of an extraordinary expense in 1991 (Nkr 750 million or 8 percent of the year's profit) as the portion of the portfolio valued above cost was written down. The Bank also adjusts its net forward foreign currency position (an off-balance sheet item) and the amount is entered in the profit and loss statement.

Finland follows the earlier Norwegian practice (pre-1985 only) of booking assets at the lower of nominal or market value. The **Netherlands** values securities at redemption value with the difference with cost placed in prepayments or deferred income, the amortized difference with cost brought to the profit and loss account. **Denmark** values securities at their market value—with revaluation changes placed in reserve. According to the recently approved accounting principles for the **European System of Central Banks**, the balance sheet will reflect market values but unrealized gains from revaluations will not be recognized as income. Unrealized losses will be taken to the profit and loss account if they exceed previous revaluation gains registered in the revaluation account.³⁵

³⁵European Monetary Institute (1997) Annual Report 1996, page 77.

Foreign exchange valuation

The arguments pertaining to foreign exchange valuation are analogous to those for revaluation of domestic assets. **Canada, the United States, Finland, Norway and Iceland** bring realized and unrealized foreign exchange gains and losses to the profit and loss account without special treatment. Foreign exchange assets and liabilities are valued at current market exchange rates in **Germany** but subject to the overriding principle of valuation at the lower of cost or market price. Hence, only net valuation losses are recognized.

A number of countries place foreign exchange revaluation gains in reserves or a revaluation account, including **Denmark, Sweden** (guidelines for distribution of the annual result stipulate that the annual transfer to the Treasury shall not be affected by fluctuations in the value of the Swedish krona), **Netherlands, Botswana** (see below for treatment of revaluation account), and **Ireland**.

Gold

Many countries simply ignore changes in the market price of gold by utilizing a historical price set in foreign currency (frequently the U.S. dollar or SDR). The national currency value of the historical foreign currency price is sometimes adjusted for changes in the exchange rate, sometimes, it too, is calculated at a historical exchange rate. This practice has in a number of cases created large hidden reserves that become tempting targets for finance ministries.

An interesting feature of the Bank of **France** accounts is the treatment of gold revaluation. Gold is periodically revalued according to recent average market prices (London price over the preceding three months with daily prices converted into francs). The revaluation amounts are effectively frozen through an offsetting entry in the Official Gold Stock Revaluation Reserve (OGSRR) and therefore do not affect the profit and loss account. As of end-1993, the amount in the OGSRR had accumulated to FF 202.5 billion or some 24 percent of total Bank of France liabilities. More recently, however, in the context of a decision that will eliminate interest-free lending from the Bank to the French Treasury by end-2003 (at the latest), an agreement was reached that part of the outstanding stock of interest free credit would be repaid by debiting the OGSRR by FF 12.03 billion.

In **Norway**, gold is valued at SDR 35 per ounce and translated into Norwegian kroner at the Nkr/SDR rate obtaining in 1973. The difference between the market value and book value of the Bank's holding of gold bars amounted to approximately Nkr 1.8 billion (the Bank also has substantial holdings of coins which are difficult to price). A revaluation of its holding of gold bars would augment international reserves by roughly 2 percent. Brought to the profit and loss account in 1992, it would have increased profit by 16 percent. Amortized over 20 years, a market treatment of gold would have had, on average, little impact on the profit and loss statement.

The **United States** (US\$42.22 per ounce), **Germany** (purchase price), **Sweden** (US\$42.22 per ounce), **Finland** (FIM 35 per gram), and **Iceland** (SDR 35 per ounce) also set an accounting rate for gold. In Iceland, the difference between the market value of gold reserves and the balance sheet value was approximately Kr 1.2 billion or 2.2 percent of total assets at end-1993.

Other countries do revalue at the market rate. They include **Denmark** (with the revaluation attributed to reserves), **Ireland**, and **Botswana** (the revaluation paid to reserve may be used to repay certain government debt, currently zero, then 10 percent of the remainder is paid to the treasury).

At the **Netherlands Bank** gold is revalued every three years at 30 percent less than the lowest annual average price of gold on the London market (translated into guilders) in the three calendar years preceding the valuation date. The revaluation was last made on December 31, 1995.

V. CONCLUSIONS

Central banks need not have capital or even positive net worth to function. However, seriously deteriorated balance sheets causing chronic losses will eventually interfere with price stability. Facing such a situation, several possibilities exist.

One is to abandon price stability as a goal, financing losses by money creation with obvious adverse consequences. A second would be to resort to financial repression with negative repercussions on financial system efficiency and soundness. A third would be to obtain frequent timely transfers from the treasury which could be used to sterilize the liquidity impact of the losses. Whether this last arrangement could work in practice is doubtful, particularly when one considers that fiscal/quasi-fiscal imbalances are usually the root cause of the problem. Even were it feasible, it would clearly jeopardize central bank independence to require constant infusions of financing. Consequently, when society places important weight on a sound banking system, price stability and an operationally independent central bank, a recapitalization becomes necessary when losses turn chronic.

Full recapitalization involves the transfer of real resources to the central bank such that it attains profitability and its balance sheet becomes capable of recovering from adverse shocks without resort to the treasury. The transfer of resources must be more than an accounting operation between the treasury and central bank. For example, the transfer from the treasury to the central bank of a non-marketable, non-interest-earning asset would provide no assistance to the central bank. In fact, such an asset would be best considered valueless for accounting purposes. Even were the asset an interest bearing claim against the treasury, if the interest were merely capitalized by the central bank and hence did not result in a reduction in central bank monetary liabilities, it would provide no relief. Either the central bank must be given assets it can sell in the market or the government debt service payments

on the non-marketable assets must result in a decline in central bank monetary or foreign exchange liabilities.

Similarly, when central bank losses are making monetary control impossible, recapitalization is clearly a necessary but not sufficient condition. A treasury, for example, could swap its own debt for central bank debt in the market thus bringing to itself the cost of financing past deficits, but if it then forces the central bank to lend to it to finance the increased expenditure, monetary control will hardly be improved. Recapitalization, therefore, makes sense only when government is committed to adopting other necessary supporting reforms.

In determining how much capital a central bank should have, a number of factors are important. The correct amount will depend on the economic environment in which the central bank operates, the historical legacy reflected in the balance sheet at a particular point in time, and the status of institutional relations with government.

If the central bank is subject to large profit and loss shocks it may need quite a substantial amount of capital. Here the divergence of foreign exchange reserve policy provides a good example. In Canada, the central bank does not hold the country's foreign reserves on its balance sheet and thus is subject to very little foreign exchange risk. In the United States, the Federal Reserve System does hold part of the country's foreign reserves, but in comparison with other items on the balance sheet they are quite small. In Norway, Sweden, and Iceland—on the other hand—the central bank holds a large portion of its assets in foreign reserves and is thus very exposed to foreign exchange risk. In consequence, these central banks hold relatively large capital reserves and tend to relate this to the size of their open foreign exchange position. Iceland, in light of its inflationary experience, indexes central bank capital.

In other cases, central banks may be exposed to losses from quasi-fiscal operations, or from extensive credits to unsound banks. While the first best solution would be to remove quasi-fiscal operations from the central bank, a second best would be to provide sufficient capital so that the operations do not generate losses interfering with monetary policy. This would also have the effect of forcing the treasury to face the consequences of such activities.

Another related issue is the connection between budgetary independence and accountability. Greater independence should go hand-in-hand with greater accountability.³⁶ A central bank with good management, strong internal audit, and close external oversight could

³⁶Fischer (1995) argues that accountability is essential to preserve central bank independence.

be trusted with a large capital base. In less ideal cases, the government may have a legitimate interest in not allowing the central bank excessive latitude to finance operational losses.³⁷

When considering macroeconomic analysis and statistics, it is essential to ensure that a meaningful distinction is made between central bank profit distribution and credit to government. It is important to distinguish non-tax revenue (profit) from credit for macroeconomic analysis as central bank credit to government creates additional claims on resources while a transfer of genuine profit reflects the payment to government of nonrepayable resources withdrawn from the private sector or abroad.

In this regard, it is also important from the statistical standpoint that the recognition of profits/non-tax revenue be roughly synchronic with the rest of government operations. The practice of lagging central bank profit payments thus can be seen to have positive and negative aspects. When a lag structure is adopted, it is accompanied by a moving average device which tends to smooth out the declaration of profits. The lag feature effectively implies that central bank profit transfer is predetermined. It therefore has the advantage of removing any incentive for a short sighted treasury to manipulate central bank profits. It also effectively implies that the treasury will not receive the benefits of the inflation tax in the year in which it is assessed. This may curb a tendency for accelerating inflation. On the downside, it can give the incentive to government to engender central bank losses as these are felt only with a lag. Here, central bank practice differs. Sweden, for example, takes a five year moving average while the Federal Reserve System makes weekly transfers. Interestingly, of the Nordic countries utilizing the lagged profit formulation, only Iceland provides for indexation of the results, an understandable exception owing to its experience with high inflation. The utilization of lagged profit accounting also makes that portion of government revenue anachronistic, out of phase with the rest of government revenue and expenditure.

Central banks often have a source of "hidden" capital. Fixed assets are sometimes held off balance sheet, gold is often valued at a historical rate, securities may be valued at the lower of historical cost or market value. Hidden liabilities—particularly large negative net foreign asset positions resulting from devaluations are often significant. Worthless assets, particularly non-performing loans to government and credit exposure to weak commercial banks, are also prevalent. All this points to the need for transparent central bank accounts. Admittedly, determining the correct accounting for central banks is complicated by the need to ensure compatibility with government accounts which are—in turn—out of line with GAAP. The solution to this problem is to require central banks to present their accounts in a transparent

³⁷"Excess" central bank capital, if properly monitored, has a neutral fiscal impact provided that all of the central bank profit is transferred to the treasury. In cases where the treasury receives only a fraction of central bank profit, the situation is more complex.

fashion on a suitably modified GAAP basis.³⁸ The transfer to government should then be derived from a clear set of rules designed to ensure central bank solvency. Adjustments in the fiscal accounts—to divide the transfer into its cash and noncash (credit) component would then be required. Institutional arrangements for careful auditing of the preparation of central bank accounts as well as of operating expenditures are an important complement to central bank financial independence.³⁹

In sum, to determine the financial strength of a central bank requires careful analysis, not only of the balance sheet and economic environment, but also the accounting rules, profit transfer rule and the bank's institutional status within government. Appropriate accounting rules and profit transfer rules will serve to safeguard the soundness of the central bank, differentiate genuine central bank profit from disguised credit to government, correctly reflect any central bank losses in the government accounts, and prudently provide for the future flow implications of changes in the current value of items on the central bank balance sheet. The appropriate level of central bank net worth is that sufficient to ensure that in the normal course of operations, the bank will preserve its financial independence from the treasury.

³⁸There will need to be exceptions to GAAP. An example comes from the Bank of England notes to the Banking Department accounts for 1993. Referring to the need to maintain confidentiality to prevent a loss of confidence in a bank receiving exceptional support from spreading through the financial system "...the Bank's financial statements disclose less detail than would be required under the Companies Acts of the constituent elements of the profit and loss account, particularly of interest income and expense and any provisions for bad and doubtful debts, together with consequential restrictions in detailed disclosures in the balance sheet, cash flow statement and the notes to the financial statements" (Bank of England, 1994, *Report and Accounts for the Year Ending 28 February* (London), page 32).

³⁹Audit is far from control, however. Budgetary control, as well as a healthy balance sheet are both important for independence. As Volcker (1986) noted "In substance, the Congress has repeatedly reached the judgement that the Federal Reserve's **functional** independence is inextricably intertwined with its **budgetary** independence."

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