# Appendix C: International reserve management

As of 15 August 2005, the Central Bank of Chile held the equivalent of US$15.745 billion in international reserves. This appendix describes the main policy features governing their management. First, it briefly describes the role, benefits and costs of holding international reserves within the current policy framework, along with the management objectives involved. Second, it presents the institutional framework for managing these reserves, including the legal framework and the organizational structure used by the Bank. Finally, it describes the main investment policies, including the characteristics of the reference or benchmark portfolio, which guides investment decisions and management of associated risks.

## International reserves and management objectives

The floating exchange rate is a distinctive component of the policy framework applied by the Central Bank to fulfill its mission of ensuring the stability of the Chilean peso and the normal functioning of domestic and external payments. This foreign exchange regime, combined with inflation targeting, solid fiscal policies, prudent financial supervision and regulation and complete financial integration abroad, provide a coherent framework that sustains essential macroeconomic balance and helps to absorb the different shocks that affect the economy, reducing their impact.

Notwithstanding, the Central Bank reserves the right to intervene in the foreign exchange market under exceptional and qualified circumstances. Lack of liquidity in international financial markets relevant to Chile, for example, could lead to peso depreciation out of line with fundamentals and significant real costs. International reserves are liquid foreign assets available to the Central Bank to intervene in the foreign exchange market under these sorts of circumstances, to support its monetary and foreign exchange policies.

Holding international reserves involves both benefits and costs that the Central Bank must take into consideration. On one hand, liquidity in foreign currency contributes to reducing the likelihood of and the costs involved in specific shocks, and improves market perception of the country's ability to deal with risk, thereby reducing country risk. On the other hand, the return on the investments made using international reserves tends to be less than the cost of the liabilities it finances, due to differences in risk, liquidity, maturity and the denomination of these instruments. These differences tend to negatively affect the Central Bank's financial net work and constitute sources of risk in its balance sheet.

In recent years, the benefits to Chile of maintaining a high level of international reserves decreased thanks to the economy's increasingly solid fundamentals, reflecting among other factors consolidation of the floating exchange rate policy and inflation targeting. In this context, since December 2003, the Central Bank has steadily been reducing the financial costs of its net position in foreign currency. This consists of swapping and renewing dollar-denominated debt, which is being paid off upon maturity using international reserves. Under this program, during the rest of 2005, the Central Bank estimates it will sell assets in dollars and other currencies for some US$1.466 billion, thereby reducing dollar-denominated liabilities by a similar amount. This program for reducing international reserves does not involve any intervention in the foreign exchange market, and therefore does not change the Bank's net position in foreign currency compared to the private sector.

Consistent with its role, and the benefits and costs inherent in international reserves, the Central Bank's goals for managing international reserves are to provide secure and efficient access to international liquidity, while safeguarding the Bank's financial capital. Secure access involves managing reserves so that they can be used quickly and opportunely, should they be required. Efficient access to international liquidity is ensured by optimizing the returns on international reserves. Finally, safeguarding the bank's financial capital involves limiting risks inherent in the investment portfolio and their management within the Central Bank's balance sheet.

To achieve these goals, the Central Bank works within the legal framework established in its own Basic Constitutional Act). Based on these objectives, the bank operates under a series of general principles applied in the management of its reserve portfolio, within an internal governance structure, described below.

## Institutional and organizational framework

The Basic Constitutional Act governing the Central Bank of Chile (article one of Law N° 18,840, published in the official gazette (*Diario Oficial*) on 10 October 1989) establishes that the "Central Bank of Chile is an autonomous body, of constitutional rank, technical in nature, with its own legal title, capital and indefinite duration." Article 38 explicitly empowers the bank to manage, maintain and dispose of its own international reserves.

This article states that "In the international sphere, the Bank will exercise the following attributes: 6. Receive deposits or open current accounts in Chilean pesos or foreign currency, in the central banks, banks, foreign or international financial institutions and those of foreign States, and 7. Maintain, manage and dispose of its international reserves in the country or abroad. These reserves may consist of foreign currencies, gold or bills of credit, securities or bills of trade, issued or guaranteed by foreign states, central banks or foreign or international banking or financial bodies. The Bank is empowered to use these reserves to guarantee its obligations."

Based on the mandate established in its founding law, at the institutional level responsibility for managing reserves is distributed among different levels of the hierarchy, so that the decision-making and management evaluation processes within the bank are clearly defined.

The first and most senior level corresponds to the Board of the Central Bank, which bears responsibility for defining the objectives of reserve management and approving the investment parameters contained in the Current Investment Policy Manual. This manual establishes the guidelines for investing international reserves in terms of its composition: by currency, duration, management of credit risk (in the sense of diversification by type of risk and instrument), issuers, intermediaries, custody, benchmarks, cash flow in foreign currency and management of certified gold. From time to time, the Board also evaluates the performance of international reserve management, based on monthly reports and quarterly presentations.

The second level is handled by the International Division's management, which acts on behalf of the Central Bank's Board, which delegates these faculties. The International Division Management area proposes policies governing overall investment and associated risk management, as well as coordinating and monitoring their implementation. It presents the proposal for the international reserve reference portfolio, which is reviewed annually.

The third decision-making level involves International Investment Management, which designs and proposes the strategy for implementing Bank investment policies, as well as handling their implementation. This body supervises the Foreign Exchange Counter and the International Treasury Department. The former designs and proposes investment in the benchmark portfolio and implements investment decisions. The latter completes and processes transactions carried out by currency operators.

Aside from its direct investment responsibilities, the International Investment area manages the portfolio and securities lending involving foreign counterparts. The external portfolio management area currently handles about 6% of the foreign currency portfolio, and its purpose is to obtain an active benchmark for evaluating the internal management of the Central Bank portfolio, the transfer of knowledge and technology, and the value added to the foreign currency portfolio. The securities lending program, which is handled by a custodial agent, provides an additional return on the investment instruments managed by the Bank.

In terms of evaluating and monitoring reserve management, the organizational structure also includes the Department of Risk Management and Evaluation. In line with international standards, this unit is independent of the International Investment Management area and reports directly to the manager of the International Division. This department measures international reserve performance, both in absolute terms and compared to the benchmark portfolio, as well as calculating risk parameters for the portfolio. It also ensures that operations carried out by the Foreign Exchange Counter comply with Board-approved investment policies.

The Central Bank comptroller, who reports directly to the Board, evaluates the effectiveness and efficiency of internal controls, risk management and governance of the integrated process of reserve management. Every year, the Bank's financial statements are audited externally, a process that includes a review of reserve management, reflecting their material nature.

Moreover, other central banks and international bodies are regularly consulted to evaluate and improve the processes in effect and ensure they

remain in line with best practices internationally. In recent years, the Central Bank has been advised by the Bank of England and the European Central Bank.

Finally, the office of the legal counsel, whose senior staff report directly to the Board, are responsible for reviewing the legality of Board resolutions and other decisions and contracts signed to invest, manage and dispose of international reserves, according to the requirements of the Bank's founding law. For this purpose, all agreements and other resolutions and contracts requiring legal evaluation must be examined prior to signing, to safeguard the investments made in securities eligible according to the aforementioned laws and contracts meet acceptable juridical standards, especially in terms of the application legislation and jurisdiction, and eventual immunity from execution, as per article 85 of the Bank's founding law.

## Investment policy

The next section describes the main aspects of the investment policy governing international reserves. First, general aspects regarding the composition of international reserves are described in terms of types of sub-portfolios and instrument types. Then the main characteristics of the benchmark portfolio are presented, particularly the criteria used to determine the parameters that guide the composition by currency and duration. Finally, a description of how the associated risks are evaluated and managed is provided.

### General aspects involved in the composition of international reserves

International reserves consist of the foreign currency portfolio, which accounts for 97.5% of total reserve assets, and other items such as gold, special drawing rights (SDR), the IMF reserve position, and reciprocal credit agreements, which account for the remaining 2.5% (table C.1).

The foreign currency portfolio consists of three sub-portfolios, depending on how quickly funds may be required: the foreign currency cash portfolio, the short-term investment portfolio, and the long-term investment portfolio.

**Table C.1**

International reserve portfolio composition as of June 2005

(US$ million)

| Instrument | Amount | Percent |
|---|---|---|
| Monetary gold | 3 | 0.0 |
| Special drawing rights (SDR) | 52 | 0.3 |
| Reserves position in the IMF | 345 | 2.1 |
| Foreign exchange | | |
| Currency and deposits | 7.166 | 43.1 |
| Government, institutional and foreign bank bonds | 5.059 | 30.4 |
| Trade notes | 365 | 2.2 |
| Foreign government treasury bills | 3.017 | 18.1 |
| Floating rate notes | 623 | 3.7 |
| Other investment instruments abroad | 0 | 0.0 |
| Other assets | | |
| Reciprocal credit agreements | 13 | 0.1 |
| Total reserve assets | 16.643 | 100.0 |

Source: Central Bank of Chile.

The foreign currency cash or liquidity portfolio consists mainly of overnight and weekend bank deposits, that is, it is a very short-term portfolio. It represents the preferred source of liquidity for dealing with daily cash requirements arising from withdrawals on currency accounts that commercial banks or the public sector hold in the Central Bank. This portfolio can receive or transfer funds to and from the short-term investment portfolio, when cash flow portfolio balances are very low or very high.

The short-term investment portfolio acts as a buffer to deal with changes in foreign currency liquidity needs. The investments from this portfolio are in bank deposits and money market instruments maturing in up to one year.

The long-term portfolio involves investment in long-term instruments, which include nominal bonds maturing in one to 10 years and inflation-indexed bonds maturing in one to 30 years.[1]/ Cash transfers from the long-term to the short-term investment portfolio and vice versa generally reflect financial considerations arising from the investment strategy, although occasionally this portfolio may absorb excess or provide liquidity.

As of June 2005 investment in currencies and short-term deposits accounted for 43.1% of the foreign currency portfolio, followed by foreign bank, institutional and government bond holdings, worth 30.4%. These were followed by treasury bills belonging to foreign governments, worth 18.1%. Finally, securities at floating rates, commercial papers and other investment instruments accounted for 5.9% of the foreign currency portfolio.

### The benchmark portfolio: composition by currency and duration

The international reserve benchmark portfolio guides investment decisions and helps to identify and quantify the risks involved in the Central Bank's reserve management. It establishes the basic parameters controlling their composition, by currency, duration, distribution of credit risk (by type of risk and instruments), and the respective reference buyers.

The basic considerations when determining the benchmark portfolio include potential foreign currency needs and the way investment decisions based on this portfolio could affect the Central Bank's balance sheet.

### a) Composition by currency

The Central Bank keeps its international reserves in a diversified currency portfolio, consisting mainly of investments in US dollars and euros. The purpose of this portfolio is to ensure suitable liquidity in foreign currency is available if required and to reduce the impact of shifting parities for the main currencies on the Bank's balance sheet.

On the first purpose, an evaluation of potential liquidity needs has established that the US dollar is the preferred currency. In this sense, the prevailing view internationally is that the main indicator for evaluating potential need for foreign currency in the case of emerging economies,

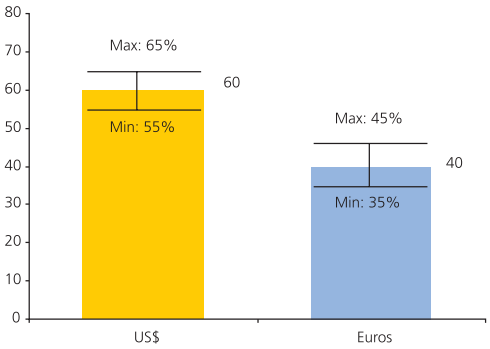
[1]/ Inflation-indexed bonds are expressed in US dollars and are Treasury Inflation-Protected Securities (TIPS).

such as Chile's, is foreign debt falling due in the short term (that is, short-, medium- and long-term debt falling due in the next 12 months). In Chile's case, this debt is expressed mainly in dollars. Similarly, the US dollar is the reference foreign currency for the foreign exchange market and the currency that traditionally has triggered interventions in this market in Chile.

On the second purpose, however, the Central Bank must also consider decisions that the currency composition of international reserves may have on risks to the balance sheet. In this sense, the main way this can affect the balance is through the effects that shifting international parities may have on the peso and/or UF value of reserves. With the application of the floating exchange rate regime, as the peso-dollar exchange rate has become more volatile compared to the peso-euro rate, it has become appropriate to significantly increase the diversification of currencies in the investment portfolio to include a larger percentage of euro-denominated instruments.

**Figure C.1**

Reference portfolio currency composition
(percent)




Source: Central Bank of Chile.

The specific composition of currencies included in the current benchmark portfolio for bank currencies represents an intermediate solution to those arising from the purposes described above. Currently, 60% is in dollars and 40% in euros, with typical deviations of ±5% in these reference amounts (figure C.1). Technically, this solution reflects the result of an exercise to minimize amounts at risk in the case of the Bank's net assets in foreign currencies measured in pesos, subject to hedging requirement to ensure a predetermined liquidity level.

Aside from the US dollar and the euro, the investment portfolio includes other internationally accepted currencies, with at least an A- rating, as secondary currencies. These include the pound, the yen, and Canadian, Australian, New Zealand and Singapore dollars, along with the Swiss franc, and the Danish, Swedish and Norwegian krones.

### b) Reference duration

To determine the reference duration for international reserves, their impact on the Bank balance sheet is examined. Given its investment profile, an increase in liquidity needs is unlikely to affect desired duration.

Currently, the Chilean economy's substantial integration into the world economy has meant that changing international interest rates affect not only the economic value of international reserves, but also other assets and liabilities included in the Central Bank's balance sheet. There is evidence that during the first half of this decade, the correlation coefficient for the relationship between external and domestic rates reached about 0.5, especially in the case of medium- and long-term rates[2]/

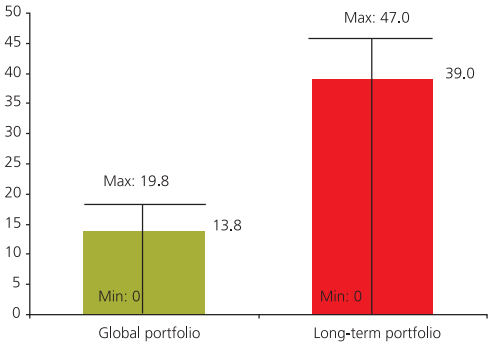
The reference duration of international reserves now in use reflects an estimation of what would be necessary to neutralize, to the first order, the impact of fluctuating international rates on the Central Bank's general balance sheets. This estimation considers its effects on the value of the assets in which international reserves are invested and the value of other Bank assets and liabilities. Technically, this involves estimating the duration of international reserves that would push the duration gap

[2]/ See González, H., E. Jadresic and F. Jaque (2005).

**Figure C.2**

Reference portfolio duration

(months)




Source: Central Bank of Chile.

associated with changes in international interest rates in the Bank's balance sheet to zero.

Based on these criteria, the current reference duration for international reserves is 13.8 months, with a minimum 0-month duration and a maximum deviation of six months from the reference duration presented above. In the case of the long-term portfolio, the duration deviation ranges from at least 0 to at most eight months, around the reference duration of 39 months (figure C.2).

For practical purposes, as mentioned above, the foreign currency portfolio is separated into sub-portfolios. Currently, the short-term benchmark portfolio, which includes sovereign instruments and bank deposits from agencies and supranational institutions, involves up to 70% of the portfolio, while the long-term portfolio, which includes nominal and indexed bonds, accounts for up to 30% of the benchmark portfolio. The reference duration for these portfolios (3 and 39 months, respectively) is calculated so that the weighted average for the respective duration is the 13.8 months defined for the general portfolio.

### c) Summary of the benchmark portfolio by maturities, currencies and instruments

The composition of the benchmark portfolio by maturities, currencies and instruments assumes that 70% of the total short-term portfolio is distributed as follows: 42% in US dollars and 28% in euros. The other 30%, long term, is distributed as follows: 18% in US dollars and 12% in euros. Indexed US bonds (TIPS) are included within the long-term share in US dollars (table C.2).

**Table C.2**

Central Bank of Chile reference portfolio composition

(percent)

| Instrument | Share | Share by currency | |
|---|---|---|---|
| | | US$ | Euros |
| Short-term portfolio | 70 | 42 | 28 |
| Banks | 37 | 22 | 15 |
| Sovereign | 33 | 20 | 13 |
| Long-term portfolio | 30 | 18 | 12 |
| Bonds | 27 | 15 | 12 |
| Indexed bonds | 3 | 3 | |
| Total | 100 | 60 | 40 |

Source: Central Bank of Chile.

## Risk management

Risk management policy forms an integral part of the guidelines for investing international reserves, which are approved by the Central Bank's Board. Implementation is delegated to the International Division. These investment guidelines include objectives associated with reserve management and therefore reflect the approach to reserve investment. This philosophy is defined in terms of the range of deviation from the benchmark portfolio and the limits imposed on the different investment types.

### a) Liquidity risk

Liquidity risk involves the risk of not being able to sell an instrument or close a position when desired, without incurring significant costs. To ensure the liquidity of investment in foreign currency, which constitutes international reserves, the Central Bank manages a portfolio consisting solely of short-term deposits in international commercial banks, with diverse maturities, and fixed income instruments trading on deep, highly liquid secondary markets.

### b) Credit risk

Three sources of credit risk are considered in current investment guidelines.

i) Bank risk. Exposure to bank risk arises from term deposits, current accounts, investment in deposit certificates and foreign currency exchange operations. Managing this risk encompasses two areas. The first involves establishing a general maximum exposure to bank risk for the total portfolio, which currently stands at 45% of the portfolio. The second involves establishing individual limits for each bank, in terms of maturity and a ceiling on investment. To meet the eligibility criteria, a bank must have a minimum net worth of US$1 billion, and at least an A- rating on its long-term instruments from two of the three main international agencies (Fitch, Moody's and Standard & Poor's), using, where appropriate, the standard nomenclature defined by the US Securities Valuation Office.

ii) Sovereign, supranational and external financial institution risk. Countries' eligibility to be sovereign issuers depends on their relative size, their public debt load, and their long-term debt risk rating. On this last point, those countries with an A- rating or higher during the past 24 months, according to at least two of the three risk rating agencies mentioned above, are eligible. There is no limit on exposure to sovereign risk. However, exposure to super-national risk is subject to an overall ceiling of US$1.560 billion, while individual limits depend on the risk rating of each institution, which must be at least AA-, according to at least two of the three agencies, and their size, measured by their net worth. External financial institutions' exposure, which involves US agencies, requires a AAA rating from at least two of the three risk rating agencies mentioned above and a minimum net worth of US$1 billion. The overall limit on exposure of this nature is 15%, with ceiling defined for each institution as well.

iii) Counterpart risk. Counterpart risk is also subject to objective selection parameters. In this sense, eligible counterparts are those institutions classified as primary dealers, along with brokers with an approved risk rating, and subsidiaries at least 90% owned by the main office, with the same long-term risk ratings required of eligible investment banks.

### c) Market risk

Market risk is controlled by diversification of currencies, instruments and investment maturities and through measuring and monitoring risk exposure for currency risk and duration, as mentioned above. Market risk is also quantified using absolute values at risk (VaR) and values

compared to the benchmark portfolio. In late June 2005, the absolute and relative VaRs (parametric method, daily timeframe, confidence level 95% and decline factor of 0.94) stood at 0.32% and 0.06% of the value of US dollar equivalent international reserves, respectively.

### d) Operating risk

Operating risk associated with reserve management is controlled by segregating functions and applying internal and external controls.

The international currency operations department applies administrative procedures established for the different stages that each operation associated with portfolio management must follow, to minimize the operating risk involved in transactions. It also has computer software that allows it to pre-enter and validate operations before processing them. Similarly, the International Treasury Department has administrative procedures and software that apply a series of controls in executing and posting operations. Similarly, no operation can be completed without the respective operation from the operator and an International Treasury supervisor.

The Management and Risk Evaluation Department's Monitoring Unit, meanwhile, is responsible for monitoring operating risk, by constantly reviewing compliance with investment guidelines defined by the Board. This unit, which reports to a department that, as mentioned above, is independent of the International Investment Management area, monitors compliance with exposure limits established for institutions and internal administrative procedures established for financial operations associated with reserve management.

This structure, combined with audits and ongoing, regular evaluations, both external and internal, minimizes this area's operating risk.