Part I

Investment operations

1 Central banks and other public institutions as financial investors

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1. Introduction

Domestic and foreign financial assets of all central banks and public wealth funds worldwide are estimated to have reached in 2007 more than USD 12 billion. Public investors, hence, are important players in global financial markets, and their investment decisions will both matter substantially for their (and hence for the governments') income and for relative financial asset prices. If public institutional investors face such large-scale investment issues, some normative theory of their investment behaviour is obviously of interest. How far would such a theory deviate from a normative theory of investment for typical private large-scale institutional investors, such as pension funds, endowment funds, insurance companies, or mutual funds? Can we rationalize with such a theory what we observe today as central bank investment behaviour? Or would we end concluding like Summers (2007), who compares central bank investment performance with the typical investment performance of pension and endowment funds, that central banks waste considerable public money with an overly restrictive investment approach?

In practice, central bank risk management is extensively using, as it should, risk management methodologies and tools developed and applied by the *private* financial industry. Those tools will be described in more detail in the following chapters of the book. While public institutions are in this respect not fundamentally different from other institutional investors, important specificities remain, due to public institutions' policy mandate, organizational structure or financial asset types held. This is what justifies discussing all these tasks in detail in this book on central bank and other public institutions' risk management, instead of simply referring to general risk management literature. The present chapter focuses more on the main *idiosyncratic* features of public institutions in the area of investment and

risk management, which do not relate so much to the set of risk management tools to be applied, but more on how to integrate them into one consistent framework reflecting the overall constraints and preferences of, for example, central banks, and how to correspondingly set the basic key parameters of the public institution's risk management and investment frameworks.

The rest of this chapter is organized as follows: Section 2 reviews in more detail the specificities of public investors in general, which are likely to be relevant for their optimal risk management and investment policies. Section 3 turns to the specific case of central banks, being by far the largest type of public investors. It explains how the different central bank policy tasks on the one side have made such large investors out of central banks, and on the other side may constrain the central bank in its investment decisions. Sections 4 and 5 look each at one specific key question faced by public investors: first, how much should public investors diversify their assets, and second, how actively should they manage them. Sections 6 and 7 are devoted again more specifically to central banks, namely by looking more closely at what non-alienable risk factors are present in central bank balance sheets, and at the role of central bank capital, respectively. Section 6, as Section 3, reviews one by one the key central bank policy tasks, but in this case to analyse their role as major non-alienable risk factors for integrated central bank risk management. Also on the basis of Sections 6 and 7, Section 8 turns to *integrated* financial risk management of public institutions, which is as much the holy grail of risk management for them as it is for private financial institutions. Section 9 draws conclusions.

2. Public institutions' specificities as investors

Public institutions are specific as financial investors as they operate under unique policy mandates and are subject to constraints which do not exist for private institutional investors. These specificities will have implication for optimal investment behaviour. The following specificities 1) to 5) are relevant for all public investors, while 6) to 10) only affect central banks.

1) Public institutions may appear to be, relative to some private institutional investors (like an insurance, or an endowment fund), subject to some specific constraints: (i) Less organizational flexibility, including more complex and therefore more costly decision-making procedures. This may argue against 'decision-intensive' investment styles; (ii) Decision

makers less specialized on investment. For instance central bank board members are often macroeconomists or lawyers, and come more rarely from the investment or risk management side; (iii) Higher accountability and transparency requirements, possibly arguing against investment approaches that are by nature less transparent, such as active portfolio management; (iv) Less leeway in the selection and compensation of portfolio managers due to rules governing the employment of public servants. This may argue against giving leeway to public investors' portfolio managers, as compared to less constrained institutional investors. There are certainly good reasons for these organizational specificities of public institutions. They could in general imply, everything else being equal, a certain competitive disadvantage of central banks in active portfolio management or in diversification into less standard asset classes, relative to private players.

2) Public institutions being part of the consolidated state sector. It could be argued that when investing into domestic financial assets, public institutions should have a preference for Government securities as they are part of the state sector, and as the state sector should not lengthen unnecessarily its consolidated balance sheet (i.e. the consolidated state balance sheet should be 'lean'). A lean state sector may be defended on the basis of the general argument that the state should concentrate on its core business, and avoid anything else, since it is likely to be uncompetitive relative to private players (which are 'fitter' as they survive free market competition). The Fed may be viewed as a central bank following the 'lean consolidated state sector' approach most closely; as more than 90 per cent of its assets are domestic Government bonds held outright (see Federal Reserve Bank of New York 2007, 11). Thus, if one consolidates the US federal Government and the Federal Reserve System, a large part of the Fed balance sheet can be netted off.

3) Public institutions have a very special owner: the Government, and therefore, indirectly, the people (or 'the taxpayer'). When discussing how a specific institutional investor should invest, it is natural to first look at who 'owns' the institutional investor or, more generally, who owns the returns on the assets that are managed. One tends to describe (or to explain) the preferences of investors with (i) an investment horizon, (ii) relative risk–return preferences, expressed in some functional form, (iii) possibly some non-alienable assets or liabilities (for individuals, this would for instance be human capital), which exhibit specific correlations with financial assets, and thereby determine the optimal asset allocation. If one would

view the central bank in its role as investor as a pure agent of the Government or of the people, one needs to look in more detail to these three characteristics of its owner. The opposite approach is to view a public institution as a subject on its own, and to see payments to its owners (to which it is obliged through its statutes) as 'lost' money from its perspective. Under this approach, the three dimensions (i)–(iii) of preferences above need to be derived taking directly the perspective of the public institution.

4) Public institutions do not have the task to maximize their income. Instead, for instance the ECB has, beyond its primary task to conduct monetary policy, the aim to contribute *to an efficient allocation of resources*, i.e. it should have social welfare in mind. According to article 2 of the ESCB/ECB Statute: 'The ESCB shall act in accordance with the principle of an open market economy with free competition, favouring an efficient allocation of resources. . .'. The question thus arises in how far certain investment approaches, such as e.g. active portfolio management, are socially efficient. As Hirshleifer (1971) had demonstrated, there is no general insurance that private and social returns are equal in the case of information producing activities. Especially in the case of what he calls 'foreknowledge', it seems likely *that private returns of information producing activities tend to exceed social returns*, such that at the margin, investment into such information would tend to be detrimental to social welfare (i.e. to an efficient allocation of resources). In his words:

> The key factor. . .is the distributive significance of foreknowledge. When private information fails to lead to improved productive alignments (as must necessarily be the case in a world of pure exchange. . .), it is evident that the individual's source of gain can only be at the expense of his fellows. But even where information is disseminated and does lead to improved productive commitments, the distributive transfer gain will surely be far greater than the relatively minor productive gain the individual might reap from the redirection of his own real investment commitments. (Hirshleifer 1971, 567)

One could thus argue that it is questionable that an institution, which according to its statute should care about social welfare, engages into active portfolio management. On the other side, it could be felt that this argument applies to a lesser extent to foreign reserves, since a central bank should probably always care more about the welfare of *its own* country than about the one of others, such that egoistic profit maximization in the case of foreign reserves would be legitimate. Also beyond the issue of active management, the question is to be raised whether what is rational from the

perspective of a private, selfish investor would be economically (or 'socially') efficient if applied by the central bank. Unless one has concrete indications of the contrary, public institutions should probably assume that this is the case, i.e. that by adopting state-of-the-art investment and risk management techniques from the financial industry; they also contribute to the social efficiency of their investments.

5) Public institutions and reputation risk. Reputation risk may be defined as risks arising from negative public opinion for the P&L of an institution or more generally for the ability to conduct relevant tasks. This risk may be related to the risks of litigation and loss of independence. It is also called sometimes 'headline' risk as events damaging the reputation of a public institution are typically taken up by the media. Reputation risk is often linked to financial losses (i.e. in case of losses due to the failure of a counterparty), but not necessarily. For instance, it may be deemed a 'scandal' in itself that a central bank invests into some issuer, be it public or private, which is judged not to adhere to ethical standards. Or it could be considered that the central bank should not invest into some 'speculative' derivatives, although these derivatives are in fact used for hedging, what the press, the government or the public however may not understand. All investors may be subject to reputation risk, but clearly to a varying degree. Central banks' rather-developed sensitivity for reputation risk may stem from the following three factors:

(i) Their need for credibility for achieving their policy tasks, such as maintaining price stability. Credibility is not supported by being perceived as unethical or amateurish.

(ii) Central banks tend to 'preach' to the rest of the world what is right and wrong. For instance, they often criticize the spending behaviour and lack of reform policies of Governments. Or, as banking supervisors, they impose high governance standards on banks, and search for weaknesses of banks to intervene against them. Again, such roles do not appear compatible with own weaknesses, which again is a credibility issue.

(iii) Central banks worry about preserving their independence. Independence is a privileged status, and it is obviously endangered if the central bank shows weaknesses which could help the adversaries of central bank independence (and those which were criticized or lectured by it) to argue that 'these guys need to be controlled more closely by democratically elected bodies'.

A classical example for central bank headline risk is the attention the small exposure of Banca d'Italia to LTCM got in 1998, including a need for the

Governor to justify the Bank in the Italian Parliament. Reputation risk may depend first of all on whether a task is implied by the statutes of a public investor. If for instance holding foreign reserves is a duty of a central bank, then associated financial risks should imply little reputation risk. The more remote an activity is to the core tasks assigned to the public investor, the higher the danger of getting questions like: 'How could you lose public money in this activity and why did you at all undertake it as you have not been asked to do so?' If taking market or credit risk for the sake of increasing income is not an explicit mandate of a public institution, then market or credit risk will have a natural correlation to reputation risk.

Reputation risk is obviously closely linked to transparency, and maybe transparency is the best way to reduce reputation risk. What has been made public and explained truthfully to the public can less be reproached to the central bank in case of non-favourable outcomes – in particular if no criticism was voiced *ex ante*. Central banks have gone a long way in terms of transparency over the last decades, not only in terms of monetary policy (e.g. transparency on their methodology and decision making), but also in the area of central bank investments. For instance the ECB has published in April 2006 an article in its Monthly bulletin revealing a series of key parameters of its investment approach (ECB 2006a, 75–86). Principles of central bank transparency in foreign reserves management are discussed in section 2 of IMF (2004).

6) **Central banks are normally equipped with large implicit economic capital through their franchise to issue banknotes**. This could be seen to imply that they can take considerable risks in their investments, and harvest the associated higher expected returns. At least for a majority of central banks, the implicit capital is indeed considerable, which is discussed in more detail in Section 7. Still, for some other central banks, financial buffers may be less extensive. For instance, central banks which are asked to purchase substantial amounts of foreign reserves to avoid revaluation of their currency may be in a potentially loss-making situation, in particular if, in addition: (i) the demand for banknotes in the country is relatively limited; (ii) domestic interest rates are higher than foreign rates; (iii) their own currency is under revaluation pressure, which would imply accounting losses.

7) **Central bank independence (relevant mainly for *domestic* financial assets)**. The need for central bank independence may be viewed to be relevant in this context as implying that the central bank should stay out from investing into securities or other assets issued by its own countries' Government. In particular World War I taught a lesson in this respect to

e.g. the US, the UK, and more than to anyone else, to Germany. Under Government pressure, the central banks purchased during the war massive amounts of Government paper and kept interest rates artificially low. It has been an established doctrine for a long time that the excessive purchase of Government paper by the central bank is a sign of, or leads to, a lack of central bank independence. For instance article 21.1 of the ECB/ESCB Statutes reflects this doctrine by prohibiting the direct purchase of public debt instruments by the ECB or by NCBs.

8) Central banks have insider information on the evolution of short-term rates, at least in their own currency, and thus on the yield curve in general. One may argue that insider information should not be used for ethical or for other reasons, and that therefore certain types of investment positions (in particular yield curve and duration positions in domestic fixed-income assets) should not be taken by central bank portfolio managers. As a possible alternative, 'Chinese walls' or other devices can be established around active managers of domestic portfolios in the central bank. For foreign exchange assets, the argument holds to a lesser extent.

9) Central banks may have special reasons to develop market intelligence, since they need to implement monetary policy in an efficient way, and need to stand ready to operate as lender of last resort. Especially the latter requires an in-depth knowledge of financial markets and of all financial instruments. While some forms of market intelligence may be developed in the context of basic risk-free debt instruments, a more advanced and broader understanding of financial markets may depend on diversifying into more exotic asset classes (e.g. MBSs, ABSs, CDOs, equity, hedge funds) or on using derivatives (like futures, swaps, options, or CDSs). Also active portfolio management may be perceived as a way to understand best the logic of the marketplace, as it might be argued that only with active management do portfolio managers have strong incentives to understand all details of financial markets. For instance the Reserve Bank of New Zealand has stated this doctrine, motivating active portfolio management openly (taken from the IMF 2005, statement 773 – see also the statement by the Bank of Israel, IMF 2005, statement 663):

> 773. The Bank actively manages foreign reserves. It does so because it believes that active management: generates positive returns (in excess of compensation for risk and of active management overheads) and so reduce the costs of holding reserves; and encourages the dealers to actively participate in a wider range of instruments and markets than would otherwise be the case and so improves the Bank's market intelligence and contacts, knowledge of market practices, and foreign exchange intervention and risk management skills. The skills and experience gained

from reserves management have been of value to the Bank in the context of its other roles too. For instance, foreign reserves dealers were able to provide valuable input when the Bank, in the context of its financial system oversight responsibilities, was managing the sale of a derivatives portfolio of a failed financial institution. It is not possible to be precise about how much added-value is obtained from active management but, in time of crises, extensive market knowledge, contacts and experience become invaluable.

10) At least some central banks tend to be amongst the exceptionally big investors. The most striking examples are the Asian central banks and in particular China and Japan with reserves, mostly in USD, at or beyond 1 trillion USD. The status as *big* investor has two important consequences. First, such central banks should probably go further than others in **diversifying** their investment portfolio. In the CAPM (Capital Asset Pricing Model), all investors should hold a widely diversified market portfolio, but in reality, transactions and information costs of many kinds are making such full diversification inefficient. Participation in a diversified fund can reduce these costs, but will not eliminate them. The easiest way to model these costs preventing full diversification is to assume fixed set-up costs per asset type, which may be viewed as the costs for the front, back and middle office to understand the asset type sufficiently and to prepare for the integration and handling of associated transactions. These fixed set-up costs will be lower for some and higher for other asset types. Under such assumptions, it is clear why smaller investors will end up being less diversified. Set-up costs can be economized to some extent through *outsourcing* or through purchasing investment vehicles like funds. Also, some important forms of diversification, like e.g. into an equity indices, may require relatively low set-up costs, and hesitations of central banks (large or small) with their regard may be due to other reasons. Second, large central banks with a substantial weight in some markets (e.g. US Treasuries) may influence relative prices in these markets, in particular when doing large transactions. This may potentially worsen their returns, and implies the need to smooth transactions over time, and, again, to diversify. Also it increases liquidity risks, i.e. the risks that the quick liquidation of relevant positions is only possible at a discount.

3. How policy tasks have made central banks large-scale investors

The starting point in analysing the specificities of central banks as investors is clearly the question why central banks are at all facing 'investment' issues.