

A EUROPEAN VIEW ON RETURN VERSUS LIQUIDITY¹

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Global central bank reserves, especially reserves held in foreign assets, have grown rapidly in recent years. This growth has taken place mostly in Asia which today accounts for more than two thirds of the global foreign exchange reserves. In addition to Asia, where foreign exchange reserves have accumulated for foreign exchange policy reasons, reserves have risen significantly in oil producing countries too, where increased export revenue has been funnelled into the balance sheets of the respective monetary authorities.

The increase in central bank reserves has not gone unnoticed by market participants. Indeed, the volume and flows of the central bank reserves are today so significant that a proper understanding of financial market developments requires understanding of the composition of the major central bank reserves and the way in which they are managed.

When assessing the reasons for holding reserves and the way they are managed, central banks are often seen as a relatively homogenous group. It is fair to say that many central banks share the same motives and objectives for holding and managing reserves. At the same time, however, one should note that not only the level of reserves, but also their composition in terms of currencies and the types of assets differ significantly from one country to another. Similarly, the manner in which the reserves are managed differ, sometimes to a significant degree.

1. Reserve management framework in the Bank of Finland

The reserve management framework in the Bank of Finland has remained largely unchanged since Finland joined the euro. After the introduction of the euro, the Bank of Finland has invested in corporate bonds, increased duration of investments and started "active investment management". In accordance with its strategic policies, the Bank of Finland takes a long-term perspective in managing its foreign reserves and handles them in a professional and active manner and on the basis of strict risk management principles.

The Bank of Finland holds foreign reserves in order to meet any additional transfer requirements of foreign reserves to the European Central Bank (ECB) and to meet the financing requirements of the International Monetary Fund (IMF), as well as to prepare for contingencies, such as serious disruptions

¹ The opinions expressed in this article are those of the authors and do not necessarily reflect the views of the Bank of Finland or the Eurosystem.

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in the financial markets. When measured in euro terms, the size of the Bank's foreign reserves has remained fairly stable. The key objectives of the Bank's investment policy – security, liquidity and return – have remained unchanged. The security objective refers to the requirement that the market value of foreign reserves must not fluctuate excessively as a result of the various risks involved. In addition, part of the reserves must be sufficiently liquid, in that they can be converted into cash sufficiently quickly and at low cost, whenever needed. Within these constraints, the aim remains to obtain the best possible return.

The portfolio that is assessed as being best suited to the Bank of Finland's long-term investment objectives is expressed in terms of currency distribution and currency-specific benchmark portfolios. The currency distribution and the structure of benchmark portfolios largely determine the return on invested reserves. The aim of active investment is to obtain a return on invested reserves that is higher than the return on the benchmark portfolios. The cornerstone of the investment policy is effective portfolio diversification. The benchmark currency distribution is reviewed at 2–3 year intervals.

Interest rate risk is measured and managed in terms of duration and the value-at-risk (VaR) method. The target duration of 2.5 years is applied to all the currencies included in the foreign reserves. The VaR method has been used comprehensively in the risk management framework since the end of 2004. In addition, interest rate risk is restricted by spreading investments among debt instruments with different maturities in all reserve currencies.

Most of the reserves are invested in government (sovereign) papers, but approximately a quarter of the foreign reserves are invested in debt instruments issued by entities with a high credit rating, such as non-financial corporations (Chart 1). In the long run, these investments generate higher returns than corresponding government debt instruments because of the credit risk attached to them and the fact that they are less liquid than government debt instruments. The credit risk inherent in the credit portfolio is also measured using the VaR method. Effective portfolio diversification is crucial in the management of credit risk. Diversification is achieved by setting maximum limits and minimum credit rating criteria for issuers and counterparty banks and maximum limits for the VaR figures derived for the credit risk on the credit portfolio (Chart 2).

Chart 1. Distribution of the Bank of Finland's foreign reserves excl. gold, as of 31 December 2005

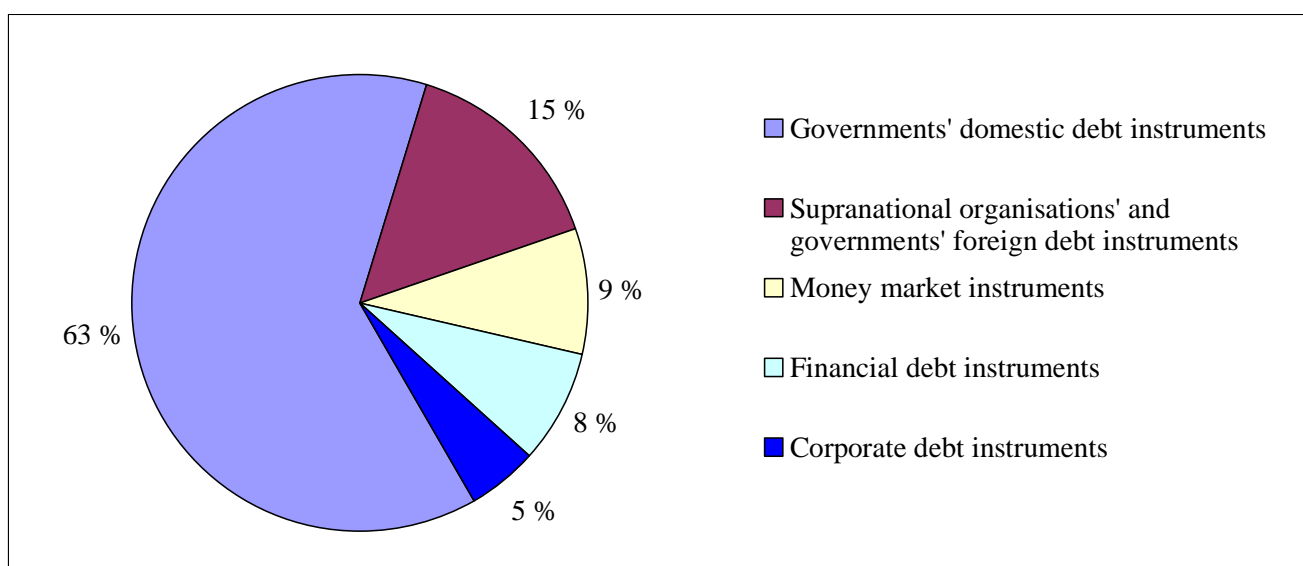
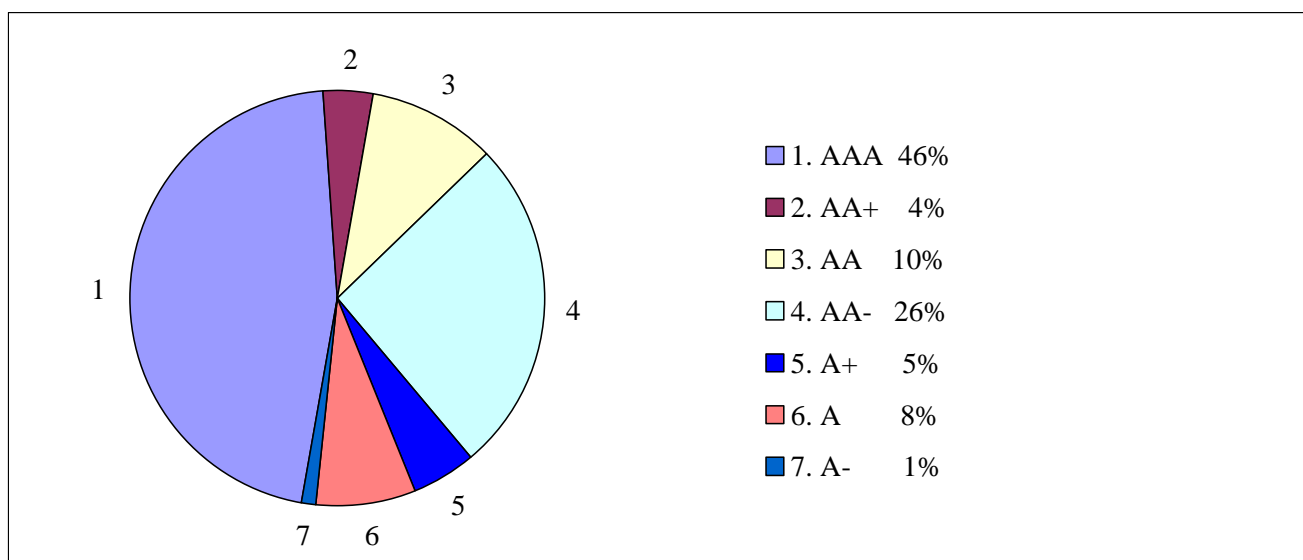


Chart 2. Distribution of the Bank of Finland's credit portfolio by credit rating, as of 31 December 2005



2. Determinants and policy requirements for central bank reserve management frameworks

In a simplified framework, the objectives for holding central bank reserves can be seen as stemming from two types of risk; macroeconomic and microeconomic. Macro risks will always remain the primary risks for a country – or a central bank – against which reserves are held, as they concern not only risks to monetary, foreign exchange and financial stability, but also risks to the safe functioning of the national economy or currency area. The fact that it is normally the central bank which is the holder of the country's reserves against macroeconomic risks originally results from an innate division of labour in society. Due to the nature of its objectives and functions, the central bank can be seen as the natural institution for the task of holding reserves on behalf of the society it serves.

Although micro risks are also very important, they can be only secondary to macro risks, as micro risks "merely" concern the financial result of the central bank. In this respect, micro risks have implications not only for the financial result of the central bank itself but also its stakeholders, such as the Government, to whom at least a proportion of the financial result of the central bank is transferred.

In order to fully realise the relative importance of macro and micro risks, it is worth emphasising the causality between them. Macro risks are the reason for holding reserves, whereas micro risks are a consequence of holding reserves. One should also note an implicit trade off between macro and micro risks in this context. When eliminating micro risks, the central bank may increase the country's exposure to macro risks. Similarly, by trying to minimise the country's exposure to macro risks, the central bank may end up facing more micro risks.

2.1. Changing weights of macro and micro risks in Europe

Managing macro and micro risks, and the above mentioned trade-off between them, is complex since these risks are not perceived as being fixed over time. The weights given to these risks by society and decision makers vary over time. As macro risks normally materialise during financial turbulence or hard times, the weight given to them tends to decrease when good times prevail.

When considering the framework for defining the level, liquidity and composition of central bank reserves, it is crucial to identify the relevant macro and micro risks and the weights placed on them. Although there are many sophisticated tools, techniques and frameworks that can be used to approach

this problem, one cannot hide from the fact that these weights are often only defined implicitly and characterise how the world is perceived. Assessment of the risks is, to a significant degree, a highly subjective matter. The reason that this task is often entrusted to central bankers probably results from the expectation that central bankers have a more distant horizon than other decision makers and therefore, have a comparative advantage in avoiding myopia when times are good.

Looking at global and European experiences in this respect, three general observations can be made. First, when total reserves increase –deliberately or otherwise– the central bank becomes stronger in facing macro risks, but at the same time, potentially more exposed to the micro risks that potentially affect the financial result of a central bank.

Second, it appears that in many euro area countries macro risks are now deemed smaller than they were before the monetary union. The specific reasons for this view may differ from one country to another, but the creation of the ECB and the Eurosystem is widely seen as a factor that has decreased some macro risks and correspondingly, the need for reserves against macro risks.

We do not believe that macro risks as such have significantly decreased since the introduction of the euro. However, we do see that within the monetary union the euro area central banks are provided with more tools with which to manage macro risks. The best example of this is the ECB which, with the foreign reserves that have been transferred to it, now takes primary responsibility for possible foreign exchange interventions. On top of which, for many euro area central banks, the euro is a more usable currency to hold against macro risks than their previous, legacy currencies.

The third observation concerns the increased freedom that the euro area central banks have in arranging their financial assets. Indisputably, the euro area central banks have an independent position from which to carry out their tasks, in comparison to other European or governmental bodies. Independence has not only offered freedom, but also an obligation to maintain a more efficient, skilful and careful approach to managing micro risks. Euro area central banks are more accountable than ever for demonstrating, through their actions, that they fully deserve their independent status.

3. Liquidity and return characteristics of central bank reserve management

Although the specific words and their order may differ from one central bank to another, safety, liquidity and return are the objectives of reserve management which are most often set by central banks. The Bank of Finland is no exception to this rule.

In order to simplify the task of characterising investment policy for total reserves on the basis of these three objectives, there is a tendency to divide total central bank reserves into two parts, at least metaphorically.⁴ In the following, these two parts are referred to as liquidity reserves, which are held primarily against macro risks, and investment reserves which can be managed by concentrating more on maximising return at the chosen level of financial (i.e. micro) risks.

Liquidity reserves should be managed in a way that which keeps the probability of losses very low over the short-term. Therefore, liquidity and safety take priority over the search for return, when the investment policy for liquidity reserves is formulated. The reason for emphasising liquidity and capital preservation is that were macro risks to materialise, it would be excessively costly for a country not to have access to reserves –and especially foreign assets– at that time. The inability to liquidate foreign

⁴ See e.g. Putnam B. H., (2004), "Thoughts on investment guidelines for institutions with special liquidity and capital preservation requirements", *Risk management for central bank foreign reserves*, European Central Bank, May 2004, pp 29-46.

assets in stress situations and turbulent market conditions can have drastic effects on the real economy and lead to a significant reduction in national income and wealth.

Having determined the level and the currency distribution of liquidity reserves, the very nature of the reserves obliges the implementation of a conservative investment policy which puts a relative large emphasis on minimising micro risks. Liquidity reserves are thus invested in a manner which guarantees, as far as possible, that the assets are usable virtually immediately once the central bank or the country needs them. For this reason, liquidity reserves are normally allocated to a small number of major international currencies and invested in the most liquid and creditworthy assets in those currencies. For instance, the Bank of Finland concretizes the liquidity requirement by ensuring that 25% of invested reserves are highly liquid. In this context, only government securities, repurchase agreements with up to one month's maturity and up to one month deposits in the reserve currencies are defined as highly liquid.

3.1. Investment reserves and how to manage them

As regards investment reserves, the investment horizon and holding period are longer than for liquidity reserves and restrictions regarding safety and liquidity are therefore looser. When managing investment reserves, more emphasis can be put on maximising return.

When setting an investment policy for investment reserves, central bankers should probably listen more carefully to what asset management professionals, investment bankers and even other long term investors have to say. Although the optimisation of a central bank's investment portfolio still comprises restrictions which are not common to the private sector's long term investors, the objective of aiming for an efficient frontier is in fact not that different. So, what advice do asset management professionals give us central bankers today? At least the following three recommendations have often been mentioned.⁵

First, investment bankers recommend differentiating the currency allocation from the country allocation. Placements can be made separately from managing the foreign exchange exposure thereby making use of the best characteristics of both markets. As the currency and bond returns have, at least historically, had a relatively low correlation, this would provide a significant opportunity to reduce risk without having a negative effect on the return of the total portfolio. What makes this advice especially interesting is the fact that following it would not necessarily increase the cost of liquidating the portfolio, even in distressed conditions.

Second, investment bankers recommend relaxing the individual duration constraints within each country sector and focussing more on total portfolio risk. Being more efficient in taking advantages of the various shapes of yield curves and different covariance amongst the maturity sectors creates opportunities to both increase return and reduce risk. In essence, this also means higher durations.

Third, investment bankers advice relaxing the credit constraints on the portfolios and widening the array of instruments. Allowing the portfolio to extend into investment-grade credits or even beyond and into instruments such as like asset and mortgage-backed securities would again allow improvement in the efficiency of the total portfolio, as measured by the Sharpe Ratio criterion. Moving away from government risk to credit risk may actually allow a reduction in the total risk of the

⁵ See also Fisher S. J. and M. C. Lie (2004), "Asset allocation for central banks: Optimally combining liquidity, duration, currency and non-government risk", *Risk management for central bank foreign reserves*, European Central Bank, May 2004, pp 75-96.

portfolio while increasing returns. This is supported by the Bank of Finland's experience with its credit portfolio.

The advice given by investment bankers is, of course, correct when judged on the basis of the models and assumptions used. However, advice may often be derived from too narrow a framework, especially if the advice is asset management-oriented rather than being backed by a more comprehensive asset and liability management framework.

Intuition tells us that central banks which are separate legal entities, and increasingly like private companies, with their own balance sheets and income statements, cannot overlook their liabilities when formulating asset management and investment policies. Even though central banks have unique tasks and objectives which differ from the private sector, it should not mean that central banks become complacent about their implicit funding structures, their obligations or about what is done in the world of investment management in general. It appears fair to say that more attention should be paid to comprehensive asset and liability management in central banks too. The liability side of the balance sheet always contains crucial information on the dependencies between different balance sheet items and understanding them fully is a prerequisite for setting an investment policy that maintains a strong central bank balance sheet. The characteristics of liabilities naturally have an impact on the entire interest rate risk of the balance sheet and certainly on defining the duration of the invested assets.

In this respect, a number of open questions arise. How should the central banks generally see their balance sheet liabilities, such as banknotes and equity? What are their costs and interest rate characteristics? Should the way in which central bank assets are financed affect the way in which they are invested? For instance, should we see banknotes as having a redemption obligation and if so, should this have an effect on duration guidelines when setting investment policies? Should part of the assets be earmarked as being financed through equity?

An opponent to this approach could argue that what suits pension funds, for example, is not applicable to central banks. Central banks are entities which actually set the cost structure of their balance sheets by, for example, deciding on policy interest rates. Central banks also create funds through issuing banknotes. In addition, on-balance sheet liabilities do not fully characterise the total liabilities of the central bank, for instance, at a time of serious financial stress.

However, there are a number of similarities between central banks and private sector long term investors, such as pension funds. Both have long-term liabilities and objectives. Confidence is the core element in both businesses and both have to reliably demonstrate that future obligations will be met. Since obligations materialize in the distant future, both institutions require decent returns on assets to maintain or increase the real value of the assets. Both also face increased demand for transparency.

Perhaps one weakness in the usual recommendations offered to central bankers is the fact that these suggestions are often derived from simple mean-variance optimisation frameworks. The models use historical data to estimate parameters, such as correlation coefficients, which are often treated as stable. This can be a serious weakness, since central banks' investment policies have traditionally been chiefly defined for those periods of financial market stress when these parameters tend to break down. Central banks are not prepared to accept major losses from micro risks in circumstances where macro risks materialise.

It is important to remember that central bank-specific restrictions significantly limit setting investment policies for investment reserves. Again, these restrictions probably vary among central banks in their nature and number. Also the size of the central bank and its role in the global scene has an effect on how restricted it feels, as recent developments in Europe seem to confirm.

In general, it can be said that European national central banks have probably fewer restrictions and have more room for manoeuvre than 10 years ago. However, Even though the trend in reserve management has provided more freedom, there is one abstract and important restriction; so-called reputation risk. For instance, reputation can be damaged when a central bank incurs losses due to the default of a debt security, even though the effect on the total portfolio return may be marginal.

Some practical hindrances to the implementation of a modern investment policy for investment reserves may exist, such as limitations in IT systems, experience and skills. In some cases, it may not be possible to include a new financial instrument in the investment universe, due to limitations in an IT system or the lack of a skills base, even though it would be optimal from the portfolio optimisation point of view. Of course, these kinds of restrictions could sometimes be circumvented through outsourcing, for example, such as in the use of external asset management.

A central bank's justification in managing liquidity reserves is clear and often even written into national legislation. The justification for managing investment reserves, i.e. assets not held against macro risks, is not as clear. In fact, if the central bank does not manage its reserves efficiently and following the highest professional standards, one should not be surprised to hear occasional comments questioning the birthright of the central bank to manage them. One can also expect more regular comparisons with the performance of similar investors managing wealth, such as pension funds. As a result of increased transparency and accountability requirements, central banks cannot and should not avoid this kind of exposure.

4. Conclusions

It appears clear that liquidity requirements, in their strictest form, are applicable to a smaller proportion of central bank reserves in the euro area today than before the introduction of the common currency. The euro and its track record support the notion that the macro risk burden, which previously was carried wholly by national central banks, is now partly carried by the European institutional framework. Therefore, the need for holding very liquid foreign reserves against macro risks has probably been reduced somewhat and as a result, the euro may have substituted foreign assets in some balance sheets of the euro area central banks. Of course, this does not mean that the euro would not have as favourable characteristics in crisis situations as any other major currency.

At the same time, one can observe that the balance sheets of the euro area national central banks are not becoming smaller. On the contrary, the continuous growth of the Eurosystem liabilities, mainly due to the strong demand for euro banknotes, has meant that also the asset side of the Eurosystem balance sheet has continued to grow.

Following these two developments, both of which interestingly result from the success of the common currency, many euro area central banks are facing a situation where their investment reserves are on a progressive path. This has meant, and probably will continue to mean, that the portfolio-theoretic thinking and the return objective will play a larger role in the future when setting investment policies in the euro area central banks. In this environment concentrating on asset management techniques alone is probably too narrow an approach and more attention should be paid to the liability side of the central bank balance sheet. In any case, euro area central banks have become increasingly accountable for managing national wealth through the exercise of prudent stewardship.