Financial Stability Report

SECOND HALF 2004

BANCO CENTRAL
DE CHILE

Financial Stability Report*

SECOND HALF 2004

BANCO CENTRAL
DE CHILE

* This is a translation of a document written originally in Spanish. In case of discrepancy or difference in interpretation, the Spanish original prevails. Both versions are available at www.bcentral.cl.

Table of Contents[1/]

[1/] The closing date for statistics included in this *Report* was 2 December 2004.

Preface

According to the Basic Constitutional Act of the Central Bank of Chile, the purpose of the Central Bank of Chile is to "look after the stability of the currency and the normal functioning of domestic and foreign payments". These objectives are not independent. The well functioning of the payment system requires currency stability as well as market discipline, regulation and supervision and a sound infrastructure. The Bank monitors developments in international capital markets and the domestic financial sector, seeking to identify those that could have relevant effects, in the short or medium term, on the financial stability of the economy or the functioning of the payments system.

Financial stability refers to safeguarding the primordial functions of credit intermediation and saving in general, the provision of payment services and the allocation of risks, carried out by markets and financial institutions. In this area, designing and implementing suitable policies for regulating, supervising and guaranteeing financial transparency play a major role in strengthening the capacity of the economy and its financial system for dealing with disturbances from different sources, whether domestic or external.

This *Report* analyzes developments in the macroeconomic and financial environment in Chile and abroad that are relevant to the stability of its financial system; the evolution of borrowing by and the payment capacity of the main users of credit in the economy, including households, non-financial firms and the consolidated government sector; conditions affecting non-bank financial intermediaries, including pension funds, insurance companies and mutual funds; and the impact of these developments on the banking system and the Chilean economy's international financial position.

The *Financial Stability Report* is a bi-annual publication based on public information, which analyzes conditions in the financial system as a whole, and not those of individual financial entities. This work complements that of other supervisory agencies responsible for these entities or groups of institutions with similar characteristics.

The Board expects that the publication of this *Report* will contribute to the analysis and public discussion of matters relevant to the development and stability of the Chilean economy.

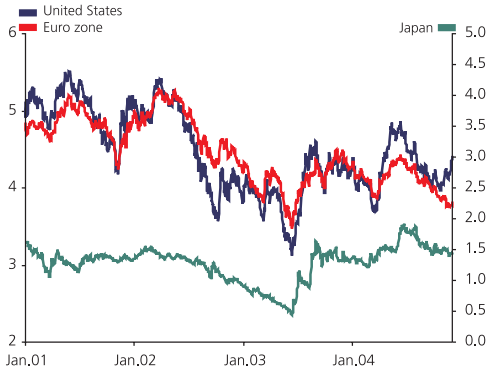
The Board

I. Summary report

Figure I.1

Yields on ten-year government bonds in more developed economies

(percent)

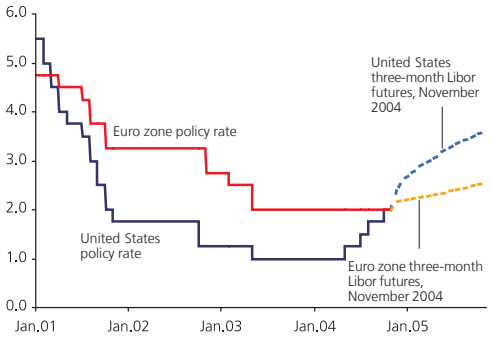


Source: Bloomberg.

Figure I.2

Monetary policy rates and three-month Libor futures in the United States and the euro zone

(percent)



Source: Bloomberg.

The external environment remains favorable for global and regional financial stability

The external environment continues to be favorable for the Chilean economy, with a positive outlook for the stability of international financial markets, at least in the short term. Annual world economic growth was around 5% this year, and the outlook is good for the next two years, despite the predicted deceleration (table I.1). The faster rate of expansion in global demand, especially in the Chinese economy, has translated into a generalized increase in the price of commodities, most notably in oil and metals, especially copper.

Table I.1

Growth of the main economies and projections

(percent, change over 12 months)

	Average 1990-1999	2003	2004 (P)	2005 (P)	2006 (P)
United States	3.1	3.0	4.4	3.5	3.2
Japan	1.7	2.5	3.9	1.9	1.8
Euro zone	2.1	0.5	1.9	1.9	1.8
Trading partners	3.1	2.8	4.5	3.5	3.5
World	3.3	3.7	5.0	4.1	4.0

(p) Projection.

Source: Central Bank of Chile.

Nevertheless, the growth in demand and the increase in the price of commodities has not led to an acceleration of underlying inflation among the industrialized economies. Inflationary pressures have been controlled by prior capacity surpluses, the credibility of central banks, and, in the case of the United States, elevated productivity growth.

Investors foresee gradual increases in international interest rates, while emerging market risk premiums are at historic lows

In the last six months, both short- and long-term international interest rates have remained low vis-à-vis historical averages (figure I.1). Short-term rates are influenced by relatively expansionary monetary policies in the main economies. Investors anticipate that these rates will rise in the coming quarters as the central banks adjust their policies, but the increase will be gradual (figure I.2). In early December, market prices reflected expectations of a 100 basis point increase in the Federal Reserve rate over the next two months and smaller increases in the monetary policy rates of the euro area and Japan. To the extent that this trend is realized,

it is not expected to produce destabilizing effects on other financial markets.

Between last June and the closing date of this *Report*, the United States Federal Reserve increased its policy rate by 100 basis points. Financial markets absorbed the effects of this increase without any serious consequences, indicating that the effects were well incorporated in prices. Long-term bond rates fell slightly in the main economies in the second half of the year, as did corporate bond risk premiums, while the stock indexes remained stable.

Most emerging economies take advantage of the favorable environment to strengthen their financial position

With regard to emerging economies' assets, sovereign premiums experienced a generalized reduction, while stock exchanges recovered and flexible currencies appreciated (figure I.3). This development not only stems from the favorable financial environment and investors' increased appetite for risk, but also reflects an improvement in the financial situation of most emerging economies.

Over the last five years, emerging economies as a group have significantly reduced the size of their external debt, regardless of whether it is measured relative to output or exports. This is the result of important surpluses in the current account, and it has been accentuated in the current environment, especially for economies that export commodities.

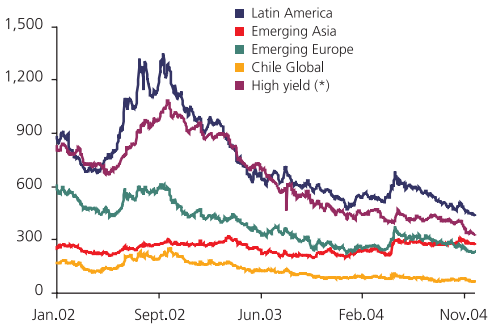
At the same time, the emerging economies have taken advantage of the moment to improve the financial conditions of their foreign debt and increase their access to international reserves. In our region, the positive evolution of the Brazilian economy is particularly noteworthy.

In sum, the global economic perspectives are favorable and have collaborated to strengthen the financial situation of emerging economies and reduce the risks for global and regional financial stability, at least in the short term.

Figure I.3

Sovereign bond premiums in emerging economies

(basis points)



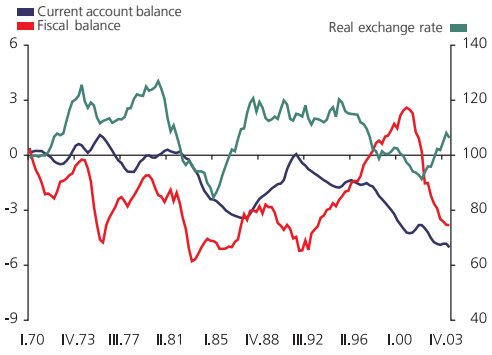
(*) High yield corresponds to bonds whose risk classification is lower than their investment grade (BB to CCC), following the S&P classification.

Sources:
JP Morgan Chase.
Goldman Sachs.

Figure I.4

United States current account balance, fiscal balance, and real exchange rate

(percent of GDP; index 1970 = 100)



Source: Bloomberg.

The main risk in the international economy is the United States' swelling current account deficit and its eventual effects on financial markets and interest rates

The main risk in the external scenario is related to the way in which the sharp US current account deficit (which was nearly 6% of GDP in 2004) will be corrected and its implications for the behavior of the dollar, interest rates, and other financial markets, as well as regional and global economic growth (figure I.4).

General expectations are consistent with a scenario of gradual adjustment, without serious consequences for interest rates, inflation, or world economic growth. However, less probable scenarios can also materialize, including a sudden and pronounced adjustment of the dollar and unexpected increases in international interest rates. Under these circumstances, one could expect a deterioration in the external financing conditions faced by emerging economies, an additional deceleration of

global growth, and lower prices for commodities. This is not the most probable scenario, however. To date, the financial markets have not had any problem absorbing the significant depreciation of the dollar that has occurred in the last six months. The impacts on inflation expectations or interest rates have thus far been minimal.

Other factors contributing to uncertainty, such as the price of oil and the future path of the Chinese economy, imply low risks for global financial stability. Both of these factors could bring a steeper deceleration in world growth, lower prices for other commodities, and greater requirements for external financing on the part of emerging economies, but they probably will not cause an increase in interest rates or a significant worsening in the external financing conditions of these economies. The only scenario that could trigger a significantly worse situation for emerging economies is one in which the higher price of oil creates additional inflationary pressures. This scenario, however, appears to be improbable under current conditions.

The Chilean economy is developing positively, bolstered by the favorable external environment and a continuing expansionary monetary policy

The international environment is very favorable for the growth of the Chilean economy, the evolution of its external accounts, and the maintenance of a scenario of financial stability.

The positive effects of the growth of its trading partners (particularly China and other Asian economies), high export prices, and low external financing costs fully offset the negative effects of the higher oil price.

In addition to these external effects, the push of monetary policy is reflected in sustained increases in the monetary aggregates, credit growth, and considerably lower interest rates. All this triggered an important acceleration of economic growth in the current year. Last September's *Monetary Policy Report* (*Informe de Política Monetaria*, or IPoM) estimated that growth would be between 5.0% and 5.5% in the current year and between 4.5% and 5.5% in 2005. Since September, however, actual growth has been higher than projected, leading to the prediction that it will surpass the above mentioned range to fall between 5.5% and 6.0%.[1]/ In the last months this expansion was led by the dynamism of investment and exports. Employment also posted an important recovery, with an annualized variation of 2.7% as of October (table I.2).

Inflation increased gradually in the direction of the target of 3% a year, while inflationary expectations for two years and longer approached that goal, although they remain below 3%. The increase in inflation as measured by the CPI mainly reflects the effects of oil; the normalization of rising inflation, in turn, was slower, but it is expected to continue over the coming quarters.

Table I.2

Aggregate demand and the labor market
(percent)

Variable	2003	2004 I	2004 II	2004 III
	(annual growth rate)			
Aggregate demand				
GDP	3.3	4.6	5.3	6.8
Domestic demand	5.5	4.8	5.4	8.6
Investment	5.5	4.7	7.7	14.0
Other domestic demand	5.6	4.8	4.7	6.9
Exports	6.3	10.0	9.8	15.3
Imports	13.9	11.1	10.3	20.5
Labor market				
Employment growth	2.6	1.5	0.6	2.0
Unemployment rate (INE)	8.4	8.6	9.0	8.9
Unemployment rate (U. of Chile)	12.5	12.0	11.2	11.1

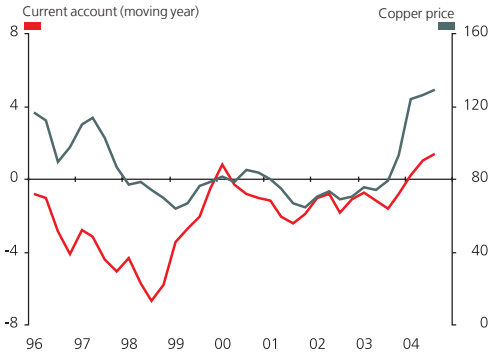
Sources:
Central Bank of Chile.
National Statistics Bureau.
University of Chile.

[1]/ Growth projections for next year will be revised in the next issue of the IPoM in January. The quantitative macroeconomic projections on which this *Report* is based correspond to those available in the September issue of the IPoM.

Figure I.5

Current account and copper price

(percent of nominal GDP, in United States cents per pound)

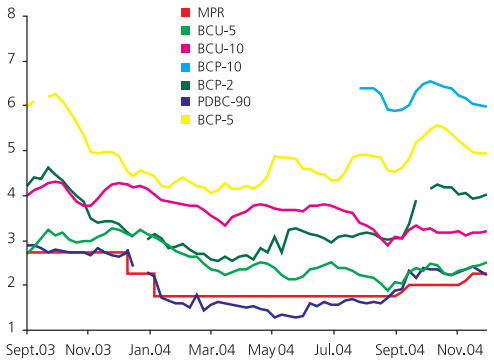


Source: Central Bank of Chile.

Figure I.6

Central Bank of Chile monetary policy rates and interest rates

(weekly averages, percent)

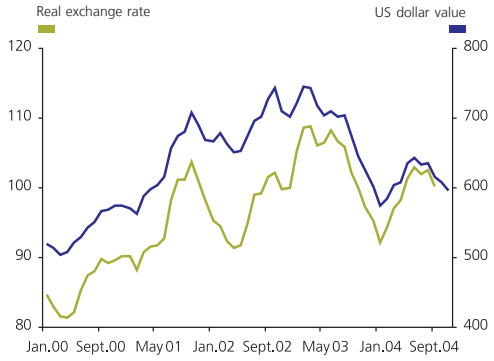


Source: Central Bank of Chile.

Figure I.7

Real and nominal exchange rate

(index, pesos per dollar)



Source: Central Bank of Chile.

With regard to external accounts, the negative impact of the higher oil price on the terms of trade was more than compensated by the higher price of copper and other export products (figure I.5). In accordance with the September projection exercise, it is estimated that the current account of the balance of payments will show a surplus of between 2.5% and 3.0% of GDP in 2004 and a somewhat smaller surplus next year.

In this context, the Central Bank began to rein in the expansiveness of its monetary policy, starting in September. At that time, the monetary policy rate increased by 25 basis points, and it increased by the same amount in November. At the time of writing, it stood at an annualized 2.25%.

The markets anticipate a gradual increase in interest rates in Chile

The markets anticipated those adjustments in monetary policy, such that its impact on long-term rates was relatively minor, remaining at low levels in comparison with historical averages (figure I.6). Companies, in turn, have continued issuing bonds in the domestic market to take advantage of the juncture of low rates and substitute other sources of financing.

Surveys now indicate that the markets foresee an increase in interest rates similar in magnitude and velocity to the changes anticipated for rates in the United States in the next two months (that is, around 100 basis points), as well as an additional 100 basis points in the following twelve months. The term structure of market rates, which may reflect other financial premiums in addition to expectations, indicate a higher rate of increase.

The peso strengthened relative to the dollar in the second semester, while it depreciated or remained stable relative to other currencies (figure I.7). This mainly reflects the depreciation of the US currency in international markets. In the domestic arena, the monetary policy adjustment in September slightly amplified the uncovered interest rate differential in favor of investments in pesos. However, this differential did not continue to widen in the following months. Markets expect it to stable in the coming quarters, which is consistent with balanced expectations for the peso-dollar exchange rate.

The stock market showed a significant increase in the second half of the year. The IPSA index posted an accumulated gain of 20.7% between July and November, led by higher profits among firms and better prospects for domestic growth, as well as the generalized increase observed in emerging market stock exchanges (figure I.8). Domestic firms took advantage of the better prices on the stock exchange to raise financing through stock issues, in particular those tied to trade.

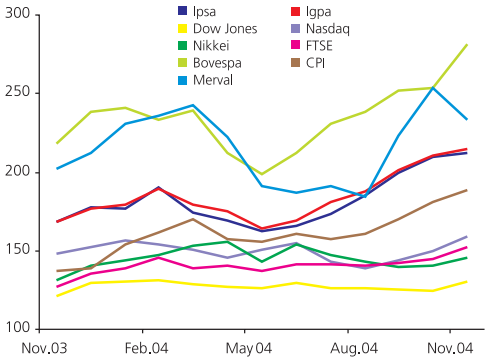
The main risks are tied to a significant and unexpected increase in interest rates, over and above expectations, and a deceleration of economic growth

The macroeconomic outlook for the Chilean economy and its financial stability is favorable, but it is not risk free. The foreign arena holds the risk of a significant depreciation of the dollar and an unforeseen increase in international interest rates. The domestic arena carries the risk that

Figure I.8

International stock indices

(indices in dollars, January 2003 = 100)

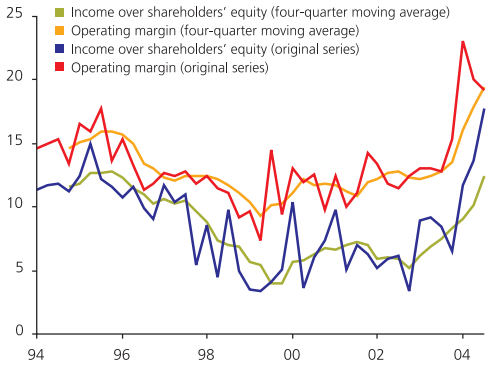


Source: Bloomberg.

Figure I.9

Profitability and margins of the corporate sector (*)

(percent)



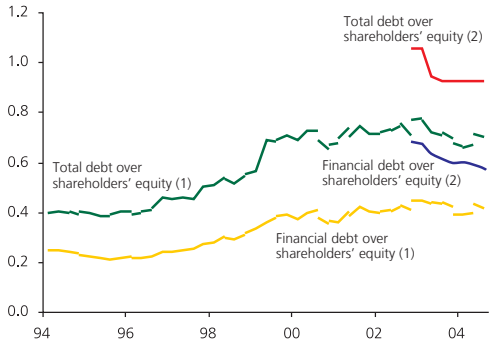
(*) Indicators calculated from individual financial statements.

Source: Own calculations, based on information from *Ficha Estadística Codificada Uniforme* (*Fecu*).

Figure I.10

Debt-equity ratio

(times)



(1) Indicator built on the basis of individual balance sheets.
(2) Indicator built on the basis of consolidated balance sheets.

Source: Own calculations, based on information published by the Superintendence of Securities and Insurance (SVS).

the acceleration of domestic demand will outpace projections, that the buffer capacity will be drawn down too fast, and, ultimately, that a favorable environment for inflationary pressures will be generated. In both the foreign and domestic scenarios, interest rates will probably adjust to the rise above current expectations, while the peso will be either strengthened or weakened according to the circumstances. A more complex situation would involve a combination of the two scenarios: an increase in foreign rates together with inflationary pressures in Chile. Under such conditions, domestic monetary policy would have less space to absorb the impact of the external shock, accentuating financial price corrections and the deceleration of domestic growth.

An analysis of the financial situation of the main sectors of the economy —namely, households, firms, government, and financial intermediaries— reveals that the situation has been strengthened, triggered by the positive evolution of the Chilean economy. At the same time, the macroeconomic outlook favors the continuation of this trend in the near future.

The payment capacity of firms continues to improve as a result of increased profits, stable debt, and low interest rates

The financial situation of firms continued to improve in the last six months, particularly in the tradable sector where the more favorable terms of trade generated higher earnings. This was also the case in the nontradable sector, whose earnings improved through the recovery of aggregate demand. Both sectors benefited from the low interest rates, and they display stable debt levels. All these factors contributed to strengthening the ability of domestic firms to cover their financial commitments.

Annualized profitability over book value, calculated for firms that publish financial statements, reached 17.8% in September—the highest rate since 1994 (figure I.9). Firms in the tradable sector led the results, with an average profitability of 20.2%, while firms in the nontradable sector reached 15.6%, thus continuing an upward trend. Currently, the operational flows of firms in both groups significantly exceed their financial costs; only 2.3% of the sector's bank debt is in firms that have a ratio of operational flows to financial expenses of less than one.

Firms' total debt, measured as a proportion of their accounting equity, remained relatively stable in 2004, while debt measured in relation to the market value of assets diminished significantly, considering the recovery of the stock exchange (figure I.10). Firms took advantage of the increase in their operational flows to finance investment projects with their own resources, although behavior varied among sectors. The biggest increases in debt were associated with the financing of new projects by firms in sanitary services and transport infrastructure, while firms in the electricity and telecommunications sector reduced their debt. Corporate debt is likely to increase in the future, assuming the continued recovery of investment in machinery and equipment.

Household debt continues to increase rapidly, but financial expenses are stable and there are no signs of overindebtedness

Consumer debt with banks and other financial institutions continued to grow in the second semester of the year, reaching 16% a year as of

Table I.3

Real percent change in household debt over the last 12 months, by component

	Dec.03	Mar.04	Jun.04	Sept.04
Mortgage debt	**12.1**	**13.4**	**11.7**	**14.8**
Bank mortgage (1)	12.3	12.6	12.0	17.5
Mortgage bonds	9.4	8.1	1.3	-5.6
Endorsable mortgage loans	-2.8	-3.9	-4.8	-2.9
Other (including variable-rate loans)	44	52	76	130
Non-bank mortgage	10.9	17.0	10.2	2.6
Consumer debt	**19.9**	**20.8**	**20.1**	**19.8**
Consumer bank	16.7	17.1	16.9	17.5
Retail businesses	36.5	36.5	27.2	26.2
Private compensation fund	11.4	14.9	31.5	24.0
Savings and credit cooperative	25	28	24	28
Other non-bank (2)	11.4	14.9	11.7	11.3
Total	**14.3**	**15.4**	**14.0**	**16.2**
Total non-bank	24.1	20.5	14.9	12.9
Total bank	13.8	14.1	13.6	17.5

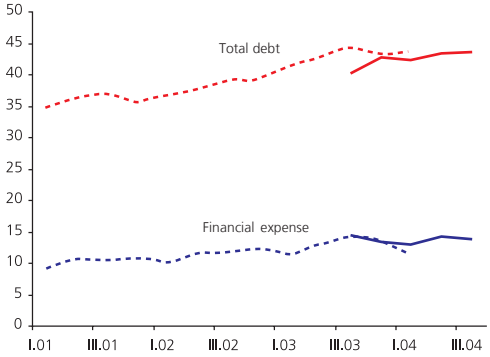
(1) Bank mortgage includes past-due portfolios and home leasing portfolios.
(2) University loans, car loans, and loans from life insurance companies.

Sources:
Superintendence of Banks and Financial Institutions (SBIF).
Superintendence of Securities and Insurance (SVS).
Superintendence of Social Security (SSS).

Figure I.11

Household debt and financial expense, as a percentage of disposable income (*)

(percent)



(*) The continuous line denotes a change in the estimation and greater availability of information.

Source: Central Bank of Chile.

September. The acceleration in the growth of home mortgages is particularly noteworthy. This acceleration reflects the increase in home sales, and it largely corresponds to variable-rate mortgage loans (table I.3).

It is estimated that debt currently represents a little more than 43% of households' available income. This figure can be compared with the level achieved in late 2000 of nearly 35% (figure I.11). Some data indicate that the average consumer debt has also experienced an increase in the recent past.

The above suggests that the financial exposure of households in the face of a potential deterioration in growth, employment, and interest rate conditions is rising. Despite this, various indicators of financial compliance signal that, at least in the short term, households are adequately managing the situation. In particular, banks' provisions for bad consumer credit have fallen as a percentage of the total consumer loans.

Consumers took advantage of the favorable financial situation to improve the conditions of their debt, including better repayment periods, more flexible payment terms, and lower interest rates. These developments have kept stable the proportion of disposable income that households destine to financial expenses, interest, and amortizations, despite the observed increase in indebtedness. As of September, the financial burden of consumers was estimated to be around 14% of their disposable income (figure I.11).

Households' greater access to financing is a positive development, but it is important that both the consumers and intermediaries adequately evaluate the associated risks. Consumers must be aware that their higher level of indebtedness and the use of variable rate credit imply additional financial risks. Financial intermediaries must continue to back their commercial policies with adequate practices of credit evaluation, provisions, and capital guarantees.

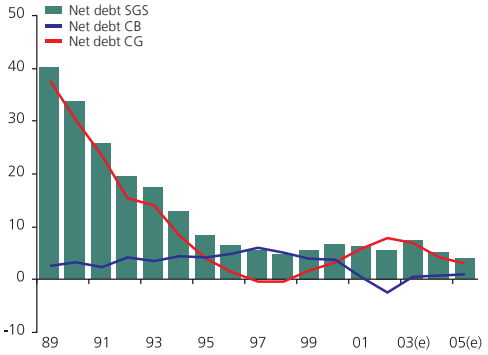
The situation continues to be favorable for public finances, and a surplus is projected for 2004 and 2005

Prospects continue to be very favorable for public finances, which further reduces the sources of vulnerability for national financial stability. The sovereign spread is at historic lows, and the recent evolution of tax revenues and the price of copper has allowed the Government to reduce its net debt in the current year (figure I.12). Net fiscal financing needs are not anticipated for the coming year. Even under a more adverse macroeconomic scenario than is currently the case, the present fiscal situation is not expected to deteriorate significantly, at least in the short term. The sustainability of the fiscal accounts is ensured through the conduct of a tight fiscal policy bound to rules such as the structural fiscal surplus, as well as the relatively low level of public debt *vis-à-vis* countries of equal or better risk classification. It is therefore improbable that the risk classification of the public debt would deteriorate, at least in the short term, or that external financing premiums would increase as a result of factors specific to the Chilean economy and independent of the external scenario. On the contrary, the maintenance of macroeconomic stability and high growth open the possibility of improvements in the risk classification.

Figure I.12

Net debt of the Central Government (CG), the Central Bank (CB), and the Consolidated Government Sector (CGS) (*)

(percent of GDP)



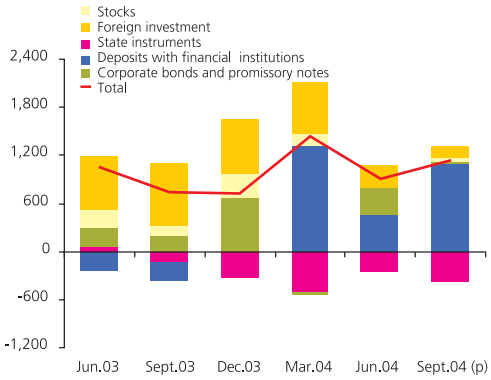
(*) Net debt of the consolidated government sector.
The consolidation of the data for the Central Government and the Central Bank eliminates accounting items that represent liabilities (assets) for the Central Government and assets (liabilities) for the Central Bank. These include promissory notes and fiscal deposits in the Central Bank.
(e) Estimate.

Sources:
Ministry of Finance.
Central Bank of Chile.

Figure I.13

Changes in the non-banking financial institutions' portfolio, net of returns

(quarterly flows, in billions of pesos)



(p) Preliminary.

Source: Own calculations, based on information from the Superintendence of Securities and Insurance (SVS) and the Superintendence of Pension Fund Administrators (SAFP).

Non-banking financial institutions maintain a strong orientation toward bank deposits and a reduction in state instruments

In the second and third quarters of the year, non-banking financial institutions received US$3.4 billion in new resources, of which 75% was directed into bank time deposits. Investment in state instruments continued to fall, a trend that is related to the reduced supply of such instruments, particularly those denominated in UF (figure I.13).

The pension funds reduced their national fixed-rate investments, but they increased their investments in domestic stocks and bank deposits

In October of this year, accumulated pension fund resources totaled US$56 billion. The increase in resources invested in bank deposits over the past twelve months is noteworthy: as of October, they represented 20% of the total portfolio, compared with 15% last year. At the same time, external investment rose significantly in the first half of the year; it then remained relatively stable at 26% to 27% of the portfolio. Stock investments also increased their share of the total, on the order of 2 percentage points.

The counterpart of these increases is a strong reduction in long-term fixed-rate local currency investments, primarily state bonds, mortgage bonds, and, to a lesser extent, corporate bonds. This decision, however, does not appear to be founded on a change in the outlook for interest rates or their exposure, such that the duration of the portfolios has remained stable. Rather, it stems from factors related to the supply of these instruments.

The reduction in state bond holdings is related to the lower issue of UF-denominated bonds and their replacement with peso bonds. The fall in mortgage bonds and the rise in bank deposits, in turn, are tied to developments in the banking system, including the increased growth of placements and housing loans financed with general funds.

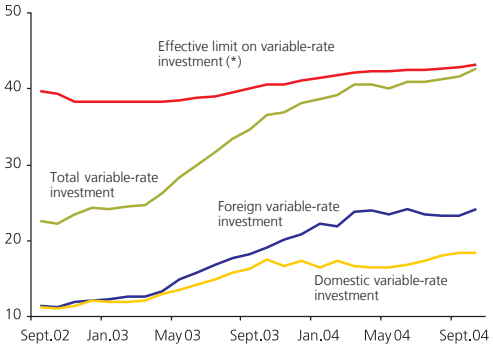
The different funds' marginal supply for investing in variable-rate instruments, in Chile or elsewhere, is limited by the growth of the funds

Since the beginning of the year, the pension funds' variable-rate investments —both domestic and foreign— have been very close to the maximum limit, even considering that the limit has increased slightly for the group of funds as a whole as a result of the transfer of affiliates toward relatively higher risk funds (figure I.14). This implies that the pension funds' additional demand for domestic stocks is limited by the growth of the funds. Otherwise, it will have as a counterpart a reduction in foreign investments, the majority of which are classified as variable rate.

The life insurance companies' portfolio did not undergo significant changes between the first and third quarters of the year. The trend of increasing the share of corporate bonds continued: such bonds captured a third of new resources between March and September, whereas investments in mortgage bonds, mutual funds, and state bonds posted marginal reductions in the same period.

Figure I.14

Evolution of variable-rate investment
(percent of total pension fund assets)

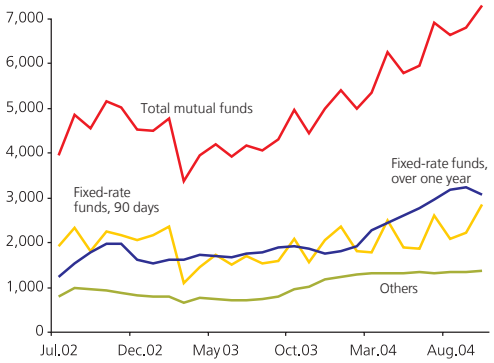


(*) Each fund's limit, weighted by market share.

Source: Superintendence of Pension Fund Administrators (SAFP).

Figure I.15

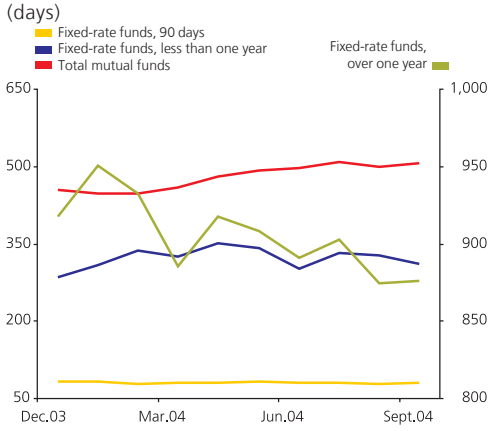
Evolution of net equity, by type of fund
(billions of pesos)



Source: Superintendence of Securities and Insurance (SVS).

Figure I.16

Duration of fixed-rate mutual funds and of the total system
(days)



Source: Superintendence of Securities and Insurance (SVS).

The expectation of increases in domestic interest rates could favor the life insurance companies' earnings, to the extent that their liabilities include annuity liabilities with a longer duration than their assets.

The sector also underwent important regulatory changes. The new official mortality tables will imply an increase in the companies' technical reserve requirements to cover their liabilities when they enter into effect. In addition, the new system for quoting pensions entered into effect in August of this year, changing the rules governing the sale of annuities. This led to considerable fluctuations in sales around this date and a drop in commissions under the new system.

The resources administered by the mutual funds continued to show a very significant increase of 58% (annualized) as of September. Half of this increase is explained by the growth of medium- and long-term fixed-rate investments, mainly in the form of state and private bonds, mortgage bonds, and bank deposits. At the same time, the industry attracted over 130,000 new participants over the last twelve months. Variable-rate investment increased by 80%, and new products were introduced, including structured funds that offer a mix of fixed and variable yields (figure I.15).

The elevated growth of the mutual funds translated into a significant increase in their demand for financial instruments. In particular, bank deposits grew by 1.2 trillion pesos, while mortgage bonds increased by 330 billion pesos during the twelve-month period ending in September.

Fixed- and variable-rate mutual funds are more exposed to market fluctuations, which could cause liquidity pressures in the domestic market in the face of an unexpected rise in interest rates

The profitability of medium- and long-term fixed-rate mutual funds is more sensitive to the evolution of interest rates in Chile (figure I.16). A faster increase than expected could erode the profitability of these funds, creating liquidity pressures on these institutions and accentuating price adjustments in the market. It could also have repercussions on other areas of the financial system, especially on banks that are financed to a greater degree through mutual fund deposits. However, this liquidity risk is attenuated by the ample available liquidity of other institutional investors such as the pension funds and by the good situation and liquidity of the banks. In any case, this factor should continue to be monitored.

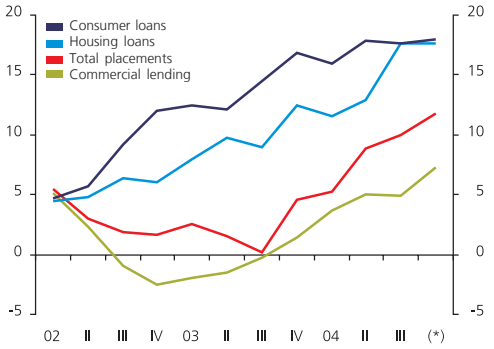
Higher growth of bank credit in the third quarter

In the period from July to October, the expansion of bank credit accelerated strongly. Total placements grew by over 10% (annualized), well over the 6% of the first semester. Faster growth continued in the household segment, especially in housing loans, which grew to an annualized 17%. In this period, loans destined to businesses —excluding external business credit, leasing, and factoring— grew an annualized average of 6%. The strong dynamism experienced by imports and exports explains the rapid expansion of foreign business lending, which grew over 30% measured in dollars (figure I.17).

Figure I.17

Growth of placements

(percent, 12-month real change)



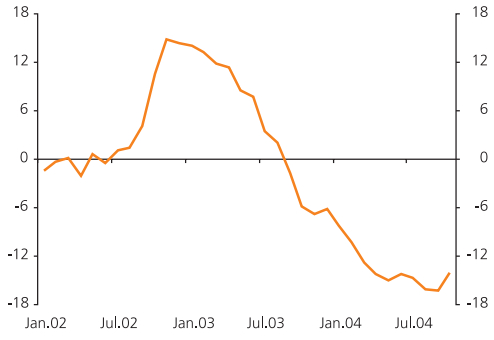
(*) As of October 2004.

Source: Superintendence of Banks and Financial Institutions (SBIF).

Figure I.18

Growth of past-due loans

(percent, 12-month real change)

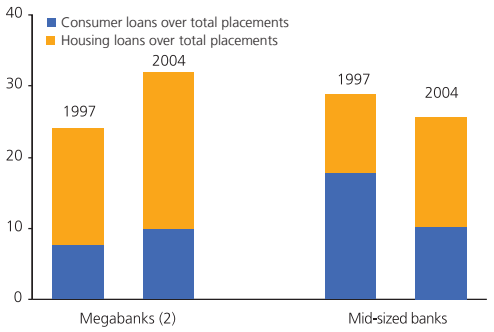


Source: Superintendence of Banks and Financial Institutions (SBIF).

Figure I.19

Bank exposure to household risk (1)

(percent)



(1) Household loans (consumer and housing) over total placements.
(2) Corresponds to the four banks with the largest market share in the system.

Source: Own calculations, based on information from the Superintendence of Banks and Financial Institutions (SBIF).

Bank profits increased, and credit risk indicators continued their downward trend

System-wide earnings improved in the third quarter of this year, particularly in the case of the biggest banks and banks with a high degree of retail credit. As of October, the banking system's annualized profitability was around 18% of capital and 1.3% of assets, both over the average observed in the last ten years. The equity base of the banking system, measured through the capital adequacy index, was at a relatively high level of around 13%, which is above international standards.

The banking system's credit portfolio risk indicators also showed a reduction. Past-due loans as a percentage of total loans, which have registered a sustained fall since the middle of last year, recorded the lowest level of the past six years in October (1.4%) (figure I.18). At the same time, accumulated provisions, which reflect expected losses from credit risk, also underwent a reduction in the recent period.

Loan expansion slightly lowered the banking system's capital adequacy index and the liquidity position of fast-growing institutions

Banks recently increased their household credit, which historically has been relatively more sensitive to cyclical fluctuations. Current exposure is not higher than the financial system's exposure in late 1997. In contrast with that period, however, the concentration of consumer credit in certain financial institutions is currently lower, and such credit thus represents a lower percentage of each institution's assets (figure I.19).

The banks' increased credit activity translated into a slightly downward trend in the equity adequacy index and a lower liquidity position among banks, especially those that posted faster growth rates. Financial investments grew more slowly than loans, which are relatively less liquid, and the average length of income flows increased relative to outflows. This situation is more obvious in banks that more strongly increased their variable-rate mortgage credits, which are financed from general funds instead of bonds (figure I.20). These entities, in turn, display a greater pressure to obtain long-term financing from institutional investors such as the pension funds and mutual funds.

At the same time, banks are more exposed to interest rate risk. This can also be related to the expansion of housing loans and their financing from general funds. In any case, the exposure remains within a confined percentage of the financial institutions' equity.

The results of stress exercises indicate that the banking system's situation is robust for facing adverse credit and interest rate shocks. It is even more robust in the case of exchange rate shocks, because its degree of direct exposure to this risk is minimal.

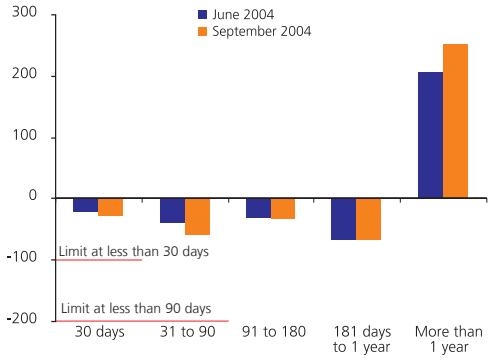
Conditions for accessing external financing continue to be very advantageous, and a surplus in the current account is projected for both this year and the next

In the second half of the year, the Chilean economy continued to access external financing under very advantageous terms as a result of the

Figure I.20

Exposure to liquidity risk (*)

(percent, banks with greatest expansion of housing loans)



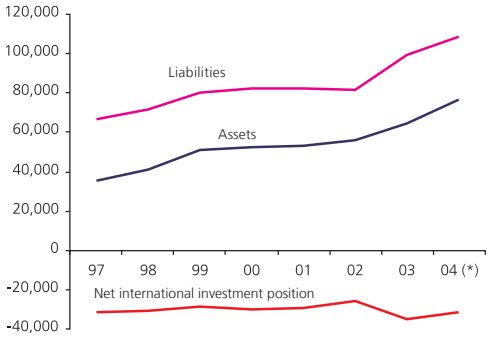
(*) Difference in the maturity flows of assets and liabilities, measured over basic capital.

Source: Own calculations, based on information from the Superintendence of Banks and Financial Institutions (SBIF).

Figure I.21

Net international investment position: international assets and liabilities, 1997–2004 (Oct.)

(US$ million)



(*) Projection based on aggregating transactions from the financial account to stocks, as of December 2003.

Source: Central Bank of Chile.

favorable international scenario described at the beginning of this section, the current account surplus projected for this year and next, and the generalized improvement in the financial situation of the primary debtors (namely, the government, large firms, and banks).

The government, banks, and firms reduced their foreign debt, with the exception of credit tied to foreign direct investment and foreign trade.

Firms took advantage of the favorable financial juncture to improve their debt terms, including refinancing at lower rates, restructuring from short- to long-term debt, and substituting credits and loans with bonds and promissory notes. The government realized prepayments, and banks used their external credit lines less.

The economy also responded to the favorable economic environment. External savings increased in the current year, which will translate into a projected current account surplus of between 2.5% and 3.0% for the current year. The counterpart was the continuation of the process of financial integration and the reduction of the economy's net liability position with the rest of the world (figure I.21).

All these factors contributed to strengthening the financial position of the Chilean economy, in terms of more external liquidity and less external debt.

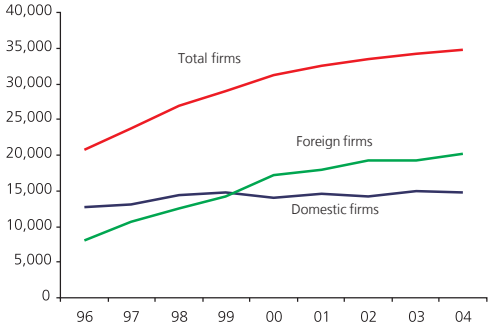
While the size of the total external debt of the Chilean economy is larger than that of other emerging economies with a similar risk classification, this has its counterpart in greater external assets. A detailed analysis of this debt indicates that it is made up primarily of private debt pertaining to firms in the tradable sector. Moreover, an important fraction corresponds to loans to subsidiaries of foreign firms, with the backing of their parent companies, or even debt with their own parent companies (figure I.22). External fiscal and bank debt represents just 22% of the total, and it represents a minor fraction of fiscal revenue or bank assets, respectively.

The situation is robust to a deterioration in the external environment, considering the flexibility of the exchange rate, the projected surplus, and the availability of liquidity for institutional investors and the Central Bank

The Chilean economy's strengths for facing a more adverse scenario include exchange rate flexibility and the strength of the financial balances of firms, households, and financial intermediaries with regard to exchange risk; the initial position of the external surplus and the fiscal surplus; the credibility of the Central Bank; the accumulation of international liquidity in the hands of residents, especially the pension funds; and the maintenance of abundant international reserves in the Central Bank for exceptional situations. In addition, the balance sheet and liabilities structure of the main debtors in the Chilean economy has recently been strengthened.

Figure I.22

Private-sector foreign debt, by country of ownership (*)
(US$ million)



(*) Corresponds to the country of origin of the debtor's controlling firm.

Source: Central Bank of Chile.

The risks to the normal functioning of internal and external payments in the Chilean economy continue to be confined

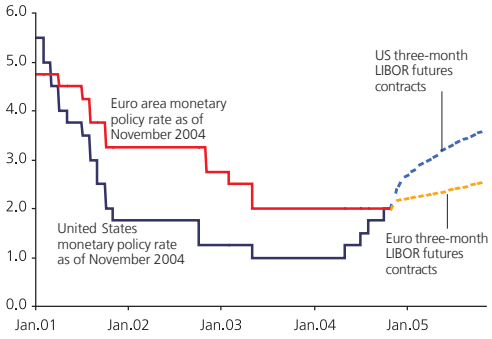
In sum, the prospects for financial stability and the normal functioning of internal and external payments remain satisfactory, as was the case in the first half of the current year. The financial position of agents and intermediaries is strengthened in a dynamic environment for the global economy, low internal and external interest rates, and faster growth for the Chilean economy. The available projections support the continuation of this trend in the near future. However, the possibility of unforeseen increases in international or domestic interest rates, over and above market expectations, is one of the main risk factors in the coming quarters. The analyses contained in this *Report* indicate that the exposure of diverse agents and intermediaries to this risk remains confined, although it rises in some sectors: namely, consumers and mutual funds. It will therefore be necessary to pay particular attention to developments in interest rates and their effects on the diverse financial markets, both in Chile and abroad, with the objective of detecting in a timely fashion any changes that could imply a deterioration in the macroeconomic financial panorama.

II. Macroeconomic and financial environment

Figure II.1

Monetary policy rates and three-month LIBOR futures contracts for the US and the euro area

(percent)

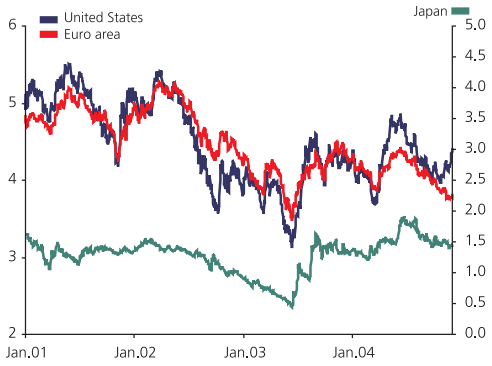


Source: Bloomberg.

Figure II.2

Long-term interest rates in developed economies: ten-year government bond yields

(percent)



Source: Bloomberg.

II.1 International scenario

II.1.1 Recent developments

The United States continued its process of gradually rising interest rates, while the euro area and Japan maintained their outlook for a stable monetary policy

The United States continued to show prospects for a gradual process of normalizing interest rates, in line with the increases in the Fed Funds rate decreed by the monetary authority in recent months. Real growth figures through the third quarter, as well as more recent activity, strengthened prospects for additional hikes, which could reach 100 basis points in 2005. For the euro area and Japan, movements in the policy rate are not expected in the medium term (figure II.1).

Long-term rates in the United States are currently at levels similar to those registered at the close of the last *Report*. However, these levels were achieved only in recent weeks, and the rates were considerably lower for almost the entire period. Contributing factors include the markets' assessment of the high oil price's impact on growth and the relatively weak labor market indicators, in the context of controlled inflation. More recently, however, the financial markets reacted to more favorable activity indicators, triggering some recovery in the long-term rates.

In Japan, short-term rates were stable, while long-term rates tended to fall as a result of the recent deceleration of the economy and the persistence of high oil prices. The euro area also saw a weakening of the economies, which is reflected in a fall in long-term rates on the order of 40 basis points (figure II.2).

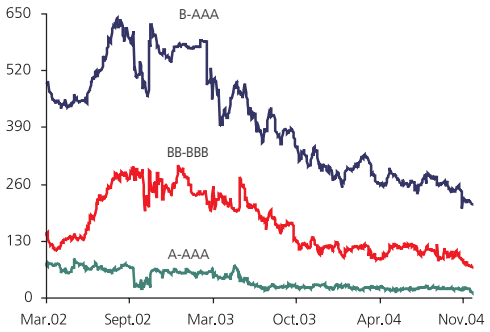
Although growth projections for the two-year period 2005–06 point to a downward adjustment, they continue to show a dynamic world economy with expansion above the 1990s average. In particular, growth is expected to reach 3.4% in the United States and 1.9% in Japan and the euro area in the 2005–06 period. Growth prospects for the world economy and for Chilean trading partners are 4.1% and 3.5%, respectively, over the same period (table II.1).

Bond markets continued to benefit from the high liquidity displayed by developed economies

Spreads continued to fall in corporate fixed-rate markets. These reductions were sharper in the case of businesses with a rating below the investment

Figure II.3

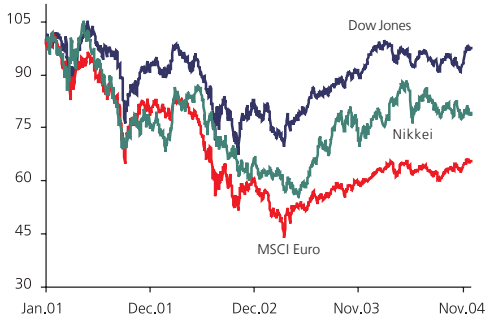
US corporate bonds: spread between credit ratings
(basis points)



Source: Bloomberg.

Figure II.4

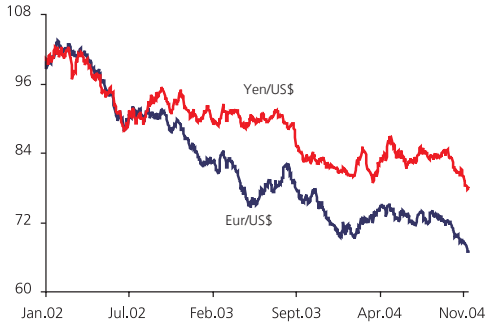
Stock market indices in developed economies
(1 January 2001 = 100)



Source: Bloomberg.

Figure II.5

Exchange rates in developed economies
(1 January 2002 = 100)



Source: Bloomberg.

grade, which reflects the fact that investors are looking for a higher return, in line with the high liquidity of financial markets (figure II.3). At the same time, price indices in the developed economies' stock markets did not register significant changes relative to their levels in July (figure II.4).

Table II.1

Growth of the main economies and projections
(percent, 12-month change)

	Average 1990-1999	2003	2004 (e)	2005 (e)	2006 (e)
United States	3.1	3.0	4.4	3.5	3.2
Japan	1.7	2.5	3.9	1.9	1.8
Euro area	2.1	0.5	1.9	1.9	1.8
Trade partners	3.1	2.8	4.5	3.5	3.5
World	3.3	3.7	5.0	4.1	4.0

(e) Estimate.

Source: Central Bank of Chile.

With regard to parities, the dollar reentered a depreciating trend in mid-October, thereafter registering falls of 9% and 7% against the euro and the yen, respectively (figure II.5). However, the differentials between dollar and euro interest rates —both current and expected based on futures contracts— reveal that the market expects the process to begin to slow. The implicit volatility of exchange options fell within historical ranges, signaling that the perception of uncertainty on the part of the market remains stable. The possibility of new pressures on the dollar in the future cannot be eliminated, however, especially if measures are not adopted to correct the high fiscal and external disequilibrium currently exhibited by the United States.

Potential pressures on the dollar also depend on the exchange policy pursued by other economies, in particular in Asia. A significant part of the US deficit has been financed through the current account surpluses of some key Asian economies, whose intervention policies led them to accumulate significant amounts of international reserves. In late 2002, these economies kept around 20% of the total public debt issued by the United States; this share rose to around 30% in mid-2004.

Favorable performance of emerging economies' country risk premiums and stock markets, with high international liquidity

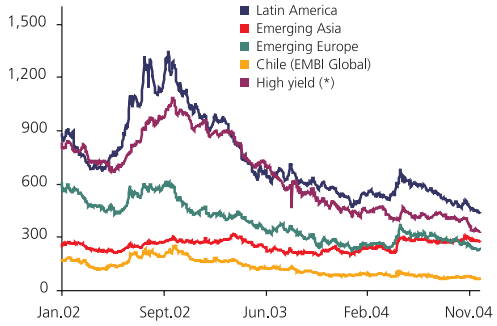
In emerging economies, bond prices and stock market indices developed favorably. Country risk premiums continued adjusting downward, reaching historic lows, especially in Latin America and emerging Europe. Factors contributing to this fall include the favorable scenario for international liquidity, the disposition toward taking more risk on the part of international investors, and the perception of a better conduct of economic policy in some countries. This was reflected in the raising of the risk rating of some of these economies, most notably Brazil, Russia, and Turkey (figure II.6).

The favorable external liquidity conditions triggered important placements in emerging corporate and sovereign bond markets, which allowed these

Figure II.6

Sovereign bond spreads for emerging economies

(basis points)



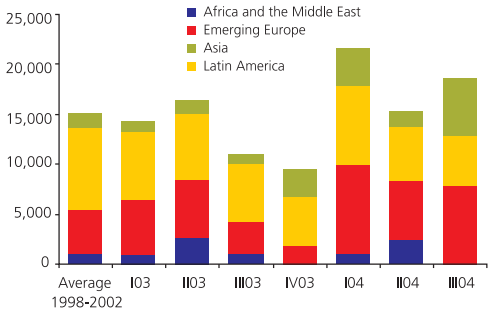
(*) High yield corresponds to bonds with a credit rating under the investment grade threshold (BB to CCC), based on S&P ratings.

Sources:
JP Morgan Chase.
Goldman Sachs.

Figure II.7

Sovereign bond issuance

(US$ million)

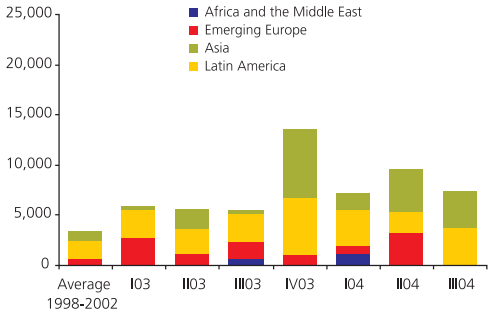


Source: JP Morgan Chase.

Figure II.8

Corporate bond issuance

(US$ million)



Source: JP Morgan Chase.

economies to refinance their liabilities. Among these, Brazil, Mexico, Russia, and Turkey stand out, whose corporate and government bond issues represent around 40% of total placements in 2004 (figures II.7 and II.8).

Emerging economies behaved prudently in the face of a cycle of high commodities prices driven by solid world growth, and current account surpluses were seen in different regions (figure II.9). At the same time, these economies improved their external liquidity position, measured as the ratio of international reserves to foreign debt with short residual maturity and the current account balance. In a sample of 25 countries, this indicator rose from 2.1 in December 2003 to 2.7 in the third quarter of 2004. In Latin America, this ratio rose from 1.5 to 2.3 over the same period. Thus, the emerging economies are currently better prepared to face negative external shocks.

Emerging stock markets registered a positive performance over the past few months. The favorable international financing conditions, investors' search for higher returns, and the relatively low volatility of the local exchange markets supported this performance. In terms of regional shares of portfolios dedicated to emerging economies, Asia continues to represent about 50%, Europe 25%, and Latin America 20%.

II.1.2 Risks

The external scenario is subject to risks, in particular the potential effects on international financial markets of the fiscal and external disequilibrium in the United States. Another source of risk involves possible unanticipated inflationary pressures in developed countries, stemming from an underestimation of the effect of economic activity on inflation in their economies or a significantly higher rise in oil prices than projected. Other concerns include the effects of a sudden slowdown of the Chinese economy and the impact on global financial markets of the constant threat of terrorist attacks.

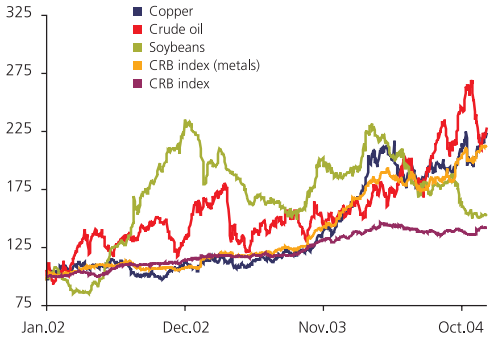
The high fiscal and current account deficits currently exhibited by the US economy will be difficult to sustain. To the extent that these gaps are not gradually closed, this raises the risk of pressure on the dollar and a possible sudden spike in interest rates, which would cause global financing conditions to deteriorate and world growth to slow. This would have a negative impact on the spreads and performance of emerging economies, especially in the case of countries that are highly indebted. At the same time, the lower levels of investment associated with high interest rates could provoke a prolonged slowdown of the economies' potential growth. However, the possible appreciation of the Asian currencies, especially the Chinese yuan, would reduce the pressure on the dollar in relation to the remaining currencies, which would lead to a more balanced equilibrium at the world level and a faster, more orderly closing of the gaps in the United States (figure II.10).

With regard to possible inflationary pressures, the risk of an anticipated hike in international interest rates could raise the costs of external financing for emerging economies. For now, however, this risk is perceived to be moderate, given the outlook for sound policy management on the part of the monetary authorities —in particular the US Federal

Figure II.9

Commodity prices

(1 January 2002 = 100)

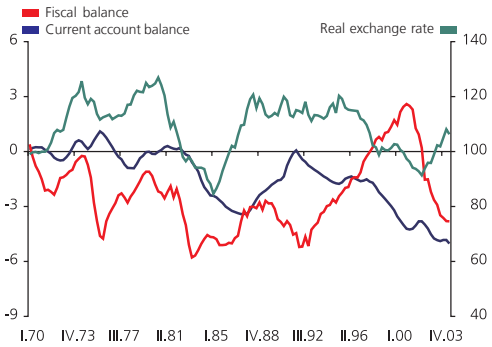


Source: Bloomberg.

Figure II.10

Current account balance, fiscal balance, and real exchange rate

(percent of GDP; index 1970 = 100)

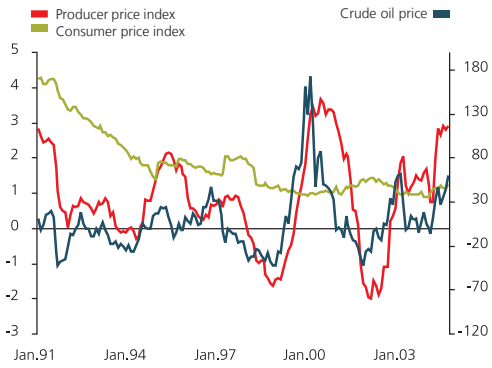


Source: Bloomberg.

Figure II.11

Producer price index, consumer price index and crude oil price

(percent, 12-month change)



Source: Bloomberg.

Reserve, whose credibility has allowed it to anchor the markets' inflationary expectations. In this sense, it is noteworthy that the most recent data on underlying inflation in developed economies indicate contained levels of 2.0% in the United States, 1.9% in the euro area, and 0.0% in Japan (figure II.11).

The risk of a sudden deceleration of economic activity in China is perceived as being lower than a few months ago, given the measures adopted by the authorities to restrain the strong expansion. Given the relevance of China for world growth, a strong fall in the country's activity could have an impact on the global growth, even though it is perceived as being less important for the stability of international financial markets.

Finally, the negative impact on financial markets of the constant threat of terrorist attacks cannot be ignored. It could strengthen the effects of the risks associated with oil prices, anticipated increases in the long-term and policy rates of developed economies, and a weakening of flows to emerging economies.

II.2 National scenario

II.2.1 Recent developments

Aggregate demand accelerated significantly over the course of 2004, as evident in the spending decisions of economic agents as a whole. In the case of households, labor market prospects improved after several months of uncertainty, thanks to annual employment growth rates of nearly 3.0%, driven by dynamic activity in the more formal occupational categories. This situation, together with the favorable credit conditions, sustained increasing levels of private consumption, especially of durables. The stability of household prospects reflects the fact that this good outlook occurred despite the increase in fuel prices and its effect on people's real income.

In the case of businesses, good corporate results, an active real estate market, and an improved outlook for the future facilitated a higher level of spending on investment relative to previous years. To date, gross capital investment in engineering works has not accelerated substantially, but the investment project registry of the Capital Goods Corporation (*Corporación de Bienes de Capital*, or CBC) indicates that this component of investment should show a substantial recovery in 2005 (table II.2).

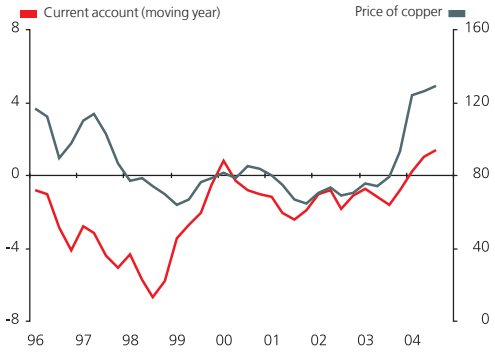
More dynamic aggregate demand and activity

The Chilean economy displays a healthy accommodation of these higher growth rates of domestic demand, which are clearly greater than the rates registered in previous years. In particular, this more dynamic environment has not entailed a worsening of the external accounts because the level of domestic activity has reacted vigorously to the higher demand, especially in the areas of construction and industrial activity. At the same time, export volumes continue posting high growth rates, and the national income received an additional increase via the high terms-of-trade level. Copper prices have been substantially higher than in 2000 and 2003, thereby maintaining a strong participation in the terms of trade despite

Figure II.12

Current account and the price of copper

(percent of nominal GDP; cents per pound)

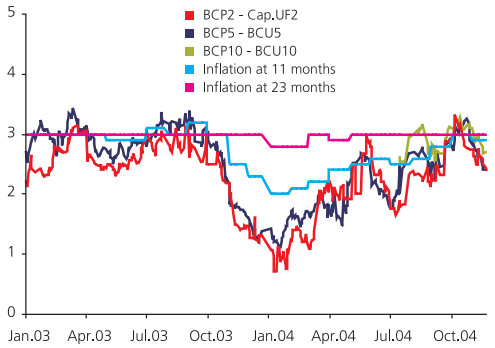


Source: Central Bank of Chile.

Figure II.13

Measures of expected inflation

(percent)

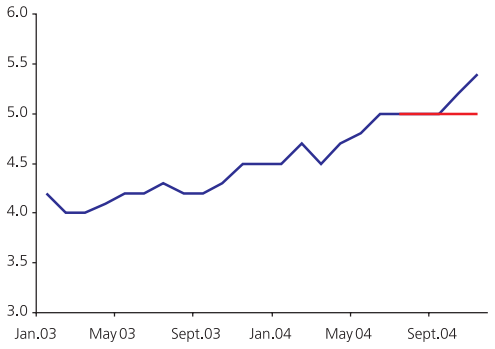


Source: Central Bank of Chile.

Figure II.14

Annual GDP growth prospects

(real annual growth rate)



Source: Central Bank of Chile.

the higher oil prices. Oil prices have been a source of great concern in recent months, rising from an average of US$34 a barrel in the first half of the year to an average of US$44 a barrel in the period from July through November.

Table II.2

Aggregate demand and the labor market

(percent)

Variable	2000	2001	2002	2003	2004 I	2004 II	2004 III
Aggregate demand			(annual growth)				
GDP	4.5	3.4	2.2	3.3	4.6	5.3	6.8
Domestic demand	4.3	-1.1	4.6	5.5	4.8	5.4	8.6
Investment	13.0	-5.6	5.9	5.5	4.7	7.7	14.0
Rest of domestic demand	1.8	0.3	4.2	5.6	4.8	4.7	6.9
Exports	4.8	6.9	4.9	6.3	10.0	9.8	15.3
Imports	9.5	-4.0	8.7	13.9	11.1	10.3	20.5
Labor market							
Growth of employment	-0.4	1.8	0.9	2.6	1.5	0.6	2.0
			(percent)				
Unemployment rate INE	9.3	8.9	8.9	8.4	8.6	9.0	8.9
Unemployment rate Univ. of Chile	14.2	14.0	12.8	12.5	12.0	11.2	11.1

Sources:
Central Bank of Chile.
National Statistics Bureau.
University of Chile.

Hence, the increase in the investment rate estimated for this year is accompanied by a substantially higher increase in national savings. The significant current account surplus projected for 2004 in the May and September issues of the *Monetary Policy Report* should therefore continue in 2005, though at a slower rate (figure II.12).

Gradual convergence of inflation to the target range despite the increase in oil prices and the recovery of activity

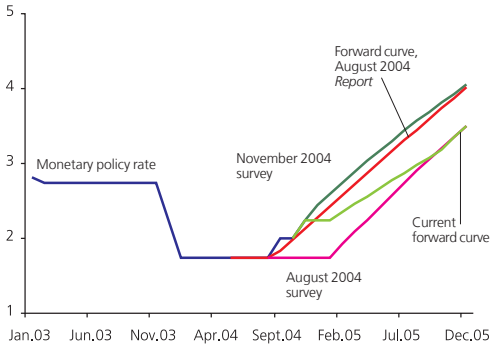
CPI inflation continued to gradually approach the target range, despite the considerable increase in oil prices on international markets and the acceleration of activity and spending. This is evident in the fact that measures of underlying inflation show a very moderate upward trend, following a period of disinflation between late 2003 and early 2004. This is probably due to the low increases in unit labor costs so far this year, which averaged around 0.5% (annualized) between January and October thanks to increases in labor productivity. Another trend was a clear persistence of more competitive conditions at the retail level (table II.3).

In any case, the lower inflation recorded in 2004 has not significantly affected agents' perceptions that inflation will continue converging toward the middle of the target range over the course of the next years. The inflationary compensation implicit in the term structure of interest rates is consistent with inflation rates around 3.0%. The monthly outlook survey also points to expected inflation rates on the order of 3.0% toward the end of 2005 and 2006 (figure II.13). At the same time, the outlook for the economic growth rate for this year and next has moved toward the higher end of the projections in the September issue of the *Monetary Policy Report* (figure II.14).

Figure II.15

Monetary policy rate, prospects and forward curve

(percent)

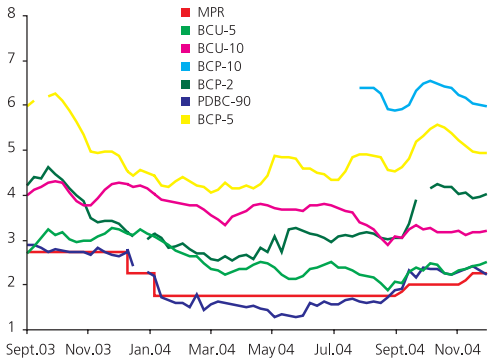


Source: Central Bank of Chile.

Figure II.16

Central Bank of Chile's monetary policy rate (MPR) and interest rates

(weekly averages, percent)

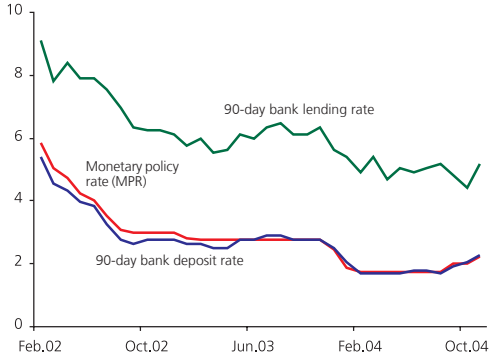


Source: Central Bank of Chile.

Figure II.17

Short-term interest rates

(annualized rates)



Source: Central Bank of Chile.

Table II.3

Inflation and costs

(annual percent change)

Variable	2002	2003	2004 I	2004 II	Jul.	Aug.	Sept.	Oct.
Inflation								
CPI	2.8	1.1	-0.7	1.1	1.4	1.6	1.5	1.9
CPIX	1.8	1.6	0.3	0.6	1.0	1.3	1.1	0.9
CPIX1	2.1	1.8	0.9	0.4	0.6	0.6	0.5	0.6
Costs								
Real hourly wage	1.2	2.3	3.6	2.0	1.5	1.0	1.4	0.8
Nominal hourly wage	4.0	3.4	2.9	3.0	2.9	2.7	2.9	2.8
CLUX*	1.5	1.1	-0.1	0.0	1.7	1.2	1.1	0.0

(*) Includes wage employment and remunerations in productive activities other than mining and energy.

Sources:
Central Bank of Chile.
National Statistics Bureau.

Interest rates in a period of normalization

In light of recent developments, the Board deemed it appropriate to begin to slowly reduce the prevailing sharp monetary incentive. This became less necessary thanks to the favorable trend and outlook in economic activity and spending. Despite the more dynamic economy, the currently low inflationary pressures and the capacity surpluses should make it possible —under the most probable scenario— to maintain a path of slowly reducing the monetary incentive.

The monetary rate rose 25 basis points in September, followed by another rise of the same magnitude in November, which brought the leading rate to 2.25%. The future outlook implicit in the forward curve and contained in the monthly outlook survey indicates that the start of this process of normalization did not take agents by surprise, and agents currently expect it to continue at a rate close to what was projected around the middle of the year. This path is similar to the trend implicit in the market outlook with regard to monetary policy in the main economies (figure II.15).

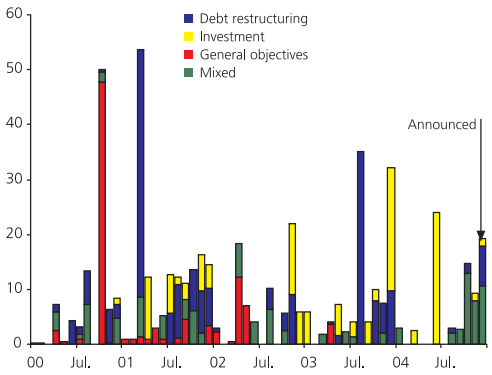
This development in the implicit path of the monetary policy rate and inflationary compensation is consistent with movements in the interest rates on Central Bank papers. Peso bond rates tended to rise since the first semester's *Financial Stability Report*, with the BCP2 and BCP5 increasing by 91 basis points and 50 basis points, respectively. Long-term rates for UF-denominated Central Bank papers tended to fall after the close of the last *Financial Stability Report* in July: the ten-year BCU rate fell 45 basis points in this period (figure II.16). Finally, short-term rates closely followed the path of the monetary policy rate. In November, the 90-day peso bank deposit rate was 2.28%, while the rate for placements was 5.16% (figure II.17).

II.2.2 Financial markets

The private short-term fixed-rate market continued to experience the strong activity it displayed in the first six months of the year. Commercial paper, which began to be issued in November 2002, accumulated an

Figure II.18

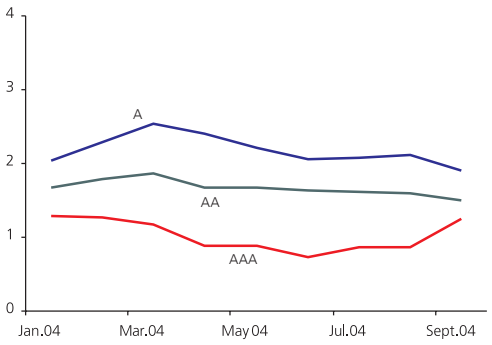
Corporate bond issues, by objective
(millions of UF)



Source: Superintendence of Securities and Insurance (SVS).

Figure II.19

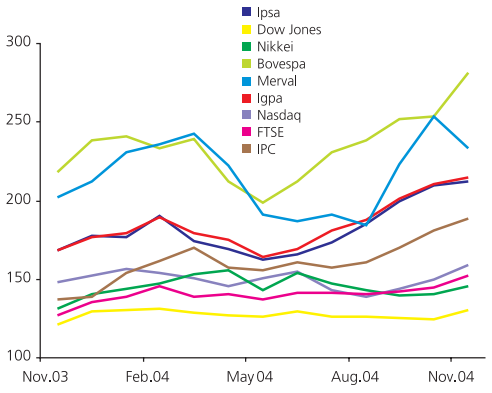
Corporate bond spread
(percentage points)



Source: Central Bank of Chile.

Figure II.20

International stock indices
(indices in dollars, January 2003 = 100)



Source: Bloomberg.

outstanding stock of 357 billion pesos in unexpired debt as of October 2004, with continuous issues totaling 352 billion pesos in the first ten months of this year. This represents an increase of 127% over the issues registered in the same period in 2003.

The fixed-rate market with terms of over a year was characterized by a growth in corporate bonds similar to the 2003 level. The accumulated stock stood at 7 trillion pesos as of October, which is 15% higher than in the same month of the previous year. Concession holders issued the greatest volume (June, October, and November), representing 44% of total private bond issues this year (figure II.18). Securitized bonds as a category (14% of the total stock of bond debt) registered issues totaling 182 billion pesos between January and October 2004, which is 34% less than in the same period of the previous year. The registered issue rates for corporate bonds remained low, and the spreads over the Central Bank rates narrowed between different risk categories in the last quarter (figure II.19).

Issues of UF-denominated Treasury bonds, which were initiated in October 2003, totaled 393 billion pesos in September of this year; the projected schedule is to continue active placements, reaching approximately 600 billion pesos by the end of 2004. The stock of Central Bank papers continued to decline, reaching a value of 12.6 trillion pesos in September 2004, compared with 13.1 trillion pesos at the end of the second quarter.

Similarly, the downward trend in mortgage bond issues deepened, and the total stock of mortgage bonds fell 8% in the third quarter of 2004. The low rates prevailing in this period and the favorable conditions on variable-rate home loans contributed to the drop in new bond issues and the prepayment of existing bonds by debtors.

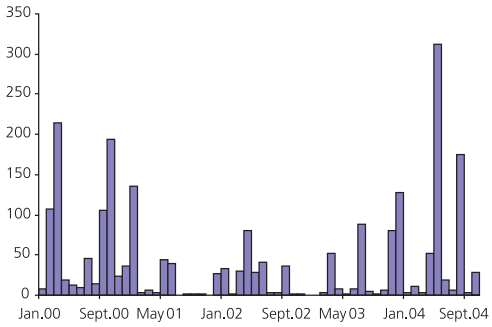
The stock markets had an active 2004. The volume of transactions and issues grew, and stock prices rose, in particular starting in June. The local stock indices dovetailed the rising international trend in the second half of the year, and the Selective Stock Price Index (Ipsa) registered a profitability in pesos of 20.6% through November of this year. These profitability levels are above those achieved by the majority of the developed economies and are intermediate for the Latin American economies (figure II.20).

Initial public offers and capital increases also rose in 2004. Stock issues registered an increase of 527 billion pesos between January and October 2004, which represents 52% of total bond issues in the period (figure II.21). The intense stock market activity is also reflected in the volumes traded, which rose to 34 billion pesos a day, on average, in the third quarter of 2004; this raised market liquidity to levels of 11% (annualized). Market prospects are good, and they are backed by the growth in corporate profits seen this year. The last Fecu report on listed companies registered a 42% growth in profits over twelve months. The year-end yield projections are optimistic and are reflected in the projected and actual levels of the price-earnings ratios (figure II.22).

The exchange market was marked by an appreciation of the peso after the middle of the year. In multilateral terms, this appreciation was slight

Figure II.21

Stock issues on the Chilean exchange (*)
(billions of peso, monthly)

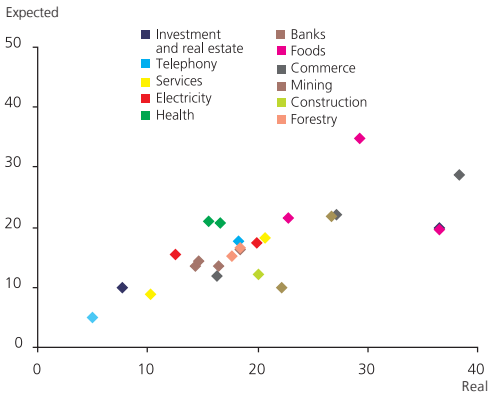


(*) Does not include the Enersis issue of June 2003 for 1.3 trillion pesos.

Source: Santiago Stock Exchange.

Figure II.22

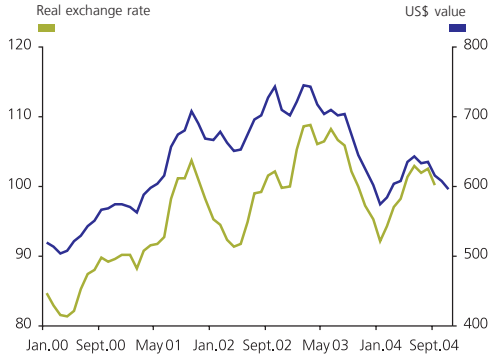
Real and expected price-earnings ratio
(real as of October 2004, expected as of December 2004)



Source: Bloomberg.

Figure II.23

Real and nominal exchange rate
(index, pesos per dollar)



Source: Central Bank of Chile.

—just above 2% in real terms— such that the peso is currently about 5% more appreciated than in 2003 (figure II.23). This trend is consistent with the improvement in the external environment, in particular with regard to the terms of trade, and the way in which the Chilean economy has adapted to this scenario through a current account surplus. In recent months, part of the nominal bilateral appreciation relative to the dollar corresponds to a weakening of the US dollar in international markets, a phenomenon that market participants attribute to the high current account and fiscal deficits in the United States.

II.2.3 Risk evaluation

The central scenario described in this *Report* considers a slow normalization of the current monetary incentive, in a context of gradually increasing inflation, stable growth rates of economic activity and spending in 2005, around the order of magnitude estimated for 2004. Within this central scenario, the main scenario for risk —that is, circumstances leading to a macrofinancial development that differs from what is considered to be the most probable case— are deemed to be related either to an environment of even more dynamic growth in activity and spending than has recently been observed, or to oil prices that steadily rise above projections. In such cases, it would not be unusual if the financial markets incorporated prospects of a monetary policy normalization earlier than what is currently implicit in the prices of financial assets. These alternative scenarios would probably also cause a more intense acceleration of inflation than is currently projected.

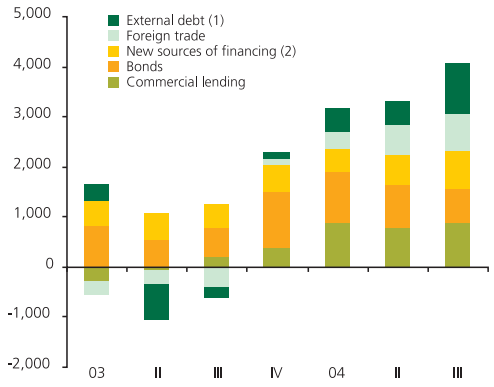
As in the last *Report*, stress tests were carried out on various agents based on the identified risks. It is important to bear in mind that these exercises analyze extreme situations, in which the key variables take on extremely adverse values, plausible with a very low probability.

In this running of the exercise, the risks point to adverse scenarios similar to those of the last *Report*— that is, a spike in long-term interest rates, exchange rate depreciation, and a fall in the commodities prices. Given that the initial values of the variables are similar to the last *Report* (in particular, the long-term interest rates and the price of copper), the size of the shocks that are used for the stress tests are the same. Those shocks are a spike in the interest rate in Chile and abroad (550 basis points on the yield curve for the year) and an extreme devaluation equivalent to 1% of the distribution (14% quarterly and 30% annually, both of which are higher than the historical maximums between 1999 and 2004). The exercise also assumes a shock to the copper price of 1.5% of the distribution of the expected variations given the current level. This shock would imply a price of US$0.66 per pound. Following the standard methodology for these exercises, the shocks are assumed to occur once and are then maintained for the entire year.

III. Real sector

Figure III.1

Evolution of financing sources: 12-month change in stock (billions of September 2004 pesos)

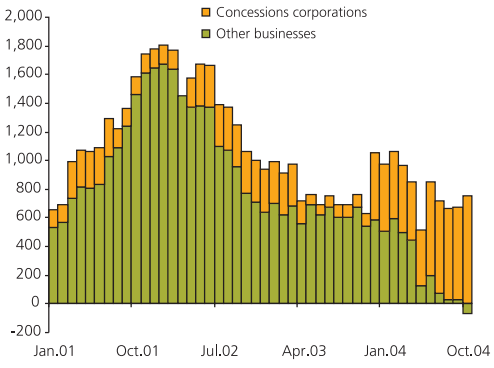


(1) External debt is converted to pesos using the period's exchange rate.
(2) Includes securitized bonds with non-banking underlying instruments, leasing, factoring, and commercial papers.

Source: Own calculations, based on information published by SVS, SBIF, and AChEF.

Figure III.2

Total stock of corporate bonds: real 12-month change (billions of September 2004 pesos)



Source: Own calculations, based on information published by SVS.

III.1 Nonfinancial firms

Nonfinancial firms constitute the main recipient of financial flows intermediated by institutional investors and banks established in the country, as well as foreign banks and other investors. Lending to nonfinancial firms represent two-thirds of the banking sector's total lending. Stocks and bonds issued by these businesses represent a quarter of the institutional investors' portfolio, and their debt with foreign creditors represents three-quarters of the total foreign debt. All these indicators illustrate the importance of the financial health of these firms for the stability of the financial system as a whole.

The first part of this section analyzes the evolution of debt financing in the business sector, based on aggregate information for the credit-issuing sector. Next, the situation of the users of this debt is analyzed, based mainly on information in the Fecu records reported quarterly to the Superintendence of Securities and Insurance (SVS) by firms listed on the Securities Registry (RV).[1]/ This covers 541 firms as of September 2004. The analysis draws on both consolidated and individual financial statements. This group of firms accounts for a fifth of the banking system's lending to firms, half the foreign debt of the nonfinancial banking sector, and all the commercial papers and bonds issued on the local market. Financial information on other firms is relatively more scarce and is thus based on indirect data.

III.1.1 Business sector financing

As of the third quarter of the year, firms increased their debt financing by 8.4% over twelve months, compared with 6.7% in the first half of the year. This type of financing is estimated to be around 95% of GDP. In particular, domestic bank and market financing grew 10.8% annualized, while foreign debt measured in dollars rose 5.1% annualized (figure III.1).

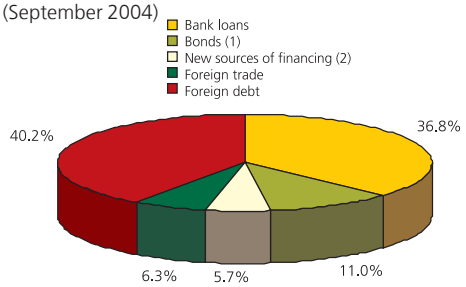
Bank loans to firms continued to be as dynamic as in the first half of the year, driven by the growth of operations tied to foreign trade. Thus, as of the third quarter, lending to firms grew 4.8% annualized, while the foreign trade credits of the local banking system grew by 28.8% annualized (in foreign currency). Other financing alternatives, such as leasing and

[1]/ Fecu stands for *Ficha Estadística Codificada Uniforme*, or Uniform Codified Statistical Record; it contains the following financial statements: balance sheet, income statement, and cash flow statement, along with their respective notes.

Figure III.3

Distribution of debt financing sources

(September 2004)



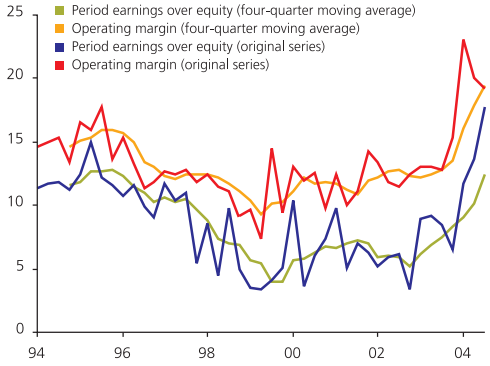
(1) Includes commercial papers and foreign trade.
(2) Includes securitized bonds with non-banking underlying instruments, leasing, factoring, and commercial papers.

Source: Own calculations, based on information published by SVS, SBIF and AChEF.

Figure III.4

Profitability and margins of the corporate sector (*)

(percent)



(*) Indicators built from individual financial statements.

Source: Own calculations, based on information published by Fecu.

Figure III.5

Period earnings over equity in the tradable and nontradable sectors (1) (2)

(percent, four-quarter moving average)

(1) Tradable sector: Foods, Forestry, Manufacturing, and Mining. Nontradable sector: Commerce, Electricity, Health, Telecommunications, Transport, and Construction.
(2) Indicator built from individual financial statements. Quarterly profitability, annualized.

Source: Own calculations, based on information published by SVS.

factoring, sustained a high growth rate in the third quarter, with annualized growth rates of 19% and 53%, respectively.

Securities market financing, in turn, continued to exhibit a positive trend. The total stock of corporate bonds thus reached an amount equivalent to 10.5% of GDP as of September, with an annualized growth rate of 13.3%, which is lower than in preceding quarters.[2]/ The main issues are from corporate concession holders involved in infrastructure projects; these account for a quarter of the current stock (figure III.2). Securitized bonds grew at a similar rate, with the total stock reaching 427 billion pesos.[3]/ Within this category, the expansion of underlying assets types was particularly noteworthy. Financing through commercial papers doubled, reaching 357 billion pesos in October, but the issue was concentrated on fewer firms (figure III.3).

The foreign debt of firms reached US$34.1 billion in September, implying an annualized growth rate of 5.1%. The evolution of foreign debt in this sector is founded on the continuation of dynamic activity for trade credits associated with foreign trade and the increase of loans tied to foreign investment projects, from foreign parent companies to their subsidiaries in Chile. These movements compensate the sustained fall in bank loans originating abroad, observed over the course of the year.

III.1.2 Financial indicators

Firms' profitability improved in the third quarter, mainly in the tradable sectors

Third-quarter sectoral profitability, measured as period earnings over equity, reached 17.8%, which upholds the positive trend recorded since the first quarter. Operating margins also remained high, at around 19% of sales as of September (figure III.4). The improved yields were generalized across the majority of economic sectors, although the increases were most marked in sectors tied to tradable goods. At the aggregate level, profits continue to be strongly driven by the mining and forestry sectors, which have benefited from the favorable commodities prices in international markets. Another noteworthy trend was the improved performance of both the manufacturing industry and the international transport sector, which reflects the positive evolution of exports. Nevertheless, these improved yields were not exclusive to sectors that are directly associated with foreign trade, such that the nontradable sector continued to exhibit a sustained recovery in yields (figure III.5).

Corporate debt remained stable in relation to the book-value, but it fell relative to the market-value of firm's equity

The aggregate debt of firms listed on the Securities Registry (RV), measured both as total callable liabilities as well as financial debt, held stable relative to equity. As of September 2004, these levels sat at 0.7 and

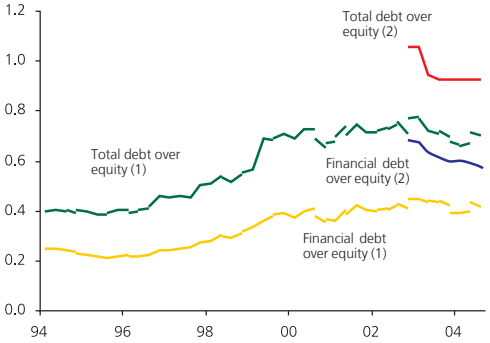
[2]/ The figures do not contemplate securitized bond issues.

[3]/ This category comprises only bonds whose underlying instrument does not correspond to bank-issued instruments.

Figure III.6

Debt-equity ratio

(times)



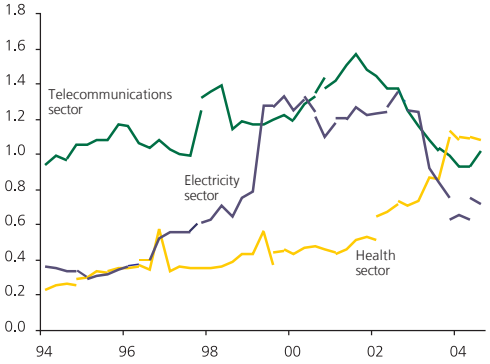
(1) Indicator built from individual financial statements.
(2) Indicator built from consolidated financial statements.

Source: Own calculations, based on information published by SVS.

Figure III.7

Total debt-equity ratio for prominent sectors (*)

(times)



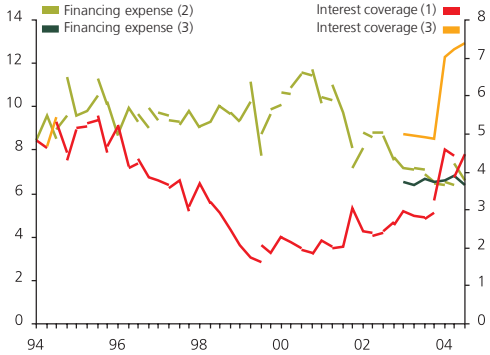
(*) Indicators built from individual financial statements.

Source: Own calculations, based on information published by SVS.

Figure III.8

Financing expense and interest coverage

(left axis: percent; right axis: times)



(1) Built from individual financial statements. Defined as EBITDA over financing costs. EBITDA = earnings before interest, taxes, depreciation, and amortization.
(2) Built from individual financial statements. Calculated as financial costs over debt that pays interest.
(3) Built from consolidated financial statements.

Source: Own calculations, based on information published by Fecu.

0.4 times, respectively, if the calculation is based on individual financial statements, and at 0.9 and 0.6 times, respectively, if it is based on consolidated accounts (figure III.6). The stability observed in the debt-equity ratio is in line with the positive trend in the book-value at equity, not only due to profit retentions, but also —to a lesser extent— to new stock issues. The debt ratio relative to either the firms' assets or equity valued at market prices, in contrast, showed a significant drop as a result of the increased valuation of the firms.

The sectoral level displays greater diversity in behavior. Firms in the mining and health sectors financed their investment plans by increasing their debt, whereas firms in the electric and telecommunications sectors reduced their indebtedness through restructuring plans that generally increased financial flexibility. These latter firms adopted a variety of measures, including capital injection, capitalization of debt, and the transfer or prepayment of debt through the sale of stocks or flows from operating profits (figure III.7).

Firms' financing costs remained low, and the ratio of operating flows to interest payments improved

At the close of the third quarter 2004, firms' financing costs, measured as the ratio of financial expenses to debt that pays interest, reached 6.5%. The recent trend for this indicator reflects the evolution of interest rates and risk premiums in national and international financial markets. It could rise in the future, however, to the extent that markets expect interest rates to increase.

The improved profitability, stable level of indebtedness, and prevailing low financing costs are reflected in the fact that firms' debt service capacity remained solid in the third quarter, with an interest coverage rate —measured through the ratio of interest expenses to operating flows (EBITDA)— of 4.5 times at the aggregate level (figure III.8).[4]/ At the same time, the number of reporting periods required to repay the debt —that is, the ratio of financial debt to EBITDA— followed a path consistent with the interest coverage rate (figure III.9).

This trend is generalized for the great majority of firms. The rise in the interest coverage rate in the tradable sector is particularly noteworthy. In the case of the nontradable sector, the recovery was less pronounced, which is explained in part by the drop in the interest coverage ratio among firms in the health sector and, to a lesser extent, in trade (figure III.10). In the health sector, the trend reflects the increased debt described earlier, but its current level is comparable to that of other firms in regulated services. In the trade sector, the trend is tied to relatively tight operating profits and trade margins.

Finally, other indicators also reflect the better conditions. The percentage of firms that are simultaneously in the lower quintiles for profitability and liquidity and the upper quintile for indebtedness fell from 6% in the third quarter of 2003 to 2% twelve months later (figure III.11). The risk ratings

[4]/ Operating flows are defined as operating income plus depreciation for the period.

Table III.1

Evolution risk ratings from May to October 2004

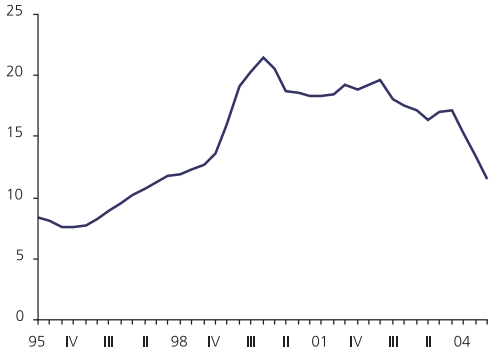
	N° firms	Percent of current debt (1)	Average change (2)
Low rating	3	7.0	1
Held rating	57	84.5	
Improved rating	5	8.5	1.4

(1) Total stock of current bond debt issued on the local market.
(2) Measured in notches.

Source: Own calculations, based on information published by SVS.

Figure III.9

Trends in the repayment period indicator (*)
(four-quarter moving average, times)

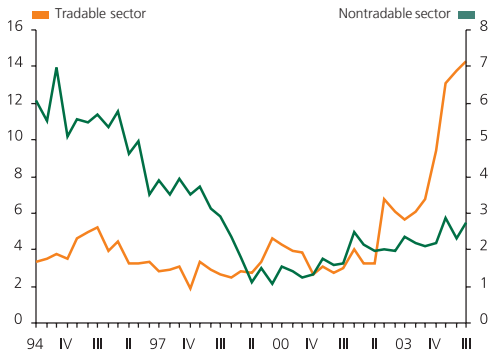


(*) Financial debt over EBITDA.

Source: Own calculations, based on information published by SVS.

Figure III.10

Trends in the interest coverage indicator in the tradable and nontradable sectors (1) (2)
(times)



(1) Defined as EBITDA over financial costs.
(2) Tradable sector: Foods, Forestry, Manufacturing, and Mining. Nontradable sector: Commerce, Electricity, Health, Telecommunications, Transport, and Construction.

Source: Own calculations, based on information published by SVS.

of corporate debt securities are slightly better, on average, than at the close of the last *Report* (table III.1). In addition, the number of national firms that went bankrupt in the first nine months of 2004 declined 5.8% relative to the same period of the previous year; this serves as evidence that the improved conditions extend to firms outside the sample.

III.1.3 Outlook and risks

The macroeconomic outlook is positive, and financial situation of firms is thus expected to remain robust in the coming periods. In line with these projections, expectations of business managers showed improvements in the last period.[5]/ Investment is expected to continue its recovery, which will probably lead to an increase in corporate debt in the coming quarters. Given the available projections, however, the rising trend in profits and the improvements in firms' financial indicators are not likely to continue, and some indicators will probably exhibit marginal reversions. This analysis takes into account that the coming year is expected to bring a slight deceleration in world economic growth, a reduction in the terms of trade, and a hike in international interest rates. At the same time, projections do not indicate that Chile will accelerate further, while the markets expect an increase in interest rates.

III.1.4 Stress tests

This section analyzes the strength of the business sector in the face of a deterioration in the macroeconomic scenario, which implies a significant increase in domestic interest rates, a depreciation of the peso, and a slowdown in growth. The size of the shocks applied to these variables is of the same magnitude as in the last issue of the *Report*. Taken as a whole, the results of these exercises show that the impact of the shocks on the financial position of firms remains contained.

Increase in the interest rate

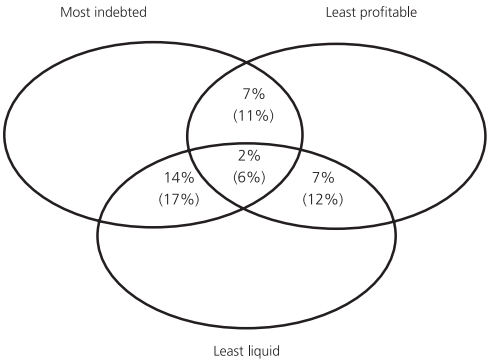
This section quantifies the impact of a hike in the annual interest rate of 550 basis points over the payment capacity of the corporate sector. It also considers a 20% fall in operating profit. Once the shocks have been applied, individual firms in the sample —that is, firms listed on the Securities Registry— are analyzed to measure the impact of shocks on the interest coverage rate, measured through the ratio of EBITDA to financial expenses.

The impact on the sector in aggregate terms would include a fall in the interest coverage rate from 7.4 times in September 2004 to 6.5 times one quarter later. At the same time, the percentage of bank debt held by firms in a weak financial position would increase slightly. As of the third quarter of 2004, 7.5% of the debt held with the local banking system by firms listed on the Securities Registry corresponded to firms with an interest coverage rate of less than 1. This percentage would increase to 7.8% as a result of the interest rate hike and the fall in operating income described

[5]/ Expectations of business managers are based on the Monthly Business Confidence Indicator (Imce).

Figure III.11

Intersection of financial indicators (*)



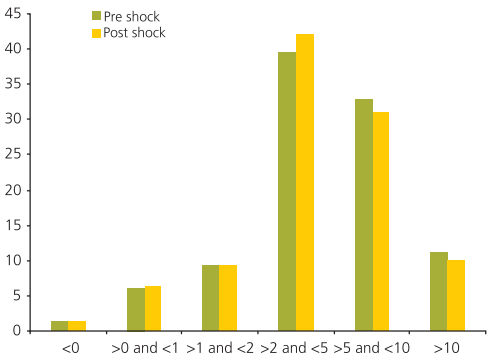
(*) Percentages in relation to quintiles, calculated as of September 2004.
Figures in parentheses correspond to September 2003.
Debt indicator: callable liabilities over assets; profitability indicator: period earnings over assets; liquidity indicator: acid test ratio.

Source: Own calculations, based on information published by Fecu.

Figure III.12

Interest rate stress test
Distribution of local bank debt around the interest coverage indicator

(percent)



Source: Own calculations, based on information published by Fecu and SBIF.

above (figure III.12). These loans at risk represent 1.6% of the banking system's lending to firms. In the case of bond issues, the shock does not change the share of instruments issued by firms with an interest coverage ratio of less than 1, which holds steady at 5.6%.

In both cases, the relatively high share is explained by the 3.7% and 5.4%, respectively, that corresponds to either public firms or firms with a state guarantee, which have a AAA risk rating. With regard to foreign debt, the percentage corresponding to firms with an interest coverage rate below 1 remains at 2.2%.

Finally, the effect of the shock in terms of corporate profitability would be a fall in the ratio of period earnings to assets from 6.6% to 6.0% (annualized).

The results of this stress test indicate that the effect of an increase in the interest rate and a fall in operating profit as described above would be limited to a small number of firms that would find themselves in a relatively more vulnerable financial position. It would not compromise the stability of the financial system.

Rise in the exchange rate

The business sector's exposure to exchange risk was quantified through an analysis not only of the available information on assets and liabilities in foreign currency maintained by firms in the sample,[6]/ but also of foreign currency flows tied to the firms' economic activity. The net foreign currency flows were calculated individually for each firm in the sample, based on information on exports, imports, and the financial expense associated with their foreign-currency-denominated debt. The sample is made up of firms listed on the Securities Registry, excluding firms that keep their accounts in dollars as well as Codelco and Enap.[7]/ In contrast with the last *Report*, which was based on individual financial statements, the present analysis draws on consolidated financial statements.

The methodology used for the analysis consisted of measuring the effect of a 14% rise in the exchange rate in one quarter on the net foreign currency balance of each firm and on their net foreign currency flows. The magnitude of the impact of these variations on the profitability and payment capacity of the business sector was then estimated.

The firms in the sample have a net foreign currency liability position of close to US$2.2 billion —that is, their foreign currency liabilities are greater than their foreign currency assets. With regard to foreign currency flows, the sector maintains positive net exports that bordered on US$860 million at the end of November.[8]/ If additional financial expenses

[6]/ Based on information contained in note 37 of the Fecu records, entitled "Assets and Liabilities in Foreign Currency;" only dollar-denominated assets and liabilities are considered.

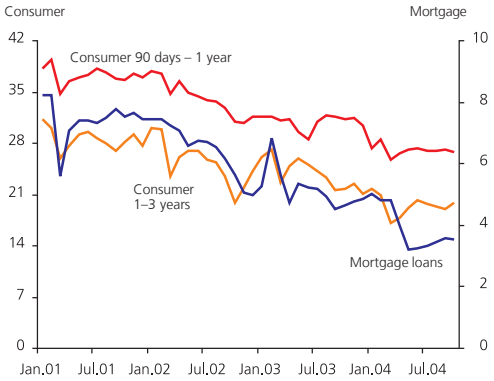
[7]/ Firms that keep their accounts in dollars are considered to have a natural hedge against exchange variations: since the value of their assets and liabilities depends on the exchange rate, any exchange variations are reflected in the accounting in dollars.

[8]/ Data on exports and imports are as of 23 November 2004.

Figure III.13

Average real interest rates on new loans, by type of operation (*)

(percent)



(*) Weighted by amount. Nominal rates for consumer loans; mortgages in UF.

Source: SBIF.

Table III.2

Real 12-month percent change in household debt, by component mortgage loans

	Dec.03	Mar.04	Jun.04	Sept.04
Mortgage loans	**12.1**	**13.4**	**11.7**	**14.8**
Bank mortgage (1)	12.3	12.6	12.0	17.5
Mortgage bonds	9.4	8.1	1.3	-5.6
Endorsable mortgage credits	-2.8	-3.9	-4.8	-2.9
Other (including variable rate)	44	52	76	130
Non-bank mortgage	10.9	17.0	10.2	2.6
Consumer loans	**19.9**	**20.8**	**20.1**	**19.8**
Consumer bank	16.7	17.1	16.9	17.5
Commercial loan	36.5	36.5	27.2	26.2
Private compensation fund	11.4	14.9	31.5	24.0
Savings and credit cooperative	25	28	24	28
Other non-bank institutions (2)	11.4	14.9	11.7	11.3
Total	**14.3**	**15.4**	**14.0**	**16.2**
Total non-bank	24.1	20.5	14.9	12.9
Total bank	13.8	14.1	13.6	17.5

(1) Bank mortgage includes overdue and home-leasing portfolios.
(2) University loans, car loans, and life insurance company loans.

Sources:
SBIF.
SVS.
Superintendence of Social Security.

are added to that figure, however, the sector would have annual net outflows of nearly US$130 million. Note that the sample accounts for 8% of exports and nearly 7% of imports at the national level.[9]/

Given this situation, a depreciation of the peso has mixed effects on these firms. On the one hand, it causes a weakening of their balance sheet position. On the other, foreign currency flows experience both a positive impact related to exports and a negative impact stemming from the increased financing charges associated with foreign-currency-denominated debt. In sum, the observed net effect of a rise in the exchange rate as described above would be slightly negative, and the interest coverage rate would fall from 7.4 times (the level observed in September of this year) to 7.2 times one quarter after the shock.

In this case, no effect is produced in terms of a redistribution of debt around the interest coverage rate, not only for debt with local banks but also for bonds issued on the national market and foreign debt. With regard to the effect of a rise in the exchange rate on profitability in the sample, the fall in flows causes the ratio of before-tax profits to assets to drop from 6.6% to 6.2%.

Finally, the analysis was extended to examine the impact of simultaneous interest rate and exchange rate shocks on the business sector's profitability and payment capacity. In aggregate terms, this exercise produced a fall in the ratio of before-tax profits to assets from 6.6% to 5.6% and a reduction in the interest coverage ratio from 7.4 to 6.4 times.

III.2 Households

The total estimated household debt reached 14.9 trillion pesos in September 2004, with bank debt representing nearly 73%. Bank exposure to this sector, measured as the portfolio share of consumer and mortgage loans over total lending, has remained stable at around 30%.

Household indebtedness continues to increase relative to income, but the financial burden remains stable

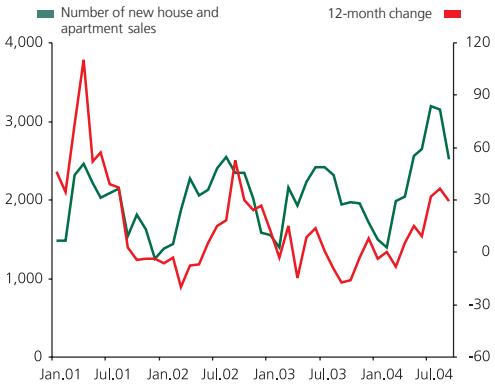
Total household debt grew nearly 16% in annualized real terms in the third quarter of the year, over and above both the growth registered in the preceding quarters and the estimated growth of private disposable income. The ratio of household debt to income in the third quarter is estimated at 43.5%, which is higher than the level registered in previous quarters.

This increase in consumer debt reflects the positive evolution of the macroeconomic environment, improvements in consumer credit capacity, heightened consumer confidence, and favorable credit conditions —especially with regard to mortgage loans, whose rates remain at historically low levels (figure III.13).

[9]/ These figures increase to 10% and 8%, respectively, when Codelco and Enap are excluded from the estimates.

Figure III.14

New home sales in Greater Santiago
(number and 12-month annual percent change)



Source: Chilean Chamber of Builders (*Cámara Chilena de la Construcción CChC*).

Table III.3

Composition of the total stock of household debt
(percent of total)

	Sept.03	Mar.04	Sept.04
Secured debt	**60.6**	**59.7**	**57.8**
Bank mortgage (*)	48.2	47.5	47.0
Mortgage bonds	32.6	30.8	26.5
Endorsable mortgage credits	6.9	6.4	5.8
Other	8.0	9.3	15.9
Non-bank mortgages	11.2	10.8	9.5
Non-bank car loans	1.2	1.4	1.3
Unsecured debt	**39.4**	**40.8**	**40.5**
Consumer bank	24.0	24.4	24.3
Commercial loan	3.3	3.6	3.9
Securitized loan houses	0.4	0.9	0.6
Savings and credit cooperative	2.1	2.3	2.4
Private compensation fund	3.8	4.1	4.1
Insurance companies	0.03	0.04	0.06
University loans	5.7	5.4	5.3
Total (trillions of Sept. 2004 pesos)	**12,799**	**13,869**	**14,876**
(%) Disposable household income	40.3	42.4	43.5
(%) Non-bank	27.8	28.5	27.0

(*) Bank mortgage includes overdue and home-leasing portfolios.

Sources:
SBIF.
SVS.
Superintendence of Social Security.

The accelerated growth of mortgage loans, mostly in the form of variable-rate products, accounts for a large fraction of the expansion of household debt

The majority of the recent growth in family debt is explained by the growth of mortgage loans. In the third quarter, total annualized real mortgage debt grew by 14.8% (table III.2). Low interest rates (combined with the prospects of a rate hike) and increased consumer confidence explain the upswing in the demand for home loans. The counterpart of this development is the strong recovery of new home sales in the second and third quarters (figure III.14).

This growth in home loans reflects the growth of nontraditional products.[10] / The majority of these loans are given at either a variable rate or a composite rate (which is fixed for a specified period and then becomes variable) (figure III.15). In October, nontraditional home loans represented 35% of all mortgages in the banking system; this is a significant change, given that the share was only 19% at the beginning of 2004. This change in the composition of household indebtedness could increase the financial risk at which the latter are exposed.

The banking sector recovered its driving role in consumer credits, expanding to higher rates than in previous quarters

Total consumer credits continued to be dynamic, with a real annualized growth rate of 20.6% in the third quarter. All the growth in consumer debt took place in loans of over a year, which had a positive effect on households' financial burden by distributing capital payment over longer periods. Furthermore, the market has incorporated new products with more flexible payment terms (figure III.16). Despite the high growth rate of consumer credit, however, household debt for the most part continues to be backed by assets (homes) (table III.3).

Another key development is the increase in the average amount of bank consumer credits (figure III.17). While the number of loans shows sustained growth since mid-2002, the amount loaned has accelerated faster since mid-2003, which implies a sustained increase in the average loan amount. Thus, the average loan was 1.5 million pesos in August 2003, but by August 2004 it was 2.0 million pesos. The average bank mortgage per debtor has also increased in recent months. This trend in average bank debt appears to indicate that the financial burden per debtor is increasing. However, one cannot rule out the possibility that some households have taken advantage of current conditions to reduce debts held with other types of financial institutions, with the goal of obtaining better conditions.

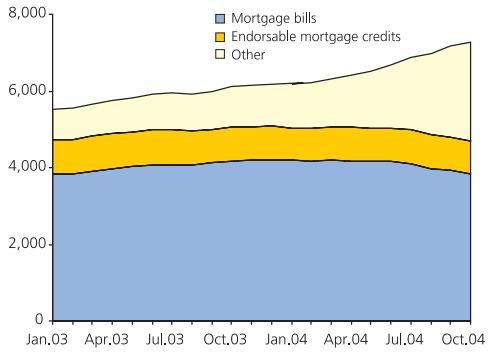
Despite the observed increase in household financial obligations, indicators of compliance have improved, which implies that the households are adequately managing their indebtedness. The banking

[10]/ Traditional mortgage loans involve either mortgage bonds or endorsable mortgage credits funded from a bank's own general resources. Any housing loan products that diverge from these two alternatives are accounted for in a separate account, termed "other."

Figure III.15

Total stock of bank mortgage loans, by type of loan

(billions of pesos)

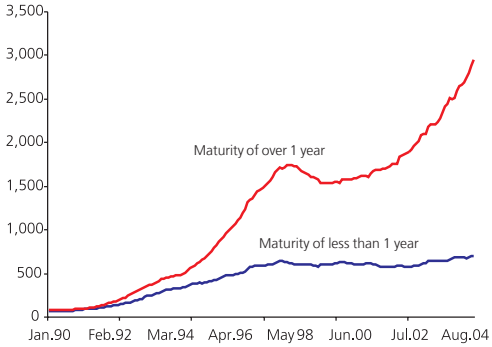


Source: SBIF.

Figure III.16

Total stock of bank consumer loans, by maturity

(billions of pesos)

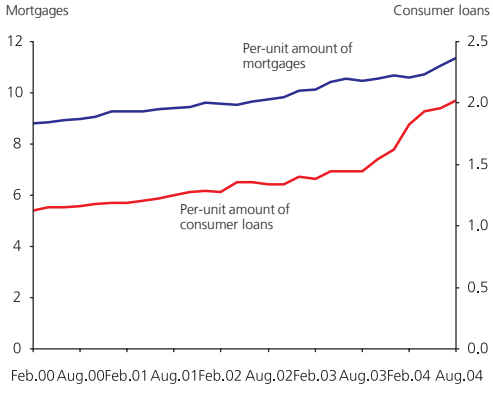


Source: SBIF.

Figure III.17

Average per-unit amount of mortgages and consumer loans

(millions of pesos)



Source: SBIF.

system's perception of the risks associated with households is positive. For both consumer and mortgage loans, the ratio between provisions and total lending fell in recent months (figure III.18). This is consistent with information furnished by other, less important lenders, such as CCAF and the Savings and Credit Cooperatives, which exhibit stable risk indicators in 2004 —and even improvements over last year in the case of CCAF.

These developments are consistent with the fact that the household financial burden indicator —that is, the percentage of income earmarked for interest and amortization payments— has remained stable and even fell slightly in the third quarter of 2004 relative to the previous quarter (figure III.19). Specifically, as of the third quarter of this year, the ratio of financial obligations —interest and amortization— to disposable private income was 13.9%, which is slightly lower than the ratio estimated in June. This reflects a reduction in interest rates, longer terms, and a growth in income, all of which offset the impact of the increased total debt on the financial burden. However, household exposure to interest rate hikes appears to be rising.

The application of an interest rate shock on the order of 550 basis points would cause the ratio of the financial burden to quarterly income to rise by nearly 40 basis points, from 13.9% to 14.3%.[11]/ This would keep the level of the financial burden over income within the range recorded in recent quarters.

III.3 Consolidated government sector

The analysis of the consolidated government sector, which includes the Central Government and the Central Bank, seeks to determine the effects of its financial performance on the evolution and volatility of the internal and external financing costs of Chilean economic agents and, therefore, on financial stability.

The financial situation of the consolidated government improved in the face of a strong increase in income from copper and taxes

International financial markets have upheld their favorable perception of Chile's public finances in recent months. The structural surplus rule (1% of GDP), fiscal income above expectations, and expenditures kept within the budget generated significant fiscal savings this year, with a consequent reduction in the public debt.

Standard & Poor's has given foreign-currency-denominated long-term debt in Chile an A rating since January, while Fitch and Moody's retained their ratings without modifications. The country risk premium has fallen since September, as it has for most emerging economies.

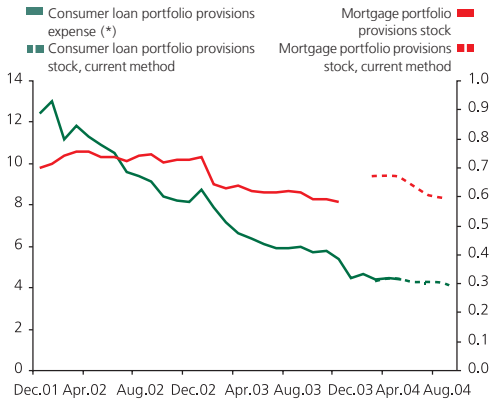
The solid financial position of the Central Government is confirmed on examining the updated macroeconomic scenario for 2004 and the

[11]/ In contrast with the last *Report*, this period's stress test was applied to all components of debt (whereas the last *Report* only considered the impact of a rate change on consumer debt).

Figure III.18

Mortgage and consumer loan portfolio risk indicators, banking sector

(percent)



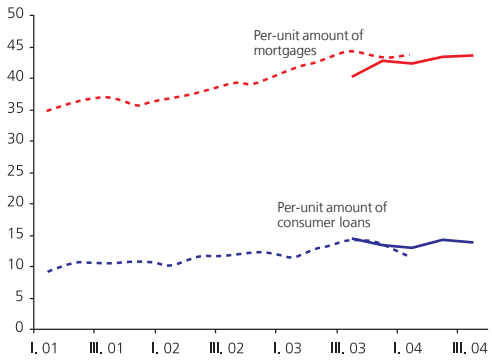
(*) Consumer loan provisions expense is constructed on the basis of a representative sample of banks.

Source: Superintendence of Banks and Financial Institutions (SBIF).

Figure III.19

Household debt and financial expense, as a percent of disposable income (*)

(percent)



(*) Continuous line denotes a change in the estimation and a greater availability of information.

Source: Central Bank of Chile.

components of the Budgetary Law for 2005, within a scenario of compliance with the structural surplus rule. In particular, a larger surplus is estimated for this year than was projected in the last *Report*, because the price of copper was higher than projected in August. This translates into a significant increase (between 0.3% and 0.4% of GDP) in the Central Government's revenue from this item. Furthermore, a dynamic economy generated net tax earnings above what was previously expected (figure III.20).

Based on projections in the September 2004 *Monetary Policy Report*, a net cash flow surplus is estimated for the Central Government this year, on the order of 2% of GDP. Estimates for next year surplus also lie above 1% of GDP (figure III.21). As of September, the accumulated surplus cash flow was 1.5% of GDP.[12] / The lower surplus projected for 2005 relative to 2004 is explained mainly by projections of a lower copper price (which reduces income), a higher reference price for copper, and a higher trend GDP (which allows for higher growth in expenditures while complying with the fiscal rule). The reference price of copper and the growth of trend GDP for 2005, which were estimated by panels of experts, were adjusted from US$0.88 to US$0.93 and from 3.9% to 4.2%, respectively.

In any case, compliance with the structural surplus fiscal rule will imply saving the sum total of any transitory fiscal earnings stemming from a real GDP that is above potential and/or a copper price that is above the reference or long-term price, as occurred this year.

A reduction in the consolidated government's net debt is projected for the two-year period 2004–05

The Central Bank will post a deficit this year on the order of 0.5% of GDP, which is larger than projected in August owing to the fall in the exchange rate. For 2005, the deficit is estimated at 0.2–0.3%, if the exchange rate stays at the level observed in recent months. As is known, this deficit stems from the structure of assets and liabilities that the Central Bank took on starting with the financial crisis in the early 1980s, as well as from the exchange rate policy of the 1990s. Essentially, the peso value of the Bank's assets (namely, international reserves and fiscal notes) is highly sensitive to the behavior of the exchange rate, and their yields are lower than the cost of the Bank's liabilities (mostly domestic debt issued in UF and pesos).

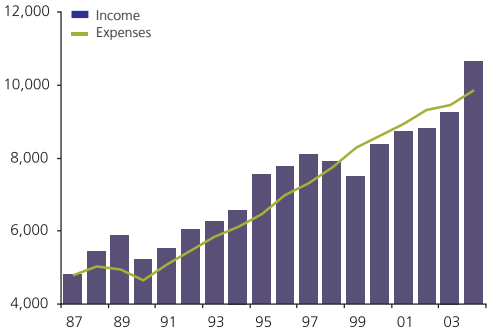
After discounting the resources obtained from the increase in the demand for money (around 0.3% of GDP), the Central Bank deficit implies that the Bank's net debt (liabilities minus assets) as a percentage of GDP will be around 0.9% in both years.

Based on these data, the consolidated government's net debt is projected to fall in 2004 and 2005 by more than previously estimated, with projections of around 5.0% and 4.0% of GDP, respectively. This debt was 5.7% of GDP at the end of June (figure III.22). Nevertheless, the Central Government will issue debt to replace current liabilities and/or refinance maturing

[12]/ Ministry of Finance.

Figure III.20

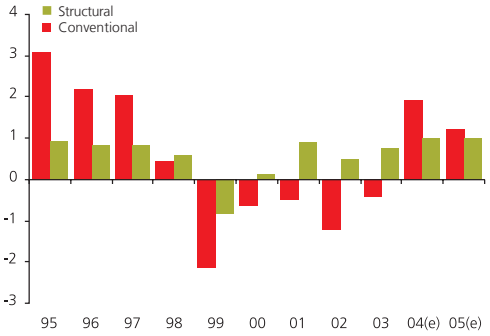
Central Government income and expenses
(billions of December 1998 pesos)



Source: Budget Division, Ministry of Finance.

Figure III.21

Central Government structural and conventional balance
(percent of GDP)



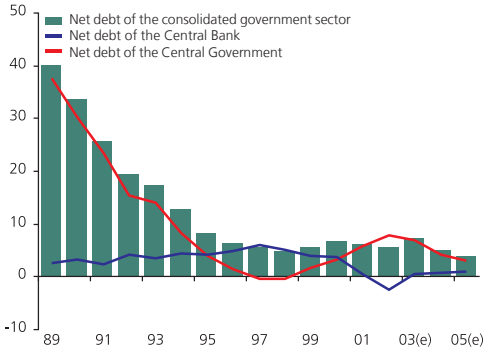
(e) Based on own estimates.

Sources:
Ministry of Finance.
Central Bank of Chile.

Figure III.22

Net debt of the Central Government, Central Bank, and the consolidated government sector (*)

(percent of GDP)



(*)The consolidation of the data for the Central Government and the Central Bank eliminates accounting items that represent liabilities (assets) for the Central Government and assets (liabilities) for the Central Bank. These include promissory notes and fiscal deposits in the Central Bank.

Sources:
Ministry of Finance.
Central Bank of Chile.

debt. Consequently, the Budgetary Law of 2005 includes an authorization for the Central Government to issue debt equivalent to US$1.5 billion.

The gross debt of the consolidated government will be around 30% of GDP in 2004 and 2005. This continues the downward trend observed in recent years, and it is lower than that of other countries with a similar or better country risk rating. An analysis of the consolidated government's debt as a proportion of income generates the same result. The consolidated government's gross debt was 34.3% of GDP in 2003; it fell to 31% of GDP in June. Of this, 5.7% of GDP corresponded to foreign debt held by the Central Government (US$4.981 billion). It is important to note that the Central Government made prepayments of US$441 million through June of this year.[13]/ These prepayments translate into savings on interest, because they correspond to loans with interest rates that are either higher than the rates on debt issued this year or above the yields that can be earned on resources saved in accordance with the structural surplus fiscal rule.

As discussed in the last *Report*, in January the Central Government took advantage of the favorable conditions on international financial markets to place a four-year variable-rate sovereign bond for US$600 million, with a premium of just 43 basis points. Furthermore, since the end of last year, the Central Government has placed part of its debt on the domestic market through issues of twenty-year UF-denominated bonds. The balance of these Treasury bonds as of the first of December is approximately a billion dollars (35.5 million UF). Of this amount, around US$660 million were issued this year, with interest rates that reached 4.8% in January but that have fluctuated around 4.1% in recent weeks.

The current fiscal situation is even more robust to shocks or negative scenarios than previously, because a higher surplus is projected than was estimated in the August *Report*. Even under a significantly adverse scenario, the perceived sustainability and risk probably would not deteriorate. This exercise assumes a risk scenario similar to that described in the last *Report*, with increases in the domestic interest rate (550 basis points) and the exchange rate (30% depreciation of the peso), together with a fall in copper prices (to US$0.66 per pound) and GDP growth (to 1%). The analysis started with current figures and extended over a year. The results indicate that the consolidated government's net debt would still be lower at the end of the year than it was at year-end 2003, because the debt reduction foreseen for 2004 is greater than the increase caused by the worse conditions of the risk scenario.

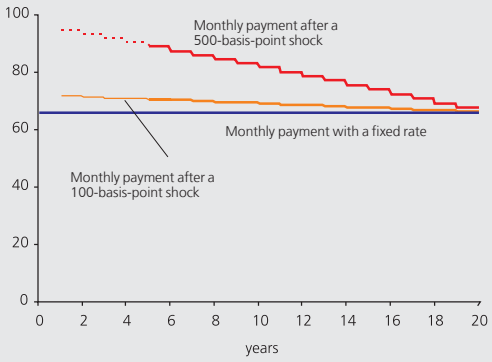
[13]/ See the *Informe de Estadísticas de la Deuda Pública*, Ministry of Finance, September 2004.

Box III.1: **Variable-rate mortgage loans**

Figure III.23

Impact of an interest rate shock on the financial burden after one year (*)

(monthly payment in UF)



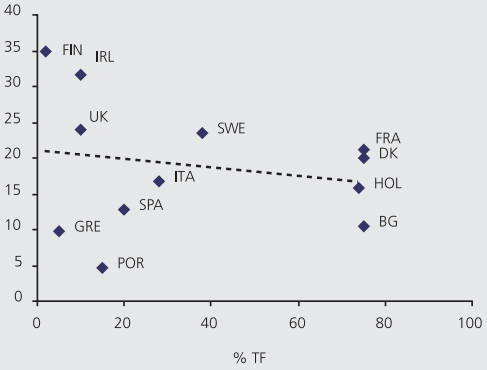
(*) Simulation of a 20-year loan for UF 10.000. The red and orange lines indicate the permanent value of the monthly payment in the event of an interest rate shock in each of the years indicated.

Source: Central Bank of Chile.

Figure III.24

Cyclical volatility of housing prices in cities versus percent of fixed-rate mortgage loans (*)

(standard deviation, percent)



(*) Cyclical volatility is measured as the standard deviation over the cycle (detrended).

Source: European Central Bank (2003).

A new development in housing finance in Chile involves the higher use of mortgage loans with a variable interest rate. Payment installments on these loans are periodically revised (usually annually) based on a reference interest rate (generally the TAB rate of the Association of Banks and Financial Institutions).

The increased use of this type of variable-rate loan generates income or wealth effects on consumers —effects that are not present when housing is financed through fixed-rate loans. The debtors automatically benefit from reductions in the interest rate, without necessarily incurring the transaction costs of prepaying existing loans and obtaining a new loan at a lower rate. The flipside, however, is that they are more exposed to interest rate hikes.

The consequence of these income or wealth effects is to accentuate the impact of the interest rate on macroeconomic and financial variables such as household expenditures, housing prices, and the credit risk of loans to this sector.

The greatest financial risk to which the debtor is exposed from variable-rate loans can be measured by the sensitivity of installment payments to an increase in the interest rate. However, this point does not take into account the possible correlation with the debtors' other sources of income or the return on other assets they may own.

The sensitivity of installment payments decreases with the residual term to maturity of the loan. For example, given a 500-basis-point increase in the reference rate, the installment on a loan with a residual term of ten years would increase 23%. This is equivalent to a drop in the debtor's disposable income on the order of 5%, considering that mortgage debtors typically dedicate between 20% and 25% of their income to their installment payments (figure III.23).

International experience displays a variety of structures for housing finance. Variable-rate loans predominate in some markets and not in others, with no clear correlation with the market's level of development (table III.4). Empirical studies tend to support the idea that housing prices

Table III.4

Mortgage loan market structure, by country

(F: fixed rate, V: variable rate)

Country	Mort-gage debt over GDP	Most common type of credit	Percent over total mortgage loans			Maturity (years)
			F	Mixed	V	
Germany	47	F	..	..	..	30
Austria	30	F	..	..	..	..
Belgium	28	F	75	19	6	20
Denmark	67	F	75	10	15	30
Spain	32	V	..	..	>75	15-25
Finland	21	V	2	1	97	15-20
France	22	F	..	..	14	>5
Greece	12	V	5	15	80	15-20
Holland	74	F	74	19	7	10
Ireland	30	V	30		70	..
Italy	10	M	28	..	..	10-25
Portugal	47	V	..	..	..	25-30
United Kingdom	60	V	..	..	74	..
Sweden	58	V	38	24	38	..
USA (1)	58	F	..	..	..	..
Colombia (1)	5	F	..	..	..	..
Chile (2)	15	F	65	35		20-25

(1) Clavijo, Janna, and Muñoz (2004), data for 2000.
(2) Central Bank of Chile, data for 2003.

Source: European Central Bank, data for 2001.

are more volatile and more sensitive to interest rates and the economic cycle in countries that are characterized predominantly by variable-rate loans (figure III.24).[14]/ Evidence also shows that aggregate demand is more sensitive to the interest rate in these countries.[15]/.

In the case of Chile, the small size of housing finance in general and variable-rate loans in particular relative to GDP leads to the conclusion that such effects should be small. Variable-rate loans are a recent development in the Chilean market. In most cases, the initial rate is fixed for the first three or five years, and a cap is set over the full life of the loan. Nevertheless, this development should continue to be studied in the near future.

In sum, access to variable-rate mortgage loans is a positive development in that it broadens consumers' financing options. At the same time, however, these loans leave consumers more exposed to the risk of a rise in interest rates. This exposure must be thoroughly evaluated by both the banks and consumers, taking into consideration the possibility not only of scenarios in which interests rates rise in line with investors' expectations, but also of more extreme scenarios.

[14]/ Meen (2002); Tsatsaronis and Zhu (2004).

[15]/ Miles (2004).

Box III.2: The economic effects of the fiscal rule

Beginning in 2001, the Ministry of Finance voluntarily adopted a rule of conduct for the budgetary process.[16]/ According to the rule, the Central Government's expenditures are adjusted each year to the level necessary for achieving ex ante a structural surplus of 1% of GDP. The term structural refers to the method of calculating the surplus based on the income the Government would receive if GDP were at trend level and the copper price were at its long-term rate. What follows is an analysis of certain aspects of the fiscal rule and its main effects.

Fiscal policy includes the Government's income and spending policy, and it thus affects consumption, investment, aggregate demand, and prices. Fiscal policy also has financial effects in that it determines the public debt and influences the stability of prices and interest rates. Although fiscal policy can contribute significantly to economic growth and societal well-being, the presence of considerable fiscal disequilibria and excessive discretion can produce negative effects by affecting macroeconomic equilibrium, the private sector's expectations and planning horizon, and the functioning of financial markets, which is the focus of this *Report*. Examples include the Latin American debt crisis of the 1980s —when the region experienced difficulties obtaining financing, high interest rates (country risk premium), capital outflows, and exchange volatility— and, more recently, the fluctuations in country risk premiums generated by market fears before presidential elections in some Latin American countries. Consequently, the goal of fiscal responsibility is broadly supported, given the benefits it brings.

However, the nature of the fiscal authority, which must allocate public resources to fulfill the needs of the people, engenders an inherent bias toward increasing public spending and postponing fiscal adjustments. The literature offers a number of motives to explain this bias. First, the authority's desire to gain political dividends in the short term creates an incentive to overspend and accumulate debt (Alesina and Tabellini, 1995). Second, the budgetary process is also characterized by the phenomenon of overexploitation of collective —and thus with a diffuse owner— public resources. In fact, the different areas of the Government naturally all try to avail themselves of the most public resources possible for spending on their preferred projects, which leads to the accumulation of deficits and public debt (Velasco, 1994). Third, political coalitions with internal conflicts frequently block fiscal adjustment so as to evade the associated

[16]/ In recent months, a proposal was made to institutionalize the calculation of the structural surplus, via the approval of a law.

political cost. Finally, the strong opposition of special interest groups makes it very difficult to eliminate expenditures or specific tax exemptions whose benefits are highly concentrated but whose costs are widely distributed.[17] / Consequently, as in the case of monetary policy, the management of public finances involves a problem of time inconsistency in the sense of Kydland and Prescott (1997) —that is, spending more than planned or postponing adjustments.

Establishing rules of fiscal conduct is a useful institution for correcting time inconsistency and thus for guaranteeing the maintenance of fiscal equilibrium.[18] / In general, such rules should be simple, stable, and transparent, so that the public can easily evaluate the Government's fiscal performance. The rules should also be sufficiently general to allow flexibility in relation to the allocation of spending and the existing macroeconomic conditions in each moment.

There is a number of different types of fiscal rules. One example of a fiscal rule is requiring a balanced budget at all times.[19] / While this rule guarantees fiscal equilibrium and sustainability, it is not optimal according to arguments based on smoothing taxes and public spending (Barro, 1979) and traditional Keynesian arguments in favor of using public finances to stabilize the cycle rather than accentuate economic fluctuations. Thus, in addition to being simple and guaranteeing fiscal solvency, the fiscal rule should ideally include automatic business cycle stabilizers. These characteristics are present in the Chilean rule, which ties Central Government spending to trend GDP and the long-term price of copper, rather than to the respective observed levels.[20] /

Consequently, one result of the adopted fiscal rule is that when economic growth slows or the price of copper falls below its long-term level, the Central Government's finances show a deficit and accumulation of debt. This occurs, however, as programmed and within previously established limits. Moreover, it is publicly known that the debt will not grow indefinitely, because the rule requires, in compensation, that surpluses be generated once the economic performance improves. The rule thus clearly provides a better guarantee of transparency, stability, and continuity in fiscal management and reduces the probability that the Government will stray from prudent fiscal management in the future. It also separates the discussion of fiscal policy from the size of the State. The fiscal rule is a code that makes the budgetary conduct predictable and, therefore, it has had positive macroeconomic and financial effects by contributing to the credibility of fiscal management. While the reduction in risk premiums has been more or less generalized among Latin American countries, the fiscal rule has surely been a factor in the gradual reduction of Chile's country risk premium over the last few years.

---

[17] / Ministry of Finance (2004).

[18] / See Alesina and Perotti (1996) for an explanation of the effects that different institutions associated with the budgetary process can have on the behavior of the fiscal deficit.

[19] / Another example of a fiscal rule is Europe's adoption of a rule imposing a maximum limit on the public debt as a share of GDP.

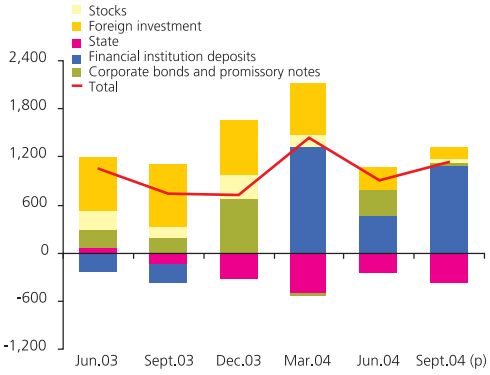
[20] / For further discussion, see Marcel, Tokman, Valdés, and Benavides (2001). A summary explanation can be found in the January 2001 issue of the Central Bank's *Monetary Policy Report*.

IV. Non-banking financial sector

Figure IV.1

Changes in the non-banking financial institutions' portfolio, net of returns

(quarterly flows, in billions of pesos)



(p) Preliminary.

Source: Compiled based on information from SVS and SAFP.

The pension funds, life insurance companies, and mutual funds are the most important in terms of their managed assets, and their investments are over 90% of GDP (table IV.1). The Report's analysis of these agents focuses on the composition and evolution of their investment portfolios. Any changes in the demand for financial instruments on the part of the non-banking financial institutions affects the financial markets in which they participate, which has ramifications for the financing conditions of the other sectors.

The value of the non-banking financial institutions grew 14% between December 2003 and September 2004. New resource flows totaled 3.48 billion pesos and thus were 50% higher than the net flow for all of 2003. The distribution of the investment flows in 2004 was marked by a reduction in state instruments and increases in stocks, bank deposits, corporate bonds, and foreign investment (figure IV.1).

Table IV.1

Agents and instruments of the non-banking financial sector

(September 2004, billions of pesos, percent)

Investment	FM	CSV	FP	SFNB
Total investment	7,272	10,640	32,459	50,370
Investment as a % of GDP	13	19	59	92

Market share	FM %	CSV % (p)	FP %	Stock
Bank deposits	22	1	35	19,561
Mortgage bills	11	29	42	5,973
Corporate bonds and promissory notes	11	48	32	7,219
Central Bank	8	2	33	12,557
Treasury (1)	3	40	55	393
Acceptance bonds (2)	0	11	14	7,767

(1) Does not include sovereign bonds.
(2) Value of the debt payable. Includes bond bonus.
(p) Preliminary.

Sources:
Central Bank of Chile.
Superintendence of Securities and Insurance (SVS).
Superintendence Banks and Financial Institutions (SBIF).
Superintendence of Pension Fund Administrators (SAFP).
Institute of Social Security Standardization (INP).

Portfolio revaluation was an important factor in the portfolio growth of these three agents, accounting for a 43% of the total increase in assets in 2004 (table IV.2). However, the flow of new resources captured by the mutual funds over the course of the year is also noteworthy. At the margin,

57% of the net flows received by non-banking financial institutions through September 2004 corresponded to investments in mutual funds, despite the fact that their assets represent only 14% of the total stock of resources held by these three non-banking financial institutions.

Table IV.2

Stocks and flows of the non-banking financial institutions
(billions of pesos for the period)

Stock of investments	2003	2004		
	IV	I	II	III (p)
FM	5,001	6,016	6,511	7,272
CSV	9,772	9,995	10,261	10,640
FP	29,506	30,747	31,166	32,459
Total	44,279	46,757	47,937	50,370
Non-banking financial institutions flows				
Portfolio changes	1,219	2,478	1,180	2,433
Revaluations	487	1,042	275	1,290
Net non-banking financial institutions flows	732	1,436	905	1,142

(p) Preliminary.

Source: Compiled based on information from SVS and SAFP.

The most important changes in the portfolio composition of the non-banking financial institutions in the second and third quarters of 2004 were the considerable increase in the share of bank deposits and the fall in the share of mortgage bills and state instruments. This solidifies the trend that had manifested in the first quarter of 2004 (table IV.3).

Table IV.3

Portfolio shares of the non-banking financial institutions, by instrument
(percent)

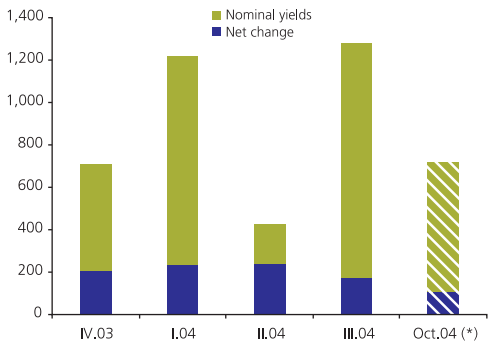
Instrument	2002	2003	2004		
	Dec.	Dec.	Mar.	Jun.	Sept. (p)
State	25.9	22.1	20.4	19.6	18.2
Financial institution deposits	22.3	16.8	18.9	19.6	21.0
Bank bonds	3.0	2.6	2.6	2.3	2.4
Mortgage bills	12.5	10.8	10.3	10.3	9.9
Endorsable mortgage credits	2.3	2.2	2.2	2.1	2.0
Corporate bonds and promissory notes	10.8	12.8	12.3	12.8	12.5
Stocks	7.3	10.9	10.5	10.5	11.5
Foreign investment	11.8	16.7	18.8	18.8	17.8
Other	4.0	5.1	4.1	4.0	4.7
Total investment	100	100	100	100	100

(p) Preliminary.

Sources:
Superintendence of Securities and Insurance (SVS).
Superintendence of Pension Fund Administrators (SAFP).

Figure IV.2

Quarterly growth of the pension funds
(billions of pesos)



(*) Growth in the month.

Source: Superintendence of Pension Fund Administrators (SAFP).

Table IV.4

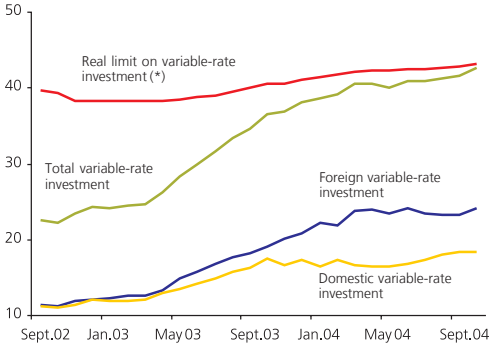
Share of different fund types in the pension funds
(percent of assets, billions of pesos)

Fund	2002 Dec.	2003 Dec.	2004 Jun.	2004 Oct.
A	1.4	5.3	7.4	8.2
B	11.1	18.7	19.8	20.4
C	71.2	55.8	54.0	53.5
D	10.6	16.2	15.3	14.8
E	5,8	4,0	3,5	3,2
Total assets %	100	100	100	100
Total assets	25,522	29,506	31,173	33,184

Source: Superintendence of Pension Fund Administrators (SAFP).

Figure IV.3

Evolution of variable-rate investment
(percent of total pension fund assets)



(*) Limit of each fund, weighted by share.

Source: Superintendence of Pension Fund Administrators (SAFP).

IV.1 Pension funds

As of October 2004, the pension funds registered a growth of 12.5% for the year. Of this growth, 9.9% is explained by profitability, while the remaining 2.6% corresponds to new resource flows (figure IV.2). Growth in 2004 was very different for each type of fund. The most notable increase was in the share of A and B funds, which together accounted for 28.6% of assets in October 2004, compared with 24.1% at the start of the year (table IV.4). This increase in the relative share of both funds is explained almost entirely (98%) by the real transfer of funds by members.

The change in the member distribution implies a greater availability of resources for variable-rate investment. In fact, member transfers caused the real limit on variable-rate investment to grow by 2% of the fund between January and October 2004 (figure IV.3).

The first three quarters of 2004 saw a generalized reduction in the share of fixed-income instruments in the pension fund portfolios, together with an increase in investment in term deposits and domestic and foreign stocks (table IV.5). The determining factors behind these changes include the lower supply of mortgage credits and UF-denominated state bonds. These factors caused the pension funds to maintain higher balances in time deposits, thus replacing other fixed-income investments while keeping the maturity of the portfolio essentially unchanged. At the same time, the pension funds approached the limit on variable-rate investment (domestic and foreign). A particularly important trend was the reduction of the existing gap between maximum limit and the actual in the C fund (figure IV.1), while the A and B funds still have room for expanding investment in this type of instrument.

Table IV.5

Pension fund portfolios, by instrument
(percent of portfolio)

Date	State	Mortgage bills	Bank deposits	Corporate bonds	Domestic stocks	Foreign investment	Other
Sept.03	27.1	9.6	15.6	7.1	13.7	21.8	5.1
Dec.03	24.7	8.9	15.0	7.7	14.5	23.8	5.5
Mar.04	22.1	8.3	17.1	7.3	14.2	27.0	4.0
Apr.04	21.5	8.2	17.7	7.2	14.0	27.7	3.7
May 04	21.7	8.3	18.5	6.8	14.0	26.9	3.7
Jun.04	21.2	8.3	18.2	6.9	14.4	27.5	3.6
Jul.04	20.8	7.9	19.3	6.9	14.8	26.7	3.6
Aug.04	20.3	7.7	19.3	6.9	15.3	26.2	4.1
Sept.04	19.2	7.8	19.8	6.8	15.8	26.0	4.8
Oct.04	19.1	7.1	19.8	6.8	15.8	26.9	4.3

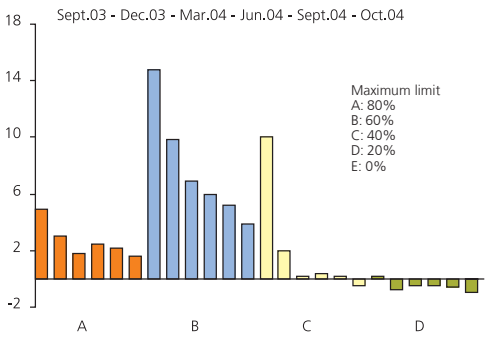
Source: Superintendence of Pension Fund Administrators (SAFP).

The share of investment abroad declined slightly beginning in June 2004, partly as a result of a drop in the value of the dollar in this period. As of October, investment abroad represented 26.9% of the portfolio; thus the float in this type of investment was 1.045 billion pesos.

The portfolio share of stocks tended to increase after June, mainly because of the increase in the value of domestic stocks in the second half of the year. The pension funds continued realizing net purchases of domestic

Figure IV.4

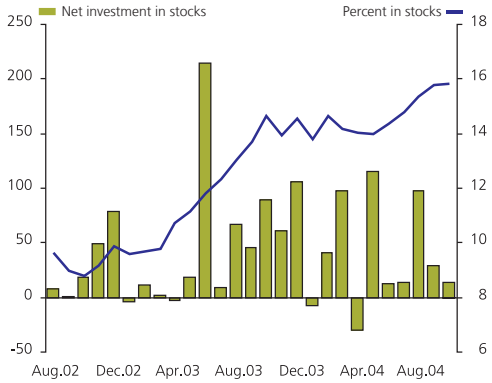
Evolution of the variable-rate float, by fund
(percent relative to the limit)



Source: Superintendence of Pension Fund Administrators (SAFP).

Figure IV.5

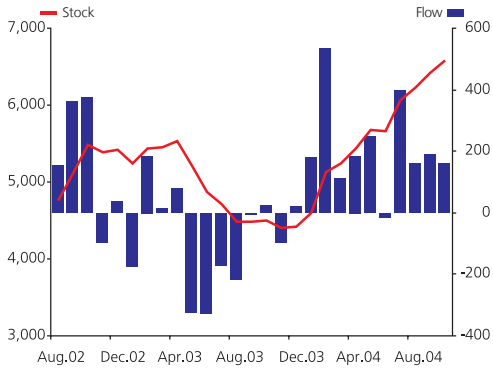
Net investment and share in domestic stocks
(billions of pesos and percent)



Source: Superintendence of Pension Fund Administrators (SAFP).

Figure IV.6

Pension funds' time deposits: stocks and flows
(billions of pesos)



Source: Superintendence of Pension Fund Administrators (SAFP).

stocks, a phenomenon that started in the middle of 2003, but the rate picked up in the second half of 2004 (figure IV.5).

Bank deposits grew to represent almost 20% of the pension funds. This change coincides with the low yields on alternative fixed-income investments in this period and with the banks' need to capture resources by this means to finance their lending (chapter V). The flow of new deposits on the part of the pension funds totaled 2.154 billion pesos between January and October of this year. The maturities of these deposits lengthened 30% in this period, reaching 200 days (figure IV.6). Another phenomenon associated with this development was the falling share of mortgage bills in the pension funds' portfolio, primarily owing to the high rate of prepayment by mortgage debtors and the substitution of mortgage bills with variable-rate loans.

The orientation of the portfolios toward relatively riskier instruments did not fundamentally change the structure of credit risk of the investments. This demonstrates that an important share of the pension funds' fixed-income instruments remain in low-risk assets (table IV.6). At the same time, while hedging through the forward sale of dollars reached US$8.2 billion net, at the margin the pension funds raised their exposure to foreign currency as a share of total assets, from 10.1% in January 2004 to 11.8% in October. Finally, exposure to interest rate risk, measured through portfolio maturity, did not change significantly in the first three quarters of 2004.

Table IV.6

Rating of domestic and foreign instruments held by the pension funds
(percent of portfolio)

	Long term			Short term		Other unclassified			
Date	AAA-A	BBB-B	Other long term	N1	N2-N5	Domestic state	Variable rate	Other	TOTAL
Mar.04	19.0	0.7	0.0	16.5	0.8	22.0	40.4	0.5	100
Apr.04	17.8	0.7	0.0	17.2	0.8	19.9	42.9	0.6	100
May 04	19.1	0.9	0.0	17.6	0.4	21.6	39.7	0.8	100
Jun.04	20.1	0.4	0.0	16.7	0.4	21.1	40.8	0.5	100
Jul.04	19.5	0.5	0.0	17.7	0.4	20.6	40.6	0.5	100
Aug.04	19.4	0.6	0.0	17.7	0.4	20.3	41.2	0.4	100
Sept.04	19.1	0.5	0.0	18.3	0.4	19.2	41.7	0.8	100
Oct.04	18.7	0.5	0.0	18.0	0.4	19.1	42.6	0.7	100

Source: Superintendence of Pension Fund Administrators (SAFP).

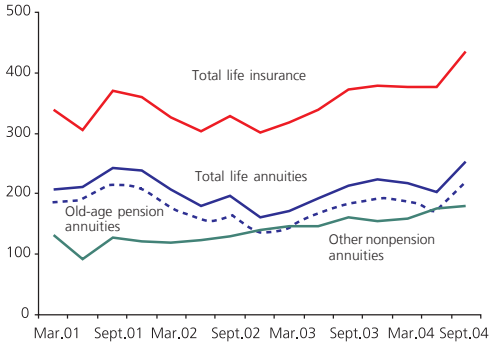
IV.2 Life insurance companies

The life insurance companies continued to receive an important flow of resources in 2004, capturing 868 billion pesos in the January–October period. The composition of their portfolios is strongly affected by the nature of the life insurance business, which requires keeping a large share of investment in long-term fixed-income instruments. This facilitates the generation of a flow of resources that will support the companies' liabilities from life annuity contracts.

In this period of low interest rates, the life insurance companies marginally increased the share of stocks and investments abroad within their asset

Figure IV.7

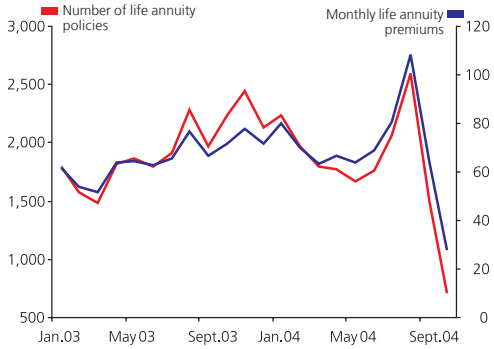
Direct quarterly premiums of the life insurance companies
(billions of pesos, September 2004)



Source: The Chilean Insurers' Association.

Figure IV.8

Monthly life annuity policies
(number of policies and monthly sales in billions of pesos)



Source: Superintendence of Securities and Insurance (SVS).

portfolio. At the same time, they upheld a trend to reduce the share of state instruments, substituting them with corporate bonds. Another noteworthy trend was the strong fall in mortgage bills, in terms of both percentages and amount invested. This reflects the increased prepayment of mortgage bills through the refinancing of home loans (table IV.7).

Table IV.7

Life insurance company portfolio, by instrument
(percent, billions of pesos)

Instrument	2002	2003	2004		
	Dec.	Dec.	Mar.	Jun.	Sept. (p)
State	19.3	17.7	18.1	17.1	17.4
Financial institution deposits	1.9	1.2	0.9	1.0	1.3
Bank bonds	7.9	7.5	7.4	7.1	7.2
Mortgage bills	20.6	18.7	18.1	17.3	16.9
Endorsable mortgage credits	10.3	10.2	10.1	9.8	9.3
Corporate bonds and promissory notes	24.6	29.4	29.2	31.9	31.1
Stocks	2.8	3.0	2.8	2.7	3.2
Real estate investment	7.0	7.2	7.2	7.3	7.5
Foreign investment	2.4	1.9	2.2	2.3	2.4
Other	3.2	3.2	3.9	3.5	3.8
Total investment (*)	8,541	9,772	9,995	10,261	10,640

(*) Billions of pesos.
(p) Preliminary.

Source: Superintendence of Securities and Insurance (SVS).

The life insurance industry experienced an important increase in sales in the third quarter of 2004, reversing the cooling trend registered in the March–June period (figure IV.7). These figures are strongly influenced by the extraordinary growth of life annuities, which grew 25% in real terms in the period. Growth was particularly strong in August, before the implementation of the new system for contracting this type of insurance (figure IV.8). [1]/

Other types of insurance, besides life annuities, also recorded sustained growth. Products related to voluntary retirement savings (APV) experienced fast growth in 2004. In this market, the life insurance companies captured 8% of the total stock of savings and posted an annual growth rate of 47%.[2]/ At the same time, the general increase in household debt had a strong impact on contracts for mortgage life insurance, which as of September had achieved a growth rate of 32% for the preceding twelve months.

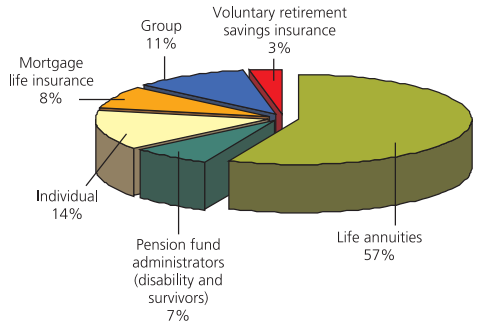
Nevertheless, life annuities in their various forms continue to be the most important product relatively speaking, representing 57% of the premiums sold by the life insurance companies and 90% of the industry's technical

[1]/ The Pension Amount and Pricing Consult System (*Sistema Consulta de Ofertas y Montos de Pensión*, or Scomp) was placed in operation on 19 August 2004.

[2]/ In March 2002, institutions outside the pension fund system were authorized to manage voluntary retirement funds. Since then, the life insurance companies and mutual funds have been active in this market. Total resources attracted under the new scheme total approximately 346 billion pesos, of which the pension funds captured 67%, the life insurance companies 16%, and the mutual funds 15%.

Figure IV.9

Direct premiums, by type of insurance
(share as of September 2004)



Source: The Chilean Insurers' Association.

reserves (figure IV.9). In selling life annuities, the companies commit to a guaranteed flow of payments over long periods, and the fulfillment of that commitment is the main focus for analyzing the financial situation of this type of institution.

The primary indicators of the companies' financial stability and performance reflect a stable positioning in general terms, with no relevant changes since the last *Report* (table IV.8). Industry earnings improved in the second half of the year, driven by better investment yields in the third quarter. The life insurance companies' profit over equity reached 13% (annualized), and both underwriting performance and investment yields recovered in the third quarter. Operating indicators similarly held at stable values in 2004.

Table IV.8

Financial and performance indicators for the life insurance companies

Indicators	2002 average	2003 average	2004 Mar.	Jun.	Sept. (p)
Returns			(annualized rates)		
Investment returns	6.4	7.8	6.9	6.7	7.2
Return on equity	0.9	13.1	12.5	11.2	13.0
Earnings over assets	0.1	1.7	1.5	1.3	1.5
Operations			(% of direct premiums)		
Net premiums	97.5	97.9	97.4	97.4	97.5
Administration expenses	12.8	14.2	13.7	14.2	14.0
Intermediation expenses	6.7	6.7	6.8	6.9	6.7
Annuities paid (2)	39.9	40.2	40.2	40.8	39.1
Damages paid (2)	19.5	19.5	18.2	19.0	18.8
Indebtedness and solvency			(number of times)		
Callable liabilities to equity	8.7	7.9	7.5	7.6	7.5
Financial liabilities to equity	0.06	0.05	0.04	0.05	0.04
Other indicators			(percent)		
Illiquid assets / assets	11.7	11.9	11.9	12.6	12.4
Direct premiums to employees (1)	30.7	33.2	35.7	36.1	42.5
Contribution margin to direct premiums	-28.5	-25.6	-23.1	-21.4	-20.8
Insurance technical reserves to direct premiums	0.1	13.2	9.3	9.2	11.7

(1) Millions of pesos.
(2) As of December.
(p) Preliminary.

Sources:
Superintendence of Securities and Insurance (SVS).
The Chilean Insurers' Association.

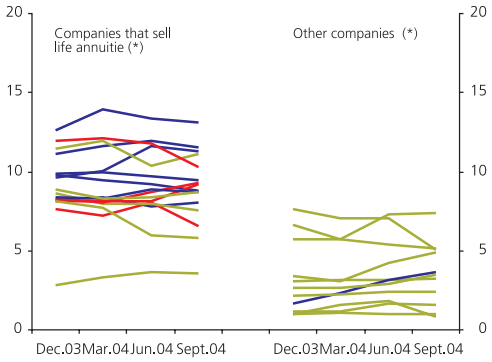
No important changes were produced in the life insurance companies' risk rating in the second half of the year, with the exception of three cases of marginal improvements in the third quarter. At the same time, domestic rating agencies maintained stable outlooks with regard to the credit risk of the companies' liabilities.

A key regulatory change involves the updating of the mortality tables that are used to set the technical reserves (liabilities) on the sale of life annuities. The new tables enter into effect in the first quarter of 2005. The updated parameters will establish greater capital requirements for the companies, although the impact will vary by company in relation to their different

Figure IV.10

Debt-equity indicator

(number of times, September 2004)



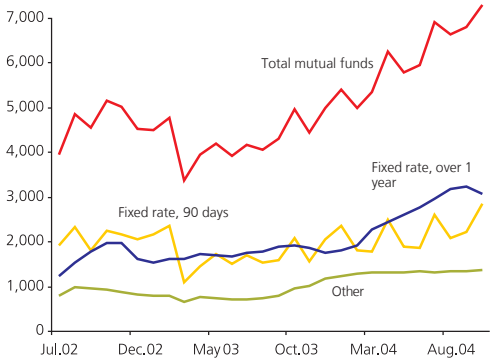
(*) Size is based on the SVS classification. Red: Large (more than 6% of the market). Blue: Medium (3% to 6% of the market). Green: Small (less than 3% of the market).

Source: Superintendence of Securities and Insurance (SVS).

Figure IV.11

Evolution of net equity, by type of fund

(billions of pesos)

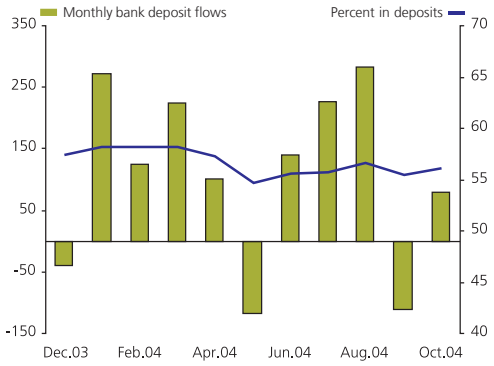


Source: Superintendence of Securities and Insurance (SVS).

Figure IV.12

Mutual fund deposit flows and portfolio share

(billions of pesos per month and percent of assets)



Source: Superintendence of Securities and Insurance (SVS).

debt compositions and current levels of debt over equity (figure IV.10).[3]/

Finally, the legal terms of sale were modified to incorporate crucial changes: a new auction system for life annuities, more demanding conditions for opting for early retirement, and the authorization for bank affiliates to broker life annuities. This increased competition in the industry is reflected in the evolution of the annuity rates offered by the companies on current sales these rates remained stable, while the interest rates on long-term Central Bank bonds fell.

IV.3 Mutual funds

The most notable trend in the mutual fund industry since the close of the last *Report* was continuous high growth. As of October 2004, the growth rate of equity was 47% over twelve months, generating a historic high in the volume of resources managed. Moreover, the industry reported having 554,683 shareholders in October, which implies a growth rate of 31% over twelve months.

In 2004, 57% of growth was explained by an increase in long-term fixed-income funds (type 3), which posted an extraordinary average monthly growth rate of 6% in the March–September period (figure IV.11). At the same time, funds that are not invested exclusively in fixed-income instruments (variable, composite, free, and structured) together grew 53% this year, thereby coming to represent 12% of total equity. This increase in equity, equivalent to 320 billion pesos, contributed to generating a more varied demand for instruments. Another important development in the industry was the creation of an array of share options for funds invested in the same portfolio; each option has a distinct commission structure depending on the maturity of the investment. This practice has allowed the funds to adapt to new investor profiles.

The portfolio composition by type of fund affects the mutual funds' contribution of financing to other sectors. Table IV.9 illustrates the mutual funds' strong demand for time deposits and, hence, the importance of time deposits in the financing of the banking system. The growth recorded by the mutual funds after June 2003 and especially in 2004 resulted in the mutual funds accumulating 21% of the total amount of bank deposits in September 2004, maintaining balances of more than 4 trillion pesos. The growth of long-term fixed-income funds in the first nine months of 2004 implies that the mutual funds —as a system— contributed a total flow of new resources of 1.155 trillion pesos to the banking sector in this period (figure IV.12).

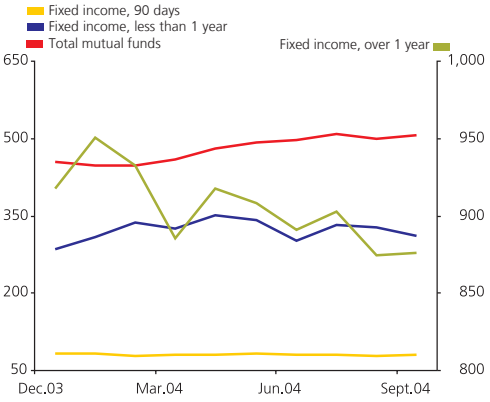
At the aggregate level, the composition of the mutual fund portfolio did not change significantly after the close of the last *Report* in June. The only exception was a recovery of the share of stocks, which reached 4.5% of

[3]/ A company's capital requirements are based on the ratio of current liabilities to equity, which has a maximum allowed limit of 15 times. Higher technical reserve requirements raise the indicator because technical reserves are considered part of the company's current liabilities, which in turn has a negative impact on period earnings by reducing capital.

Figure IV.13

Duration of fixed income mutual funds and of the total system

(days)



Source: Superintendence of Securities and Insurance (SVS).

the portfolio in September 2004. This trend was driven by a 15% growth rate for variable-rate funds between June and September (table IV.10).

Table IV.9

Mutual fund portfolio by type of fund, as of September 2004

Type of fund	Type 1	Type 2	Type 3	Type 4	Type 5	Other	Total
Name	Fixed rate, less than 90 days	Fixed rate, 90 to 365 days	Fixed rate, more than 1 year	Mixed	Variable	Unrestricted, guarant., institut.	
Number of funds	49	12	65	39	57	22	244
Total assets (*)	2,641	525	3,257	197	360	292	7,272
Percent of total	36.3	7.2	44.8	2.7	5.0	4.0	100.0
Portfolio	**Type 1 %**	**Type 2 %**	**Type 3 %**	**Type 4 %**	**Type 5 %**	**Other %**	**Total (*)**
State instruments	6.3	20.4	21.9	9.6	1.5	34.0	1,104
Bank deposits	85.5	67.4	40.2	26.0	1.1	27.1	4,039
Bank bonds	0.3	3.2	2.0	3.9	0.0	1.9	101
Mortgage bills	0.2	2.6	19.1	6.1	0.0	6.1	667
Corporate bonds	0.7	0.9	12.6	13.2	0.0	10.4	486
Commercial papers	4.5	5.5	2.5	4.3	0.0	1.7	242
Stocks	0.0	0.0	0.0	9.9	80.7	7.8	326
Other	0.0	0.0	0.0	0.3	0.3	0.0	2
Total domestic	97.6	100.0	98.3	73.3	83.5	89.0	6,967
Total foreign	2.4	0.0	1.7	26.7	16.5	11.0	258
Total instruments	100.0	100.0	100.0	100.0	100.0	100.0	7,225

(*) In billions of pesos.

Source: Compiled based on information from SVS.

Table IV.10

Mutual fund portfolio by instrument

(percent, billions of pesos)

Instrument	2003		2004		
	Sept.	Dec.	Mar.	Jun.	Sept.
State	13.0	15.1	15.3	15.8	15.2
Financial institution deposits	60.9	57.7	58.3	55.8	55.5
Bank bonds	0.7	0.6	0.8	0.8	1.4
Mortgage bills	8.0	6.8	7.1	9.4	9.2
Corporate bonds	6.8	6.9	6.5	6.8	6.7
Commercial papers	1.9	3.3	2.8	3.3	3.3
Stocks	3.3	4.8	4.5	4.1	4.5
Foreign investment	4.9	4.3	4.2	3.5	3.5
Other	0.5	0.6	0.5	0.6	0.7
Total (*)	4,676	5,001	6,016	6,511	7,272

(*) In billions of pesos.

Source: Compiled based on information from SVS.

A look at the rate risk faced by the mutual funds reveals that maturity by type of fund remained relatively stable from March to September of this year. The one exception was long-term fixed-income funds, which shortened their maturity (figure IV.13). However, aggregate maturity, based on all the mutual funds, increased as a result of the changing composition toward medium- and long-term fixed-income funds. This situation is a factor to monitor in the future, considering market expectations of increases in the interest rate and the risks of unforeseen rate hikes.

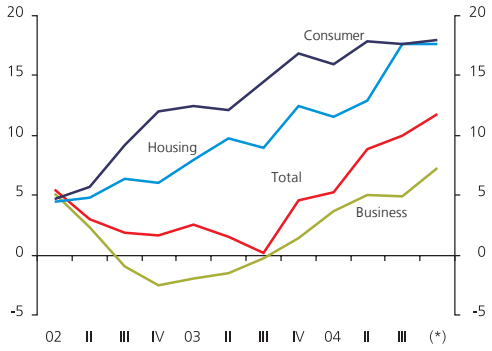
A period of negative returns in the face of an increase in long-term rates could generate revisions in shareholders' investment decisions and liquidity pressures on the mutual funds. This type of pressure could accentuate interest rate volatility and trigger extraordinary liquidity pressures on the banking sector, especially given the relevance of the mutual funds in financing banks through deposits. For this reason, the mutual funds constitute a "sensitive source" of financing for the banks and it is important to measure their relative importance for evaluating the liquidity risks that the banking institutions might face.

V. Banking sector

Figure V.1

Growth of lending

(percent, 12-month real change)



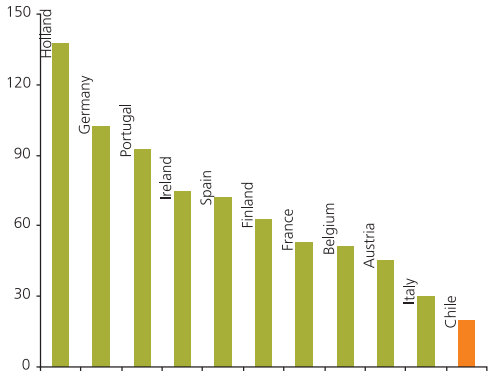
(*) As of October 2004.

Source: Superintendence of Banks and Financial Institutions (SBIF).

Figure V.2

Bank exposure to households (*)

(percent)



(*) Total household lending (consumer and housing) over GDP, for the period 1999–2001, except Chile which corresponds to October 2004.

Sources:
European Central Bank.
Central banks of respective countries.

This chapter analyzes the financial position of the domestic banking system. It considers the evolution of the macro-financial environment in which the banking system has operated in recent months, together with its consequences for the system's capital adequacy position, risk exposure, and income generation.

Since the last *Report* on the first half of the year, the financial position of the baking industry has strengthened as a result of the macro-financing environment. The growth rate of bank credit accelerated, and the quality of assets with credit risk improved. This expansion in lending was buoyed by the high levels of capital accumulated over the last few years.

V.1 Financial soundness and profitability

The growth rate of bank credit accelerated strongly in the July–October period. Total annual lending grew more than 10%, which is well above the 6% registered in the first half of the year and the 1.1% of the same period of the previous year (figure V.1). The greatest expansion of bank credit continued to be in the household segment —especially home financing loans, whose average annual change was over 17% at the time of writing. The prospects of a monetary policy normalization, combined with increased flexibility in granting loans, favored the maintenance of both record growth in home loans and a growth rate in consumer credit above 15% a year.

This translated into greater exposure of the baking system to households, which represent 30% of total lending, equivalent to 20% of GDP. International evidence indicates that this figure is still well below the exposure of more developed economies (figure V.2). In countries like Holland and Germany, home financing by banks is more than 100% of GDP.

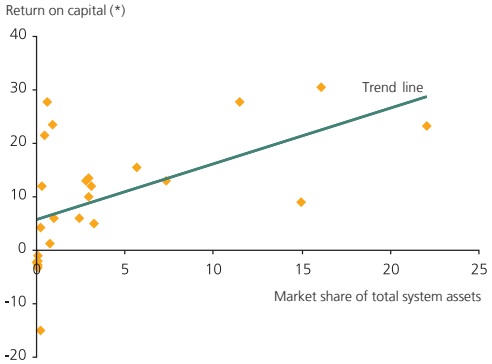
The acceleration of economic activity in recent months, combined with the better outlook for 2005, favored the acceleration of the growth rate of business loans in the second half of this year. In this period, business lending —excluding foreign trade credits, leasing operations, and factoring— grew an annualized average of 6%. Furthermore, very dynamic imports and exports raised the annual growth rate of foreign trade lending around 30%, measured in dollars.

Megabanks increase their profits

The banking system has achieved high profitability levels in the last three years, especially in the case of relatively large institutions and institutions with a high percentage of retail credit. As of October, the three main

Figure V.3

Return on capital and market share, by banking institution
(percent, October 2004)

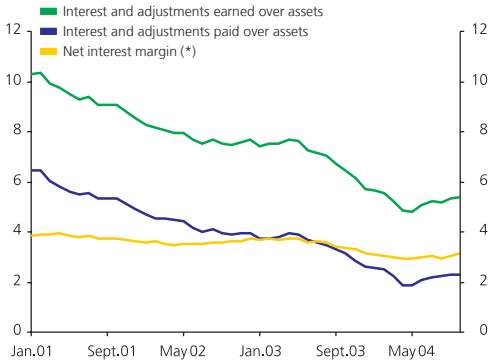


(*) Annualized earnings over basic capital.

Source: Compiled based on information from the Superintendence of Banks and Financial Institutions (SBIF).

Figure V.4

Evolution of the net interest margin
(12-month moving average, percent of assets)



(*) Net interest and adjustments over assets.

Source: Compiled based on information from the Superintendence of Banks and Financial Institutions (SBIF).

private institutions, which represent around 50% of the total assets in the system, registered profitability levels above 20% of capital, while the system average was 18%. In contrast, some recently established institutions posted losses in the same period. These institutions, however, represent a small share of the total lending in the banking system (figure V.3).

The interest margin (net interest and indexation) represents the domestic banking system's main source of income.[1]/ At the beginning of the second quarter of 2004, this spread reverted to its trend of previous years, raising its relative importance to 76% of gross operating income. The same trend is found on measuring the interest margin in relation to assets: this indicator reached 3.1% in October, compared with 2.9% in the second quarter of this year. Despite this increase, the current level is below the historic average.

The evolution of the interest margin is explained by the increase in income from interest and indexation to nearly 5.4% of assets, which in turn stems from greater adjustments to the UF (indexation) and the larger share of home loans in bank portfolios. Additionally, interest and indexation expense was relatively stable, despite the increase in lending rates in July 2004 in anticipation of the period of monetary policy normalization. The annual growth rate of cost-free bank liabilities (demand deposits), which was over 20% in recent months, allowed the banks to stabilize interest and indexation expense at around 2.3% of assets (figure V.4).

The rest of operating income was relatively volatile. While the banking industry benefited from a fall in long-term rates on Central Bank instruments on around 0.5% of assets in July and August, this trend was subsequently reversed proportionately. Earnings from service fees were stable in this period, and exchange earnings fell relative to 2003 owing to the appreciation of the peso in the current year.

Backstopping costs associated with operating efficiency stabilized at around 54% of gross operating income, and they are now at a historical low relative to assets, at around 2.4%. The use of electronic payment methods continued to grow sharply. The number of electronic transactions saw an annual increase of 50%; their use is expected to continue rising, thereby favoring greater operating efficiency in the banking system. The fall in credit risk in recent months also helped raise profitability by lowering spending for provisions, which stood below 20% of gross operating income in October 2004 (figure V.5).

Better leveraging had some effect on the financial soundness of the banking system

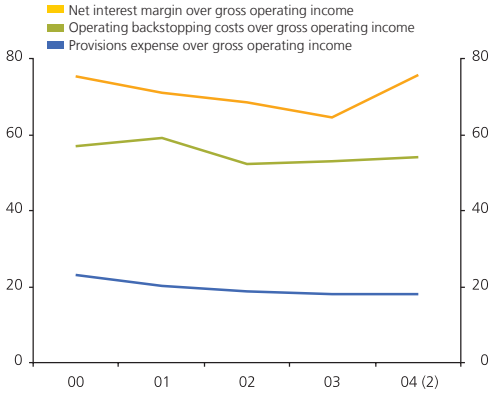
The financial soundness of the Chilean banking system, measured through the capital adequacy index (real equity over risk-weighted assets), remained above the required minimum of 8%. Nevertheless, the indicator

[1]/ In contrast with Chilean accounting practice, the calculation of the interest margin used here excludes net income derived from exchange rate adjustments, which are considered part of exchange earnings.

Figure V.5

Sources of bank profitability

(percent of gross operating income) (1)



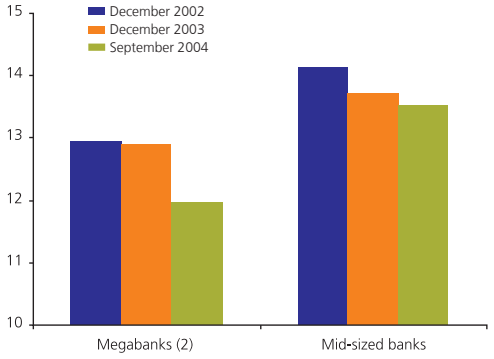
(1) Gross operating income includes net earnings from intermediation, price differences, fees and commissions, and exchange earnings.
(2) As of October 2004.

Source: Compiled based on information from the Superintendence of Banks and Financial Institutions (SBIF).

Figure V.6

Capital adequacy index by type of institution (1)

(percent)



(1) Real equity over risk-weighted assets.
(2) Corresponds to the four banks with the largest market share in the system.

Source: Compiled based on information from the Superintendence of Banks and Financial Institutions (SBIF).

fell by about 100 basis points over the course of the year, to around 13% in September. This mainly reflects the faster growth of lending in the relatively larger banks (figure V.6).

The trend in the capital adequacy index can be explained by changes in two components: the ratio of real equity to total assets and the ratio of total assets to risk-weighted assets. The former equals the inverse of the leveraging level —that is, it shows the growth in real equity (subordinate bonds, voluntary provisions, and core capital) over the growth of assets. The latter reflects the trend in the banking industry's appetite for risk. Figure V.7 illustrates the average annual trend in the capital adequacy index and its monthly variations, in bars with the two components separated out. As the figure shows, the past months were characterized by a stronger growth of bank assets relative to capital, with no significant changes in the proportion of risky assets in the system. The space of capital generated in previous years allowed the system to sustain this strong expansion without affecting the solvency of the banking system, inasmuch as all the institutions in the system to date present a capital adequacy index of over 10%.

V.2 Banking industry risks

Banking institutions are exposed to different types of risk, including credit risk, liquidity risk, and market risk. Of these, credit risk constitutes the banks' primary source of risk, given that total bank loans (to both businesses and households) represent around 70% of their assets. Exposure to liquidity risk, in turn, depends on the share of illiquid assets and long-term assets, whose financing comes from sources that are sensitive to market risk or have a shorter maturity. The main source of market risk for the domestic banking industry stems from exposure to interest rate fluctuations, whereas exchange risk is fairly limited.

Credit risk indicators continue a downward trend

The banking system's credit risk indicators continued a favorable trend in the third quarter of 2004. Overdue loans fell steadily after the middle of last year (figure V.8), causing the overdue portfolio index to register its lowest level of the last six months in October (1.36%).[2]/

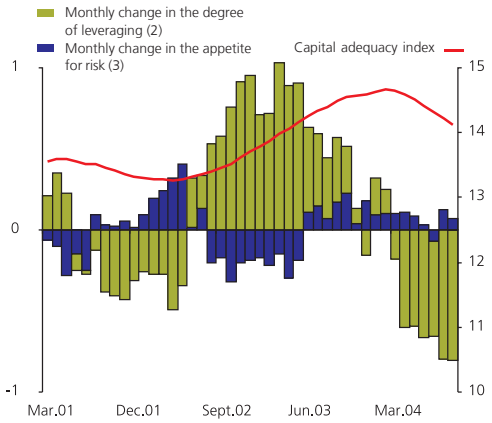
Expected losses for the different types of loans, measured through the stock of provisions, also fell. Provisions associated with both households (consumer and home loans) and businesses (trade lending) posted a reduction between March and October of 2004 (figure V.9). As discussed in chapter III.2 of this *Report*, the main business financial indicator improved in the third quarter of this year, thereby strengthening firms' payment capacity. The household and family sector lowered its credit risk as a result of improved income prospects and the fall in the financial burden resulting from lower interest rates and more flexible conditions for

[2]/ In accordance with Chilean regulation, the overdue portfolio index primarily reflects only unpaid loans that are over 90 days past due, which constitutes a less stringent requirement than in other countries. At any rate, the growth of loans would have an estimated impact of 2% of total lending. This would bring the overdue portfolio index to 3.5%, a figure that is still low by international standards.

Figure V.7

Evolution of the capital adequacy index (1)

(percent, 12-month moving average)



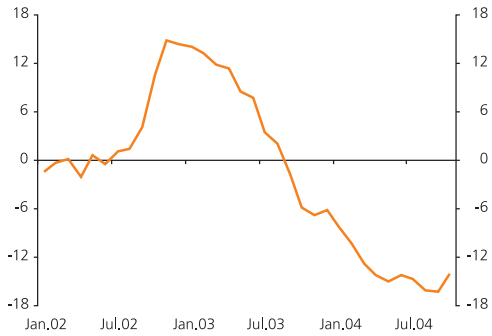
(1) Real equity over risk-weighted assets.
(2) Real equity over total assets.
(3) Total assets over risk-weighted assets.

Source: Compiled based on information from the Superintendence of Banks and Financial Institutions (SBIF).

Figure V.8

Growth in overdue loans

(percent, 12-month moving change)

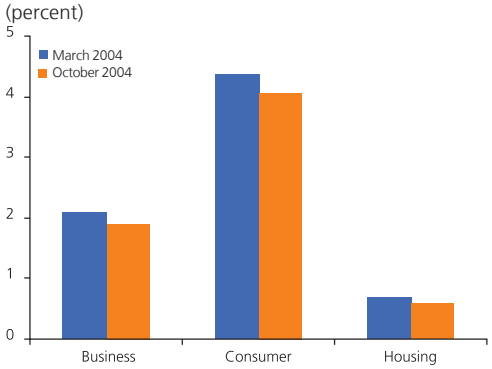


Source: Superintendence of Banks and Financial Institutions (SBIF).

Figure V.9

Credit risk provisions (*)

(percent)



(*) Stock of provisions over lending.

Source: Superintendence of Banks and Financial Institutions (SBIF).

approving consumer and home loans. Given these developments, provisions exceed the overdue portfolio by 50%. This figure represents an important equity guarantee in the face of possible losses stemming from a worsening of the payment capacity of the system's debtors.

The exposure of bank assets to household risk rose nearly 30%, which is similar to the rate in late 1997. This trend, however, has not been uniform within the industry. Specifically, the strong growth of household loans corresponds to the group of megabanks, in which the share of these loans represented 24% of total lending in 1997 and 32% in October 2004 (figure V.10).

In the late 1990s, the bigger banks pursued strategies aimed at increasing their participation in the household sector —namely, absorbing financial corporations and buying consumer portfolios. This led to a reduction in the concentration of household credit risk in individual financial institutions. Figure V.11 shows the distribution of bank capital exposed to the household sector and the share of their assets in the total banking system, for December 1997 and October 2004. In December 1997, 3% of the banking industry held an exposure to households greater than or equal to ten times their capital, while in October 2004 this indicator was under seven times for all institutions.

The above situation is reflected in the results of the credit risk stress exercises presented in a separate paper in this *Report*. The paper analyzes the individual impact of an unexpected increase in provision expenses greater than or equal to the maximum observed historical increase. The paper concludes that a deterioration in the loan portfolio of this magnitude does not represent a significant threat to the banking system's capitalization. The high levels of earnings and coverage of the overdue portfolio currently maintained by the banking system constitute an important guarantee in the face of a possible deterioration in the loan portfolio.

V.2.1 Financial risk and liquidity

To face their liabilities (both expected and unexpected), banking institutions maintain part of their assets in highly liquid instruments. Chilean banks maintain 17% of their assets in financial investments. The banks' liquidity position was reduced in the third quarter, and financial investments thus grew proportionately less than loans, at 2.5% and 10% annualized in the July–October period. This situation was more marked in private institutions that registered faster growth rates in home loans. Within this group of banks, the lower liquidity of their assets translated into a lengthening of the income flows toward periods of over a year, generating greater exposure, at the margin, for terms under 180 days (figure V.12).

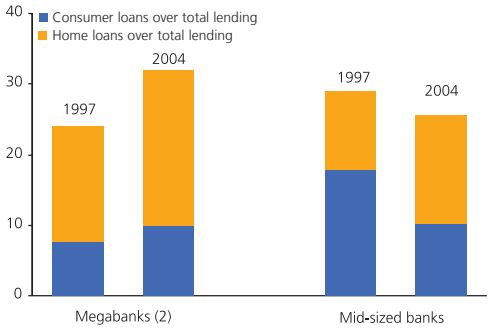
The same observation applies to the share of illiquid assets (loans, fixed assets, and nonfinancial investments) financed from stable sources.[3]/ In this case, while banking institutions with greater expansion in the

[3]/ Stable sources of bank financing include personal, business, and public sector deposits, issued bonds and drafts, basic capital, period earnings, and provisions.

Figure V.10

Bank exposure to household risk (1)

(percent)



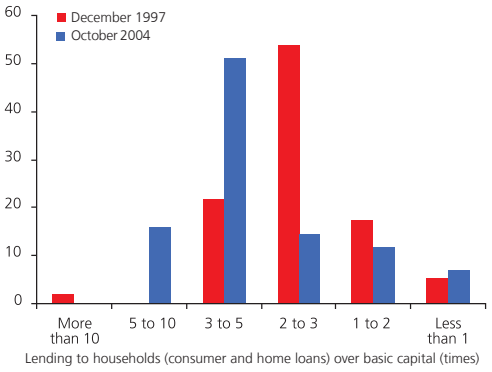
(1) Lending to households (consumer and home loans) over total lending.
(2) Corresponds to the four banks with the largest market share in the system.

Source: Compiled based on information from the SBIF.

Figure V.11

Distribution of equity exposure to households

Market share of total system assets (percent)

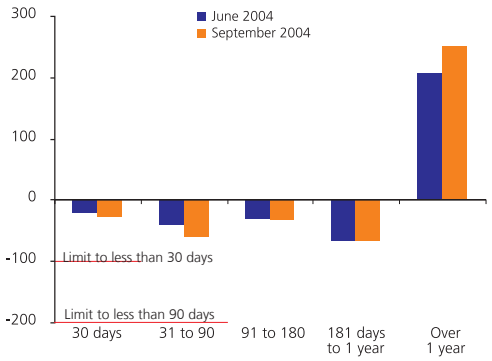


Source: Compiled based on information from the SBIF.

Figure V.12

Exposure to liquidity risk (*)

(percent; banks with stronger growth in home loans)



(*) Difference in asset and liability maturity flows, measured over basic capital.

Source: Compiled based on information from the SBIF.

home loan segment saw this indicator fall from 83% in December 2003 to 75% in September 2004, the remaining banks held the share of illiquid assets financed from stable sources at around 100%. This is explained because the faster growth of housing credit mostly involved variable-rates loans, whose financing comes from the bank's general funds instead of mortgage bills (figure V.13).

The structure of bank financing also affects a bank's vulnerability to liquidity risk, because it is associated with the availability of alternatives in the face of unforeseen reductions in the usual sources of financing. Liquidity risk thus tends to increase if a bank's financing depends mainly on wholesale sources. In the third quarter of the year, institutional investors increased as a share of total bank deposits (chapter IV). The greater demand for deposits on the part of pension funds and mutual funds raised the share of these sources to 20% of total bank financing. However, other wholesale financing sources —namely, foreign indebtedness and indebtedness to other banks— became less important in the period, such that the share of total wholesale sources in bank financing remained stable in the third quarter (figure V.14). In fact, in the June–September period, banks' foreign indebtedness fell US$360 million, lowering its share in total financing sources from 6% to 5%.

Increased bank exposure to interest rate risk

The strong growth of variable-rate home loans has translated, at the margin, into a greater exposure to interest rate risk. Traditionally, home loans were financed through mortgage bills and endorsable mortgage credits, which allowed the bank to eliminate the interest rate risk from its balance sheet. Currently, more than 30% of home loans are being financed through general funds, whose maturity has been shorter than the maturity of bank assets. Figure V.15 illustrates the widening of the gap between asset and liability maturities that has taken place over the last several months in private institutions with strong growth in home loans. This longer average maturity of assets relative to liabilities (by five months) increased the banking system's exposure to variations in the time structure of interest rates.

The above is also reflected in the results of stress exercises carried out to calibrate the impact on the system's solvency of an increase in the time structure of interest rates (see the paper "Stress Exercises for the Chilean Banking Sector" in this *Report*). A parallel displacement of 550 basis points would translate into losses, but no institution would see its capital adequacy level fall below 8%. The banks' risk policies, together with existing guidelines limiting interest rate risk exposure to a maximum of 8% of real equity, have driven the most exposed institutions to take measures to lengthen the average maturity of their liabilities.

V.2.2 Outlook

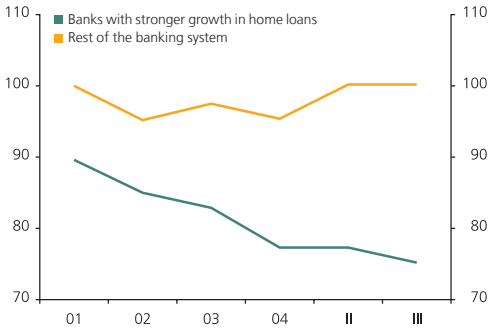
The strong growth of banking activity that characterized 2004 will probably continue in 2005. It is also reasonable to expect a bigger recovery of trade lending to the extent that investment growth continues, despite the fact that the current outlook reflects gradual increases in interest rates. At the same time, the level of capital adequacy and provisions will allow banks to

face significant weakening in the payment capacity of the system's debtors, especially in the relatively larger institutions.

Exposure to liquidity and interest rate risk, especially among banks implementing more expansive policies, has increased, albeit within contained limits. The favorable financing environment that the banking system currently faces has reduced the probability of unforeseen changes in the main market variables. In any case, some banking institutions have pursued financing policies, such as bond issues, to achieve greater diversification, lengthen the maturities of their financing sources, and in some cases improve their equity base.

Figure V.13

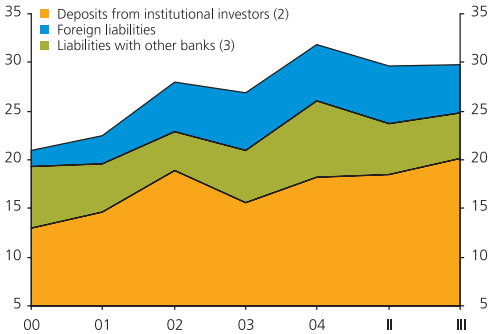
Illiquid assets financed from stable sources
(percent)



Source: Compiled based on information from the SBIF.

Figure V.14

Relative importance of wholesale financing sources (1)
(percent)

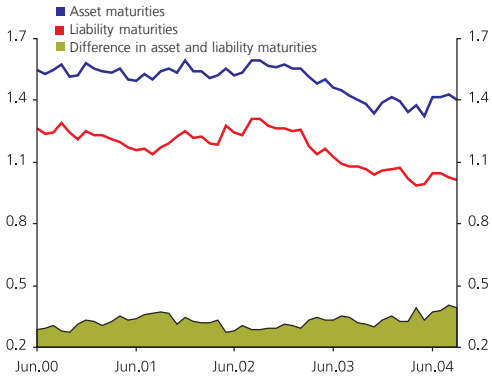


(1) Percent of total bank financing sources.
(2) Deposits from pension funds, mutual funds, and insurance companies.
(3) Includes interbank deposits and loans.

Source: Compiled based on information from the SBIF.

Figure V.15

Evolution of bank asset and liability maturities
(years; banks with stronger growth in home loans)



Source: Compiled based on information from the SBIF.

VI. External sector

This chapter analyzes the international financial position of the Chilean economy and the factors that affect the normal functioning of payments to other countries. To that end, the discussion reviews the access conditions and indebtedness trends of the main economic sectors vis-à-vis the rest of the world. It also examines trends in external liquidity and solvency indicators, as well as the risks considered most relevant to the central scenario described in this Report. The analysis considers the current framework of the Central Bank's monetary and exchange policies, defined by inflation targets, a floating exchange rate, opening of the capital account, and the maintenance of an appropriate level of international reserves.

VI.1 Recent developments and outlook

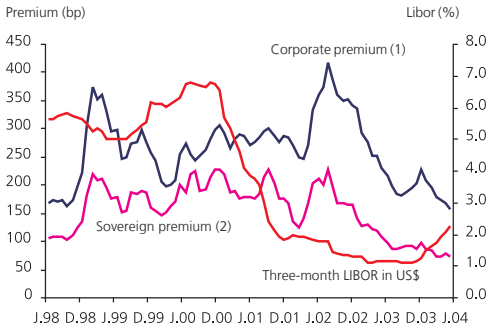
VI.1.1 Conditions for access to foreign financing

In the current international economic context, the conditions for the Chilean economy's access to foreign financing have remained stable and favorable for the different sectors (table VI.1). Thus, the government bond premium has fallen since June, to around 70 basis points in the last week of November; this brought the annual average to 84 basis points as of that date. The Chilean corporate bond premium followed a similar path, reaching levels around 150 basis points in the last week of November and bringing the year's average to 190 basis points. That level compares favorably with the 2003 average Chilean corporate bond premium (270 basis points), and it is below historical levels (figure VI.1).

Figure VI.1

Conditions for access to foreign financing: sovereign and corporate bond premiums

(basis points) and three-month LIBOR in US$ (%)



(1) Chilean corporate index.
(2) EMBI Global index for Chile.

Source: Bloomberg.

Table VI.1

Conditions for access to foreign financing in the economy

	Jan.-Jun.04	Nov.04
Three-month LIBOR in US$	1.2%	2.4%
Ten-year US Treasury bond rate	4.3%	4.2%
Sovereign bond premium (EMBI Global for Chile)	90 basis points (minimum 79 basis points in April)	70bp
Corporate bond spread (Chilean firms)	200 basis points (192 basis points in late July)	150bp

This year's conditions for sovereign bond placements and public and private corporate bond placements also reflected the favorable environment. For example, in October Codelco placed ten-year bonds worth US$500 million, with a spread of 95 basis points —fully 30 basis points lower than a similar placement in October 2003. A similar pattern is found with recent placements by Enap, a private corporation in the electricity sector, and a bank. Taken as a whole, US$2.35 billion dollars in foreign bonds were

issued over the course of 2004 (as of the close of this *Report*), which is higher than the issues of the previous four years. The majority of these issues were associated with liability restructuring and refinancing.

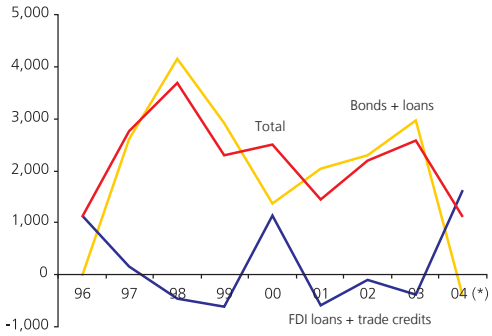
VI.1.2 Evolution of foreign debt

In this context of favorable access to foreign financing, resident economic agents in Chile continued to reduce their rate of net foreign indebtedness, which fell to US$1.1 billion between January and October; this is half the amount registered in the same period in 2003 (table VI.2). This trend is basically due to the fact that for the first time since 1997, the aggregate level registered net payments on foreign debt that is more sensitive to market conditions, such as bank loans and bonds (figure VI.2), which reached US$420 million in October. This compares with US$2.95 billion net indebtedness in October 2003.[1]/ All agents realized net payments on more sensitive debt during the year. This process was partly offset by an increase in foreign debt that is less sensitive to market conditions, such as trade credits and loans tied to foreign direct investment. These debt components reveal a net indebtedness of US$1.62 billion (figure VI.2), which contrasts with average net payments of US$350 million a year over the last three years.

Figure VI.2

Net debt flows by type

(US$ million)



(*) Accumulated through September 2004.

Source: Central Bank of Chile.

Table VI.2

External indebtedness of the Chilean economy

(US$ million)

	Jan.-Oct. 2003	Jan.-Oct. 2004
Total external indebtedness by sector	**2,145**	**1,115**
Banks	1,081	-192
Businesses and individuals	-642	524
Trade credit	112	814
FDI-related credit	-389	748
Bonds and other credit and loans	-365	-1,038
Public sector	1,706	783
Short-term external indebtedness	**1,145**	**829**
Banks	584	148
Businesses and individuals	575	1,063
Trade credit	250	872
FDI-related credit (*)	-214	428
Public sector	-14	-382
Long-term external indebtedness	**1,000**	**286**
Banks	497	-340
Businesses and individuals	-1,217	-539
FDI-related credit (*)	-256	358
Public sector	1,720	1,165

(*) Provisional and partial data.

Source: Central Bank of Chile.

[1]/ The sources of foreign indebtedness that are relatively more sensitive to market conditions include debt such as credits and loans that are not tied to foreign direct investment or foreign trade and bond debt. The sources of foreign indebtedness that are less sensitive to market conditions include trade credit tied to foreign trade and loans associated with foreign direct investment.

The lower rate of foreign indebtedness characterized all sectors except businesses. It was manifested in a reduction of aggregate flows of net short-term indebtedness to just over half the level registered in the same period in the last two years, combined with a reduction in long-term indebtedness (table VI.2).

An analysis by agent reveals that the reduction in foreign debt is due to the banking sector, which reduced its foreign debt by US$190 million in the first ten months of the year, and to the public sector, which reduced its net foreign indebtedness to US$780 million between January and October —less than half the amount registered for the same period of 2003. Businesses, however, increased their foreign indebtedness during the year, mainly due to increases in trade credits and loans tied to foreign direct investment (FDI).

As a result of these developments, the foreign debt of the economy reached US$44.782 billion in October 2004. The annualized growth rate was 4.7%, almost two percentage points below the average of the last four years.

Table VI.3

External debt of the Chilean economy

(US$ million)

	December 2002	December 2003	October 2004
Gross external debt	**40,675**	**43,396**	**44,782**
Short-term external debt by residual maturity	**11,591**	**12,967**	**15,175**
Original maturity (excl. trade credits)	2,390	3,810	4,214
Long-term debt falling due (excl. trade credits)	5,546	5,162	5,894
Trade credits	3,655	3,995	5,067
Short-term external debt by residual maturity and sector	**11,591**	**12,967**	**15,175**
Consolidated government	179	185	452
Banks	2,987	4,638	4,531
Businesses and individuals	8,425	8,144	10,192
Long-term external debt by residual maturity and sector	**29,084**	**30,429**	**29,607**
Consolidated government	3,398	4,376	4,216
Banks	838	783	761
Businesses and individuals	24,848	25,270	24,630

Source: Central Bank of Chile.

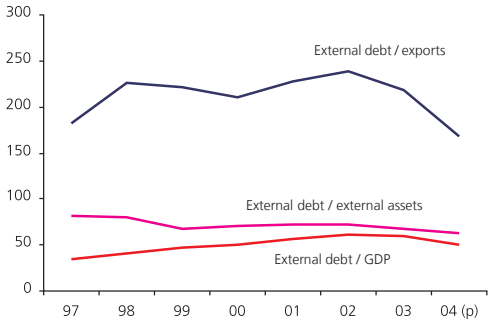
VI.1.3 Trends in other foreign financing flows

FDI increased significantly in 2004. As capital shares, the net flow of FDI into Chile increased 45% relative to last year, reaching US$4.61 billion in October (table VI.4). This increased FDI stems primarily from an increase in the reinvestment of profits in foreign-owned firms in Chile, which in October stood at US$3.8 billion, more than double the level a year earlier. However, the entry of new foreign financing through FDI flows in the form of stocks and capital shares totaled US$810 million in October, almost half the amount of October 2003. Another noteworthy trend involves the entry of FDI in the form of debt, through credits and loans with related foreign firms, which reached US$750 million; this item posted net outflows in the three years previous. Thus, total FDI flows (capital and

Figure VI.3

External solvency indicators

(percent)



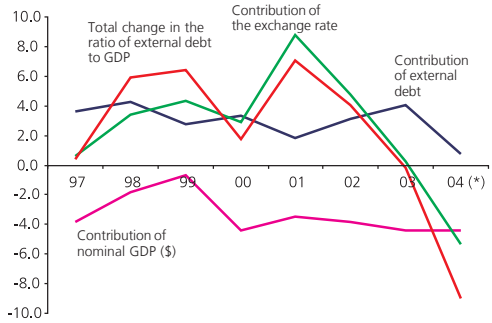
(p) Projected.

Source: Central Bank of Chile.

Figure VI.4

Contribution of external debt, GDP, and the exchange rate to the evolution of the external solvency index

(percent of GDP)



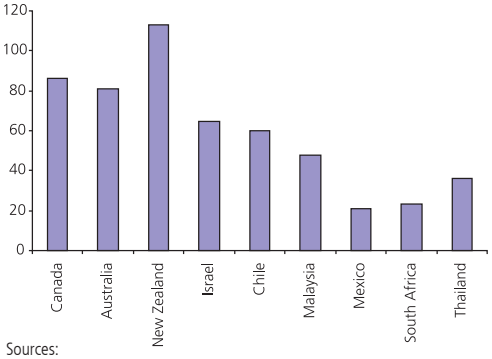
(*) Accumulated through September 2004.

Source: Central Bank of Chile.

Figure VI.5

International comparison of the ratio of external debt to GDP, December 2003

(percent)



Sources:
Central Bank of Chile.
FMI.
Statistics of Canada.

debt) into Chile during the year increased significantly to US$5.25 billion, which is approximately double the level for the same period of 2003.

This year was also marked by a reduction in portfolio investment flows. Portfolio investment flows as capital shares experienced a net outflow of US$80 million, compared with net inflows of US$260 million in 2003 (table VI.4). These net outflows, together with a significant drop in net portfolio investment inflows in bonds over the course of the year, resulted in a total portfolio investment flow of US$530 million, a third the 2003 level.

Table VI.4

Flows in the financial account of the balance of payments

(US$ million)

	Jan.-Oct. 2003	Jan.-Oct. 2004
Liabilities	**5,596**	**5,651**
Foreign direct investment (capital)	3,187	4,614
Portfolio investment (capital)	264	-77
Debt	2,145	1,115
Assets	**5,921**	**6,676**
Foreign direct investment (capital)	890	600
Portfolio investment (capital)	4,066	3,320
Debt	1,237	3,048

Source: Central Bank of Chile.

VI.2 External solvency and liquidity indicators

VI.2.1 Solvency indicators

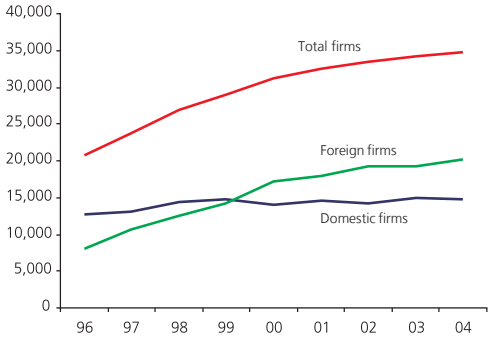
Despite the growth in foreign debt over the course of the year, indicators of the economy's external solvency continued to improve. The ratio of foreign debt to GDP fell 10 points as a percentage of GDP, from 60% in December 2003 to 50% in September 2004 (figure VI.3). Although total foreign debt continued to grow, it was more than offset by the appreciation of the peso and the stronger growth of GDP (figure VI.4). The appreciation of the peso increased the value of GDP expressed in dollars, causing a 6 percentage point reduction in this indicator, while the stronger GDP growth explains approximately 5 percentage points of its reduction. The evolution of other indicators of the economy's external solvency, such as the ratio of foreign debt to exports or of foreign debt to international assets, also improved in the year (figure VI.3).

An international comparison shows that the level of foreign debt in Chile as a share of GDP is slightly higher than similar economies with a lower risk rating, but lower than economies with a better risk rating (figure VI.5).

An evaluation of the economy's external solvency should also consider other dimensions of foreign debt, such as ownership (domestic or foreign), the nature of the creditors, and its composition by debtor agent, maturity, contracted rate, type of instrument, and financing source. The analysis should further take into account the economy's degree of financial

Figure VI.6

Private sector external debt by country of ownership (*)
(US$ million)

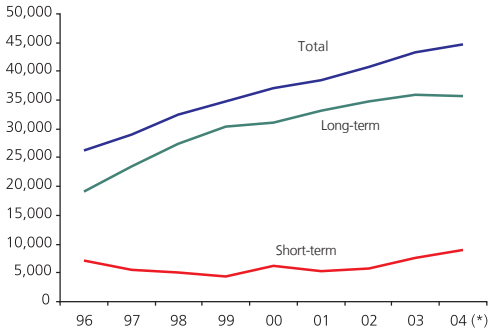


(*) Corresponds to the country of origin of the debtor's holding company.

Source: Central Bank of Chile.

Figure VI.7

External debt by contractual maturity
(US$ million)

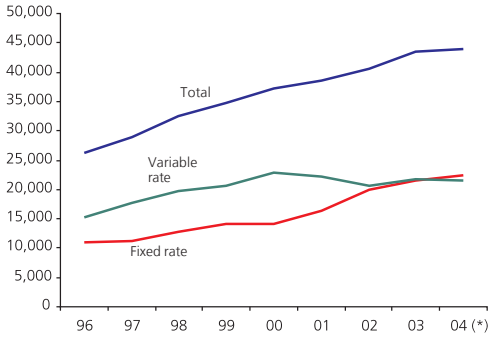


(*) Figures through October.

Source: Central Bank of Chile.

Figure VI.8

External debt by stipulated rate conditions
(US$ million)



(*) Figures through September.

Source: Central Bank of Chile.

integration and the diversification of its international assets and liabilities by sector and type of instrument.

Debt ownership continued a trend of a significant share for foreign-owned firms in the total private foreign debt (figure VI.6). This factor could contribute to the economy's foreign financial stability, as could the significant share of foreign debt with related firms, since it constitutes foreign financing from sources that are less sensitive to fluctuations in market conditions. In a crisis period, foreign-owned firms can count on the financial backing of their parent company in managing their indebtedness. In September, the private foreign debt contracted with foreign-owned companies was US$20.13 billion, which represents 58% of gross private sector foreign debt and 46% of gross total foreign debt. A quarter of this debt was contracted directly with related companies. The private banking sector registered a similar trend: 55% of its gross foreign debt was owned by foreign banks operating in Chile, and a third of it was contracted with foreign parent companies and related firms.

With regard to distribution by agent, the low share of the Central Government in total foreign debt is noteworthy (table VI.3). This factor also contributes to the foreign financial stability of the economy, since a small fraction of the foreign debt would potentially be subject to the budget contingencies of the fiscal sector. In October, 11% of foreign debt corresponded to the Central Government, 11% to banks, and 67% to the remaining sectors, mainly businesses. This debt structure by institutional sectors is very similar to the situation of December 2003, when banks represented 12% of the total and the Central Government 10%.

Another continuing trend is the reduction in the contracting of short-term debt, which represented 19% of total foreign debt in October (figure VI.7). This trend, which was manifested in all sectors, further contributes to foreign financial stability by reducing the economy's need to refinance.

Although the last three years recorded a stable average maturity, long-term foreign debt maturities fell from 4.8 years last December to 4.7 years. This reduction was greatest in the public sector, where the average maturity of long-term debt contracted during the year was 5.2 years, slightly lower than in 2003. Another contributing factor was the fall in the average maturity of outstanding debt, although this indicator still lies above the average of the last nine years.

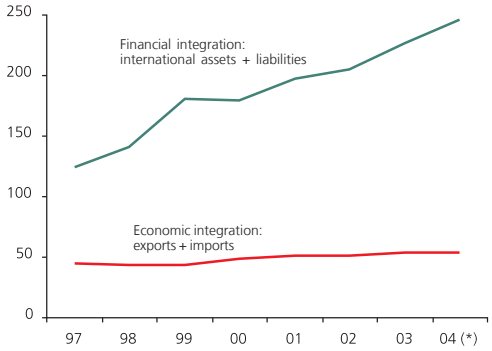
The interest rate structure of foreign debt continued its trend of a rising share of fixed-rate debt, which reached US$22.5 billion in September or 51% of total foreign debt (figure VI.8). This development reduces the variability of the debt service in the face of foreign interest rate fluctuations.

The economy continued the vigorous process of external financial integration that has unfolded over the last several years (figure VI.9), with a growth rate of international assets and liabilities, as well as exports, that is much higher than GDP growth. International asset flows continued to increase during the year, reaching US$6.680 billion in October. International liabilities also continued to increase during the year, similar to previous years, reaching US$5.65 billion in October. International asset

Figure VI.9

Financial and economic integration, 1997 to September 2004

(percent of GDP)



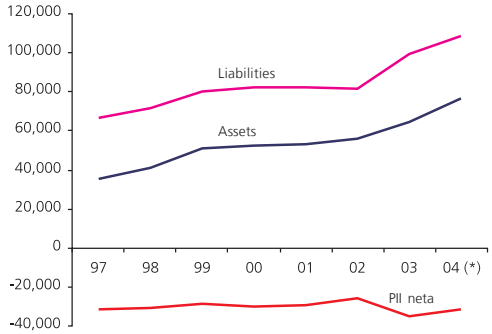
(*) Projection to September aggregating financial account transactions to total stocks as of December 2003.

Source: Central Bank of Chile.

Figure VI.10

Net international investment position: international assets and liabilities

(US$ million)

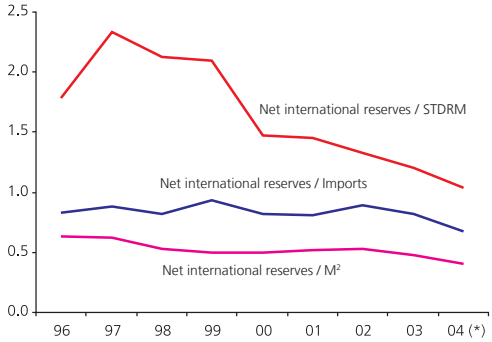


(*) Projection to October aggregating financial account transactions to total stocks as of December 2003.

Source: Central Bank of Chile.

Figure VI.11

External liquidity indicators



(*) As of October.

Source: Central Bank of Chile.

flows were thus greater than international liability flows, which tended to reduce the economy's net liability position (table VI.4). This development was the natural counterpart to the projected 2004 current account surplus of around 2.7% of GDP, and it tended to strengthen the external solvency of the economy, despite the moderate increase in foreign debt.

The larger flow of international assets than liabilities this year will contribute to lowering the greater net liability position that the economy registered last year. That situation resulted from the impact of the appreciation of the peso on the value of foreign debt. The peso appreciated around 17% in 2003, causing approximately 80% of the increase in the economy's positive net liability position that year (figure VI.10), even though net foreign asset flows were greater than net foreign liability flows.[2]/ The increase in the economy's net liability position in 2003 was primarily associated with a revaluation of liabilities owing to the appreciation of the peso. It does not affect the evaluation of external solvency, but rather reflects agents' greater disposition to invest in Chile.

A final noteworthy trend is the lower share of foreign financing in the form of loans, together with an increase in the share of bonds, the foreign debt of foreign firms, and trade credits.

VI.2.2 Liquidity indicators

The economy's external liquidity in foreign currency remained stable and at adequate levels (figure VI.11). As of October, net international reserves were equal to 1.04 times the short-term external debt by residual maturity (foreign liabilities with maturities of less than a year). This level is lower than at the close of the last *Report*, when it was 1.15 times the short-term external debt by residual maturity (STDRM). This drop occurred because the Central Bank reserves were relatively constant while the growth rate of the STDRM increased.

As a result of the strong expansion of indebtedness through trade credits tied to foreign trade, the growth rate of the STDRM picked up during the year, reaching US$15.175 billion in October, versus US$12.25 billion in October 2003. However, US$5.07 billion —that is, 33% of the residual short-term foreign debt— corresponded to foreign-trade-related trade credits. These loans are usually much less sensitive to conditions for accessing foreign financing for several reasons: they are supplier credits, they are subject to their own rules, they are part of the normal functioning of international trade, and they are backed by the value of the imports and exports they finance. Additionally, as of October, US$1.21 billion (8% of the STDRM) correspond to FDI-associated loans with maturities of less than one year. This implies that 41% of the STDRM corresponds to debt that is relatively less sensitive and less risky in terms of access and renewal.

[2]/ The change in the international investment position between two periods is the sum of the net asset and liability transactions of the financial account of the balance of payments, plus the changes in the net valuation of assets and liabilities stemming from price changes, exchange rate variation, or other adjustments such as reclassification. The change in the net valuation of international assets and liabilities due to exchange rate variation represented 11% and 2%, respectively, of the stock in December 2002.

The outlook for the evolution of reserves is for these to be gradually drawn down through December 2005, as a result of a redemption program on dollar-denominated notes that the Central Bank has implemented since December 2003. The total program involves a payment of maturing dollar-denominated notes totaling US$2.63 billion during the coming year, mainly in the second semester. The implementation of this program will imply a 16% drop in the reserve level. However, the Central Bank considers that the resulting reserve level will ensure an adequate external liquidity position, given the current policy framework based on a floating exchange rate and an open capital account. In this context, the materialization of the redemption program will allow the Central Bank to reduce its dollar-denominated liabilities, along with the associated financial costs.

VI.3 Risk scenarios

The risk scenario described in this *Report* (section II.2) considers a faster adjustment of the US external accounts than expected. This could lead to greater-than-expected increases in international interest rates, which —when combined with increases in the risk rating of emerging economies' debt— could raise the economy's external financing costs. The estimates show that for every 100-basis-point rise in international interest rates, Chile's external debt service increases by approximately US$220 million. Thus, the direct effect on the current account of the risk scenario of a 550-basis-point interest rate hike would be around US$1.2 billion.

Nevertheless, Chile's external liquidity and solvency position shows that the economy has an adequate capacity to manage external payments in the face of adverse changes in the base scenario. The economy's financing needs continue to be low for the next two years. This is manifested in the high current account surplus that is expected this year, as well as in the sectoral developments that have led the banking and business sectors to prepay and restructure their more sensitive external debt and the government sector to reduce its external indebtedness. The policy framework of the Central Bank —which is characterized by a credible inflation target, a floating exchange rate regime, and sufficient availability of reserves— should allow the economy to adequately adapt to adverse changes in the external financial scenario.

Bibliografic references

a| Alesina A., and R. Perotti. 1995. "Budget Deficits and Budget Institutions." Working paper 5556. Cambridge, Mass.: National Bureau of Economic Research.

Alesina, A. and G. Tabellini. 1990. "A Positive Theory of Budget Deficit and Government Debt." *Review of Economic Studies* 57: 403–14.

b| Barro, R. 1979. "On the Determination of Public Debt." *Journal of Political Economy* 87: 940–47.

c| Clavijo, S., M. Jana, and S. Muñoz. 2004. "The Housing Market in Colombia: Socioeconomic and Financial Determinants." Bank of the Republic of Colombia.

e| European Central Bank. 2003. "Structural Factors in the EU Housing Markets." March 2003.

k| Kydland F., and E. Prescott. 1997. "Rules Rather Than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy* 85: 473–91.

m| Marcel, M., M. Tokman, R. Valdés, and P. Benavides. 2001. *Balance estructural del Gobierno Central: metodología y estimaciones para Chile: 1987–2000.* Santiago: Ministry of Finance, Budget Office.

Meen, G. 2001. "The Time-Series Behavior of House Prices: A Transatlantic Divide?" *Journal of Housing Economics* 11: 1–23.

Miles, D. 2004. "The UK Mortgage Market: Taking a Longer-Term View." Final Report and Recommendations, March 2004.

Ministry of Finance. 2004. "How to Induce Fiscal Discipline: A Case for Fiscal Policy Rules." Paper prepared for the 2004 APEC meeting. Santiago.

t| Tsatsaronis, K. and H. Zhu. 2004. "What Drives Housing Price Dynamics: Cross-Country Evidence?" *BIS Quarterly Review* March 2004.

v| Velasco, A. 1994. "A Model of Endogenous Fiscal Deficits and Delayed Fiscal Reforms." Working paper 93-04. New York University, CV Starr Center.

Factors in the dynamics of the Chilean country risk premium

Authors: Felipe Jaque and Alberto Naudon

The country risk premium, or sovereign spread, is a commonly used financial indicator for measuring the risk that markets assign to an economy. It equals the excess return paid by a foreign-currency-denominated fixed-rate instrument issued by an emerging economy, over the yield on instruments of a similar maturity issued by developed economies. In particular, the country risk premium for dollar-denominated bonds is calculated over US Treasury bonds.

This indicator is linked to an economy's macroeconomic fundamentals, which determine the country's capacity for fulfilling its financial liabilities. Even when these fundamentals may not register any important changes, however, the country risk premium often exhibits significant movements. This paper analyzes the factors that explain the dynamics for the particular case of Chile. We start by presenting some stylized facts on the fundamentals of the Chilean economy and the level of its sovereign spread. We then develop a model for explaining the dynamics, and the final section lays out our conclusions.

Stylized facts

As shown in figure 1, an emerging economy's fundamentals, measured as its Standard and Poor's (S&P) credit rating, are inversely related to its sovereign risk level. The sovereign spread of economies with similar credit rating tend to oscillate within a given range, which is associated with the rating.

Nonetheless, a detailed look at the evolution of the Chilean country risk indicator reveals a low correlation between the spread and the Institutional Investor Index (III), a complementary indicator of an economy's fundamentals. This index shows small changes within the sample, which covers the period from 1999 up to date (table 1).[1]/

Table 1

Independent variable statistics

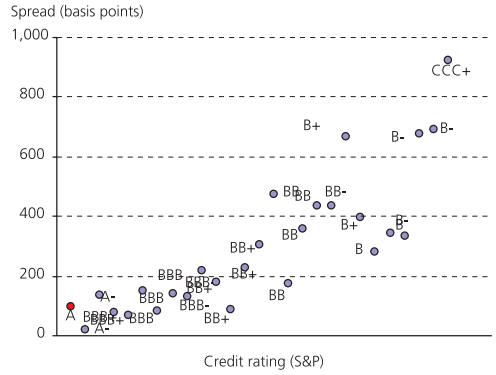
	III	US Corporate spread (rated B)	VIX	Swap spread	Fed. Funds
Average	64.1	447.6	23.0	63.2	4.0
Maximum	67.4	731.7	38.2	130.6	6.5
Minimum	61.0	276.4	13.5	31.9	1.0
Standard deviation	1.9	114.7	5.5	26.4	2.0
Observations	74	103	103	103	103

Source: Institutional Investors, Bloomberg.

Figure 1

Sovereign spreads and credit ratings for emerging economies

(basis points; S&P credit rating)



Sources:
JPMorgan Chase.
Standard & Poor's.

This points to the need to review specific indicators of the Chilean economy, looking for some kind of link with the sovereign spread. We use variables associated with the Chilean economy's external financing position. Once again, we find that both the external liquidity ratio (international reserves over short-term external debt) and solvency indicator (external

[1/] This indicator is from EuroMoney Institutional Investor PLC. It assigns a value between 0 and 100, with higher numbers corresponding to a better debt repayment capacity, such that it should have an inverse relation with the sovereign spread.

debt over GDP) behave relatively independently from the sovereign spread (figures 2 and 3).[2] /

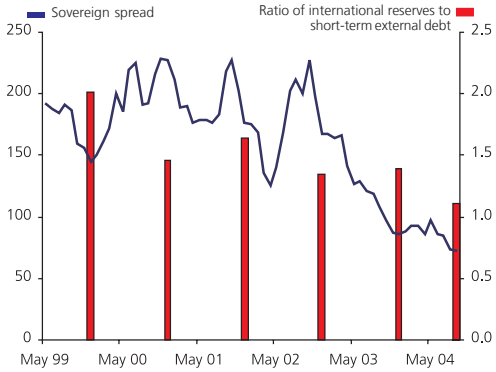
Analysis methodology

In light of the above analysis, we propose including the financial variables that reflect the prevailing international market conditions that drive short-term changes in sovereign spreads generally and the Chilean spread in particular.[3] / The following factors are used to measure financial market conditions: (i) investors' willingness to take on greater credit risk; (ii) global risks perceived by investors; and (iii) the liquidity in the international markets.

Figure 2

Chilean sovereign spread and net international reserves / short-term external debt by residual maturity

(basis points, ratio)

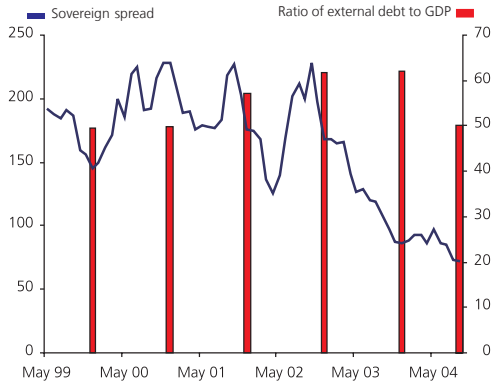


Sources:
JPMorgan Chase.
Central Bank of Chile.

Figure 3

Chilean sovereign spread and external debt / GDP

(basis points, ratio)



Sources:
JPMorgan Chase.
Central Bank of Chile.

To capture these three factors, we use the premium paid by corporate bonds issued by US firms rated B (SB), the implied volatility of stock options in the S&P 500 index (VIX), and the spread between the ten-year swap rate and the ten-year US Treasury bond rate (SS).[4] / Essentially, the premium paid by US corporate bonds rated B measures the credit risk of instruments considered to be imperfect substitutes within a portfolio that includes Chilean bonds, weighted in the JP Morgan EMBI Global index. If these instruments exhibit a reduction in the premium claimed by investors, then the risk premium paid by Chile could also be expected to fall. This correlation is explained by a greater willingness of investors to take positions in riskier assets, or rather by the search for higher returns reflected in decreasing spreads of these assets.

The implied volatility of stock options (VIX) measures the level of uncertainty —or risk conditions— prevailing in the market. We assume that markets that face greater uncertainty, and thus generate prospects of higher expected volatility, would tend to reduce investors' demand for riskier assets. Moreover, higher implied volatility is directly associated with higher hedging costs on investments in these assets.

The spread between the ten-year swap rate and the ten-year US Treasury bond rate, known as the swap spread (SS), is commonly used as a measure of the liquidity in international financial markets. Additionally, a direct relation has been observed between this variable and the US Federal Funds interest rate, which is also relevant when measuring the liquidity faced by investors. Higher international market liquidity leads investors in search of returns, given the low yields they are receiving in the developed markets. They are thus motivated to invest in emerging market instruments, which ultimately deliver a higher expected yield.

The specification of a model that captures both the effects of an economy's fundamental variables and the role of financing conditions in international markets can be derived through different means. Following the specifications outlined in early

[2/] Data on external debt, short-term external debt by residual maturity, international reserves, and GDP are year-end data for each year except 2004, which is through September (Central Bank of Chile). The country risk premium is from the JP Morgan Global Emerging Market Bond Index (EMBI Global) and is measured in average monthly basis points.

[3/] Something similar is found when the variable Fed. Funds rate is included in the specification presented in Jaque and Rojas (2003).

[4/] Higher expected risk, measured as higher implied volatility, can occur in combination with higher expected returns, thus implying a scenario for risky assets that is at least stable. However, the inclusion of the SB variable allows us to control for higher returns on risky bonds within the specification.

studies on sovereign spreads (Jaque and Rojas, 2003), together with some conclusions from theoretical models developed for risky corporate debt (Longstaff and Schwartz, 1995),[5] / we propose modeling the Chilean sovereign spread based on the Institutional Investors Index (III) and the three factors associated with financial markets described above:

$$S_t = \alpha + \beta_1 III_t + \beta_2 SB_t + \beta_3 VIX_t + \beta_4 SS_t + \varepsilon_t$$

Table 1 presents the basic statistics for the selected variables. As the table shows, the variables display strong variability and a low correlation among themselves. Table 2 presents our estimations.

Table 2

Correlations matrix

	US Corporate spread (rated B)	VIX	Swap spread	Fed. Funds
US Corporate spread (rated B)	1.000			
VIX	0.584	1.000		
Swap spread	0.468	0.338	1.000	
Fed. Funds	-0.189	-0.018	0.408	1.000
Observations	103	103	103	103

Source: Institutional Investors, Bloomberg.

Estimation and results

The estimation methodology is based on a specification similar to that put forth by Pesaran and Shin (1999). We seek to capture in a single equation both the short-term dynamics and the long-term relations among the variables considered in the specification. We therefore estimate an autoregressive distributed lag model (ARDL), using both levels and first differences of the variables and an optimum number of lags:[6] /

$$\Delta y_t = \phi y_{t-1} + \beta' \mathrm{x}_t + \sum_{j=1}^{p-1} \lambda_j^* \Delta y_{t-j} + \sum_{j=1}^{q} \delta_j^{*\prime} \Delta \mathrm{x}_{t-j} + c + \varepsilon_t$$

The fitted equation presents an R^2 of 0.65, which is adequate given that the estimations are carried out on the first differences of the variables. The parameters for the credit risk, volatility, and market liquidity variables have the expected sign. Thus, an increase in credit risk and volatility in the markets for riskier US instruments explains an increase in the country risk premium paid by Chilean bonds. An increase in liquidity in international markets —that is, a reduction in the swap spread— causes a decrease in Chile's sovereign spread.

With regard to the Institutional Investor Index variable, the estimations yield a non-significant parameter. This could stem from the low variability of the series in relation to the movements observed for the sovereign spread.

The long-term elasticities obtained are in line with our expectations. They demonstrate the relevance of market conditions for the dynamics of the Chilean sovereign spread (table 3).[7] /

Table 3

Long-term elasticities to sovereign spread

Variable	Elasticity
US Corporate spread (rated B)	0.35
VIX	0.59
Swap spread	0.36

Source: Central Bank of Chile estimate.

Conclusions

First, the estimation results show that the variable capturing economic fundamentals has a low degree of statistical significance. While the fundamentals can be used to derive a reference value for the spread, based on the economy's credit rating, they do not explain the short-term dynamics of the sovereign spread. This is due to their low variability. However, given that individual fundamental variables could display a greater variability in the short term, they could be more significant in determining the sovereign spread level, after controlling for financing conditions, as shown in other studies.

Second, we found that the variables measuring the prevailing financial conditions in the markets, associated with liquidity, willingness to take credit risk, and uncertainty, turn out to be significant for determining the sovereign spread in Chile. Thus, an important part of the movements of the spread can be explained by changes in the overall financial market conditions.

[5/] The Longstaff and Schwartz (1995) model includes the interest rate risk on corporate debt. While it is common to see the Fed. Funds rate or the ten-year US bond rate in empirical studies, our study considers the swap spread and the US corporate spread. Both of these variables are affected by and related to the interest rate, so the empirical results do not show statistical significance in the case of the Federal Funds interest rate.

[6/] We used the Schwartz-Bayes lag selection criterion, which allows a maximum of three lags for each variable.

[7/] The estimation results were stable according to CUSUM and CUSUM-squared tests. We also tested the robustness of the model as a whole using a variable-exclusion test; the results were satisfactory. Finally, the long-term elasticity of the III variable is not include because it is not significant, but given its low variance in the sample period, part of the effect is captured by the equation's constant.

References

Jaque, F., and A. Rojas. 2003. "Determinants of the Chilean Sovereign Spread: Is it Purely Fundamentals?" Money Affairs 16(2). CEMLA.

Longstaff, F., and E. Schwartz. 1995. "A Simple Approach to Valuing Risky Fixed and Floating Rate Debt." *Journal of Finance* 50(3): 789–819.

Pesaran, M. H., and Y. Shin. 1999. "An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis." In *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium,* edited by S. Ström. Cambridge University Press.

Stress tests for the Chilean banking sector

Authors: Alejandro Jara and Sergio Rodríguez

Stress testing constitutes a valuable tool for analyzing the risks faced by the banking system. As such, it is included in the Financial Sector Assessment Programs (FSAPs) developed for a number of countries by the International Monetary Fund (IMF) and the World Bank,[1] / as well as in the financial stability reports of a growing number of central banks around the world.[2] / Additionally, at the suggestion of the Bank of International Settlements (BIS), several countries have recently reformed their market risk standards, introducing the idea of stress testing as part of the risk management of their banking institutions.[3] /

What are stress tests?

The goal of stress testing is to estimate the impact of adverse but plausible shocks in macro-financing conditions on the financial soundness of banking institutions. In this sense, the stress exercises are designed to answer questions such as how a banking institution's value would change if the interest rate rose 300 basis points.

It is important to emphasize that stress tests do not assign a probability to a specific scenario, but rather quantify its impact. In practice, these exercises constitute an excellent support tool for assessing the financial stability of the banking industry, because they provide a uniform methodology for identifying potential risks.

A number of factors must be defined before the stress tests can be carried out, including the type of analysis, the risk factors, the variable to be subjected to shocks, the size of the shocks, and the horizon over which to measure the impact.

With regard to the type of analysis, the traditional approach is to distinguish between so-called sensitivity tests and scenario analysis.[4] / Sensitivity tests evaluate the impact of a change in a specific variable on the value of the banking institution, without taking into account interaction between this and other variables. Scenario analysis, in contrast, considers such interactions, usually within a macroeconomic model.[5] / In this case, the exercise is carried out in two phases: the analyst first estimates the impact of a shock on a set of macro-financial variables and then assesses the impact of these changes on the banking institutions' portfolio.

To decide which variables to subject to a shock, the first step is to identify which risk factors could create extraordinary losses in the banking sector. Once the risk factors have been chosen, the next step is to associate at least one variable with each risk. In each of these cases, the usual procedure is to modify the level of this variable, its volatility, or its correlation with another macro-financial variable of interest.

The magnitude of the shock is determined based on historical observation or statistical evidence. In the latter case, it is common to consider a specified percentile of the relevant distribution outside its normal trend. In any case, the magnitude of the shock must represent a plausible scenario, so as to avoid coming to false conclusions.[6] /

Stress tests are traditionally applied to individual bank data, which helps identify the origin of potential risks. The number and type of institutions considered depends on their importance in the system, and the tests could include a group of institutions or even extend beyond the banking system strictly defined. Given the way the banking system functions in Chile, the stress tests must be applied to the total number of banking institutions in existence at a specified date, owing to the potential systemic effects that could be transmitted through the interbank market.

1/ See Blanco and García (2003), who describe the importance of stress tests in developing the FSAPs.

2/ For financial stability reports that incorporate stress tests, see Central Bank of Germany (2003); Reserve Bank of New Zealand (2004).

3/ See Ahumada and Rodríguez (in this volume).

4/ See BIS (2000); Blaschke et al. (2001).

5/ See Blaschke et al. (2001).

6/ See the Central Bank of Austria (1999) and BIS (2001) for international recommendations on this subject.

Designing stress tests

The main risk factors facing the domestic banking industry are related to the probability of nonpayment of loan obligations, the change in the type of interest rate used, and fluctuations in the exchange rate. These factors are associated, respectively, with credit risk, interest rate risk, and currency risk.[7]/

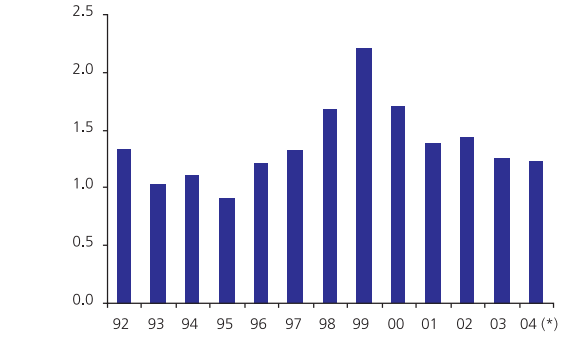
Credit risk

The worsening in the quality of debtors' credit is directly related to the evolution of loan-loss provisions, so the evaluation of credit risk is based on this variable. We consider that a plausible shock level for loan-loss provisions as a percentage of lending is the maximum annual increase in this variable in the period 1992–2004. At the system level, this maximum increase was produced in 1999, when the loan-loss provisions rose 52 basis points (figure 1).

Figure 1

Provisions expense over lending in the total banking system

(percent)



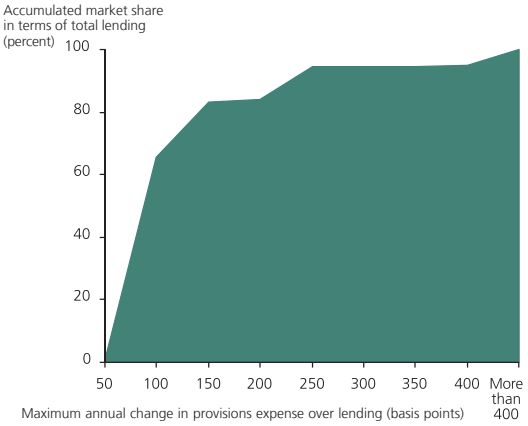
(*) As of September.

Source: Superintendence of Banks and Financial Institutions (SBIF).

By institution, the maximum annual increase in loan-loss provisions fluctuated from 23 to over 400 basis points. Figure 2 shows the heterogeneity and systemic importance of this shock within the domestic banking system. The greatest credit risk corresponds to small institutions of little systemic importance, while more than 80% of the banking market faced a maximum annual increase of loan-loss provisions below 150 basis points.

Figure 2

Maximum annual change in provisions expense over lending, by institution



Source: Calculated based on information from the Superintendence of Banks and Financial Institutions (SBIF).

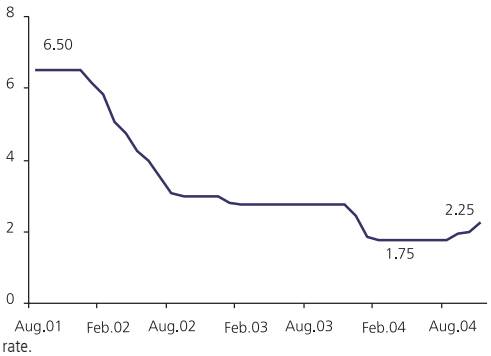
Interest rate risk

To evaluate bank exposure to interest rate risk, we analyze an unexpected change in the term structure of interest rates. The international recommendation in this respect is 200 basis points for developing economies and 100 basis points for developed economies. In the case of Chile, the monetary policy rate fell nearly 350 points in a twelve-month period between 2001 and 2004, with a total fall of 475 basis points in the period (figure 3). This trend leads us to postulate a parallel shock in the term structure of interest rates of 500 basis points, which represents a severe adjustment to the monetary policy followed over the last four years.[8]/

Figure 3

Evolution of the monetary policy rate (MPR) (*)

(percent)



(*) Annual rate.

Source: Central Bank of Chile.

[7]/ In countries where the banking system can invest directly in the stock market, stock prices are commonly included as a variable of interest. Other economies may also consider trends in commodities prices and the real estate market to be an important source of risk for their banking systems.

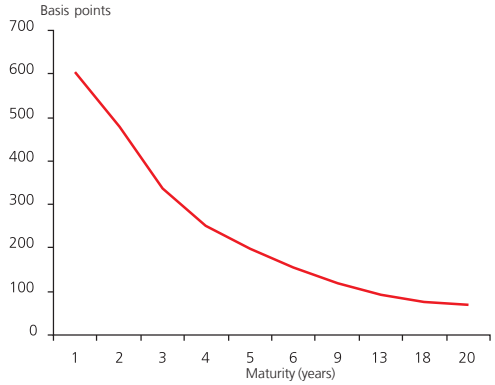
[8]/ The interest rate stress tests consider shocks of a similar magnitude in the return curves for peso- and UF-denominated instruments. The return curve in dollars, however, reacts to a shock of half this magnitude.

We also examine a nonparallel change based on the trend in the term structure of UF (indexed) interest rates in the period 1990–2004. Figure 4 shows the maximum quarterly changes observed in this period, which gives rise to a reversal when applied to the term structure of interest rates for a moment of time.

Figure 4

Maximum net change in the time structure of UF (indexed) interest rates, 1990–2004

(percent)



Source: Calculated based on information contained in the rates of Central Bank of Chile (BCCh) papers.

Currency risk

The assessment of currency risk starts with the application of a change in the nominal exchange rate. The international recommendation for developing economies involves an appreciation or depreciation of the domestic currency of at least 20%.[9]/ In Chile, 95% of the economy's exposure to foreign currency risk stems from operations in US dollars. We therefore look at trends in the relation of the Chilean peso to the US dollar, which recorded annual fluctuations ranging from –25% to 25% in the 1999–2004 period (figure 5). Based on both this evidence and the international recommendation, we consider it reasonable to work with an exchange rate shock of ±30%.

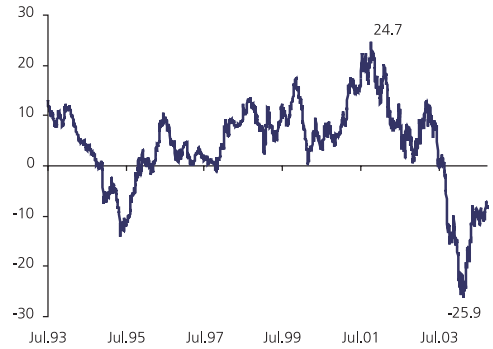
Outcome

The shocks described above were applied to the Chilean banking industry and evaluated in function of their impact on the return on equity (ROE) and the capital adequacy index (CAI) of each bank, using September 2004 as the initial situation.

Figure 5

Annual change in the nominal exchange rate (*)

(percent)



(*) Ratio of the Chilean peso to the US sdollar.

Source: Central Bank of Chile.

The stress tests are designed in such a way that the shock is first transmitted to the profit level and, therefore, to the ROE indicator, such that initial profitability acts as the first shock absorber. If the shock generates losses that exceed initial earnings, then capital acts as a second shock absorber. In this case, the equity base shrinks, thereby reducing the capital adequacy index.[10]/

Credit risk

The increased loan-loss provisions are transmitted through the following channels: (1) a reduction in operating income (due to the higher loan-loss provisions); (2) a fall in the interest margin (due to the fall in productive assets); (3) an equity effect (absorption of net losses); and (4) a fall in risk-weighted assets, net of provisions. The sum of these effects represents the impact of a credit risk shock.

To test the magnitude of the credit risk shock, we applied different degrees of severity ranging from one to five times the historical maximum increase in annual loan-loss provisions. For each magnitude, figure 6 shows the market share whose ROE level became negative and whose capital adequacy fell below 8%.[11]/

The results show that fewer than 40% of the institutions in the market would post losses in the event of an increase in their loan-loss provisions equal to the historical maximum by institution, and no institution would see its capital adequacy level fall below the regulatory minimum. In fact,

[9]/ See Derivative Policy Group (1995).

[10]/ In the case of Chile, the capital adequacy index corresponds to the ratio of real equity (basic capital, subordinate bonds, and voluntary provisions) to risk-weighted assets net of required provisions.

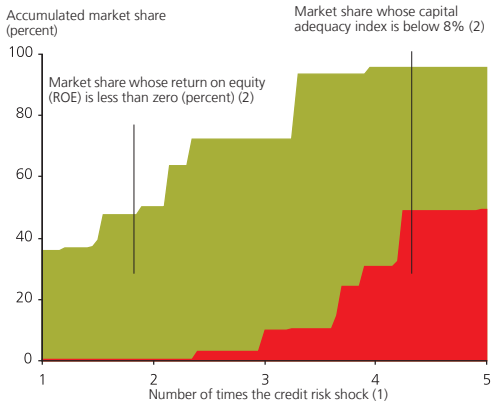
[11]/ According to current standards, banking institutions must maintain a capital adequacy level (real equity as a percentage of risk-weighted assets) above 8%.

the shock would have to be twice the historical maximum increase in loan-loss provisions before any banking institution's CAI would fall below 8%.

Figure 6

Impact of a credit risk shock

(percent)



(1) Measured in terms of the greater annual increase in loan-loss provision over lending.
(2) For different magnitudes of the shock.

Source: Calculated based on information from the Superintendence of Banks and Financial Institutions (SBIF).

Interest rate risk

The assessment of a shock to the term structure of interest rates takes into account current regulatory factors in Chile with regard to recognizing changes in the value of financial investments held by the banking system. These guidelines distinguish between permanent and trading investments, and fluctuations in value are recognized differently for the two categories even though both are valued at market price. In the case of trading investments, fluctuations are registered in income accounts, whereas they are recorded in equity accounts in the case of permanent investments. For all other balance sheet transactions, the impact of the interest rate movement was simulated via a one-year interest rate gap—that is, we quantified the effect of changes in the interest rate on the interest margin, taking into account the maturity structure of each institution's transactions.

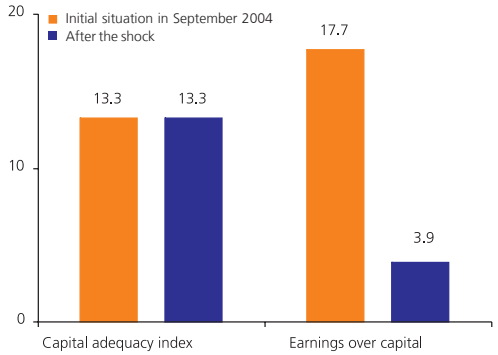
In sum, the transmission channels for changes in the term structure of interest rates are as follows: (1) changes in the economic value of financial investments pertaining to the trading portfolio;[12] / (2) changes in the economic value of investments classified as permanent; and (3) variations in the margin of interests associated with the remaining balance sheet items. The first and last channels affect income (change in final earnings), while the second has an impact on equity.

The scenario of a parallel 550-basis-point increase in interest rates generates a fall in the banking system's profitability from 17.7% to 3.9%, while the CAI holds steady at 13.3% (figure 7). At the individual level, no institutions finish with a capital adequacy index of less than 8% (figure 8). For the

Gráfico 7

Impact of a parallel shift of the time structure of interest rates (*)

(percent)

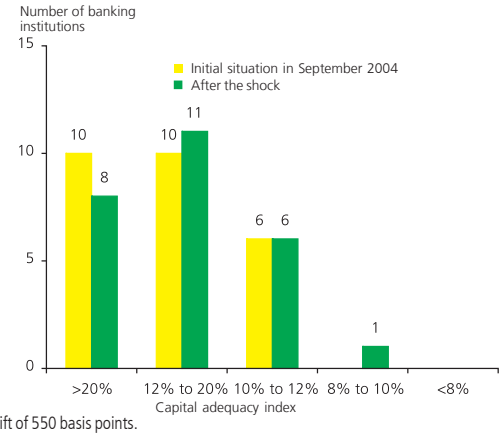


(*) Shift of 550 basis points.

Source: Calculated based on information from the SBIF.

Gráfico 8

Impact of a parallel shift of the time structure of interest rates (*)



(*) Shift of 550 basis points.

Source: Calculated based on information from the SBIF.

[12/] A similar treatment was used in the case of derivative instruments and items—that is, for the purposes of the simulation, they were valued at market price, and fluctuations generated an impact on earnings.

solvency of any bank to fall below the required 8%, the curve would have to shift by nearly 850 basis points.

We also simulated the impact of a reversal of the curve, as described in the last section. The results were similar.

Currency risk

A depreciation (appreciation) of the peso has a direct impact on the value of foreign-currency-denominated assets and liabilities and on the share corresponding to risk-weighted assets. In fact, a depreciation (appreciation) increases (decreases) the exchange earnings to the extent that foreign-currency-denominated assets are greater than liabilities. Moreover, there are second-order effects on the intermediation margin, attributable to the worsening in the credit quality of debtors affected by the exchange rate fluctuations.

A 30% depreciation or appreciation of the peso generates a marginal impact on the average profitability of the banking system. In fact, the depreciation lowers the CAI to 12.7%, mainly as a result of the increase in foreign-currency-denominated risk-weighted assets. In this case, for the solvency indicator of at least one bank to fall below the required minimum, the peso would have to depreciate by over 170%.

The domestic banking system's low exposure to currency risk stems from the fact that most banks concentrate their activity in currency trading (spot and forward) and not in taking directional positions in foreign currency.

Conclusions

Stress tests perform a key role in the assessment of the financial system's strength in the face of potential macro-financial shocks. The results presented in this paper demonstrate that given the domestic banking system's low exposure to exchange risk, the greatest risks stem from a weakening in the credit quality of debtors and variations in the interest rate. Under current macroeconomic conditions, however, the strongest emphasis should be on interest rate risk, considering that debtors' payment capacity has strengthened in a context of economic growth. Even so, the banking institutions have sufficient capital to absorb the potential losses despite the size of the shocks considered. Finally, it is important to bear in mind that the subjective nature of risk scenarios implies a need for the ongoing realization, application, and assessment of stress tests on the banking sector.

References

Ahumada, L., and S. Rodríguez. 2004. "Regulación y supervisión de los riesgos de mercado: recomendaciones de mejores prácticas, evidencia internacional y su aplicación en Chile." In *Informe de estabilidad financiera*, second semester. Santiago: Central Bank of Chile. English translation in this volume.

BIS (Bank of International Settlements). 2000. "Stress Testing by Large Financial Institutions: Current Practice and Aggregation." April.

———. 2001. "A Survey of Stress Tests and Current Practice at Major Financial Institutions." April.

Blanco R., and A. García. 2004. "Las pruebas de estrés en los programas de evaluación del sistema financiero." In *Informe de estabilidad financiera,* May. Bank of Spain.

Blaschke W., M. Jones, G. Majnoni, and S. Martínez. 2001. "Stress Testing of Financial Systems: An Overview of Issues, Methodologies, and FSAP Experiences." Working paper WP/01/88 (June). Washington: International Monetary Fund.

Central Bank of Germany (Deutsche Bundesbank). 2003. "Stress Testing the German Banking System." In *Monthly Report*, December. Bonn.

Central Bank of Austria (Oesterreichische Nationalbank). 1999. "Stress Testing." In *Guidelines on Market Risk*, vol. 5. Vienna.

Derivative Policy Group. 1995. "Framework for Voluntary Oversight." New York.

Reserve Bank of New Zealand. 2004. "Stress Testing the New Zealand Banking System." *In Financial Stability Report,* October. Wellington.

Regulation and supervision of market risks: best international practices and their application in Chile [1] /

Authors: Luis Antonio Ahumada and Sergio Rodríguez

I. Introduction

In the last few years, the international regulatory and supervisory authorities have recognized that financial institutions are, by their nature, permanently exposed to a variety of risks that are difficult to measure and control. An unsound management of exposure to credit risk, for example, can cause a financial institution to become insolvency and could potentially compromise the stability of the rest of the banking sector. In response to the growing concern for financial stability, these international organizations, in particular the Bank of International Settlements (BIS), have made efforts to forge agreement on and promote the adoption of standards on a range of issues associated with bank business, including principles of capital adequacy and the functioning of the payment system.

Market risk management and control have been prominent issues in the effort to establish a set of sound management practices for financial institutions. Good market risk management is especially important in the current context of a strong financial integration in the international capital markets, the heightened complexity of financial institutions' transactions, and the increased volatility of variables such as exchange rates. For example, the situation leading up to and following the collapse of the Barings Bank in 1995 revealed that the insolvency of a financial institution can be caused not only by a worsening in the credit quality of debtors (traditional business of banks), but also by the absence of a good policy for managing market risks.

Market risk refers to the potential loss in the value of a financial institution's net positions, as a result of adverse movements in market prices. In general, the literature defines four market factors or risks: the exchange rate, interest rates, stock prices, and commodities prices. This paper provides a complete overview of the main international recommendations for managing market risks, which call for effectively identifying, measuring, monitoring, and controlling exposure to these risks. The paper also summarizes the new standards on market risks that will be implemented in Chile in the second half of 2005.

The following section reviews the contents of documents published by the Basel Committee on Banking Supervision in relation to market risk management for financial institutions. Section III then summarizes the proposal for revising the guidelines on market risks, which was put forth by the Central Bank of Chile in conjunction with the Superintendence of Banks and Financial Institutions (SBIF), by virtue of the authority and functions established in Article 35 of the Central Bank's Basic Constitutional Act. The proposal fully incorporates best international practices in this area, while adapting them to the specific characteristics of the Chilean banking sector, specifically the existence of formal indexation mechanisms. Finally, section IV presents the conclusions.

II. Overview of documents published by the Basel Committee

Core principles for effective banking supervision

Before describing the details of the Basel Committee documents on managing market risks, this section highlights and reviews —albeit briefly— a 1997 Basel Committee document that outlines a set of 25 minimum recommendations and preconditions considered essential for effective banking supervision.[2] / While this document came after the first publication on market risks, it is important in that the 25 recommendations define a basic

1/ We thank Rodrigo Cifuentes and an anonymous reviewer for comments on an earlier version of this paper. Any errors or omissions are our sole responsibility.

2/ "Core Principles for Effective Banking Supervision," Basel Committee on Banking Supervision, September 1997. The document is available in English only. All Basel Committee on Banking Supervision documents cited in this paper can be found at www.bis.org/bcbs/publ.htm.

regulatory framework for the stability of the banking sector. These principles have been adopted, to varying degrees and at different rates, by a large number of countries, and a review of their compliance is included regularly as part of a country's financial stability assessment program (FSAP), developed jointly by the International Monetary Fund (IMF) and the World Bank.[3]/

These principles cover a wide spectrum of issues, from the preconditions necessary for effective banking supervision (in particular, the legal framework for authorizing banking organizations), to cross-border banking business (which centers on global consolidated supervision)

With regard to financial institutions' risk exposure, the document highlights the need for prudential regulations and standards for setting minimum capital adequacy requirements that reflect the exposure to these risks and defining the capital components of the financial institutions based on the institutions' ability to absorb losses as the basic criterion. The document further indicates, for example, that banking supervisors should ensure that banks have available adequate systems for measuring, monitoring, and controlling market risks and that the supervisors have the power to set limits and/or impose specific capital charges on market risk exposure.

Amendment to the capital accord to incorporate market risks

In 1996, the Basel Committee published the Amendment to the Capital Accord of 1988 (Basel I), to incorporate a market risk charge in the calculation of the capital adequacy index.[4]/ The Amendment sought to broaden the set of risks reflected in the minimum capital requirements, recognizing that a bank's capital should not only be sufficient to compensate unexpected losses from the nonpayment of loans, but should also take into account potential losses from adverse changes in the market prices to which the banking system is exposed, in both its asset and liability transactions.[5]/

The Basel Committee's proposal contemplates all the market risks described above, which should each be measured for the net position of the total balance sheet. The one exception is the measurement of interest rate risk, which is applied solely to the trading book.[6]/

In any case, the minimum ratio of regulatory capital (*RC*) to risky assets, which after the Amendment correspond to the sum of credit-risk-weighted assets (*CRWA*) and market risk exposure (*MR*), are held constant relative to the original Accord, at no lower than 8%. Thus, with the Amendment the capital adequacy ratio (*CAR*) is expressed as follows:

$$CAR = \frac{RC}{CRWA + 12.5MR} \geq 8\%$$

where *MR* represents a financial institution's value at market risk, given the structure of assets and liabilities on its balance sheet. This value is multiplied by 12.5 (the reciprocal of the 8% capital adequacy requirement) so as to achieve a similar base compared with the credit risk exposure.

Methods for measuring market risk

The Amendment establishes two methods for measuring market risk, which are explained below. The first is called the standardized approach, because the calculation procedure and the parameters used to measure the value at risk are determined by the supervisory authority. The second, called the internal approach, allows the financial institutions to calculate the value at market risk using models developed by the institutions themselves, but with the prior authorization of the supervisory authority.

The standardized approach lays out a similar measure for measuring exchange risk, stock risk, and commodities risk. The value at risk is determined by multiplying the net position of the total balance sheet by a parameter that represents the volatility of the associated risk factor in a specific period of time. In contrast, interest rate risk is

---

[3]/ In August 2004, these organizations published the results of an FSAP carried out for Chile, which included an assessment of compliance with the banking supervision principles. The FSAP's recommendations include granting greater independence and legal protection to officials of the supervisory authority, giving the SBIF greater power to grant bank licenses, and speeding the implementation of international accounting and risk management standards.

[4]/ "Amendment to the Capital Accord to Incorporate Market Risks," Basel Committee on Banking Supervision, January 1996. The document is available in English only.

[5]/ In June 2004 the Basel Committee adopted an Accord entitled "International Convergence of Capital Measurement and Capital Standards" generally known as Basel II. This recent Accord expands the measurement of the capital adequacy index to incorporate a financial institution's exposure to operational risk. This includes potential losses stemming from inadequate or failed legal or technological processes, personnel, or internal systems, as well as from external events such as terrorist attacks or fire, among others.

[6]/ The trading book is defined as that part of the balance sheet that is composed of positions in both asset and liability instruments, valued at market prices, that are traded actively and frequently by the financial institution or are held either with the intent of reselling in the short-term to benefit from possible changes in market prices or as hedging instruments to cover the risk of other positions in the trading book.

determined by classifying the instruments into temporal bands according to either their residual term to maturity or, alternatively, their duration. The net position of each temporal band is then multiplied by a parameter that represents the sensitivity of the instruments in the respective band to a predefined change in the interest rates, over a predetermined time horizon.[7]/ In addition, adjustments are made to allow the approximation of other risks specific to positions that are sensitive to interest rate fluctuations.

The Amendment also establishes a special treatment for options positions, because this type of instrument has complex characteristics with regard to their valuation. Other measures are therefore incorporated, such as the sensitivity of the price of the instruments to variations in the price and volatility of the associated underlying instruments.

Next, market risk (MR) is determined simply by summing the values at risk obtained separately, adding —when appropriate— the associated risk to the options positions held in the financial institution's balance sheet.

The internal approach, in turn, represent the Basel Committee's response to the industry's requirements for more flexible methods of estimating the capital charges for market risk. This approach allows the banks to use value-at-risk (VaR) type models to calculate their exposure to market risks. In the VaR calculation, each institution defines the relevant risk factors given their business structure and then calculates the parameters (variances and correlations) necessary for quantifying their market risk. As indicated earlier, the Committee recommends that the use of internal models requires the prior authorization of the supervisory authority.

The capital requirement of a bank that uses internal models will correspond to the higher of:

- The previous day's VaR; or
- Three times the average daily VaR of the previous sixty business days.[8]/

Institutions that intend to use this approach for calculating their minimum capital requirements should fulfill certain qualitative and quantitative requirements. This will ensure a minimum degree of prudence, transparency, and consistency of capital requirements among different institutions that use the internal approach. The supervisory authority will only grant authorization for using this method if, as a minimum:

- The bank's risk management system is well founded and implemented with integrity;
- The bank has sufficient personnel with knowledge and skills in the use of sophisticated models, not only in the area of trading, but also in the areas of risk control, auditing, and, if necessary, back office support;
- From the supervisor's perspective, the bank's models have been proven to behave reasonably with regard to risk measurement; and
- The bank regularly carries out stress tests using parameters established by either the Basel Committee or the country's supervisory authority.

The main quantitative restrictions that the Basel Committee recommends applying to internal models are the following:

- The VaR should be calculated daily;
- A 99% confidence interval should use in the VaR calculation; and
- The minimum time horizon used in the VaR calculation should be 10 days (holding period).

The annex to this paper presents a comparative summary of the quantitative standards considered in the market risk regulation of a variety of countries, with special emphasis on aspects such as the holding period, the confidence interval, and the sample size used to calculate risk factors. Box 1 provides additional detail on the intuition behind the VaR and on certain methodological aspects of this tool.

Framework for the use of backtesting

Parallel to the publication of the Amendment to the Capital Accord of 1988, the Basel Committee proposed a conceptual framework for the use of backtesting in conjunction with the application of the internal models for measuring market risk.[9]/

---

[7]/ For an explanation of the function of time horizons in the measurement of market risks, see box 1 in this paper.

[8]/ The goal of this criterion is to smooth the measurement of market risk exposure and provide sufficient protection in the face of losses stemming from lengthy adverse market conditions or exceeding the 99% confidence interval recommended in the regulation. Moreover, the criterion tries to correct the error inherent in this instrument, in that extreme returns are sometimes observed more frequently than would be predicted by a normal distribution because the estimated parameters are calculated over a historical database, which does not necessarily capture sudden changes in market volatility and the exact liquidity conditions.

[9]/ "Supervisory Framework for the use of 'Backtesting' in Conjunction with the Internal Models Approach to Market Risk Capital Requirements," Basel Committee on Banking Supervision, January 1996. The document is available in English only.

Backtesting is a statistical exercise for comparing the losses generated by internal models with the real losses registered by the institution in the course of its daily operations. If the comparison yields positive results, in the sense described in the next paragraph, then the backtest supports the conclusion that the internal measurement model is consistent and acceptable for determining the capital charges for market risk. If, however, the comparative exercise reveals significant differences, the assumptions used in constructing the internal model should be revised.

The procedure proposed by the Committee basically consists in reviewing the last 250 business days in which a financial institution had market risk exposure and counting the number of times in which the real losses of the institution were greater than the loss indicated by the VaR (prediction error of the VaR model at 99% confidence). Financial institutions should implement this procedure at least quarterly. Based on the number of exceptions (failures), the supervisory authority will approve or reject the model or, in intermediate cases, solicit more information. The Committee defines three areas of analysis: the first (in which the supervisor approves the model) corresponds to backtests that yield between zero and five exceptions; the second (in which the supervisor requests more information) corresponds to backtests that yield between six and nine exceptions; and the third (in which the model is rejected) corresponds to backtests that yield ten or more exceptions. In the case of institutions whose backtests fall in the second category, the VaR should be corrected by an additive factor proportional to the number of exceptions.[10]/

Principles for the management and supervision of interest rates

In July 2004, the Basel Committee published a revised version of a document entitled "Principles for the Management and Supervision of Interest Rate Risk," which was originally published in 1997.[11]/ The document outlines 15 principles that are considered key for the supervision and global risk management of interest rates. These cover, among other issues, the role of the board of directors and senior management in overseeing risk; risk management policies and procedures; risk measurement and monitoring; internal controls; information that should be provided to supervisors; and the public disclosure of information.

This document centers a good part of its recommendations on the supervision of interest rate risk in the banking book. It constitutes a complement to Basel II, with regard to the issues covered in the Second Pillar of the Accord.[12]/

The Basel Committee recommends that financial institutions regularly measure the interest rate risk exposure in their banking book along two dimensions. The first is focused on the concrete short-term impact of interest rate movements on the institution's profit and loss statement, including a fall in the one-year interest margin stemming from changes in market rates. The second (long-term) dimension centers on the effect of interest rate movements on the institution's economic value. In both cases, the interest rate movements used in these analyses can be defined based on historical changes, simulations of possible future movements, or using the judgment of the bank's risk control unit.

Given that these recommendations form part of the Second Pillar of the Basel Accord, they do not, in principle, translate directly into a direct capital charge for financial institutions. The capital charge for interest rate risk is determined for the trading book and is part of the 1996 Amendment. The document proposes, however, that the supervisory authority should have the power to demand a reduction in risk from institutions that exhibit excessive interest rate risk exposure in their banking book. To that end, the supervisory authority can request that they undertake corrective action to reduce exposure, that they have available an additional amount of capital, or a combination of the two. In any case, the financial institutions themselves set the limit —duly founded and as a percentage of capital— on their exposure to short- and long-term interest rate risk, consistent with their business strategy.

Finally, this document does not leave out a fundamental element of a good management system for market risk, in general, and interest rate risk, in particular. Specifically, it includes a discussion of stress tests on the banking book, which, by simulating extreme market situations, allows an

---

[10]/ The increase should be sufficient to correct the model to achieve the required coverage (99%). For example, five exceptions in a sample of 250 observations correspond to 98% coverage. The increase in the multiplicative factor should thus be sufficient to transform a model with 98% coverage to one with 99% coverage.

[11]/ "Principles for the Management and Supervision of Interest Rate Risk," Consultative Document, Basel Committee on Banking Supervision, June 2004. The document is available in English only.

[12]/ The banking book corresponds to positions in instruments, contracts, and other operations (both asset and liability) that do not form part of the trading book. In general, this book registers instruments related to traditional banking activities, such as lending and deposits, or financial investments that the institution acquires with a clear intention of holding through maturity.

institution to establish its degree of vulnerability in the face of such events. These tests can be designed to fit the specific conditions of each financial institution, based on its risk profile and oriented to finding the least favorable scenario and then taking the appropriate steps to protect against it. These exercises are considered a fundamental part of the internal process of setting limits on interest rate risk exposure in the banking book.

III. Market risk regulations in Chile

In the context of the program for modernizing the financial regulation of the banking system, the Central Bank and the SBIF initiated a review process in 2002 covering the legal provisions on liquidity risk management and control. This process was concluded in June 2004, with the full application of the provisions approved in this area in October 2003.

The review of the legal provisions on market risk management was also carried out in 2004. This review resulted in a proposal to modify the corresponding regulations contained in chapter III.B.2 of the Central Bank's Compendium of Financial Regulations, replacing the current numbers 2, 5, and 6. This initiative was published on the Central Bank's website with the objective of generating comments from the banking industry through the Association of Banks and Financial Institutions, as well as from the general public.

This initiative takes into account the Basel Committee on Banking Supervision's recommendations on better practices for market risk management in financial institutions, as well as the specific characteristics of the Chilean banking system, stemming from the existence of formal indexation mechanisms like the *Unidad de Fomento* (UF) and the Average Value Index (IVP). Given these characteristics, the regulations address only the measurement of interest rate and foreign exchange risk, because the financial institutions are not authorized to take positions in commodities or stocks, together with the treatment of inflation risk, which financial institutions face because certain balance sheet items are periodically corrected according to the consumer price index. For the effects of the regulations, this inflation risk is defined as adjustability risk. The next section describes the main aspects incorporated in the proposal.

Market risk management policy

The review initiative incorporates the Basel Committee on Banking Supervision's recommendations with regard to the active participation of a financial institution's board of directors and senior management in market risk management and control. In particular, it establishes the following:

- Financial institutions should adopt a Market Risk Management Policy that has been expressly approved by the board of directors and that is oriented toward protecting the institution's solvency, in line with the scale and complexity of its operations.
- The board of directors should be kept adequately informed on the institution's market risk exposure, on its affiliated businesses and foreign branches, and compliance with the adopted policy.
- Financial institutions should inform the SBIF in a timely manner regarding any unusual situation that arises — or that could arise— in the area of market risk management, together with its originating causes and the proposed measures for correcting or facing the situation.

Models for measuring market risks

The proposal also incorporates the Basel Committee on Banking Supervision's recommendations on the use of internal models for measuring and controlling market risk in the trading book. The use of internal models will be an option available to financial institutions with an A solvency rating, subject to the prior authorization of the SBIF based on that authority's evaluation of the institution's financial risk management and treasury operations. A standardized model will also be established for application by banking entities that do not opt for or are not authorized to use the VaR-type models.

With regard to managing interest rate risk in the banking book, the financial institutions will be charged with modeling the behavior of the transactions registered in the banking book, based on a set of parameters established in the regulations and using a set of fourteen time bands, especially in cases in which the real maturity term differs from the contracted maturity. The SBIF, within the framework of the periodic assessment process, can evaluate the relevance and consistency of the criteria and assumptions used in the allocation of banking book flows.

Stress tests and backtests

Financial institutions must carry out stress tests that consider several scenarios and account for all activities that generate market risks, in general, and interest rate risk in the banking book, in particular. The objective of these tests is to detect sources of vulnerability in unusual, but plausible situations. In the case of interest rate risk in the banking book, certain base scenarios have been defined relative to the size of the interest rate shock, based on

information on interest rate volatility garnered through observation of transactions in the secondary market over the last four years. Financial institutions that are authorized to use internal models for measuring market risks must periodically carry out backtests (described earlier), with the aim of assessing the degree of precision of the test results. In any case, both the stress tests and the backtests should fulfill the significance and adequacy requirements established by the SBIF.[13]/

Limits on market risk exposure

The proposal on market risks considers the establishment of a maximum limit on exposure to interest rate risk in the trading book and to currency risk in the overall balance sheet. This limit, which cannot be negative, corresponds to the difference between the financial institution's Real Equity and the sum of credit-risk-weighted assets (defined in Article 67 of the General Banking Law), times the minimum Real Equity percentage established in the Law (8%), plus the exposure to market risk, determined with the methods described earlier.

The proposal thus eliminates the individual quantitative limits on exposure to interest rate, foreign currency, and nonadjustable Chilean currency risks, applied over the same equity base, that are currently established in chapter III.B.2 of the Compendium of Financial Regulations. Consequently, each financial institution will now have the flexibility to adapt its exposure to each one of these risks, given the nature of its business and the complexity of its operations, as well as its exposure to other risks (credit and operational), based on the equity support at its disposal.

Finally, the regulations establish that financial institutions must observe certain limitations on exposure to short- and long-term interest rate risk in the banking book; and to adjustability risk and the risk of a reduction in income from fees, charges, and commissions in the short term (owing to adverse changes in interest rates), also in the banking book. These limits, however, are determined by each institution, in agreement with the Basel Committee's recommendations. Specifically, they are established annually by the institution's board of directors and are subject to review by the SBIF within the framework of the authority's assessment of the institution's financial risk management and treasury operations.

IV. Conclusions

In recent years, international organizations such as the Bank of International Settlements have made an important effort to draw up a set of standards for the supervision, registration, and management of financial institutions' activities. These standards include general recommendations on market risks and more specific recommendations on interest rate risk in the banking book, as described briefly in this paper. In general, the recommendations stress the need to establish an active participation on the part of the board of directors and senior management in the design, control, and limitations of a financial institution's risk management policy.

The Central Bank of Chile and the Superintendence of Banks and Financial Institutions (SBIF) have gradually incorporated these recommendations in the regulations that govern the banking sector. The most recent of these is the regulation on market risks, which is currently in the final phases of approval by the Central Bank Board and whose main points are summarized in this paper. In this sense, the regulatory changes that will be implemented in mid-2005 fully reflect the international recommendations on market risk management. They are also in line with the Financial Stability Assessment Program prepared jointly by the International Monetary Fund and the World Bank in August 2004, which recommended speeding up reform in this area.

The central characteristic of the new regulations is that, in contrast with current legal provisions, the main risks facing a financial institution will be protected by a single equity base. The choice of risk profile is thus addressed within the realm of each institution's policy decisions, in line with the nature and complexity of its operations. The regulations also contain elements based on the principle of self-regulation of financial institutions, in that the institutions are responsible for setting their own limits on exposure to interest rate risk in the banking book. Furthermore, the SBIF takes on a more significant role under this regulatory framework, because the oversight of financial institutions' market risk management is an integral part of the authority's periodic assessment of solvency and conduct.

[13]/ See the paper by Jara and Rodríguez in this *Report*.

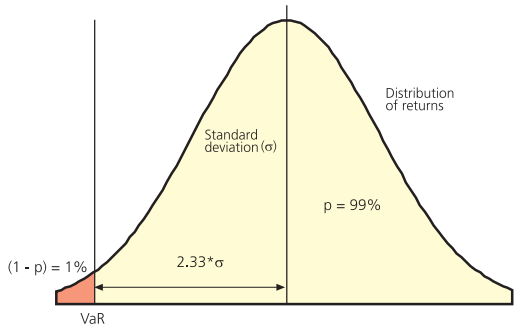
Finally, when the new regulations enter into force, the financial institutions will be able to offer participants new hedging instruments for managing market through options overwriting. These may have simple risk profiles, or they may be more structured, provided they always have the prior authorization of the SBIF. In any case, the methods of market risk measurement considered in the regulations will allow institutions to adequately accommodate the risks that these instruments generate in a financial institution's asset and liability positions.

Box 1: Introduction to the Value-at-Risk (VaR) methodology

The value-at-risk (VaR) technique provides a risk measure that reflects the maximum potential loss to the value of a portfolio of financial instruments, with a given probability (confidence level, p%) and for a predetermined time horizon (holding period). In other words, if the model is correctly estimated, then with a probability of p% (for example, 99%), the loss in the portfolio's value will be less than the amount yielded by the VaR as shown in the following figure.

Figure

Diagram of VaR at 99%



The Basel Committee has established that in the case of market risk measurement, financial institutions should calculate the VaR at 99%, with a holding period of 10 days. The holding period is related to the time necessary for an institution to offload positions in the portfolio without incurring stress liquidation risk. Given that the VaR measure is used for capital requirement purposes, the 99% confidence level guarantees that institutions have a sufficient equity base for covering losses associated with market risks.

The advantage of the VaR is that it allows the analyst to aggregate different risks (interest rate, currency, and others) under a single measure, which also identifies the probability of occurrence and is quantified in terms of monetary units (pesos, dollars, and so forth). All these features facilitate the interpretation of the VaR and its communication to all parties that participate in risk management within the financial institution. They also serve to provide a direct capital charge figure.

Calculating the VaR

Different methods or approaches can be used to calculate the VaR. They can be divided into the following groups:

i. Variance-covariance matrix or parametric method
ii. Historical simulation
iii. Monte-Carlo simulation

The calculation is generally based on historical data on market rates and prices, the positions currently in the financial institution's portfolio, and valuation models for these positions (stock valuation models, bond valuation models, etc.). All these elements are combined to estimate a specific percentile of the loss distribution (one minus the confidence level, which is usually 99%).[14]/

i. Parametric method: variance-covariance

The variance-covariance method assumes that the VaR is proportional to the standard deviation of the portfolio yield. The following expression is used to calculate the VaR:

$$\text{VaR} = \alpha \cdot \sqrt{\tau \cdot \sigma_p}$$

where α is a parameter that depends on the statistical confidence level to be used in the measure (given a normal distribution for returns and a 99% confidence level, α equals 2.33); τ is the holding period; and σ_p is the standard deviation of the portfolio yield.

This is the fastest and simplest method to calculate, because it assumes a specific distribution for the returns (usually a normal distribution). The distribution parameters are calculated directly from historical data. The disadvantage of this method is that it does not work very well when the positions are nonlinear, as in the case of options.

ii. Historical simulation

The second alternative consists in applying a representative series of historical risk factor returns to the portfolio, so as to generate a sequence of portfolio values that can be represented in a histogram. This histogram is then used as the basis for calculating the VaR, choosing the percentile associated with the desired confidence level.

One of the advantages of this approach is that it does not make an explicit hypothesis on the distribution of returns.

[14]/ The measurement methodology developed by JP Morgan, known as RiskMetrics, suggests calculating the VaR at 95% confidence, for a holding period of one day. The following expression can be used to obtain a VaR that meets the demands of the Basel Committee (BIS) based on a VaR calculated with RiskMetrics (RM):

$$VaR_{BIS} = \frac{2,33}{1,65} \cdot VaR_{RM} \cdot \sqrt{10}$$

This adjustment assumes that the returns are normally distributed.

However, the way the historical period is chosen is extremely important. The data used are generally taken from the period immediately preceding the point at which the calculation is carried out (typically from six months to two years prior). Another option is to choose a historical period with similar characteristics to the period under analysis (for example, a period with a similar level of market volatility).

iii. Monte Carlo simulation

Whereas historical simulations quantify risk by replicating a specific trend in prices, the Monte Carlo simulation method tries to generate a large number of trends for market returns. These trends are generated using stochastic processes (for example, stock price returns follow a random walk) and process parameters (such as the mean and variance of the model distribution). These parameters are generally obtained from historical data on the behavior of prices or market risk factors.

The advantage of this approach is that it provides a better valuation of nonlinear instruments. Its disadvantage is that it is much more demanding computationally, in that the analyst must carry out a large number of simulations (10,000 or more) to build a histogram from which to adequately calculate the VaR.

Annex:
Summary of quantitative standards in the use of VaR models, stress tests, and backtests

	Basel recommendations	United States	Spain
Calculation	Daily.	Daily.	Minimun daily.
Confidence interval	99% over a single tail.	99% over a single tail.	99% over a single tail.
Minimum holding period	10 days.	10 days.	10 days.
Sample size	At least one year. For institutions that use time weighting, the effective period should be at least one year.	At least one year. For institutions that use time weighting, the effective period should be at least one year.	One year minimum, unless a significant increase in price instability justifies a shorter observation period.
Updating of the databases	Not less than three months and any time market prices are subject to material changes.	Not less than three months and more frequently if justified by market conditions.	Quarterly.
Types of models	No specific recommendation, as long as all the material risks to which the institution is exposed are captured.	Any generally accepted model can be used, although the model's level of sophistication must be consistent with the nature and size of the positions held by the institution.	No information available.
Correlations	Institutions can recognize empirical correlations within broad categories of risk. With the authorization of the supervisory authority, they can recognize correlations between broad categories.	Empirical correlations (calculated on the basis of historical data) within and between broad categories of risk can be used, subject to confirmation by the supervisory authority that the model is robust.	No information available.
Risk computation	Risk corresponds to the greater of: (a) the VaR of the previous day and (b) the simple average of the VaRs of the last 60 business days times a multiplicative factor. An additive factor (related to backtest performance) can be added to the multiplicative factor.	Same as Basel.	Same as Basel.
Multiplicative factor	Greater than or equal to 3.	Equal to 3.	Equal to 3.
Additive factor	Between 0 and 1.	Between 0 and 1.	Between 0 and 1.
Stress tests	Must be carried out periodically and reported to the supervisory authority.	Must be carried out periodically and reported to the supervisory authority.	Must be carried out periodically and reported to the supervisory authority.
Backtests	Must be carried out quarterly, at 99%, using (hypothetical and real) returns of the last 250 days. Holding period is one day. Focus is on three zones.	Same as Basel.	Same as Basel.

United Kingdom	Australia	Brazil	Argentina
Daily.	Daily.	Daily.	Daily.
99% over a single tail.	99% over a single tail.	99% over a single tail (factor 2.33),	99% over a single tail (factor 2.33).
10 days.	10 days.	10 days.	5 days.
250 days, unless changes in price instability justify a shorter observation period.	One year minimum, unless a significant increase in price instability justifies a shorter observation period.	n/a	n/a
Not less than three months and any time market prices are subject to material changes.	Not less than three months and any time market prices are subject to material changes.	n/a	n/a
No information available.	No specific recommendation, as long as all the material risks to which the institution is exposed are captured.	VaR-type model only for interest rate risk; the supervisory authority provides the volatility parameters and correlations.	VaR-type model; the supervisory authority provides the volatility parameters.
Correlations between broad categories of risk can be used if there is a measurement model that has been implemented with integrity.	Correlations within and between broad categories of risk can be used if there is a measurement model that has been implemented with integrity.	Correlations defined by the supervisory authority can be used.	
Same as Basel.	Same as Basel.	Risk corresponds to the greater of: (a) the VaR of the previous day and (b) the weighted average (by a factor between 1 and 3 that captures market volatility and is provided by the supervisory authority) of the VaRs of the last 60 business days	Risk corresponds to the sum of the VaRs for positions in bonds, stocks, and foreign currency.
Greater than or equal to 3; based on qualitative criteria.	Between 3 and 5; based on qualitative criteria.	n/a	n/a
Between 0 and 1; in some cases greater than 1.	Between 0 and 1.	n/a	n/a
Institutions should have the capacity to carry them out daily.	Must be carried out periodically and reported to the supervisory authority.	Not required by the regulations.	Not required by the regulations.
Same as Basel.	Same as Basel.	Not required by the regulations.	Not required by the regulations.

Index of tables and figures

Tables

Figures

Tables in Papers

Figures in Papers

Juan Esteban Laval Z.
Legal Representantative

Agustinas 1180, Santiago, Chile
P.O. Box 967, Santiago, Chile
Tel.: 56-2-670 2000
Fax: 56-2-670 2231
www.bcentral.cl
bcch@bcentral.cl

Published in Santiago, Chile

April 2004
500 copies printed

ISSN 0718-154X
Intellectual Property Registration N° 141.570
