

**FIRST TECHNICAL ASSISTANCE PROJECT TO THE
SUPERINTENDENCE OF PENSION FUND
ADMINISTRATORS
IN CHILE**

**MOVING TO A RISK-BASED
SUPERVISION SYSTEM IN CHILE**

1. INTRODUCTION

The Superintendence of Pension Fund Administrators (SAFP) in Chile requested technical assistance from FIRST to support the transition of the regulatory and supervisory framework of the pension sector, from one based on quantitative restrictions and controls to a modern system that emphasizes the capacity to identify and manage risks. Such request stemmed from the FSAP mission carried out by the World Bank/IMF in May 2004.

The adoption of a risk-based approach to regulation and supervision of pension funds is expected to lead to improvements in risk management practices and asset allocation. This in turn should result in improvements in the risk-return trade-off. The new approach is also expected to reduce operating costs that result from the excessive regulatory burden. Both outcomes may have a significant impact on replacement ratios and the welfare of future retirees. This is an essential issue in Chile, where the pension fund industry is the core of the social security system.

This report provides a diagnostic of the regulatory and supervisory frameworks for pension funds in Chile, and proposes recommendations for reforms in these areas. The report constitutes the output of the first phase of the technical assistance project financed by FIRST. Some of the key recommendations of the report would constitute the set of tasks that would be financed by FIRST in the second phase of the project.

The report is based on the information collected during a first mission that took place in January/February 2006. The mission included Messrs. Roberto Rocha (World Bank), Graeme Thompson (consultant), Eduardo Walker (consultant), and Mrs. Susan Mangiero (consultant). In November 2006, a second mission discussed the main findings and recommendations of the report with the authorities and market participants, and identified the tasks that would be supported in the second phase of the project. The second mission included Messrs. Roberto Rocha and Gregorio Impavido (both World Bank).

The remainder of this report is structured as follows. Section 2 summarizes the structure and the performance of the industry. Section 3 assesses the progress made by AFPs in adopting internal risk management procedures and techniques. Section 4 assesses the current regulatory framework of the AFP industry, especially as it relates to risk management. Section 5 assesses the structure and powers of the SAFP, as well as its supervisory procedures. Section 6 reports the policy recommendations of this report. Section 7 draws on the recommendations made on section 6 and identifies the main tasks that could be supported by FIRST in the second phase of the project. These tasks include: a) the drafting of secondary regulation on internal risk management of AFPs; b) the drafting of secondary regulation on the use of derivatives by AFPs; c) the drafting of secondary regulation on outsourcing by AFPs; d) the reorganization of the SAFP; e) the development of a risk scoring model to guide supervisory actions; f) the training the SAFP staff will require to implement the new framework; and g) the simplification of the complex body of regulations, eliminating those elements that do not add regulatory value or would hamper the successful implementation of the new risk based supervision model.

2. STRUCTURE AND PERFORMANCE OF THE INDUSTRY

2.1 Growth of the industry

Pension fund assets in Chile have grown rapidly in the past two decades, reaching 60 percent¹ of GDP in 2005. The share of pension assets in GDP is much higher than the Latin American average and even the OECD average, as shown in Table 1. The main providers of pension products are the Administradoras de Fondos de Pensiones (AFPs). Other financial institutions in Chile such as insurance companies, banks and mutual funds also offer pension products but at present these account for less than 1 percent of GDP.

Table 1: Pension Fund Assets (% of GDP) in Chile, Latin America and the OECD

Chile					Latin America	High Income OECD
1985	1990	1995	2000	2005(p)	2003	2001
10.0	24.1	38.7	50.7	60.0	11.1	32.0

Sources: SAFF, AIOS, OECD

The fast growth of pension fund assets is the result of the 1981 reform that involved the switch from a pay-as-you-go system to a mandatory fully-funded one, with the imposition of a 10 percent contribution on wages to individual pension accounts, up to 60 UF (*Unidad de Fomento*), or the equivalent of 3 times the average covered wage. Workers pay an additional 2.5 percent of their wages in commissions (1.0 percent of which approximately corresponds to the premium for disability and survivorship insurance). The new system was made mandatory for new entrants to the labor force after 1981 and voluntary for all the existing workers. Most workers decided to join the new system, receiving a ‘recognition bond’ for the amount of contributions paid under the former PAYG system. This recognition bond is redeemed by the Government at the time of retirement.

The rapid transfer of a substantial share of the labor force to the new pension system implied a large inflow of resources to pension funds. As shown in Table 2, by the mid 1980s annual mandatory contributions (net of commissions) already amounted to 1.9 percent of GDP per year, or 2.3 percent of GDP per year including the redemption of recognition bonds. Net mandatory contributions have grown continuously during the 1990s and the early 2000s, reflecting the growing share of the labor force enrolled in the new system. By the early 2000s the flow of mandatory contributions exceeded 3 percent of GDP.

Investment returns constitute the second source of asset growth and have actually been more important drivers of growth than mandatory contributions, as shown in Table 2. Average returns increased again in the past five years after declining in the second half of the 1990s. Clearly, a regulatory regime that facilitates consistently healthy fund earnings

¹ The total assets of the pension system increase to about (75) percent of GDP if one includes the current value of the assets of institutions (mainly insurance companies) that are held to fund retirement annuities.

is very important to increasing the assets of the pension system and ultimately the income replacement ratios enjoyed by retired workers².

Table 2: Flow of Funds in the Private Pension Fund System, 1986-2005 (% of GDP)

	1986- 2005	1986- 1990	1991- 1995	1996- 2000	2001- 2005
Net Inflows (1 + 2 – 3 + 4)	6.8	5.8	9.1	5.6	6.5
1. Net Mandatory Contributions + Rec. Bonds	2.9	2.3	3.1	3.2	3.0
Net Mandatory Contributions	2.4	1.9	2.5	2.6	2.5
Recognition Bonds	0.5	0.4	0.6	0.6	0.5
2. Asset Returns	4.9	3.9	6.9	4.0	5.0
3. Mandatory Payouts	1.3	0.5	1.0	1.7	1.8
Direct Benefit Payments by Pension Funds	0.4	0.1	0.4	0.6	0.6
Transfers to Insurance Companies	0.8	0.4	0.6	1.1	1.2
4. Voluntary Contributions – Payouts	0.2	0.1	0.1	0.1	0.4

Source: SAFP

The outflows from the pension fund sector are associated with retirement and take place through two main channels—the direct payment of programmed and temporary withdrawals by pension funds, and the transfer of the final balance to insurance companies, for the purchase of life annuities (retiring workers can choose between these three basic products). As shown in Table 2, mandatory payouts have increased rapidly—from 0.5 percent of GDP in the late 1980s to near 2 percent of GDP in recent years. This growth in payouts reflects the maturation of the pension system, driven in turn by demographic factors and the relatively low average age of retirement in Chile - a large number of workers take the early retirement option at the average age of 55.

Finally, net voluntary contributions to the pension fund sector remained relatively modest until the late 1990s, at less than 0.2 percent of GDP. However, new rules on voluntary pension savings in the early 2000s have dramatically increased the contribution of voluntary pension savings, although they remain substantially smaller than the mandatory flows.

2.2 Structure of the Pension Sector

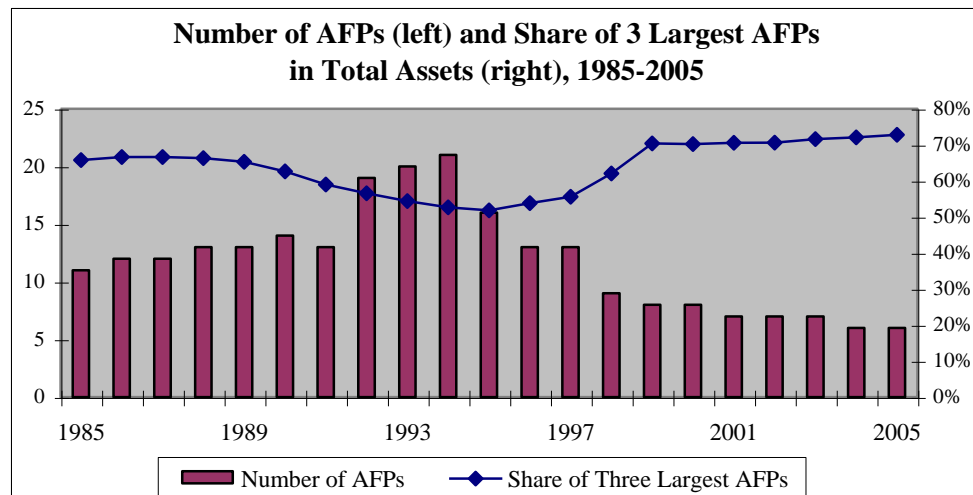
The large volume of pension assets in Chile is managed by six pension management companies, the AFPs. Each of these is constituted as a joint stock company with their assets segregated from the assets of the pension funds they administer. The number of AFPs was reduced substantially by mergers and acquisitions during the 1990s; see Figure 1.

Until 2000, each AFP was allowed to offer only one pension fund. In 2000 they were permitted to offer two funds each—the regular fund, and a second investing only in fixed income assets. Then in 2002 AFPs were allowed to offer five funds each – labeled A to E

² The May 2004 Financial Sector Assessment Program (FSAP) report discussed factors affecting the contribution base and projections for pension fund assets and replacement ratios.

- with funds being primarily differentiated according to the share of variable income assets that they can hold. Participants are allowed to switch across the family of funds managed by each AFP, as well as to switch across AFPs. Although some restrictions apply for switching across funds and across AFPs, the logic of the system is that workers should be able to compare costs, returns and service quality across funds and institutions and ‘vote with their feet’, thus exerting competitive pressure on AFPs.

Figure 1



The AFPs are, to a greater or lesser extent, owned by other financial institutions and are therefore parts of diversified financial groups, both domestic and international. It is evident that ownership by large international groups has hastened the rate at which some AFPs are adopting risk management standards and practices originally developed for other financial institutions, especially banks.

Table 3 summarizes the aggregate balance for the six AFPs at December 2003 and 2004. Their largest asset is the obligatory reserve – or encaje – which is invested in shares of the pension funds, implying a portfolio balance that mirrors that of each AFP’s aggregate pension funds under management. The encaje must currently be equal to one percent of assets under management, and it constitutes 57 percent of AFPs’ total assets. This percentage is higher for the five AFPs other than the largest, Provida, which has significant assets relating to its foreign investments and domestic acquisitions. Consequently, the second largest component in Table 3, ‘other assets’, is mostly on the balance sheet of Provida. About 75 percent of the AFPs’ total liabilities comprise shareholders’ equity or capital.

Table 3: AFPs - Consolidated Balance Sheet at December
(millions of pesos)

	Assets MM\$				Liabilities MM\$				
	2003		2004		2003		2004		
Current Assets	67,801	12.6%	78,250	13.3%	Current Liabilities	107,383	19.9%	127,827	21.8%
Obligatory Reserve	298,494	55.5%	334,428	57.0%	Long-term Liabilities	18,935	3.5%	19,159	3.3%
Fixed Assets	51,876	9.6%	49,972	8.5%	Equity	411,696	76.5%	439,405	74.9%
Other Assets	119,843	22.3%	123,741	21.1%					
TOTAL ASSETS	538,014	100%	586,391	100%	TOTAL LIABILITIES	538,014	100%	586,391	100%

Source: SAFP

2.3 Portfolio Composition of Pension Funds: Evolution

The portfolio composition of pension funds changed significantly over the past 20 years. As shown in Table 4, in the early 1980s AFPs invested almost exclusively in bonds issued by the public sector and by other financial institutions, primarily banks. By 1990, portfolios were more diversified, with smaller claims on the financial sector and larger investments in domestic equity and corporate bonds. This trend continued in the early 1990s, and by 1994 domestic equity holdings had reached a peak, essentially due to a large increase in the equity prices of previously privatized firms, especially in the electricity sector. Since the mid-1990s, the main portfolio shifts have included a significant reduction in public sector bonds and, to a lesser extent, domestic equity and an increase in foreign assets. In recent years, AFPs have again increased their holdings of corporate paper, both holdings of bonds and equity. However, in proportionate terms, holdings of corporate paper remain well below their peak levels of the mid-1990s.

These changes in portfolio composition have been, to a good extent, due to the evolution of the investment regulation regime and exceptional events during the past two decades. In the early 1980s the investment regime was severely restrictive, allowing only investments in domestic fixed income instruments. Relaxation occurred in various steps, starting in 1985, when AFPs were allowed to invest up to 30 percent of their portfolios in a selected number of shares, in order to be able to participate in the privatization of utilities. Subsequent privatizations took place in the early 1990s, also with the

participation of pension funds. The increase in the share of equity in the early 1990s reflects both increased volumes and price gains. By the mid-1990s pension funds realized large capital gains through sales of a portion of their equity holdings to foreign strategic investors, who took control of many of these enterprises in tender offers which allowed all pension funds simultaneously to sell large fractions of their investments in these firms.

Table 4: Portfolio Composition of Chilean Pension Funds (%), 1983-2005

	1983	1990	1994	2000	2002	2003	2004	2005
Claims on the Public Sector	42.1	44.1	39.7	35.7	30.0	24.7	18.7	16.5
Government Bonds	16.5	1.5	0.2	0.0	0.0	0.3	1.2	1.9
Central Bank Bonds	25.6	42.5	38.5	31.9	24.4	19.1	12.6	10.6
Other	-	0.1	1.0	3.8	5.6	5.3	4.9	3.9
Claims on the Financial Sector	55.8	33.4	20.1	35.6	35.0	27.3	29.5	29.8
Mortgage Bonds	42.9	16.1	13.7	14.4	11.1	8.8	6.8	5.0
Time Deposits/CDs	16.2	16.3	4.8	18.7	21.2	15.0	19.4	20.8
Other	0.7	1.0	1.6	2.5	2.7	3.5	3.4	4.0
Claims on the Corporate Sector	2.0	22.4	39.3	17.6	18.4	24.0	24.4	23.2
Shares	-	11.3	32.1	11.1	9.0	13.5	14.7	13.9
Bonds	2.0	11.1	6.3	4.0	7.1	7.7	6.8	6.6
Other	-	-	0.9	2.5	2.3	2.8	2.9	2.7
Claims on the Foreign Sector	-	-	0.9	10.9	16.4	23.8	27.2	30.4
Mutual Funds Shares & Shares	-	-	-	8.9	11.9	20.4	24.4	29.3
Other	-	-	-	2.0	4.5	3.4	2.8	1.1
Cash	0.0	0.1	0.0	0.2	0.1	0.1	0.1	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memo items:								
Total Variable Income	-	11.3	33.1	23.1	24.2	37.9	42.8	46.9
Total Assets/GDP	5.6	22.0	38.0	50.4	55.1	59.1	59.1	60.0

Source: SAFP

The AFPs started investing in foreign assets after other rounds of liberalization in 1990 and 1994 which coincided with economic authorities' concerns about significant appreciations of the Chilean peso.

Most holdings of foreign assets take place through holdings of shares of mutual funds abroad. Apart from the intrinsic advantages of investing this way, there is a strong financial incentive to do so because the AFPs are able to pass the associated fees to the pension funds whereas the law requires fees paid directly to foreign portfolio managers to be paid by the AFPs themselves. Foreign mutual fund holdings are classified as variable income in the current asset classification system, regardless of whether the mutual fund is an equity or a bond fund. This causes some overstatement of the share of variable income in the portfolio—47 percent in 2005 – but the bulk of foreign investment through mutual funds would be in equity funds. The true share of variable income may be closer to [30] percent, although overseas investments that are exposed to currency risk may still be considered to have variable returns.

Table 5 shows the extent to which pension funds have hedged their foreign investments with forward transactions. There are minimum regulatory hedging requirements, with the

maximum unhedged positions set at 40, 25, 20, 15 and 10 percent of the investment abroad for Funds A, B, C, D and E, respectively.

Table 5: AFP Currency Hedging by Fund and Total
(Dec. 2005, US\$ Bn)

Type of Fund	Fund Value - total	Investments in local currency	Investments in foreign currency			Legal maximum without coverage
			Hedged	Unhedged	Total	
			A	10.3	4.1	
B	16.5	9.9	4.2	2.4	6.6	4.1
C	37.0	27.9	3.5	5.6	9.1	7.4
D	9.3	8.2	0.5	0.6	1.2	1.4
E	1.6	1.6	0.0	0.0	0.1	0.2
Total	74.8	51.6	12.1	11.0	23.2	17.2

Source: SAFF

In recent years pension funds have again increased their holdings of domestic corporate paper. The share of corporate bonds in the portfolio rose after 2000, reflecting the decision of major Chilean companies to take advantage of falling domestic interest rates and long maturities, and the more difficult conditions to raise funds abroad. On their side, pension funds were interested in good quality corporate bonds offering returns 200 basis points above Government and Central Bank bonds, and after a period of depressed equity returns. In 2003, holdings of domestic equity also increased, reflecting the rebound in the domestic equity market.

The increased share of equity also reflects to some extent the 2002 reforms under which, as noted above, AFPs were allowed to offer up to five funds or portfolios structured according to the share of variable income assets that they can hold. The investment regime includes floors and ceilings for variable income that are high for Fund A (40 and 80 percent respectively), and that decline progressively for the other funds, reaching zero in the case of Fund E. Members are allowed to place their balances in up to two of the five funds offered by an AFP, except for those approaching retirement (55 and 51 years of age for men and women, respectively), who cannot select Fund A, and retired members, who cannot select Funds A or B. Members who do not exercise their right to choose are assigned to Funds B, C, or D according to three age brackets. The central age bracket is the widest (36 to 55 years of age), implying the assignment of a large number of non-choosing members to Fund C, the middle Fund. This construction was inspired by the “lifestyle investment concept” whereby young members should invest primarily in equity and older members should invest primarily in bonds, to avoid excess volatility in the period close to retirement.

As shown in Table 6, in December 2005 82 percent of total members were enrolled in Funds B and C. This outcome was due both to the default rules and to active choices—out of the 2.2 million members that had exercised their right to choose a fund, roughly 40 percent had opted for Fund B and 27 percent for Fund C. The age distribution of

members across the five funds is generally consistent with the objective of the multi fund regime, with young members primarily enrolled in Funds A and B, middle-aged members in Fund C, and older members in Funds D and E. The average wage of Fund A members is much higher than that in Fund B, revealing a greater tolerance or appetite for risk among better educated, high income young workers.

Table 6: Average Age, Income, Balance, and Size of Different Funds, December 2005

	Fund A	Fund B	Fund C	Fund D	Fund E
Average Age (years)	32	30	43	57	47
Average Wage (1,000 Pesos)	501	309	341	353	397
Average Balance (1,000 Pesos)	8,112	2,459	5,572	6,224	12,280
Number of Members (1,000)	593	3,300	3,250	741	66
Number of Active Contributors (1,000)	387	1,404	1,296	191	45

Source: SAFP

The portfolio allocation of different Funds is also generally consistent with the objectives of the multiple portfolio regime. Fund A, designed to offer the highest risk-return combination, effectively holds the largest amounts of domestic equity and foreign assets, while Fund E, designed to be the “safe fund”, holds the largest amounts of domestic fixed income assets, especially long-term bonds issued by the public sector, but also corporate and mortgage bonds. This outcome is to some extent the result of investment regulation itself, which directs investments towards variable and fixed income according to the type of fund. AFPs have little margin to maneuver, and have used the greater room for investing in variable income in all 4 funds where this is possible. As shown in Table 7, in December 2005 the share of variable income in funds A through D was at their ceiling (80, 60, 40, and 20 percent of the portfolio, respectively), although this may be overstated by the asset classification problem mentioned earlier.

Fund C was designed as the central fund, and is effectively the successor of the former system. As mentioned before, most members who did not exercise their option to choose were placed in Fund B and C (roughly 5.0 million members), and roughly 40 percent of the members who made a choice opted for remaining in Fund C as well. As a result, in December 2005 Fund C still accounted for almost 50 percent of total assets managed by the AFPs. The portfolio allocation in Fund C has remained reasonably conservative, with a small share of domestic equity and a large share of short-term and long-term fixed income instruments.

Table 7: Portfolio Composition of Pension Funds, by Type of Portfolio, Dec, 2005

	A	B	C	D	E	Total
Claims on the Public Sector	3.84	9.87	17.55	31.40	52.02	16.45
Central Bank of Chile	2.38	6.26	11.33	20.89	32.42	10.63
Government	0.48	1.19	2.19	2.93	5.71	1.91
Recognition Bonds	0.98	2.42	4.03	7.58	13.89	3.91
Claims on the Financial Sector	16.94	26.27	33.14	36.38	30.65	29.75
Mortgage Bonds	1.13	3.30	5.89	7.09	12.42	4.96
Time Deposits	12.19	19.09	23.04	25.83	14.52	20.83
Bonds of Financial Institutions	0.85	1.59	2.59	2.34	3.42	2.12
Shares of Financial Institutions	0.84	0.94	0.86	0.60	0.00	0.83
Forwards	1.93	1.35	0.76	0.52	0.29	1.01
Claims on the Corporate Sector	18.90	24.26	25.13	20.23	14.79	23.24
Shares	15.55	16.62	13.97	9.52	0.00	13.91
Bonds & Commercial Paper	2.00	4.55	8.22	8.72	14.79	6.76
Units of Investment Funds	1.35	3.09	2.94	1.99	0.00	2.57
Other	0.00	0.00	0.00	0.00	0.00	0.00
Claims on the Foreign Sector	60.28	39.54	24.02	11.82	2.35	30.44
Units of Mutual Funds and Shares	59.21	38.53	22.85	10.67	0.00	29.30
Indirect Investments Abroad (*)	0.48	0.24	0.23	0.16	0.00	0.25
Debt Instruments	0.49	0.68	0.90	0.99	2.33	0.84
Forwards	0.02	0.03	-0.01	-0.03	0.00	0.00
Other	0.08	0.06	0.05	0.03	0.02	0.05
Cash	0.04	0.06	0.16	0.17	0.19	0.12
Total Assets	100.0	100.0	100.0	100.0	100.0	100.0
Total Assets (US\$ million)	10,277	16,539	36,975	9,333	1,632	74,756
Memo Item: Variable Income	77.43	59.42	40.85	22.94	0.00	46.86

2.4 Portfolio Composition of Pension Funds: International Comparison

The average portfolio composition of pension funds in Chile looks conservative by comparison with pension funds in the OECD, reflecting to some extent the conservative allocation in Fund C and its dominant size. As shown in Table 8, Chilean pension funds hold a much larger share of cash and bank deposits (primarily bank CDs) than pension funds in other countries, and also hold more bonds and less equity than their OECD counterparts. The differences are probably larger than indicated, considering that the share of variable income in Chile is somewhat over-estimated, and the share of equity in some OECD countries is under-estimated (the large share of other assets in some countries such as the UK reflects holdings of foreign equity not properly classified). Chilean pension funds also invest much less in private equity—less than 1 percent of the total portfolio in 2005, compared to 4 percent in the case of European pension funds

A more conservative portfolio allocation for Chilean funds is probably justified, considering that the private pension sector is the core of the social security system. In the other countries in the sample, the private pension system complements a public PAYG system that replaces 20-50 percent of contributors' incomes at retirement. This means that Chilean workers are more exposed to capital market volatility and "replacement rate

risk” than workers in most OECD countries. Dealing with this risk requires a smaller share of equity and a larger share of bonds relative to other countries. A higher share of liquid assets may also be justified, considering that the Chilean pension system is defined-contribution and open, where participants can switch across funds, and where pension fund portfolios are marked-to-market on a daily basis.

Table 8: Portfolio Composition of Pension Funds (%): Chile and Selected Countries

Country	Bills and					Total	Assets/	
	Cash and Deposits	Bonds	Loans	Shares	Other		Foreign	GDP
Chile (2005)	21.0	31.1	0.0	46.9	1.0	100.0	30.4	60.0(p)
Australia (2002)	7.7	19.8	3.9	59.8	8.9	100.0	19.1	67.4
Canada (2001)	0.4	40.7	2.9	49.6	6.4	100.0	21.4	48.2
Denmark (2001)	1.3	49.2	1.6	45.6	2.3	100.0	25.0	23.8
Ireland (2001)	2.8	21.4	0.0	65.6	10.2	100.0	67.8	44.7
Netherlands (2001)	1.5	34.7	8.8	49.5	5.4	100.0	65.0	105.1
Spain (2001)	16.0	50.9	0.6	21.0	11.5	100.0	34.3	6.8
Switzerland (2000)	7.3	31.2	12.0	33.9	15.6	100.0	25.0	121.1
United Kingdom (2001)	3.2	13.9	0.0	60.9	22.1	100.0	22.9	69.2
United States (1998)	3.6	20.9	1.6	61.6	12.2	100.0	11.0	72.0

Sources: SAFF, FSAP report (2004).

At the same time, the portfolio composition of Chilean pension funds raises questions in a number of respects. Holdings of short-term certificates of deposit look high - even considering the liquidity needs of Chilean funds and that expectations of interest rate increases might have been a factor during the last period - and imply lower returns for members in the long-run. The obverse is that the share of equity looks somewhat low, particularly domestic equity, even considering the justification for a less risky portfolio in the case of Chile. The negligible amount of private equity after 20 years is notable, as this is an investment class that can produce attractive returns when properly managed, and that can also make an important contribution to corporate development and growth. Finally, while still constrained by regulation, the share of foreign assets also seems low, considering that Chile has a smaller and less diversified economy than the other countries.

There are other noteworthy aspects of their portfolio composition. AFPs are allowed to invest in 91 listed shares approved by the regulatory authorities (the Credit Risk Commission), but only invest in 70, and the value of these holdings is well below the ceiling for the asset class. AFPs can also invest in about 140 other listed shares not approved by the Credit Risk Commission, up to a small percentage (3 percent of Funds A and B, and 1 percent for Funds C and D), but only invest in 20 of these enterprises and the value of these holdings is extremely small (0.2 of the portfolio). Investments in corporate bonds also seem restricted—AFPs hold bonds of about 74 Chilean corporations, but 70 percent of these bonds are rated AA, 94 percent are rated A and above, and these are all issued by the largest corporations. Holdings of corporate bonds rated BBB and BBB+ are very small, even though the potential universe of well-performing large and medium issuers would seem to be significant, and regulation may

contribute to this. Given their significance as investors, the pension funds' lack of appetite for such securities may in turn discourage their issuance.

The introduction of the multi-funds has not changed in any fundamental way the AFPs' portfolio strategies. Although Funds A and B have a larger share of domestic equity than Funds C and D, the universe of enterprises in these four portfolios is essentially the same. Investment in private equity is also very similar across different types of funds. In other words, all AFPs are meeting the demand from their members to offer a higher risk-return combination in Fund A, but this is being achieved by simply holding 'more of the same' group of domestic equities that they already held in Fund C before the reform. With corporate bonds the picture is very similar—there is little variation in bond ratings across funds.

Of course, in all of these cases, the limited universe of securities restricts opportunities for diversification. However, if there was an expectation that asset managers would be more innovative in Fund A and possibly Fund B, considering additional listed shares, or investing more in private equity, or going slightly down the credit curve, this expectation has not been met. If the multi-fund regime contributed to the larger equity holdings in 2005, that was essentially due to the larger share of members in Funds A and B, relative to Funds D and E, and not to different portfolio strategies.

The current portfolio allocation may be explained to a good extent by the relatively small size of the Chilean economy, and its relatively small, illiquid and concentrated capital market. The rapid growth of pension fund assets due to mandatory contributions and large asset returns have led to a situation of 'pension funds in search of additional assets' that is not uncommon in other small countries. As shown in Table 9, pension funds already have a substantial participation in the market for many instruments, such as mortgage, corporate, and public sector bonds—they hold roughly half of the stock of mortgage and public sector bonds and one third of the stock of corporate bonds and time deposits.

Table 9: Financial Assets (% of GDP) and Pension Fund Participation (%), 1995-2005

Year	Stock Market Capitalization (% of GDP)	AFP (%)	Corporate Bonds (% of GDP)	AFP (%)	Mortgage Bonds (% of GDP)	AFP (%)	Public Sector Bonds (% of GDP)	AFP (%)	Time Deposits (% of GDP)	AFP (%)
1995	101.3	10.7	3.4	55.3	10.3	60.3	27.3	49.9	23.2	8.3
1996	89.6	10.9	3.1	55.5	12.1	60.3	28.7	50.6	26.7	5.9
1997	91.0	10.0	2.4	53.2	13.4	54.3	30.3	46.9	29.8	14.0
1998	67.2	8.9	2.9	51.9	13.5	53.9	27.6	54.9	33.2	16.6
1999	97.3	6.3	3.7	51.0	14.3	58.8	29.1	52.4	36.6	21.7
2000	85.4	6.9	5.1	39.8	14.1	58.8	27.5	58.8	35.7	26.6
2001	85.5	6.6	9.3	35.4	14.6	54.7	28.1	57.0	34.6	27.0
2002	74.0	7.4	11.5	34.3	13.0	55.2	26.8	50.0	34.3	34.1
2003	101.1	8.4	11.4	38.9	12.3	48.3	20.1	56.2	30.1	29.0
2004	113.4	8.2	10.3	39.4	10.1	45.1	15.4	52.7	32.8	34.9
2005	110.9	8.7	9.5	42.9	8.4	50.5	14.5	55.5	35.4	34.5

Sources: SAFF, BCCH

The only major domestic market where the pension sector seems to be under-represented is the equity market—pension funds hold roughly 10 percent of the market value of the 90 equities in their portfolios. However, the low investments in domestic equity are also caused, at least to some extent, by capital market limitations. The 90 equities held in the portfolios account for more than 80 percent of total market capitalization and several companies have a very concentrated ownership structure discouraging participation by minority investors. The equity market is generally illiquid, particularly in the case of medium and small caps, reducing the attractiveness of the asset class. Although AFPs are not active traders, shares which are illiquid still prove problematic, not only because they make exit difficult, but also because they create valuation problems and may affect adversely rates of return. These factors would be a particular disincentive to investment in private equity. Moreover, the inclusion of additional small shares may involve larger research and monitoring costs without improving significantly the risk-return profile of the portfolio. When pension funds invest in listed small caps these investments take place primarily through participations in closed-end investment funds, and are also small (around 1 percent of the portfolio).

[Although the limitations imposed by a small capital market are probably the most important cause of the current portfolio allocation, it is likely that the investment regime has also constrained the portfolio strategies adopted by the AFPs. A mechanical comparison of investment limits with actual holdings would suggest that most of the numerous quantitative restrictions are not binding, except for the ceiling of foreign assets, which is currently 30 percent. However, a closer examination of the regulatory and supervisory regime indicates that it may be more constraining than perceived. For example, AFPs adopt a very conservative policy in corporate bond investments, basically avoiding bonds rated as BBB and BBB+, because they do not want to sell bonds that fall below investment grade in an illiquid market. If they were granted some additional flexibility to manage below investment grade bonds, they would probably invest more in companies issuing bonds at the investment grade level, and more Chilean companies would be motivated to issue bonds as well. Also, small AFPs sometimes face constraints when investing in variable income and BBB bonds because the minimum size of bond issues would result in a violation of some joint limits on variable and fixed income.

More generally, the overall regulatory and supervisory framework, involving a complex set of restrictions and an aggressive supervision, may have led asset managers to adopt overly defensive strategies and avoid investments within the acceptable risk-return range, particularly in Fund A. This suggests that the optimal policy response will probably involve well coordinated actions in the two fronts—a careful relaxation of some of the investment restrictions, combined with improvements in securities markets designed to address the limitations faced by pension funds, such as market liquidity.

2.5 Gross Rates of Return

Chilean pension funds have posted reasonable returns on their assets since the creation of the new pension system in 1981. As shown in Figure 2, average real returns (measured on a 10-year rolling basis to smooth fluctuations) amounted to about 12 percent per annum in the first 10 years of the new system, well above the average growth of the real

wage bill and of real wages in the same period³. Average real returns have declined to about 6.5 percent, but still have exceeded the growth of the real wage bill and the average wage by 2 and 3 percent, respectively. They have also exceeded the 4 percent real return that was envisaged by the government in 1981 in order to obtain a 70 percent replacement rate for the incomes of retired workers.

The returns of pension funds in Chile were higher precisely in the period 1980-1995 when investment restrictions were more severe and the average share of equity was lower. (Indeed, the return performance of Chilean funds over 1980-1995 seems to have exceeded the international return-risk pattern by a wide margin, as shown in Figure 3. No country was able to match the 12 percent average real return that Chilean funds achieved in this period, and the few countries that posted real returns close to 10 percent, such as the UK, only achieved this result through substantial holdings of equity.) This was due to two exceptional, one-time factors. The first was a large capital gain on long-term nominal bonds held by pension funds in the very first years, and that were generated by a sharp (and possibly unexpected) drop in inflation rates. The second was a large capital gain on the equity purchased in the late 1980s and early 1990s, particularly the equity purchased at modest prices in the first period of *capitalismo popular*.

In more recent years real returns have dropped to levels that are more consistent with the portfolio composition of pension funds, and with Fund C in particular. This also implies that future returns will tend to be lower than in the past, particularly if the asset composition of Fund C remains the same, as this Fund will probably hold most of members' assets during their working lives.

Rates of return have been very similar across different AFPs since the start of the pension system, and this pattern has been maintained in recent years, as shown in Table 10. This similarity of returns across AFPs reflects the similar composition of their portfolios, or the herding behavior that has been well documented in the literature. There is a prevalent view in analyses of the Chilean system that the herding behavior in Chile is due partly to the concentrated structure, and partly to the existence of the minimum relative return guarantee, which involves bands around the average industry return and the obligation for AFPs to bring any return to the minimum with its own compulsory reserves (the *encaje*).

There was some expectation that the creation of multi-funds would open room for more portfolio differentiation and less herding, on the grounds that there would be more choice, and that a lower rate of return in one fund managed by one AFP could be offset by a higher return in another fund managed by the same AFP (thus increasing the probability of members remaining in the same AFP even if the first fund under-performed). In order to allow more room for differentiation, the regulatory authorities also widened the bands around the industry average for Funds A and B. Herding indeed seemed to be less intense during the early stages of the multi-fund system, but this soon reasserted itself. See Figure 4.

³ The comparison with the growth of the real wage bill is important because this variable is a proxy for the implicit rate of return in a balanced PAYG system, while the comparison with real wage growth is also relevant because final replacement ratios depend on the difference between the two variables.

Although the minimum relative return guarantee (see section 4.1) may exacerbate herding behavior, extreme herding has also been observed in other pension systems, including developed pension systems with thousands of pension funds and very liberal investment regimes such as the UK. Herding behavior in these cases happens because asset managers are pressed by boards of pension funds to demonstrate a satisfactory return performance, which usually involves comparisons with peer or industry benchmarks, and tend to adopt defensive strategies in order to avoid under-performing relative to the benchmark and losing their contracts. Moreover, although herding does imply a potential risk of more asset volatility, there is no clear evidence that this has happened to a significant extent in Chile

Figure 2

**Real Returns, Wage Growth, Wage Bill Growth
10-year Rolling Averages (%), 1990-2005**

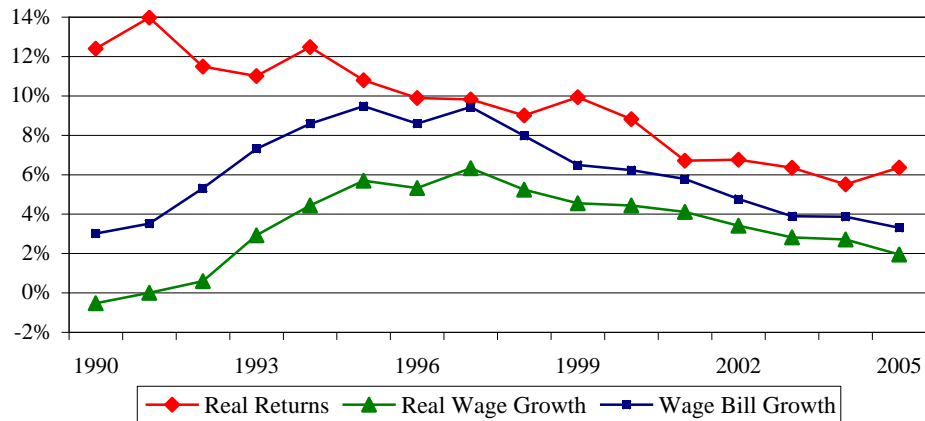


Figure 3

**Average Real Returns and Share of Equity
in Pension Fund Portfolios, 1980-95**

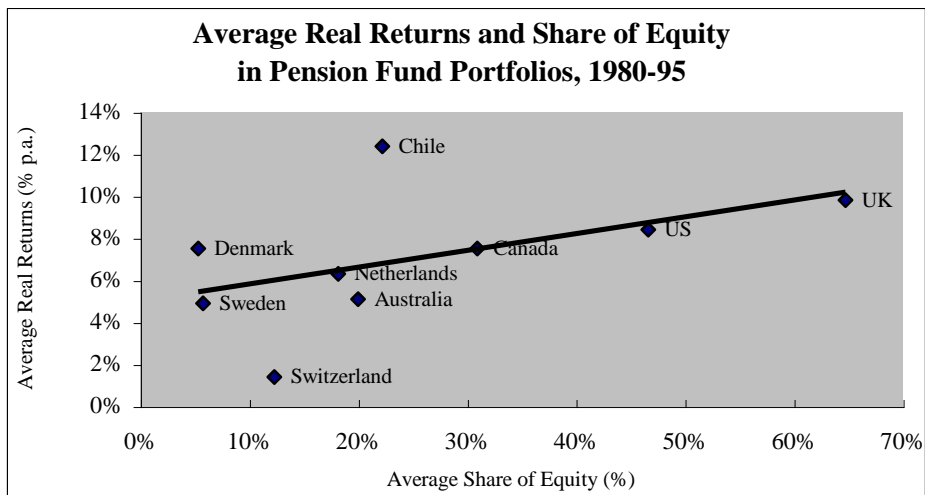


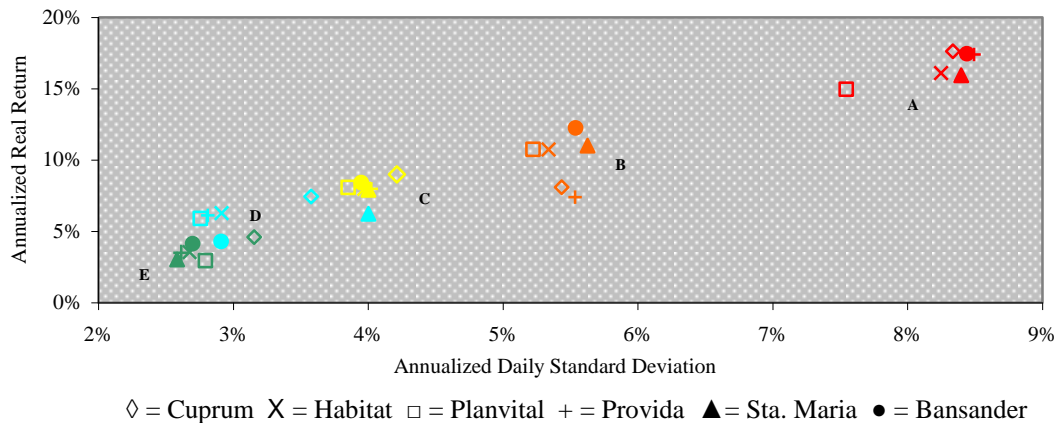
Table 10: Real Rates of Returns of Individual AFPs (% p.a.), 2001-2005

	2001	2002	2003	2004	2005
Cuprum	6.6	2.8	12.8	9.2	5.9
Habitat	7.0	4.1	11.3	8.9	5.5
Planvital	6.9	3.3	11.1	8.5	4.8
Provida	6.4	3.3	11.7	8.6	4.9
Santa Maria	7.0	3.1	11.5	7.9	5.0
Bansander	6.9	3.5	13.3	9.1	6.0
System	6.7	3.4	11.9	8.7	5.4

Source: SAFF

Figure 4

Real Return and Volatility of each AFP and Type of Fund, Oct.02-Dic05



2.6 Fees, Costs, and Profits

Fees charged by AFPs were extremely high in the early years of the new system when AFPs charged members 4 percent of their wages in commissions, or the equivalent of 40 percent of their mandatory 10 percent contribution. Excluding the premium for disability and survivorship insurance, members were charged 35 percent of their contributions. Gross and net fees have declined dramatically over the past 20 years, and now amount to around 17 and 10 percent of contributions, respectively; see Figure 5. Although international comparisons are difficult, a net fee of 10 percent of contributions is in the range of net fees for occupational schemes in the OECD, although towards the upper end.

Net fees and operating costs assets also declined dramatically as a proportion of assets over the past 20 years, as shown in Figure 6. The significant decline after 1997 was enabled by a sharp reduction in marketing expenditures, the outcome, in turn, of regulatory actions and an agreement among AFPs. The regulatory initiative consisted of the obligation that members have their latest booklet (*cartola*) before the transfer and that this booklet be distributed only three times a year. The agreement involved the joint decision by AFPs to fire two-thirds of their sales agents, and to pay only a fraction of the

commission to the agent after the transfer. Payment of the remaining part commission today depends on how long the member stays in the AFP.

Note, however, that the ‘net fees’ line in Figure 6 does not include fees paid to foreign mutual funds which have increased in importance in recent years as AFP investment abroad has risen. These fees are shown separately in Table 11.

Figure 5

**Fees/Contributions, 1991-05
Total and Net of Insurance Premia (%)**

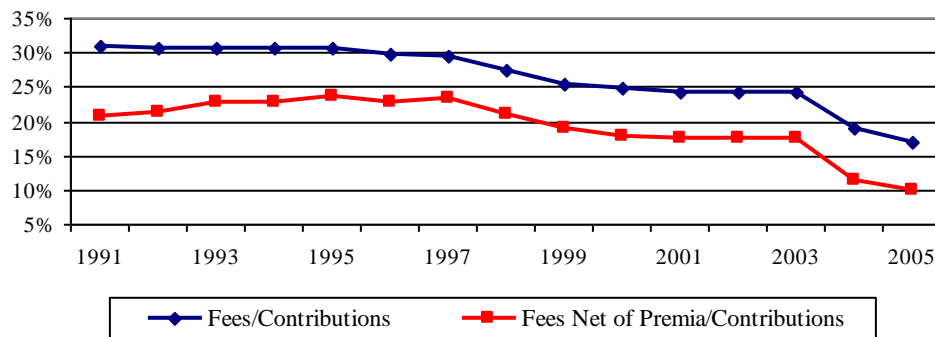
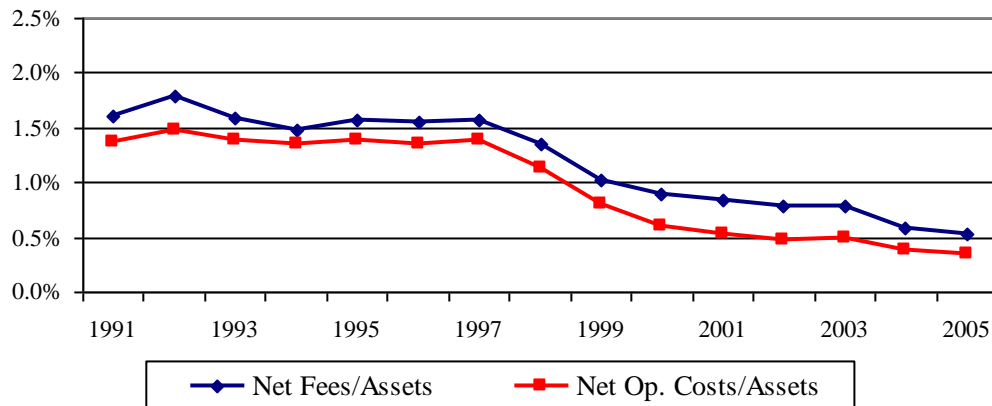


Figure 6

**Fees and Operating Costs/Assets, 1991-2005
Net of Insurance Premia (%)**



The reduction in marketing costs – see Figure 7 - was passed to members in lower fees, but only partially. As a result, operating profits and the return on equity increased dramatically, the latter reaching a peak of 50 percent in 2000, as shown in Figure 8. The return on equity has since declined to around 22 percent, as AFPs have absorbed an increase in insurance premia without increasing fees. However, these rates of return on equity still look high, especially considering that the institutions are operating in a mandatory system. On the other hand, they do include returns from the obligatory

reserves held by AFPs which are not in the normal course available for distribution to shareholders.

Figure 7

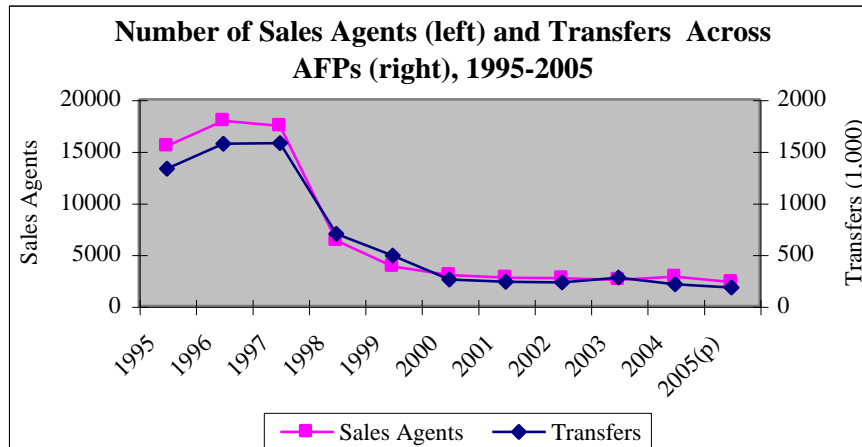


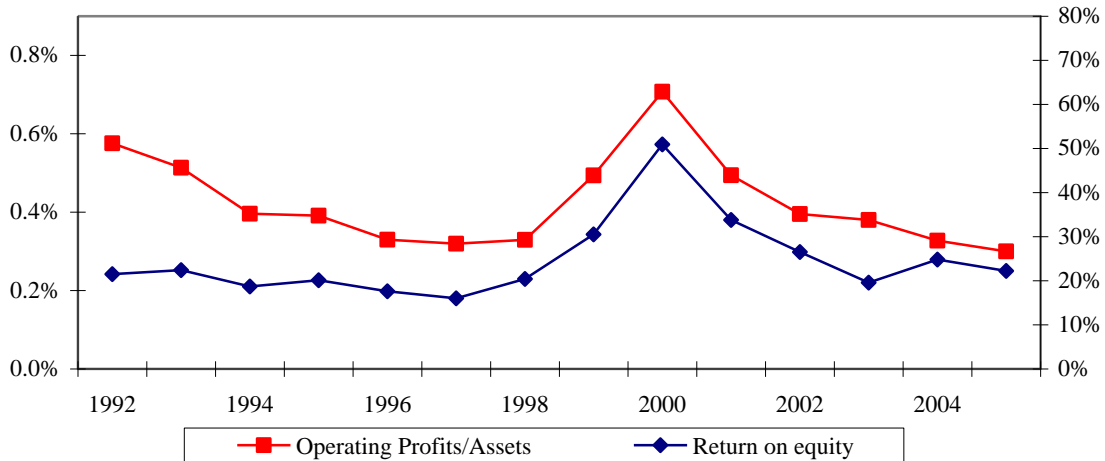
Table 11 shows trends in fees and other costs as a proportion of fund assets. As noted above, reported fees do not include the implicit fees paid by AFPs to foreign asset managers, as these are netted from the gross returns of the pension funds. The existence of such implicit fees does not affect variables such as the operating profits of AFPs or the net returns on individual accounts, but they must be considered in international comparisons and in analyses of the efficiency of AFP management processes. With the proportion of investments in foreign mutual funds growing significantly over recent years this factor is becoming more important - these implicit fees amounted to 125 basis points of foreign assets in 2005 and, as shown in the memorandum item of Table 11, and to about 40 basis points of total assets. (There is a separate question to be resolved as to whether all foreign fees, particularly trading fees, are captured in that measure.)

Table 11: Fees, Operating Costs and Operating Profits Over Assets, 1990-2005

	1990	1994	1997	2000	2002	2005
Gross Fees	3.3	1.9	2.0	1.3	1.2	0.9
Insurance Premium	1.3	0.4	0.4	0.4	0.4	0.4
Net Fees	2.0	1.5	1.6	0.9	0.8	0.5
Net Operating Costs	1.8	1.3	1.4	0.6	0.5	0.4
Marketing Costs	0.4	0.4	0.7	0.2	0.1	0.1
Non-Marketing Costs	1.4	0.9	0.7	0.4	0.4	0.3
Operating Profits	0.8	0.4	0.3	0.7	0.4	0.3
Memo: Implicit Fees on Foreign Assets	0.0	0.0	0.1	0.1	0.2	0.4

Sources: SAFF, AFPs

Figure 8
Operating Profits/Assets (left) and
Return on Equity (right), 1992-2005



Studies have indicated that, with the present industry structure, AFPs have the advantage of significant scale economies⁴. It is not surprising that an AFP's cost curve would flatten with a market share of around 10 percent, as this share implies assets of around US\$7 billion, and a large pension fund size by international standards. It is probable that the substantial outsourcing of activities to external service providers has contributed to the achievement of scale economies. Activities outsourced by AFPs include revenue collection, account management, custody, benefits payments, collection of late contributions and information technology services.

There seems to be scope for further reductions in costs through outsourcing, because there are AFPs that still perform some tasks internally, and because external service providers are technically capable of reducing further the costs of some key outsourced activities. For example, revenue collection is mostly outsourced, but only 20 percent of the paperwork (50 percent by amount) related to contributions is processed electronically or via internet, with the rest being processed manually and involving massive paperwork. An increase in electronic payments could reduce total processing costs significantly.

⁴ See FSAP report (2004)

3. PROGRESS OF AFPs IN ADOPTING RISK MANAGEMENT TECHNIQUES

3.1 Introduction

The Chilean regulatory and supervisory system has relied heavily on portfolio controls, detailed regulations, and close monitoring of compliance with these rules. A system of supervision based on risk relies less on portfolio controls and more on the capacity of institutions to manage financial, operational, and other risks. Detailed quantitative rules are replaced by stronger corporate governance rules, especially those related to internal procedures for managing and controlling risks. The move from a compliance-based approach to a risk-based approach has the potential for generating significant efficiency gains, both through improvements in the risk-return trade-off, and through reductions in the large operating costs that may result from a heavy regulatory burden.

As Chile prepares to migrate to a risk-based approach, a central question that needs to be addressed is whether the licensed institutions have already made some progress in adopting risk management procedures and techniques, even though these procedures may not be required by current regulations. To address this question, this section identifies if, and to what extent, a risk culture currently exists at the six AFPs, and assesses the likely ability of AFPs to shift from the current system to a risk-based supervisory regime. This section also examines the efficiency gains that could be generated by the move towards a risk-based approach.

3.2 The Emergence of a Risk Culture in the Pension Fund Industry

Most AFPs have made progress in adopting risk management procedures and techniques in the past few years. This progress seems to have resulted from an internal decision inside the financial group to which AFPs belong, rather from regulatory requirements. Most AFPs belong to financial conglomerates owned by a parent company abroad, and these companies are already familiarized with modern risk management concepts, due to regulatory requirements in the home country. It is also apparent that in most cases the risk management culture had originated in the banking institution inside the financial group. This is not surprising, as banks have been operating under a risk-based approach for a much longer period of time in most countries.

While the emergence of a risk management culture among AFPs is a positive development, it is also clear that progress in adopting risk management procedures and techniques has been uneven and somewhat disorganized, precisely because of the absence of minimum regulatory standards. The absence of regulatory standards set by the supervisor has led some AFPs to rely entirely on internal rules and methods set by the parent company, and/or general standards such as COSO and COBIT. Some AFPs set as a goal the achievement of internationally recognized standards of management quality such as ISO 9002.⁵ Those AFPs owned by a global parent with U.S. exchange-listed stock were making efforts to comply with the strict new requirements for risk

⁵ See <http://www.coso.org> and <http://www.iso.org>

management and internal controls imposed on listed companies by the Sarbanes-Oxley Act of 2002 (“SOX”).

Therefore, while risk management functions have been created in most AFPs, the internal architecture of risk management and its quality and effectiveness seem to vary significantly across institutions. Some AFPs had chief risk officers responsible for managing all risks, while other AFPs separated responsibilities by type of risk, without necessarily creating coordination mechanisms necessary for a coherent approach. In some institutions the risk management function was conducted internally while in others it was conducted for the financial group as a whole.

A particular deficiency observed in all institutions was the lack of Board involvement in risk management. Although Boards are generally informed of risk management activities through the CEO or the external auditor, no institution has created committees with the participation of Board members, institutionalizing Board involvement in risk management. In some of the institutions owned by parent companies abroad, the chief risk officer reports directly the foreign owner, bypassing entirely the CEO and the local AFP board. This type arrangement is well regarded by some AFP managers, because it presumably makes the risk management function more independent, but its implications for coordination with the investment function and the behavior and involvement of the local AFP Board are not well understood and merit further examination.

In addition to sharp differences in internal architecture and procedures, the quality of the instruments and tools used also seems to vary significantly. Several institutions seem to have reasonable and sophisticated procedures for developing their investment policies, while other smaller institutions seem to merely copy the large players. Monitoring of financial risks through techniques such as value at risk (absolute and relative) and tracking errors seems to be widespread, although in some cases this task is outsourced and it is not clear if board members and management master the concepts.

The quality of techniques used to control operational risk also seems to vary considerably across institutions. Some institutions have developed sophisticated models to measure and control operational risks, while others seem to be totally oriented towards compliance with SAIF regulations. Interestingly, the more sophisticated players expressed frustration that they were asked to spend a disproportionate amount of time and resources correcting minor and irrelevant problems, and meeting an unreasonable number of requests from the supervisors, diverting attention and resources from more significant tasks such as implementing best practices.

3.3 The Ability of AFPs to Shift to a Risk-based Regime

As mentioned above, while there is significant activity underway with respect to risk management and operational controls, progress has been uneven and somewhat disorganized. Moreover, there does not seem to be a coordinated attempt by the AFP industry to coalesce around best standards. Their diverse motivations and interests have

resulted in a situation where regulators should impose minimum standards and urge more uniformity before relaxation of controls begins.

Shifting to a risk-based regime will entail more involvement of Boards and greater responsibilities of Board members. The technical capacity of AFP Board members could not be assessed in any detail, but conversations with market players suggests that criteria for Board participation may have to be reviewed to ensure that there is a critical mass of members with a minimum understanding of risk and risk management.

At the level of management, most AFPs would seem able to shift to a risk-based regulatory regime, a view that is shared by external auditors and systems companies with professional relations with AFPs. Some AFPs may need to adapt their internal organizational structures and recruit additional staff but this may not entail great difficulties. However, the requirements that the SAFP may need to impose to allow AFPs to use derivatives may entail some additional efforts from the side of the institutions, even the large ones. Some AFP managers expressed concerns about the availability of high-quality risk management training. Several AFPs encouraged individuals to pursue the CFA (Chartered Financial Analyst) designation yet complained about not being able to send employees to local training for the exams. The FRM (Financial Risk Manager) exam, created and administered by the Global Association of Risk Professionals, was mentioned by professionals at two of the AFPs, at the same time expressing concern about the lack of specialized training opportunities in Chile.

Some of the smaller AFPs may need to spend more resources in personnel and systems to comply with minimum standards of risk management and internal controls, especially with those that may be required for the use of derivatives. In designing the regulation for minimum standards of risk management the SAFP will need to strike a balance between the objectives of safety and soundness and the objective of competition, i.e., avoid a regulation that becomes a barrier to entry due to its complexity. The SAFP may also need to assess whether some of the AFPs should be allowed a longer period to comply with the new regulations.

At the same time, both AFPs and market participants were unsure as to whether SAFP supervisory staff understood risk and could assess the quality of internal risk management systems. AFPs indicated that most SAFP supervisors frequently paid excessive attention to irrelevant details and did not appreciate the progress that had been done in the area of risk management. The implementation of a risk-based approach to supervision requires more sophistication from the side of participants and supervisors alike. Therefore, the changes that need to be made by the institutions will need to be matched by corresponding changes from the side of the SAFP, in its supervisory procedures and techniques.

4. THE REGULATORY FRAMEWORK

4.1 Brief Description of the Regulatory Framework

4.1.1 The Legal and Regulatory Framework for Pension Funds in Chile

The regulatory framework is defined by the Pension Law (Law 3,500), first enacted in 1981 but substantially amended since then, and by other special laws regulating particular aspects of the pension system. There is a substantial body of secondary legislation in statutory regulations and in resolutions or *circulares* issued by the *Superintendencia de Administradoras de Fondos de Pensiones* (SAFP), the industry regulator. AFPs are also subject to the Company and Capital Markets Laws that apply to corporations and market participants generally.

The following sections briefly describe the aspects of the regulatory regime that are most relevant to consideration of risk-based prudential supervision.

4.1.2 Entry to the industry

Entry to the industry is controlled by a licensing or authorization process administered by the SAFP. To gain authorization an applicant must submit to the SAFP a prospectus that describes the company (owners, capital structure, by-laws etc) and how it will perform its activities. The prospectus must include a feasibility study that includes a detailed project or plan including a strategic analysis and economic evaluation. This must address compliance with *encaje* and capital requirements. The SAFP has the power to reject the plan and the application without presenting a formal justification.

Licensing criteria do not include a fit and proper test. Proposed draft amendments to the Capital Market Law contain a clause introducing a fit and proper test for a *change* in the ownership of an AFP, thus allowing the SAFP to stop the transaction if the new owner does not have the proper credentials. However, the draft amendment does not include a clause extending the fit and proper test to the licensing stage. Equally significant, present licensing criteria do not include a specific requirement for an applicant to demonstrate adequate risk management plans and capacity. Such requirements are integral to a robust risk-based regulatory system and are discussed further in section 6.

A successful applicant must satisfy requirements for capital and the obligatory reserve. The minimum capital required for a license is 5,000 UF or the equivalent of US\$170,000. The minimum increases with the number of members, but is capped at 20,000 UF, or US\$0.7 million, when fund membership reaches 10,000. A more onerous requirement is the obligation of AFPs to have a minimum level of reserves equal to 1 percent of their total pension fund assets under management (*encaje*). Therefore, if an applicant aims at gaining a market share of 5 percent, it would need to accumulate US\$37 million in minimum reserves.

There have been no new entrants to the industry since 1994. However new entrants are possible in future and the regulatory regime should be designed to accommodate these in

ways that maintain the safety of the industry and the investments it manages, while not discouraging the beneficial effects of more competition.

4.1.3 Portfolio restrictions

Pension funds are presently subject to a set of comprehensive and complex overlapping portfolio restrictions. These have been changed in several occasions over the past 20 years, allowing AFPs to increase the depth and breadth of their investments across different asset classes. However, the investment regime has not diminished in complexity, involving an intricate web of regulations imposed on instruments, classes of instruments, individual issuers, and related issuers. Moreover the detailed investment regime is mostly defined in the text of the Pension Law itself, and not through secondary regulation, leaving very little margin for its adaptation to changing market conditions.

As shown in Annex 3, regulations apply to instruments and classes of instruments, and to issuers. In the first case, there are investment limits specified for each instrument and class of instrument (variable and fixed income), for each of the five portfolios or funds managed by the AFPs (from A to E). There are also joint limits on different combinations of variable and fixed income instruments, and sub-limits depending on risk, liquidity, particular instrument characteristics (e.g. convertible bonds), and the age of the company.

The limits by issuer are even more complex, being divided into three main categories. The first aims at portfolio diversification, with limits defined as a percentage of the individual funds (A to E) and the sum of all the five funds combined. The second aims at restricting investments in related companies and are also usually defined as a percentage of the value of the fund. The third imposes limits on ownership concentration, and are defined as a percentage of the equity of the firm or its assets.

The first set of issuer limits has a high level of detail and specificity—the limits depend on sectors, type of instrument, type of company, and other parameters. This results in 21 different instruments subject to specific limits, with the basic percentages varying from 0.15 percent of the fund for riskier shares to 10 percent of the fund for debts instruments issued by banks. Moreover, these basic percentages are further reduced by up to four specific factors: risk, diversification, concentration, and liquidity factors, with their values defined in separate tables and varying from 0 to 1. The second set of limits applies to cases where the companies invested are related to the AFP, and are usually defined in a straightforward way. The third set, however, is also defined with detail, resulting in 13 different instruments subject to specific limits.

The SAFP currently has plans to simplify substantially the matrix of portfolio restrictions. These proposals are assessed in Section 6.2.1.

By comparison, the investment regime for pension funds in OECD countries is substantially simpler. OECD countries are usually classified in two groups, namely, the countries following the prudent man (PM) rule, and the countries following a regime of quantitative restrictions (QR). The PM rule is a simple rule with origins in British

common law, and followed basically in Anglo-Saxon countries and the Netherlands. It states that pension funds should manage their portfolios as a prudent man and it has been established by tradition and jurisprudence that the PM rule implies a proper diversification of the portfolio. The QR regime has been primarily adopted in continental Europe, and involves direct restrictions on the portfolio, both by instrument and by issuer, but these rules are generally fewer and simpler than in Chile.⁶

4.1.4 Valuation of investment portfolios

Pension fund portfolios are marked to market on a daily basis and accounting rules are generally in line with international accounting standards. Valuation is performed by the SAFP itself, which raises the vector of prices in the Santiago stock exchange (*Bolsa*) and the electronic exchanges, sends the information to all AFPs and monitors the application of the price vector by the institutions.

Although this ensures a consistent application of the same price vector by all AFPs, there are number of problems in valuation that give cause for concern. The large share of trade in OTC markets at unreported prices raises questions about market integrity, the reliability of price discovery in the official exchanges, and accuracy of valuation of pension fund portfolios. There are also issues related to the valuation of thinly traded assets, such as small caps and quotas of closed-end investment funds.

Several domestic instruments are thinly traded, and it is not clear whether the rules for valuing them are always reasonable – sometimes the solutions look arbitrary eg mortgage bonds price cap. The present rules for valuation of derivatives are in Circular 1.216 (section G).

Further, valuation problems will become greater if AFPs are allowed access to other domestic investments such as additional derivatives and sub-investment grade bonds that are traded not at all or only very thinly. The problems are much less with investments overseas, where secondary markets are deeper and more transparent.

4.1.5 Risk Rating Commission

Pension funds may invest only in asset classes that have been approved by law or regulation and in specific private fixed interest securities and equities that have been approved and rated by the Risk Rating Commission or Comision Clasificadora de Riesgo (CCR). Given the structure of the investment regulations, both the CCR's approval and its assigned rating influence AFPs' investment in a particular security.

The CCR's role is specified in the Pension Fund Law and rules issued by the SAFP. The Commission's members are the three superintendents of the pension, securities and insurance, and banking regulatory agencies and four members nominated by AFPs but who are not related to AFPs and who have renewable two-year terms. The Superintendent of the SAFP is customarily the chairman. Members with a conflict of interest in relation to a security being considered must absent themselves from deliberations.

⁶ See SAFP (2004) for a summary of OECD practices.

The CCR meets at least monthly and is supported by a secretariat of 12 headed by the Secretary and including five financial analysts, a lawyer and support staff. It is financed by the AFPs, contributing in proportion to their share of total pension fund assets.

In considering domestic fixed interest securities the CCR requires two ratings by private risk rating agencies. It will either adopt the lower of the two or request a third rating. If dissatisfied with that it will decline to approve the security. To inform these decisions the Commission conducts its own analysis of issuers and securities, but it does not have formal authority to collect information other than what is publicly available. For this reason alone there is a question over the value of the CCR's contribution to risk management domestically; the Commission's role also raises concerns about moral hazard for the authorities. These issues are discussed further in section 6.

There are four domestic ratings agencies, only one of which (Fitch) is a subsidiary of one of the recognized international agencies. Some have expressed the view that the agencies are not as reliable as they should be, in particular that their ratings tend to be skewed to the right. If so, one of the reasons for this could be the desire to retain clients in a relatively small and concentrated market.

Most of AFPs' foreign investments are currently in mutual funds, for which the CCR conducts a due diligence process that includes country risk, the applicable regulatory framework, the home stock exchange, liquidity of the securities and other features of their policies and operations. The group to which the fund belongs must have at least US\$10 billion under management and at least five years management experience. The fund itself must have arm's length assets of at least US \$20 million. To date the CCR has approved over 1,300 mutual funds. The foreign ratings are not paid for by the funds but indirectly by the AFPs. The need for reform of these arrangements is assessed in section 6.

4.1.6 Minimum return benchmark and minimum reserves

AFPs must ensure on a monthly basis that the annualized real yield during the previous 36 months for each of the five funds they manage is no less than the lower of:

- the average annualized real yield of all funds of the same type for the previous 36 months, *less* 4 percentage points for funds A and B and less 2 percentage points for the other three funds
- the average annualized real yield (as above) *less* the absolute value of 50 percent of that yield.

If a fund's return falls below this range, the following top-up mechanisms come into play:

- first, the yield fluctuation reserve – this reserve comprises any surpluses occurring when returns are *above* the higher of the ranges that mirror those described above

- second, the minimum or obligatory reserve (*encaje*) – this is the reserve described above that must at all times be equivalent to one percent of an AFP’s assets under management.

If the minimum yield is not achieved after drawing on these reserves and other resources of the AFP, the government will contribute the difference and liquidate the AFP.

It seems generally believed that the minimum return benchmark encourages ‘herding’ behavior by the AFPs, probably beyond what would arise naturally from competitive pressures. The important question is whether this is a good thing. It is possible that, because of its endogeneity (that is, expressed in terms of historical returns) the benchmark could entrench excessively risky (or excessively conservative) investment strategies. These questions and recommendations for an improved formulation are discussed in section 6.2.3.

4.1.7 Disclosure requirements

The pension system is relatively transparent. A fund member receives every four months a booklet (*cartola*) that contains information on the current balance, gross and net rates of return, and commissions, for his/her AFP and comparable information other AFPs. The websites of individual AFPs provide additional information.

The website of the SAFP also provides a large volume of information relevant to members, researchers, and private sector participants. Significantly, this includes, with a ten-day lag, a monthly ranking of AFPs according to the latest investment returns in each of the five Funds, and detailed disaggregated data on the investment portfolios of each Fund.

Section 6.2.6 discusses the scope for improvement in the quality of information disclosed by AFPs. The *cartola* probably contains an excessive number of indicators, several of which of little relevance to members. At the same time, the *cartola* and the websites do not contain any measures of risk, and some specific indicators, such as net rates of return, do not reflect closely the situation of fund members. They may also encourage a short-term focus by all participants. In addition, there are no clear rules for disclosure of investment policies. Some AFPs have published short versions of statements of investment policies (SIPs) in their websites, but the information is insufficient and does not seem harmonized.

4.1.8 Outsourcing

AFPs have increasingly resorted to external service providers, particularly the smaller AFPs, in an effort to reduce their costs. Two firms provide revenue collection services: *PreviRed*, and the *Caja de Compensacion de los Andes*. The company *Sonda* provides account management/record keeping services to some AFPs. DCV, 30 percent-owned by the AFPs (the remainder by other financial institutions) provides centralized custody services for domestic assets and international banks provide custody for foreign assets. Collection of late contributions and benefit payments are outsourced to varying degrees

to banks and other providers, while other outsourced functions include document storage (Iron Mountain), call centers and letter distribution to affiliates.

Contracts with providers in relation to management of affiliate information (certain accounting services, physical back-up, quarterly statements) must contain a provision that the provider understands and will comply with SAFFP regulation and accepts the authority of the SAFFP to supervise those of its activities. This applies to Sonda, to the extent that it manages and retains affiliate information, but not to the other main service providers (including collection agencies which do not retain such data).

Otherwise, the SAFFP does not have the authority to regulate or supervise external service providers, except indirectly through the AFPs, although it is noteworthy that contracts with foreign custodians must have a provision that permits the SAFFP or its nominee to inspect their records of AFP assets held. Contracts with significant service providers are generally given by AFPs to the SAFFP and in some cases (collection agencies and foreign custodians) its prior approval is required. There are, however, no formal requirements as to what contracts with providers should contain, except for those with foreign custodians and certain aspects of those with collection agencies.

These arrangements deny the SAFFP formal authority to conduct technical on-site inspections of the service providers, determining the risk of service disruptions, identifying the scope for improved methods and procedures, and enforcing adequate solutions. Nor does the SAFFP does have the authority to monitor fees and curb abusive behavior either. However, Any anti-competitive behavior is finally resolved by the antitrust authority.

4.1.9 Governance of AFPs

Risk-based supervisory systems must pay close attention to the internal governance arrangements of regulated entities such as the AFPs. This is because the regulator is, as far as practicable, is aiming to rely on internal mechanisms rather than detailed rules to produce a safe and well-managed industry.

The AFPs are single-purpose - pension fund managing - joint stock companies with governance rules defined by the Company Law and several additional rules prescribed by the Pension Law. Many of the original articles of the Pension Law describing the general obligations of the institutions towards their members resemble the language used to define the fiduciary obligations of trustees in Anglo-Saxon countries, but this general obligation is usually imposed on the AFP, not its board members or directors. However, the Law was amended over the past 20 years to strengthen governance structures and clarify the personal obligations of board members, directors, and investment officers.

The Pension Law (Article 147) imposes a responsibility on both an AFP and its directors to ensure the security of pension fund investments and to earn an appropriate return on those investments. As is common in such legislation, the concept of 'appropriate' is not, however, further defined. An AFP and its directors must compensate pension fund

members for any damage they cause to the fund, including through negligence in carrying out their duties.

Beyond this general duty, and recognizing that the directors of AFPs owe their primary responsibility to their shareholders, a number of specific regulations are aimed at preventing decisions that might not be in the interests of pension fund members. These include the regulations that restrict AFPs to a single activity and that prevent cross-selling of products by other companies in the same group. In addition, each AFP's obligatory reserve, its largest asset, must be invested solely in the pension funds – a requirement aimed at achieving closer alignment in the interests of AFP shareholders and pension fund members

The law also requires AFPs to have internal control systems that ensure compliance with the conflict of interest rules and which must be audited externally. However, there is no secondary regulation expressing clearly this rule, resulting in differences in interpretation and implementation among AFPs. The internal audits of some of the institutions seem to be actively engaged in verifying compliance with conflict of interest rules, while others just inform investment officers of their obligations under the Law.

Another body of regulation that concerns corporate governance rules is the SAFP Complementary Law. This body entitles the SAFP to penalize AFP directors, senior officers, and external auditors for infractions to the laws, bylaws, and other regulations, as well as for actions that might have caused damage to the pension fund. The scope of the penalties ranges from a written warning to the legal termination of the AFP.

Additionally, the Corporate Law requires 'directors to act with the care and diligence that they would employ in their own businesses'. Since every fund manager in Chile must be constituted as a corporation, the fiduciary duties established in this body apply to all of them. In addition, this body complements the rules set by the Pension Law, whenever the two bodies do not conflict with each other (Corporate Law, Article 132). As a consequence, this body of law allows the pension supervisor to apply both non-pecuniary and pecuniary penalties to directors and main executives of an AFP.

Despite the various provisions described above, there is significantly, also no general provision in law imposing a responsibility on directors and senior managers of AFPs to have sound risk management strategies, plans and systems to protect the long-term interests of pension fund members. The responsibility for the security and earnings of fund investments referred to above may provide sufficient basis for regulations that achieve this purpose. This question is related to the desirability of tightening licensing standards, and is taken up in more detail in section 6.2.7.

4.1.10 External and internal audit

The SAFP has access to external audit reports and may influence the work of external auditors through its powers over AFPs, not through any direct authority over the auditors. Regulations provide that the SAFP can control the scope and breadth of the external audits of AFPs and their funds via its authority over AFPs, can discuss intermediate

results with the auditors and has the power to veto the publication of deficient audits. From each AFP, the SAFP receives all regular audit reports and may require that it see the auditors' working papers.

Among the regular reports it receives are the external auditors' annual reports on management controls. These will report any control weaknesses and recommend solutions, but they do not provide a general audit opinion on the quality of an AFP's systems. Some auditors are drawing on international assessment models, such as Sarbanes-Oxley, COSO and COBIT, in conducting such work but this is not driven by any local regulatory standard or requirement.

The SAFP can direct an AFP to commission a supplementary audit to investigate a particular issue. With respect to foreign investments, external auditors must report annually on the extent of an AFP's compliance with the foreign investment regulations and provide an opinion on the foreign investment procedures manual and associated internal controls.

Notwithstanding these various provisions, the general impression is that the SAFP does not place much store on the work of external auditors, relying instead on the resources and skills of its own Control Division which has very much the style and function of an audit unit. This lack of reliance on external audit is out of line with practice in many other countries where the trend has been to enlist the resources of auditors as a support to the supervisory function, both to access the professional skills and to defray the costs of regulation.

It may also be a factor in Chile that there is regulatory concern about the independence of audit firms in a market with relatively few large potential clients. However, there can be regulatory responses to such concerns. In contrast to common practice elsewhere, the SAFP does not have control over the selection of an AFP's external auditor, and cannot veto auditors that may have performed poorly. Also, auditors do not have the legal obligation to inform the SAFP of any weaknesses in controls or of any violation or wrongdoing (whistle-blowing) outside of the regular reports that are provided, in the first instance, to AFP management.

There is no SAFP resolution clarifying the obligations of the *internal* audit departments of the AFPs. All the institutions seem to have an internal audit department in charge of ensuring compliance with the main regulations, including conflict of interest rules. However, there are significant differences across AFPs in the scope and depth of activities carried out by their internal audit departments. For example, some of these departments seem active in the verification of conflict of interest rules, while others just inform the professionals in the investment department of their obligations under the law.

4.2 The regulatory framework for investment management

4.2.1 Key aspects related to asset management by AFPs

The current system of incentives for asset management promotes herding in the risk return space. This section summarizes the key aspects related to asset management by AFPs, analyzed in more details elsewhere.⁷ In our opinion the key aspects characterizing asset management behavior of AFPs are:⁸

- **Ranking.** For each pension fund type, competition takes place via relatively short-term return ranking positions, determined almost independently of absolute risk levels. Risk measures *naturally* used by the pension fund managers are thus related to relative performance (i.e., the system's average). Therefore either "tracking error" or "relative value at risk –VaR" with respect to the benchmark represented by the average competitor's portfolio is considered to be the relevant risk measures by competing pension fund managers.⁹
- **Herding.** This competition via ranking and the consequent visualization of risk as relative VaR or tracking error causes pension funds to herd. This happens as a consequence of competition, but is by no means a strictly local phenomenon. Herding could be more intense in the Chilean case though, given the transparency of detailed investment decisions and the existence of the relative minimum return requirement.¹⁰
- **Inefficiency trap.** There is an efficiency trap in the system: if the benchmark is or becomes inefficient (due to a large external price shock, for example), there are no natural market incentives to move the system again towards an efficient position. This is due to the fact that the performance benchmark is endogenously determined.¹¹

⁷ See Walker (2006). Benchmarks, Risks, Returns and Incentives in Defined Contribution Pension Funds: Assessing alternative institutional designs. Mimeo. School of Business, Pontificia Universidad Católica de Chile.

⁸ A possible problem of this analysis is that to a certain extent some of the facts listed below may be themselves consequences of the way in which the regulatory structure has been organized.

⁹ Tracking error is the volatility of the return difference with respect to a benchmark. This measure can be forward or backward-looking. Value at Risk or VaR corresponds to the loss (in dollar or percent terms) that may occur with a certain probability. Relative VaR corresponds to how much more could be lost by one manager with respect to another.

¹⁰ This phenomenon has been known for some time. See for example "Do Institutional Investors Destabilize Stock Prices? Evidence on Herding and Feedback Trading" J Lakonishok, A Shleifer, RW Vishny - 1991 – NBER WP 3846.

¹¹ There are two good examples of inefficiency traps. First, we have the concentration until 1998 of the Chilean pension fund portfolios in the local electricity sector. This concentration happened involuntarily, and was principally due to large unexpected capital gains in this sector. Once the electricity sector represented about 80% of the stock portfolios, it became very "risky" (from a competitive perspective) to reduce investment in this sector, since if capital gains happened to continue their "momentum" the consequences on the ranking position could potentially be negative. A second example is Fund E. This fund, in order to hedge the costs of future pensions from the perspective of pensioners, should be partly invested in very long-term local bonds, and this should be close to an efficient asset allocation. Most managers probably know this. However, these bonds are very volatile, and if the pension system is on average invested in short-term bonds, moving towards a more efficient portfolio becomes risky from a

Hence, a necessary condition for funds to compete in the neighborhood of efficient portfolios is obviously that benchmarks be efficient. Nevertheless, this condition is not sufficient due to the endogenous way in which the benchmark itself is determined.

- ***Risk taking incentives.*** In addition to the necessary condition to have efficient benchmarks, it is also necessary to have such benchmarks exogenously determined. As a matter of fact, there are incentives for (parsimonious) incremental risk taking with respect to the benchmark, since taking slightly more systematic risk is expected to provide superior returns, and to potentially improve ranking positions. If the benchmark is the system's average, there is no obvious endogenous limit to this behavior, and the system's portfolio will converge towards the highest allowable risk levels. Increases in risk levels could be more abrupt if executives are asymmetrically rewarded for good performance.
- ***Investment horizon and the risk perspective.*** Risk is generally not short-term (e.g. annual, monthly or daily) volatility and the risk perspective depends on the investment horizon, as is well known by fixed-income portfolio managers. For example, a long-term default-risk-free-annuity-like real bond should be close to riskless from the perspective of soon to be pensioners, but this security has significant volatility. The long-term and short-term efficient portfolios will differ in the lower risk end of the efficient frontier, whereby long-term indexed bonds will generally be considered efficient from the long-term perspective but not necessarily so from the short-term perspective. This means that adequately measuring the appropriate (long-term) risk is particularly difficult in practice. The issue of mean-reversion in long-term indexed bond returns is critical.

A conclusion that can be drawn from the observations aforementioned is that the AFP system, without an absolute anchor that mitigates the negative aspects associated with relative performance, is potentially prone to drifting in the risk return space yielding non socially optimal equilibria that are unstable over time.

4.2.2 The overly complex and rigid system of quantitative investment rules

The problems highlighted in the previous section are mitigated by the presence of a well developed set of quantitative investment rules. In broad terms, the current investment regulatory framework relies on detailed global investment limits by fund, detailed investment limits by issuer (all of them based on a multiplicity of factors), a minimum (relative) return requirement and a government guarantee over the returns (which is quite unlikely to become binding). In addition, there is heavy compliance supervision. It thus corresponds to a prescriptive approach to investment regulations. Most investment limits (global and by issuer) are set in the law. Changes to the investment rules are thus relatively difficult to pursue, since they need to be approved by congress. In addition,

commercial perspective. In this way, portfolios may end up involuntarily “trapped” in inefficient positions, concentrated in a few assets or sectors, or with certain undesirable characteristics, and competition will not spontaneously produce more efficient portfolios.

any changes related with pension laws are of the exclusive initiative of the Executive Power.

This provides a stable and perhaps political-pressure free investment environment, but it also is very inflexible, leaving little room for innovation or gradual adaptation to changes in the investment environment. The last important change to the investment environment of pension funds was the creation of multi-funds. The regulatory strategy ended up replicating the same limit structure of the original two funds for each of the five multi-funds. This has resulted in a myriad of investment limits. As reported in section 6.2, the current structure of the investment limits has more than 100 different and quite intricate restrictions.

In addition to overly restricting the risk return space in which AFPs can compete, the current investment rules have promoted an audit approach in the SAFP to investment supervision. The complicated structure of limits sometimes makes it difficult for supervisors to assess what restrictions are more important. There is little room for using common sense since the regulations simply state that certain restrictions have to be met. This has led to a “traffic police-like approach”, in which diligent supervisors constantly look for possible “traffic violations”, no matter how trivial these may be. According to certain AFP officials, there is no systematic correspondence between the violation and their consequences. Trivial breaches may have the same consequences (fines, penalties, extensive report writing, presence of inspectors for long time periods, etc) as serious ones. This has made compliance costs quite high. Significant resources need to be distracted in order to comply with relatively unimportant restrictions.

In summary, a set of quantitative investment rules can in principle compensate for the undesirable asset management behavior associated with relative performance and endogenous benchmarks. However, it appears that from the point of view of a cost benefit analysis the current investment regulatory regime is also excessively constraining the investment universe of asset managers limiting the potential for investment risk diversification. In addition, it reduces the effectiveness of investment supervision by promoting an audit approach focused exclusively on regulatory compliance.

4.2.3 The relaxation of investment rules presents a trade off

The relaxation of the current investment regulatory regime (quantitative rules) could potentially improve the scope for risk diversification in AFPs portfolios and an outright elimination of quantitative limits would eliminate the importance associated by the SAFP to supervising the compliance to a myriad of complex and rigid quantitative limits. Nevertheless, an outright elimination of quantitative limits poses a policy problem of how to maintain an absolute and exogenous anchor in the system that mitigates the problems associated with relative performance.

Given the current incentive structure design and the whole relative performance philosophy that characterizes the system we would not expect that absolute anchors be endogenously generated by AFPs. For instance, AFPs would not include stricter-than-necessary rules in their investment policies or guidelines, because of potential

competitive disadvantages. Our prediction is that even if initially pension funds did decide to include relatively restrictive elements in their policies, these would be quickly abandoned in favor of less restrictive elements if these happen to negatively affect AFPs relative returns or ranking positions.

Alternative exogenous absolute metrics would need to replace quantitative limits. For instance, one could think of limiting the absolute level of investment risk in each portfolio. However, risk is not easily measurable; it is not necessarily well represented by absolute volatility and/or short-term absolute value at risk. Risk could be correctly measured by short-term volatility if: i) we can obtain a good forward-looking risk indicators (for the time horizons we are interested in); ii) returns are uncorrelated through time (which is a particularly bad assumption for long-term bonds); iii) return distributions are more or less symmetric; and iv) there are no jumps (or fat tails), which is also a bad assumption for “peso-problem” risks (such as default risk or devaluation risk when currencies are not allowed to float freely). Some of these issues could be solved by using VaR instead of volatility, but then it becomes critical to figure out the appropriate return distributions. Still, the issues of measurement in the appropriate time-frame and the assumption of uncorrelated returns through time are very difficult to deal with, without imposing very specific return distribution assumptions, which in turn involves significant parameter uncertainty. This is complicated further because in defined contribution systems there are no explicit liabilities. We could think of measuring “notional liabilities”, as today’s present value of a future deferred stream of payments, but this also involves significant parameter uncertainty, especially associated with the real term-structure of interest rates in the long-run, and its behavior through time. Thus, in our opinion, completely substituting rule-based supervision by a “100 percent pure value at risk approach” is neither feasible nor recommendable.

In conclusion, rule-based supervision cannot be completely substituted for the alternative approaches. Nevertheless, as suggested in section 6.2, there is ample room for simplifying an extremely complex investment limit structure, without significantly affecting the “risks” supposedly addressed by these limits. This will hopefully have the effect of allowing AFP investment opportunities to be broadened, allowing them to achieve more efficient portfolios. But still, the problem we have called the “inefficiency trap” will remain, and specific mechanisms should be proposed in order to continuously free AFP portfolios from inefficient positions.

4.2.4 Getting closer to Risk-Based Supervision

An important consequence of the analysis presented above is that, in general, we would not expect AFPs to include stricter-than-necessary rules in their investment policies or guidelines, because of potential competitive disadvantages. Our prediction is that even if initially pension funds did decide to include relatively restrictive elements in their policies, if these happen to negatively affect their relative returns or ranking positions, they will change their policies and adopt the least restrictive possibility, sooner or later. This does present a complication for the RBS approach, since it requires AFPs to have explicit investment policies, which should also include indications regarding how

different risks are dealt with. Given our predictions, supervisors will end up verifying only whether the required global minimum is met.

Regarding risk measurement, the main difficulty of migrating from a rule-based investment regime towards a risk-based approach is that risk is not easily measurable; it is not necessarily well represented by absolute volatility and/or short-term absolute value at risk. Risk could be correctly measured by short-term volatility if: i) we can obtain a good forward-looking risk indicators (for the time horizons we are interested in); ii) returns are uncorrelated through time (which is a particularly bad assumption for long-term bonds); iii) return distributions are more or less symmetric; and iv) there are no jumps (or fat tails), which is also a bad assumption for “peso-problem” risks (such as default risk or devaluation risk when currencies are not allowed to float freely). Some of these issues could be solved by using VaR instead of volatility, but then it becomes critical to figure out the appropriate return distributions. Still, the issues of measurement in the appropriate time-frame and the assumption of uncorrelated returns through time are very difficult to deal with, without imposing very specific return distribution assumptions, which in turn involves significant parameter uncertainty. This is complicated further because in defined contribution systems there are no explicit liabilities. We could think of measuring “notional liabilities”, as today’s present value of a future deferred stream of payments, but this also involves significant parameter uncertainty, especially associated with the real term-structure of interest rates in the long-run, and its behavior through time. Thus, in our opinion, completely substituting rule-based supervision by a “100 percent pure value at risk approach” is neither feasible nor recommendable. However, for some specific investments, particularly derivatives, an RBS approach may be suitable.¹²

Still, even though we argue that rule-based supervision cannot be completely substituted for the alternative approach, we see in section 6.2 that there is ample room for simplifying an extremely complex investment limit structure, without significantly affecting the “risks” supposedly addressed by these limits. This will hopefully have the effect of allowing AFP investment opportunities to be broadened, allowing them to achieve more efficient portfolios. But still, the problem we have called the “inefficiency trap” will remain, and specific mechanisms should be proposed in order to continuously free AFP portfolios from inefficient positions.

¹² Despite all these difficulties, Mexico has adopted a short-term VaR approach. The undesirable consequence is that pension funds end up invested principally in short-term deposits. Widening the VaR seems a solution, but it needs to be widened by so much in order to allow for investment in riskier instruments, that the VaR limit becomes meaningless. Still, this assumes that risk is being adequately measured. In any case, Mexico complements this approach with a complete set of investment limits.

5. THE SUPERVISORY FRAMEWORK

5.1. SAFF's Governance and Powers

The SAFF was created by the 1981 Pension Law (Decree Law 3,500) and the Complementary Law 101, which describes its structure, obligations and powers in more detail. It was conceived as a proactive supervisory agency, expected to monitor and regulate closely the authorized administrators of pension funds and maintain the stability and resiliency of the new pension system. The SAFF describes its role as safeguarding the resources accumulated in the pension funds a very important role not only because the second pillar is a significant source of retirement incomes but also because the State made contributions mandatory and undertakes to supplement pensions from its own budget when they fell below certain thresholds and because the pension funds are a significant source of finance for the Chilean economy.

The SAFF is an autonomous public sector organization, formally linked to the government through the Ministry of Labor and Social Security, but without reporting obligations to that Ministry. It does not have a board structure and is directed by a superintendent who is appointed by, reports to, and can only be removed by the President of Chile. An amendment to the Law on Public Administration establishes a formal selection process (*concurso publico*) and a term of three years for the Superintendent, renewable for another three. However, the amendment has not introduced formal rules for the removal of the Superintendent during his or her term.

The SAFF does not have formal financial autonomy. It does not collect levies from the pension industry and is financed entirely by the State budget. Each June, the SAFF formulates a proposed budget which is either approved or modified by the Ministry of Finance in September and submitted to Congress as part of the government's overall budget for approval in December.

Despite its lack of financial independence the SAFF appears to have enjoyed considerable operational autonomy during its existence, reflecting the strong political commitment to the stability of the pension system. Superintendents seem not to have been subjected to undue political pressures. And despite its lack of financial autonomy, the agency seems to have access to adequate financial resources to conduct its activities. The SAFF has a total of 147 employees to supervise six institutions and about seven million member accounts, high ratios by international standards. Indicative of the absence of any pressure to cut its budget, the SAFF's staff numbers are about the same as in the mid 1990s when there were nearly four times as many AFPs (although, admittedly, a smaller number of member accounts and funds under management).

The legal provisions for the organization of supervision are marked by some deviations from best international supervisory practice. In particular, the lack of clear rules for removal of the superintendent and the lack of financial independence open room for political interference in the supervisory process. In many OECD countries, there has been an effort to ensure the independence of supervisory agencies through the establishment of governing boards, the introduction of formal rules for the termination of

mandates (e.g., misbehavior, incapacity, corruption, and conflicts of interest), and through self-financing via the imposition of levies on the pension industry.¹³

Although in practice the SAFP appears not to have been significantly impeded by the lack of such governance features, the gaps with international best practice still merit attention and review by the Government, given the importance of the SAFP in preserving the stability of the pension system and building credibility and confidence.

Turning to its regulatory and enforcement authority, the SAFP's powers are set out in the Pension Law and in the binding secondary regulations issued by the agency through its resolutions or *circulares*. These powers are very broad but suffer from some deficiencies.

Paradoxically, despite its strong regulatory powers overall, the SAFP is constrained in some specific areas such as investment regulation because so many of the detailed rules have been placed in the body of the Pension Law itself. As previously described, Decree Law 3,500 specifies most of the numerous and detailed investment ceilings and restrictions that AFPs must comply with. Although the Law sometimes specifies ranges for limits to be mandated by the SAFP or by the Central Bank of Chile in consultation with the SAFP, there is still little flexibility left for the SAFP to adapt the investment regime to changing market conditions - significant changes have to be introduced through legal amendments and are subject to normal legislative queuing and debate in Congress.

At the same time, there are also areas of regulation where the SAFP seems to have excessive regulatory discretion, such as in licensing. The SAFP generally has the enforcement tools that are required to ensure compliance with the regulations. This includes the power to issue warnings, to impose heavy fines (one million dollar fines have been reported), and to withdraw the license. The SAFP is regarded by market participants as a very proactive supervisor which does not hesitate to use the means at its disposal to ensure compliance with the rules.

Surprisingly, the Pension Law does not clearly empower the SAFP to intervene in an ailing AFP and take over temporarily its administration, powers which are granted to the insurance and bank supervisors. This flaw persisted for more than 20 years because there had been no need for interventions and/or forced administrations, but the SAFP recently had to intervene in a small and troubled AFP. It was able to perform this task using its broad powers of enforcement, but this episode revealed the need to improve the legislation in this area. Finally, the SAFP also lacks formal powers to regulate and supervise external service providers, as noted above, and it lacks direct authority over the external auditors of AFPs.

There are no legal constraints on the sharing of information with other supervisors - the SVS and the SBIF. An *ad hoc* Supervisory Committee has been formed and the heads of the three supervisory agencies meet every month to exchange information. The CCR

¹³ By way of illustration, a recent survey of supervisory practices in 19 OECD countries reports that the pension supervisory agencies of nine countries financed their activities entirely through industry levies, five agencies financed themselves through levies and budget transfers, and only five agencies depended entirely on the State budget.

provides another channel for coordination and the sharing of information, as the heads of the three agencies form part of this Commission as well. However, a memorandum of understanding has not been elaborated yet, and it is not clear how effectively the staff of the three agencies coordinate their work programs. The draft amendments to the Capital Markets Law include a proposal for formalizing the Supervisory Committee, and this could open the way for implementation of memoranda

5.2. Structure and Staffing of the SAFP

The SAFP is organized into six main divisions and one unit: the Finance, Control, Benefits, Legal, Studies and Administration divisions, and the Medical unit. The core functions in relation to supervision of the pension system are performed by the first two divisions, with support from the others.

The *Finance* division maintains a very tight off-site surveillance system, providing a detailed vector of asset prices on a daily basis, and verifying compliance with valuation rules, investment restrictions, minimum reserves, and conflict of interest rules. It interacts closely and daily with all the AFPs, but this takes place primarily through its off-site surveillance program and is linked to its analysis of the detailed daily information provided by AFPs on their investment portfolios and transactions.

The *Control* division verifies the management of individual accounts by the AFPs, including transfers between AFPs, compliance with marketing and disclosure rules; it also handles complaints from fund members. These are more the functions of a consumer protection agency than a prudential regulator, but the division also has the traditional prudential role of overseeing all cases of resolution, including liquidations, mergers, and acquisitions.

Unlike Finance, this division maintains a comprehensive on-site program of audits and checks, carried out every year in all AFPs and their 323 branches. This program combines fixed and variable topics. Fixed topics include all basic AFP processes, including the enrolment of new affiliates, collection of contributions, account balances, fund switching, transfers of affiliates between AFPs, commission payments from funds, pension calculations and the handling of complaints. Variable topics are identified as a result of previous onsite programs, audit results, or due to complaints from participants. Such topics have included marketing practices, the elaboration of the booklet to members, and the recording of contributions. While a basic auditing program is applied to all AFPs, supervision is more intense for AFPs having a poor performance record. In such cases a supervisor may be placed permanently on-site.

Each year an audit program is developed for each AFP, with special attention given to weak areas that have been identified from statistical analysis of monthly data provided by AFPs, complaints, previous on-site inspection findings and reports from other SAFP divisions. The audit methodology includes reviews of documentation, testing of critical procedures, direct inquiry of IT systems, step-by-step verification of results, sampling of transactions and balances and interviews with AFP staff. Evaluation reports are prepared and follow-up actions recommended where warranted. These might include warnings,

requirements for improvements in procedures and fines. Control division seems to have close working relations with the internal audit departments of the AFPs during its onsite visits, and reports that such interactions provide valuable information for the diagnosis of the AFPs.

The *Benefits* division oversees compliance with all the payout rules and the proper functioning of the disability and survivorship insurance. The *Legal* division prepares formal proposals for changes in primary and secondary regulations and implements sanctions for non-compliance. *Studies* division assesses the performance of the pension system and its regulation, proposes changes and reforms for improvements and also organizes all the statistics and publishes them in the SAFF's website.

Within a relatively benign budgetary environment, as noted above, the SAFF has had more flexibility to hire and fire personnel than the rest of the public sector. The agency has also been able to offer competitive wages to new employees and middle-level managers, although it also faces administrative restrictions to pay more competitive wages for senior management. Even so, the staffing of its main supervisory divisions has been very stable with very low turnover rates.

Table 12 summarizes information on the staff currently working in Finance and Control divisions, the two core supervisory units, and in the Studies division which is responsible for research leading to the development of new supervisory policy.

Table 12: SAFF Staff Profile /1

Control Of Institutions Division

n°	Position	Years of Service	Age	Tertiary Studies
1	Head of division	24	49	Math & physics teacher
2	Head of operations department	25	52	Accountant/auditor
3	Head of special processes department	20	56	Accountant/auditor
4	Head unit special proc. Department	25	60	Accountant/auditor
5	Head of u. insurance department	17	50	Public accountant/auditor
6	Head unit u. insurance	17	53	Public accountant/auditor & math teacher
7	Head unit operations department	17	48	Accountant/auditor
8	Head unit special processes department	17	42	Accountant/auditor
9	Supervisor/u. insurance	16	45	Accountant/auditor & business
10	Supervisor/operations	16	41	Public accountant/auditor
11	Supervisor/special processes	25	59	Public accountant
12	Supervisor/operations	13	48	Public accountant/auditor
13	Supervisor/special processes	16	45	Public accountant/auditor
14	Supervisor/special processes	14	41	Public accountant/auditor
15	Supervisor/operations	08	44	Public accountant/auditor
16	Supervisor/operations	13	43	Accountant/auditor
17	Supervisor/u. insurance	12	43	Public accountant/auditor
18	Supervisor/special processes	03	35	Accountant/auditor/control engineer
19	Supervisor/special processes	15	44	Public accountant/auditor
20	Supervisor/special processes	08	39	Public accountant/auditor

21	Supervisor/operations	08	35	Public accountant/auditor
22	Secretary	25	65	Secretary
23	Secretary	24	46	Secretary
24	Support	14	40	Technician
25	Support	06	27	Technician
	Average	16	46	

Finance Division

n°	Position	Years of Service	Age	Tertiary Studies
1	Head of division	24	53	BA Business
2	Head of financial control department	12	36	BA Business/MBA
3	Head of markets & risks department	24	62	BA Business/MBA
4	Head of foreign investment department	15	42	BA Business
5	Supervisor/financial control	12	35	BA Business
6	Supervisor/financial control	14	43	BA Business
7	Supervisor/financial control	06	33	BA Business/MS(c) Finance
8	Analyst/markets & risks	08	33	BA Business
9	Statistician/financial control	24	49	Statistician
10	Fin analyst/foreign inv	02	26	BA Business
11	Financial analyst/foreign investment	10	38	BA Business/auditor/accountant
12	Financial analyst/financial control	02	27	BA Business/MS(c) finance
13	Analyst/financial control	01	26	BA Business
14	Financial analyst/foreign investment	01	28	BA Business/MS(c) Finance
15	Analyst/financial control	01	25	BA Business/MS(c) Finance
16	Analyst/markets & risks	04	28	BA Business
17	secretary	15	45	Secretary
18	secretary	15	53	Secretary
19	secretary	25	60	Secretary
20	support	08	36	Technician
	Average	11	39	

Studies Division

n°	Position	Years of Service	Age	tertiary studies
1	Head of division	03	38	BA/MA/Phd Economics
2	Head of statistical analysis department	16	43	BA Business/auditor
3	Head of research department	02	31	BA/MA/Phd Economics
4	Senior analyst/research	00	31	BA/MA/Phd(c) Economics
5	Analyst/u. insurance	02	28	BA/MA Economics
6	Analyst/research	03	28	Industrial & Electrical engineer
7	Analyst/statistical analysis	13	43	BA Economics
8	Analyst/u. insurance	03	35	MA Psychology/MA Public Policy
9	Analyst/research	03	31	Industrial Engineer/MA Economics
10	Analyst/research	00	27	BA/MA(c) Economics
11	Analyst/research	01	26	BA/MA Economics
12	Analyst/stat analysis	04	28	BA Economics/MS(c) Finance

13	Analyst/u. insurance	03	31	Industrial Engineer/MBA[c]
14	Statistician/statistical analysis	11	37	BA Mathematics & Statistics
15	Secretary	21	48	Secretary
16	Analyst/statistical analysis	13	64	Biology teacher
17	Secretary	07	42	Accountant
18	Support	04	27	Technician
	Average	06	36	

Notes: /1 as of January 2006

It is apparent from Table 12 that staff in the Control and Finance Divisions have quite long experience in the SAFP, particularly at the senior levels. For instance, the twelve officers with 'Head' in their titles have average service of about 20 years, almost as long as the present pension system has been in place. By contrast, staff in the Studies Division have on average considerably shorter service and are somewhat younger.

The tertiary educational background of staff varies considerably between divisions, but is remarkably homogeneous within – officers in Control mostly have an accounting or auditing qualification and those in Finance have business and finance degrees, while those in Studies are most commonly economists, along with a small number of industrial engineers. These specializations are consistent with the respective broad functions of the three divisions.

Many staff members, particularly in Finance, have a BA in Business from a Chilean university (mainly the Catholic University of Chile or the University of Chile). A 'BA in Business' program is a mainly theoretical 10-semester program. The first six semesters include topics such as economics, accounting and business, while the final four semesters are directed towards field courses - marketing, finance, human resources, etc.

Most of the staff in Control and Finance divisions do not have formal training in financial investment, and there is no explicit policy regarding continuing education or training although specific requests for training made by junior staff are in general supported by the SAFP. Nor is there any program of secondments, either inward or outward, with industry or with other official agencies such as the banking or insurance regulators. These factors combined indicate that for most staff their main continuing education after joining the SAFP has been 'on the job'.

The move to a more risk-based supervisory style will require changes in staff experience, training and skills. It will also require some change in the culture and supervisory style of the SAFP – the following section discusses this.

5.3. Culture and Practice of the SAFP

In common with all organizations, the culture of the SAFP is a product of many forces. In its case the key ones seem to be:

- The keenly felt burden of responsibility for supervising such an important component of Chile's social support system, and the strong State and community expectations from its origin in 1981 that the SAFP would be a proactive regulator, working assiduously to protect both the retirement investments of members and the State guarantee from fund mismanagement
- The regulatory framework itself which is characterized by very detailed prescription of investment, valuation and other aspects of AFP operations, combined with the fact that a high proportion of this regulation is in the law itself
- The relative under-development and small size of the Chilean financial system which official intervention has been called upon to redress – these factors help explain the detailed centralized asset valuation system that partly compensates for lack of deep transparent markets, the official ratings body created in response to lack of confidence in private ratings agencies, and the relatively light reliance by the SAFP on external auditors for possibly the same reason
- The small number of AFPs (especially since the mid 1990s) which, given the SAFP's resources, has facilitated very close regulation of each one; the highly concentrated system also contributes to a very conservative supervisory style because of the damage that one institutional failure can do to the confidence in the system as a whole and to the reputation of the regulator
- The insularity of the SAFP in its staffing, as a result of which it has not been greatly exposed to developments in supervisory philosophy and practice in other financial sectors, especially banking.

These forces seem to have produced a supervisory culture that is aggressive, paternalistic and very thorough, but only within the scope of the rules that are laid out in law and secondary instruments. It is apparent that the SAFP has taken little interest in AFP risk issues that might be important but that fall outside the existing letter of the regulations, although there is also evidence that that mindset may be changing.

The SAFP's regulatory approach is closely heeded, even feared, by AFPs - but it is not by and large regarded as constructive, encouraging of innovation or generally 'adding value'. In fact, some AFP officers argue that the cost of compliance for AFPs clearly outweighs any benefit to fund members. One asserted that regulatory complexity was probably a barrier to new entry.

In interviews, one AFP said that it would have invested more in improving its management systems but there is no incentive in such a tightly controlled environment. It noted that major constraints and inefficiencies include the investment rules, the time spent on detailed interrogation by SAFP analysts, report writing, and correspondence with SAFP and fund members. Competition among AFPs is restricted by SAFP interference in business activities and by its practice of adopting the best practice of one AFP as a minimum standard for all. SAFP's on-site visits add some value but the focus is too much on finding errors and having them corrected – success seems to be measured

by the number of errors found, fines levied and warnings issued. This AFP indicated that if it suggests an improvement in procedures, SAFF supervisors are not interested and usually reply that AFPs should ‘just do what the law or circular says’. It conceded that the SAFF has little choice in this because the letter of the law drives supervision and leaves scant room for discretion or flexibility.

A second AFP said that SAFF people are more interested in the numbers and in daily detail, not in the broader issues of risk and quality control. A third noted that, while close regulation of AFPs does help protect against losses, it also compels considerable focus on things that are not necessary and not important. It estimated that its staff are working 60 percent of the time ‘for the SAFF’, rather than working productively in the interests of affiliates. Also, the review team heard numerous (admittedly untested) assertions about episodes where large volumes of resources had been devoted to tracking down tiny discrepancies in individual account balances, descriptions of the monthly avalanche of SAFF correspondence that has to be dealt with, and the supervisors’ lack of concern or understanding about systemic issues of risk management or service delivery.

Such views expressed by regulated entities must be taken with ‘a grain of salt’. However, the strong criticisms do look plausible when considered against such factors as the enormous and complex existing body of regulation that has to be administered, the evident audit-like training and mindset of many of the SAFF’s staff and the total number of its supervisory staff relative to the number of regulated entities.

It was also asserted that the SAFF’s focus is indiscriminating, giving similar attention to all problems regardless of the different significance of the weaknesses they might indicate in an AFP’s business processes. The SAFF argues, however, that it does try to focus attention on areas of particular weakness in constructing its audit programs and more generally in allocating supervisory resources to the different AFPs. It also notes that critical processes, in general those that directly affect the interests of affiliates themselves, are given greater attention by supervisors.

The SAFF’s approach and culture seems quite different from that of the banking regulator (SBIF). More closely aligned to international practice in banking supervision, this approach is less intrusive in regard to daily operations and more focused on the quality of the banks’ systems for managing risk. It is an approach that puts more responsibility on the management of a regulated entity to ensure the safety of depositor/member funds, while leaving more room for innovation and product differentiation. It aims to ensure that regulation is strategically targeted and is delivering better ‘value for money’.

While this style of supervision should be more effective because it is better targeted at genuine risks, it imposes a smaller compliance burden on the regulated industry, both in the explicit costs of the agency and the indirect costs imposed on regulated firms in form-filling, hosting on-site visits and focus on unnecessary operational details. The SBIF has about 150 staff responsible for supervising 22 banks and some other institutions. Also in contrast to the SAFF, the banking regulator reported numerous senior recruits from

industry. There is further discussion of relevant aspects of the banking regulation model in section 6.3.3.

6. RECOMMENDATIONS FOR CHANGE

6.1 A New Approach to Regulation and Supervision

The adoption of a risk-based approach has the potential for generating significant efficiency gains in Chile and for producing better outcomes for the retired population. The adoption of the new approach will entail changes in key areas of regulation, as well as changes in supervisory procedures and methods. The new approach to regulation allows more room for asset managers to operate through a relaxation of investment controls but, as a *quid pro quo*, also entails stricter standards of risk management and internal controls. On the supervisory side, the changes entail greater emphasis in identifying and measuring risk, and allocating supervisory resources where they are most needed. Section 6.2 provides recommendations for changes in the regulatory framework while section 6.3 identifies the required changes on the side of the SAFP.

6.2 Regulatory changes

6.2.1 The proposed new pillars

Section 4 explains that the investment regime relies on an intricate system of limits united with heavy supervision and minimum return guarantees. Most of the investment limits are set in the law. While this has the advantage of providing rules which are stable and relatively immune to political pressure it reduces flexibility, it creates a very restrictive investment environment for the AFPs, and encourages a compliance mentality both in the AFPs and among supervisors. Given the arguments presented in Section 4.2, we do not believe that this “compliance-based” system can be completely substituted by a “risk-based” one, perhaps not even in the long-term. Therefore, we suggest reducing restrictions and regulations, while keeping important ones, leaving more room for private sector creativity, adding flexibility to the way in which some of the investment limits are set. This requires many of the investment limits should not to be set in the law. We must therefore look for a “balanced structure” that will somehow protect the system from political pressure and instability. It is also important to notice that if important investment limits are no longer set in the law, then regulators may require some compensating prerogative. Considering the above, in very broad terms our proposition is based on the following six main elements:

- The Pensions law. Only global investment limits and general issues must be considered in the law. In addition, it should be conceptually very clear regarding the purpose and scope of the other regulations, in terms of what issues must be dealt with in lower rank legal instruments (such as Decretos Supremos and Circulares). Among others, the law should establish that no minimum investment limits in specific securities, sectors, industries or for specific purposes can be set.

- Minimum return and *encaje*. The *encaje* and the relative minimum return requirement should remain, although with changes, as explained below.
- Technical Advisory Board (TAB). There should be an independent technical advisory board, in charge of recommending specific investment limits to SAFP, primarily for diversification and risk limitation purposes. It should also be in charge of “trimming” the composition of the minimum return benchmark, in order to mitigate the problem of the inefficiency trap described before.¹⁴ In a second and future phase, we recommend analyzing whether this Board should determine exogenous benchmarks for each kind of fund, against which the minimum returns should be computed. There should be open communication channels between SAFP, AFPs, other supervisors and this advisory board.
- SAFP. In addition to its role related with operational supervision, the SAFP must decide whether to accept or reject, partially or completely, the recommendations given by the advisory board. It should issue Decretos Supremos and Circulares in order to determine the more detailed investment limits by issuer.
- Senate report and public hearings. The Superintendent should present an annual report to the Senate (specifically to one of its specialized commissions – Comisión de Hacienda del Senado), regarding the decisions adopted, achievements, failures problems faced during the year, and future plans. The purposes are to require public accountability and transparency to the SAFP’s decisions and to return some supervisory power to the Senate.
- Individual pension fund investment policies. These are expected to cover especially certain issues, such as conflicts of interests between funds and with related parties, liquidity and valuation of illiquid instruments.

In what follows we analyze the elements that justify these general proposals, in addition to providing more details on some of the proposals. Our main recommendations are summarized below.

Recommendations: (i) Leave only the broader investment restrictions in the law and create a sound and clear legal basis for the SAFP to create the necessary secondary regulations; (ii) Enhance the role of AFP’s investment policies in the regime; (iii) Keep the minimum return regulation and the *encaje*, while adapting/relaxing some of the specific related regulations such as the benchmark; (iv) Create a technical advisory board whose advice should be considered by SAFP; (v) Require the Superintendent to report to Congress on the main issues faced during the year.

6.2.2 Roles for the Technical Advisory Board

In our proposal, the principal role of the Technical Advisory Board (TAB) is to advise SAFP (and the pension industry) regarding the finer or more detailed investment limits.

¹⁴ This particular recommendation is consistent with that of the Consejo Asesor para la Reforma Previsional. The jurisprudence of the Comisión Clasificadora de Riesgo (or the Central Bank) may be useful for determining the way in which its members should be elected.

However, as discussed below, it may also have a role in determining the portfolio representative of the minimum return benchmark. The minimum return benchmark portfolio may range from being completely exogenous for each kind of fund to the fully endogenous alternative currently utilized (e.g. the system's current average portfolio). But even if it is decided that the minimum return benchmark should be determined as today, the TAB should somehow "trim the excess investments" present in the system's portfolio for the purpose of determining the minimum return benchmark, helping in this way to move pension system portfolios closer to efficient asset allocations.

For many, determining detailed investment limits and minimum return benchmarks may be considered subjective, thus emphasizing the importance of involving an independent technical body in the process. Even if AFPs were asked to be very explicit about their investment policies, herding behavior is still likely to continue. The larger AFPs will "impose" their benchmarks, through return ranking competition. The industry will end up with a single (and probably mobile) benchmark for each fund anyway. Given this, the TAB may help avoiding inefficiency traps and mitigate drifting towards riskier portfolios. Also, as with the CCR, it avoids free riding, since a single advisory body helps simultaneously all industry participants.

In order to choose its members and to determine the way it should be organized, there is the successful precedent of Chile's Comisión Clasificadora de Riesgo (CCR), whose model can be replicated.¹⁵ For example, it may have seven board members: three elected by the AFPs, three by the regulatory authorities, and one by some independent entity, such as the Central Bank and a technical staff. Consistent with our recommendation for changing the CCR, we do not recommend official regulatory authorities to be part of its board.

Recommendation: Create a Technical Advisory Board (following the model of the CCR) whose mission is to help SAFP at setting detailed investment restrictions, among other things.

6.2.3 *Reviewing the minimum return benchmark*

As explained, the Chilean AFP system has a minimum return requirement regulation, according to which the manager has to contribute to the fund the shortfall in returns with respect to a certain minimum, using a special asset account called the *encaje*. The *encaje* has to be invested in pension fund shares. The minimum required return is a function of the weighted average of all pension fund returns of the same type (A through E), minus certain tolerance levels, which are 4% in the cases of funds A and B, and 2% for the rest. We can thus say that the minimum return benchmark is *endogenous*, since it depends on the decisions that are being made by the different portfolio managers.

It is argued that since there is a required minimum rate of return which is determined relative to the performance of other pension funds, this feature of the law creates herding incentives. This is likely. However, competition in returns, especially via rankings, by

¹⁵ There are formal differences in the local law between Committees, whose decisions are binding, and "advisory boards" (Consejos), whose decisions are not.

itself produces this result, so it is hard to disentangle the extent to which this behavior is exacerbated by this regulation. In any case, an important effect that must be considered is that since the benchmark is endogenous, the same investment decision made by a larger pension fund will have a lower marginal impact on its own tracking error. In other words, larger pension funds can “contaminate” more the benchmark with their decisions, without suffering significant consequences. This has been mitigated by setting an upper limit to the maximum weight of a pension fund at 20%, but the problem still exists.

There is some preliminary empirical evidence indicating that when the past year’s relative return has been significantly negative, future tracking errors tend to be reduced.¹⁶ If an AFP’s return is close to the system’s, it tends to take more active risk the following year, and finally, if returns are well above that of competitors, again the tracking error is reduced (a lock-in strategy). The result that differs with respect to what is reported in the literature is the first one: after a bad year AFPs would take less active risk (and not more, as suggested by the international evidence).¹⁷ The explanation for this is probably related with the minimum return guarantee and the associated probability of losing part of the *encaje*. However, we have to keep in mind that falling below the minimum return may also have effects not directly related with losing part of the *encaje*, because this piece of information in the hands of competing sales agents can be used to discredit the underperforming AFP (and its investment team). So having a threshold in itself seems to have significant effects.

Therefore, the combination of competing via rankings, the reserve requirement and the relative minimum returns seems to imply a conservative behavior of AFPs relative to one another. It is thus important to assess whether the minimum return rule is justifiable. Table 13 summarizes the costs and benefits of this rule, in our judgment:

Table 13: Costs and Benefits of the *Encaje* and the Minimum Relative Return Requirement

Costs	Benefits
<ul style="list-style-type: none"> - <i>Encaje</i> is an entry barrier - It reinforces herding or imitating behavior (which will probably exist anyhow); it limits creativity; promotes free-riding; and also reinforces the inefficiency trap. - It exacerbates concerns for short-term returns, given the direct link between the <i>encaje</i> and the AFPs equity value (misaligned incentives regarding the second moments of the return distributions), but even without the <i>encaje</i> this is likely to happen. The different risk perspectives are probably 	<ul style="list-style-type: none"> - <i>Encaje</i> is an entry barrier for small and possibly less prestigious conglomerates - It mitigates incentives for “Rogue Trading” – and imposes certain parsimony in the evolution of the system’s investments. - Since the <i>encaje</i> mirrors the average pension fund of each AFP, they share the average fund’s luck. It thus helps aligning incentives at least in terms of returns (aligned incentives regarding the first moment of the return distribution)

¹⁶ See Walker (2006). Aspectos financieros del sistema de AFP y algunas propuestas. *Administración y Economía UC*, 61: 21-28.

¹⁷ See K. Brown, V. Harlow y L. Starks, Of Tournaments and Temptations: An Analysis of Managerial Incentives in the Mutual Fund Industry, *Journal of Finance*, Vol. 51 No. 1, March 1996.

<p>important only for the lower risk portfolio profiles.</p> <ul style="list-style-type: none"> - Since it is a moving <i>benchmark</i>, it would be impossible to obtain a zero probability of underperforming. 	
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Considering the international evidence mentioned above, regarding manager behavior, the *encaje* and the relative minimum return requirement may be justified, acknowledging that it does impose certain costs that should be mitigated. The minimum return bound is, in fact, a relative VaR or tracking error limit (this is illustrated in Annex A2). Surpassing it implies economic losses of different kinds.

Recommendation: Keep the minimum return requirement mechanism, and the associated encaje.

6.2.4 Possible changes to minimum reserve and capital requirements

The minimum capital currently required is just a reasonable minimum (less than USD 1 million). The more important requirement is the *encaje*, which is 1% of the assets under management (the total amount represented by the *encaje* is about USD 790 million). For the reasons stated above, we do not propose reducing or eliminating the *encaje*. If there is access to capital markets, having a reserve in itself does not imply a direct cost for the AFP equity holders that should be passed to the fund members, because they are forced to keep wealth invested in financial instruments, which if fairly priced, implies a zero net present value. However, some indirect potential costs associated with it can be mitigated, as explained below.

6.2.5 Possible changes to minimum return determination

We do not recommend eliminating the minimum return requirement, but **the benchmark used for determining it can be made more transparent**. Currently, there is uncertainty which adds costs to the system, since resources may be invested just to figure out exactly the composition of the minimum return benchmark. It is curious that anecdotal evidence indicates that this happens despite the fact that 10 days after month-end such uncertainty disappears, but the benchmark is always moving.

It is also necessary to find mechanisms that facilitate gradual exiting from inefficiency traps. Portfolios may fall in these traps because of involuntary limit trespassing (produced by events such as large unexpected capital gains) and currently this does not require an immediate solution. There are two ways of addressing this. First, if the benchmark for calculating minimum returns does not hold “excess investments” of any kind, pension fund portfolios should naturally adjust in order to reduce the possibility of falling below the minimum return. An alternative is to enforce quantitative compliance with the investment limits set from the beginning. In either way, pension funds could be induced to gradually sell excess investments. The drawback of this solution is given by opportunistic or strategic counterparty behavior, which should principally affect the returns of investing in illiquid securities.

a. *Lagged endogenous minimum return benchmark*

With a relatively small modification to the way in which the minimum required returns are currently calculated we can achieve two objectives: make the minimum return benchmark composition more transparent and reduce the incentives for drifting towards ever-higher risk portfolios. This can be done by lagging the system’s average portfolio (keeping the maximum weight limits for each pension fund, as today), but this portfolio should be “trimmed” in specific ways. This has some additional advantages. First, current decisions by the larger pension funds do not affect today’s minimum return benchmark (although they may affect future ones). Second, if pension funds are to change their portfolios it is to beat their own average decisions of the past. Of course, the inefficiency trap problem is not solved by this mechanism, but lagged portfolio weights can be trimmed in order to eliminate certain “excess” investments, related with a lack of security, sector, and industry or country diversification. The specific mechanisms used to determine what investments are excessive needs to be studied in detail, but this can be one of the missions of the Technical Advisory Board. The length of the lag must also be determined, but this parameter is related with how often detailed pension fund portfolios should be known. In principle, we propose a one-year lag, with quarterly adjustments. Finally, AFPs should be given a time period to appeal if they consider the minimum return benchmark to be flawed.

b. *Exogenous benchmarks*

Establishing exogenous benchmarks is an alternative that has many potential advantages. If pension funds do follow efficient benchmarks, their portfolios will tend to be efficient. In addition, these exogenous benchmarks can provide incentives towards asset allocations which are optimal from a long-term perspective. This can be made equivalent to establishing notional liabilities for pension funds, which would be embedded in the way benchmarks are determined. The purposes of these benchmarks may be purely informational or they could be used to calculate relative minimum returns. The principal problems of setting exogenous benchmarks in either case are (i) “political” (whoever is in charge of defining them has important power) and (ii) practical (there are significant uncertainties for determining optimal long-term benchmarks). That is why we believe that if adopted, they should be either be set by the Technical Advisory Board or be determined as simple portfolio rules.

However, some of the problems described above may remain more or less the same, even in the case of exogenous benchmarks. If pension funds follow an inefficient benchmark, there will be no incentives to move towards efficient portfolios (but here the inefficiency trap is exogenous). The incentives of drifting towards the highest allowed risk levels will also remain.

i. *Exogenous benchmarks for information purposes only*

Under an official benchmark scenario, the TAB’s role would be to generate long-term or strategic asset allocation recommendations on a regular basis. Since they are supposed to be long-term recommendations, they should not change wildly over time. These

recommendations can be transformed into benchmarks for the different fund types. The foundations for such benchmarks should be explicit. AFP investment policies could be required to determine the extent to which they can deviate from these benchmarks and benchmark returns should be computed by an independent entity and published regularly (probably daily). The Superintendence could periodically inform the relative performance of each pension fund. It is also possible to use for certain funds (D and E, for example) benchmarks composed entirely of long-term indexed bonds.

If official benchmarks are determined, there is little guarantee that they will be followed pension funds, unless they are required to do so. Therefore, it is not clear that official exogenous benchmarks for information purposes only will have any effects, since the relative return incentives for competition purposes will remain exactly as before.

ii. Exogenous minimum return benchmarks

Exogenous benchmarks can also be used to determine minimum required returns. By establishing bands around them AFPs tend to be forced in practice to follow them. This increases the political responsibility of the Technical Advisory Board. As before, an alternative is to set bands around a long-term real bond index, such as the LVACLG9, which has 9-year duration (www.lvaindices.com), which may be particularly suitable for funds D and E. The duration of an annuity is higher than this, but this provides at least partial protection against changes in annuity costs. The bandwidth determines the extent to which other instruments will be chosen. An advantage of such an approach is that the government bond long-term portfolio is likely to be ex ante mean-variance efficient from the perspective of a long-term investor. Given the results described above, incentives would be such as to keep pension fund portfolios close to the benchmark, perhaps choosing instruments with slightly more risk, which is an interesting consequence. In the cases of the riskier funds, A and B, it can be argued that the differences in risk perspectives between short and long-horizon investors is relatively less important, and normal market incentives (may work properly, so the issue of efficient benchmarks is probably less relevant in these cases.

c. Conclusions

We propose adopting, at least in a first stage, the lagged endogenous minimum return benchmark alternative. The system's lagged portfolio should be adjusted in order to eliminate excess investments by the Technical Advisory Board.

For a second stage, we suggest studying the convenience of establishing exogenous benchmarks, at first with informational purposes only, and to possibly determine the minimum required returns with respect to these later. Recall that the band plays a role analogous to a relative VaR or tracking error measure. The Benchmark considers absolute risk, which may be viewed from a long-term perspective. If more room for creativity or risk is desired, or if there is less confidence regarding the benchmark, the band can be widened. One particularly appealing alternative, because of its simplicity, is using a long-term local low risk bond index as minimum return benchmark for funds D and E, and to set tolerance levels with respect to this index, but the question that should be

answered before is whether the supply of fixed-income securities is large enough such that the index represents a nearly feasible investment strategy.

Recommendation: In order to determine the minimum return requirements start using adjusted system's lagged portfolios as benchmarks, and consider switching to exogenous ones in the future.

6.2.6 Reviewing disclosure requirements

By law, a pension fund member can request her portfolio details at any time. We propose relaxing this requirement and require detailed portfolio composition only annually, with a three-month lag after year-end. This would provide a “protection period” for smart (and dumb) investment decisions. As mentioned, possible cost is that AFPs destine even more resources to figure out what competitors are doing, but the cost of free-riding will increase. The protection period is expected to increase the expected benefits of investment research, which could have a positive effect on long-term returns.

Recommendation: Make the detailed information of AFP portfolios' available only once per year with a three-month lag.

6.2.7 Reviewing and simplifying the investment regulations

a. Global limits

The purposes of these limits are:

1. To restrict the maximum risk assumed by each fund type.
2. To promote diversification between asset classes.
3. To help differentiate fund types

It seems reasonable to pursue the first two objectives using global investment limits. The third objective is of a different nature, since it seeks facilitating performance comparisons between managers and presumably to avoid cheating or misinforming actual and potential fund members. So far, given the observed return-volatility profiles of the different fund types, segmentation appears to have worked. We have to keep in mind that given the current investment limits there is room for overlapping, and it has not happened significantly. However, in this case it may be reasonable to rely more on declared investment policies, getting us closer to an RBS context. Thus, we propose eliminating both upper limits to the safer asset classes and lower limits to the riskier ones altogether. A “Circular” should detail the verifiable fund characteristics that must be explicitly declared in the corresponding investment policies.

Furthermore, we recommend that the law should explicitly say that no minimum investment limit in any asset class can be set directly (except for those that appear by setting maximums for the rest of the asset classes, such as local “variable income” in fund A), in order to avoid the use of the laws and regulations for achieving ad hoc pension funding for specific sectors or industries.

So this leaves two purposes for the investment restrictions: to limit maximum risk and to promote diversification between asset classes. It is correct to focus on aggregate categories if:

- i. The broad categories consider relatively homogeneous components, in terms of their sensitivities to risk factors.
- ii. Covariance effects are duly taken into account

The general principle for setting these limits should be that asset classes with lower (credit or long-term loss) risk should (except for differentiation purposes) have higher limits.

Current limits show certain inconsistencies in terms of credit-risk or long-term risk of losses. We analyze this below and propose simplifications. In some cases we are able to identify room for replacing limits with an investment policy supervision approach (let us call it the RBS approach).

The proposed global investment limit structure is presented in Annex 3. Next we analyze the different items following the order of the current limits, presented in Annex 3 in Table A3.2

- a) Government and Central Bank backed instruments (N°1) are the safest local instruments. There should therefore be no upper limit on these investments (except for differentiation purposes). This avoids potential market distortions that could happen in the future. If adopting the RBS approach to differentiation, there should be no upper limit whatsoever. In general we do not expect to observe any single fund fully invested in government bonds. However, such a strategy could be reasonable for a fund that is being liquidated or in the case of a global crisis, when these bonds can become particularly attractive.¹⁸ This proposition could be interpreted as promoting investment government instruments, which is certainly not its spirit. If due to political restrictions this proposition has the risk of being misinterpreted, we recommend an across-the board upper limit of 80% or 90%. Let us call this category “Government”.
- b) Deposits (N°2), being of shorter maturity, should be safer than other bank-backed securities (N°3 – but notice that today the investment in this asset class is zero). Therefore, the limit to deposits should be larger. Also, “Letras de crédito” (mortgage bonds issued by banks) are safer than other bank-backed instruments because of additional real estate guarantees. Here we thus suggest merging investment limits 2, 3 and 4 into a single category, related with local banks. We need to keep in mind that from the perspective of the banking industry, the source of funding is not quite relevant in the event of a systemic failure, which may be one of the purposes of an aggregate limit on the banking sector as a whole. By segmenting the investment types, the total investment currently allowed in the banking sector ranges from 120% (A) to 230% (E), at least theoretically, without

¹⁸ In 1998 during the Asian/Russian crisis, long-term government bonds offered extremely attractive yields, with very little risk from the perspective of local investors.

yet considering individual investment limits. However, investment limit N°15 (in Annex A3) limits the maximum investment in the banking sector at 40% for fund A and 80% for fund E. This does not make much (horizontal) sense if the purpose is to limit exposure to the systemic risk of the banking sector. Type E funds today have approximately 1/3 invested in banks (being the largest fraction of all fund types). Given the above, it may be reasonable to use a single aggregate limit for all funds, such as 60%. Let us call this broad category “Local bank fixed income and deposits”.

- c) In terms of credit risk, short-term bonds (“efectos de comercio” – commercial paper) should be safer than long term bonds (*ceteris paribus*). From this perspective it makes little sense to restrict the former more than the latter. Here we suggest merging limits 5 and 10. The origin of this investment limit is probably related with the fear of negatively affecting the banking industry when the “efectos de comercio” were first approved. However, it makes little sense to use investment limits to protect an industry. A relevant question is whether investment limits should be used to promote investment in longer-term instruments. The thesis here is that other mechanisms should be used, such as benchmarks and/or declared investment policies. Furthermore, if such is the purpose of this investment limit, there should be a tighter one on deposits as well. Given today’s segmentation, the maximum total investment in these two categories ranges between 40% and 90% (although there actually is zero investment in “efectos de comercio”). Total current investment in bonds ranges between 10 and 20% for the E funds. We propose an across the board upper limit of 60%, assuming an RBS approach to fund differentiation. Let us call this category “Local non-bank fixed income”. (This aggregate limit should replace global limit N°16 below in Annex A.3).
- d) Holding other things constant, straight bonds are safer than convertible bonds (N°6) – because of the volatility of the option value, and these in turn are generally safer than stocks (N°7), almost by definition. It thus makes little sense to have a lower limit for convertibles than for equity and to segment these two categories. A simple way of dealing with this is to merge limits 6 and 7 into a single one. We propose to also consider within the same category non-investment grade bonds and/or subordinated bonds. Adding the maximum investments in numbers 6 and 7 we obtain 90% through 20% and 0%, for funds A, D and E, respectively. We propose a range going from 70% in fund A through 5% in fund E. The reason for allowing a small investment in risky assets in fund E is related with covariance risk: the minimum volatility portfolio is likely to have a small fraction invested in equity-like instruments. We shall call this the “local variable income” limit. (This should replace limits N°16, 17, 18 and 19 below). However the following arguments against allowing risky assets in Fund E must be pondered: First, investors are allowed to combine more than one fund, so fund E could remain 100% fixed income and allow pension fund members an asset allocation of 5% in fund A and 95% in fund E. However this requires an important informative effort on the part of the Superintendence. Second, it is not easy to explain the lack of symmetry: why can fund A be fully invested in equity

while fund E cannot be fully invested in fixed income? From a public policy perspective these two alternatives are equivalent. The choice between them must be based on other (mainly practical) considerations.

- e) N°8 refers to an instrument that no longer exists: equity of firms specialized in real estate investments, which were initially created especially for pension funds. From their perspective these instruments are tax-dominated by local investment funds with the same purposes. However, future legal innovations may change this. This instrument should be considered with other “variable income instruments”, eliminating its special limit.
- f) N°9 refers to investment fund shares. Today, CUPRUM, for example, has 9% of Fund A invested in this asset class. From a loss-probability perspective, local closed-end investment fund shares need not be riskier than individual stocks. A practical difference is that they tend to be less liquid, but this issue should be addressed elsewhere. We propose including this asset class within the general “variable income” limit.
- g) N°11 corresponds to Investment abroad. This is an asset class which may include quite heterogeneous components. The maximum current investment is a joint 30% for all funds. The allocation of this percentage is a discretionary decision of the manager. Several issues need to be discussed here: the actual percentage that should be authorized to be invested abroad; the fact that it is defined over the sum of all funds; the heterogeneity of this category’s components; the extent to which some limits can be eliminated, switching to an RBS approach; the generalized use of mutual funds rather than hired managers; the currency hedging requirement.
 - i. It is a fact that Chile is a small economy in the world context. It can be argued that the relative importance of Chilean securities in the portfolio should reflect its relative size. This is only partially true. It is important to keep in mind that pension funds will be used to generate income streams upon retirement. These income streams will generally be needed in a relatively distant future, and should be measured in local real currency. This implies a difference in the risk perspective: certain instruments may appear safer for local investors and riskier for global ones. We search for instruments with *high* correlation with changes in the prices of local real long-term near default-free bonds. Notice that this benchmark takes into account both currency composition (local) and investment horizon (long-term). This does imply a significant difference between investing in local versus foreign securities and may justify upper limits to foreign investment. For example, Walker (2003)¹⁹ finds that a high risk-return portfolio (such as fund A), with the highest correlation with changes in the market price of an annuity, should have about 50% in local equity and 50% in global equity. He also finds that if the horizon is

¹⁹ “Portafolios Óptimos para los Nuevos Sistemas de Pensiones de Países Emergentes”, Mimeo, Escuela de Administración, Pontificia Universidad Católica de Chile.

more distant, the optimal portfolio should include a larger fraction in the local assets. Of course these conclusions may change through time, but the underlying difference in perspective should remain. We thus propose an upper limit of 70% in the case of Fund A, gradually decreasing to 5% for Fund E.

- ii. The need of a sub-limit for “emerging markets”. Investment in emerging markets is likely to have two characteristics: first, high total risk, and second, possible high correlation with local long-term bonds, as long as Chile remains in the emerging market category. However, this latter characteristic may change over time. For example, currently most shocks are absorbed by appreciation or depreciation of the local currency and not by interest rate changes. In any case, an overall sub-limit for emerging markets may be justified, especially for the funds that invest more in equity. However, in a portfolio context, and when equity already represents a small fraction of the total, such as in funds D and E, under some circumstances it could make sense to invest the entire fraction invested abroad in emerging markets. The law may thus establish an upper limit for investing in emerging markets of one half of the total investment abroad for fund A, but a portfolio consideration could indicate that it is reasonable to increase this fraction when the absolute investment abroad is “small”, such as for fund E. However, instead of establishing this limit in the law it may be set in some other lower-level regulation.
- iii. Maximum investment defined as a fraction of the total investment abroad by all funds. This restriction was originally set in place because of fears of losing control of the foreign exchange market by the Central Bank. Given the recent advances of the local economy and the trend toward liberalizing the capital account, this no longer seems necessary. In addition, this restriction implies conflicts of interest between funds, since the total is fixed and has to be assigned to one or more funds. AFPs will use this opportunity to favor as much as possible a “flagship fund” in order to appear well ranked in the return competition process. Our proposition is to completely eliminate the joint limit structure, setting no upper limit to the aggregate investment abroad. Given the proposed aggregate limit structure presented in Table A3.1, and the relative importance of each kind of fund, the maximum investment abroad would increase from today’s 31.5 percent to 39.1 percent.²⁰ Still, given this wider margin, it is very unlikely that AFPs will abruptly increase their investment levels abroad, but even if they did, the amount involved represents a small fraction of the trading volume in the foreign exchange market. In any case, the effect on the exchange rate, if any, is likely to happen once this information is known.

²⁰ In an unlikely scenario in which the relative importance of the different fund-types changes dramatically, assuming that 50 percent of funds B and C are moved to fund A, the upper total investment could reach a theoretical 50 percent.

- iv. Distinguishing between different kinds of foreign investments (such as bonds, convertibles, structured notes and equity). We propose generally not to distinguish between different kinds of foreign instruments. Furthermore, we propose to include within this general limit shares of foreign investment funds issued locally (12.a in Annex A3). From the local perspective, the risk of investing in foreign fixed income is not comparable to that of local fixed income. The former will generally be riskier, involving exchange rate risk, reinvestment risk and price risk (even though credit risk may be lower). Therefore, it is incorrect to think of foreign fixed income as a substitute for local fixed income. Nonetheless, we propose to consider as an exception investment grade foreign bond portfolios hedged back to local currency. For example, a Chilean Yankee bond hedged back to local currency should be considered to be fairly similar to a local government bond in local currency. The differences arise when dollar interest rates and local currency interest rates diverge. Therefore our proposition is to consider all foreign investment jointly, with the sole exception of investment grade bonds hedged back to local currency. These should be considered either in the “local government” or “non-bank fixed income” categories. It should qualify for the former if the average risk rating of the bond portfolio is greater or equal to that of Chilean sovereigns. The implementation of this may be complex, but AFPs themselves may define certain hedged bond portfolios as being equivalent to local bonds. This particular case would be more manageable within a RBS approach.
- v. Prudent and diligent liquidity management in foreign accounts (11.b and 11.d) and security lending (11.e). These are natural candidates for a RBS approach, implying that these limits can be eliminated altogether. In both cases AFPs should be required to have explicit policies. Competition in returns should reduce idle funds to the minimum and maximize security lending. However, it is likely that different kinds of investments, in different markets around the world, may require different liquidity levels over different periods of time, depending on the institutional settings. In the case of security lending, in addition to requiring explicit policies, the law should establish that the losses that occur due to counterparty risk or default should be compensated to the fund by the AFP (and of course, if lent securities pay coupons or dividends, these should be fully paid to the fund).²¹
- h) We also propose an aggregate joint limit to foreign and local variable income, in order to promote diversification across asset classes and also to limit maximum risk.

²¹ We propose this because security lending is of a different nature than investing in financial instruments for the long term. The purpose is to obtain extra returns on top of those paid by this portfolio of instruments. The risk-return profile here is highly asymmetric: a small probability of counterparty default (losing 100 percent of the investment) and a large probability of receiving a small rent over the lent instruments.

- i) N°12b Corresponds to commercial paper without a risk rating or not approved by the CCR. Today the investment in this asset class is zero. Since we propose eliminating this role for the CCR, we consequently propose eliminating this investment limit.
- j) (N°20 and 21) General use of derivatives. Derivative instrument use is best approached as an end to a means, not a separate activity. It is an integral part of risk management which itself is an element of the investing process. As Shown in section 6.2.8 derivatives offer organizations an opportunity to transform cash flows, reduce risk, synthesize asset class exposures not otherwise available and possibly reduce transaction costs. In particular, pension fund managers can use derivatives for cash equitisation purposes,²² to hedge portfolio values, for yield enhancement strategies, and sector overlays. However, as shown in section 6.2.8, the use of derivatives introduces new risks mainly operational but also intrinsic to the security traded.²³ Hence, the general principle to be followed in allowing the use of derivatives is that strong internal controls are in place and that the specific instrument traded allows for reduction of risk in the portfolio for give acceptable expected returns (or *viceversa* an increase in expected return for given acceptable levels of risk). It is recommended that a detailed secondary regulation be written on the use of derivatives further defining this risk mitigation concept which could include stress testing techniques and scenario analysis.
- k) Currency hedging. In the specific case of currency hedging, Walker (2006)²⁴ finds that currency hedging could actually increase portfolio volatility if the asset class considered to be hedged is global equity. This happens because the local currency could depreciate (appreciate) at the same time that global portfolio returns are negative (positive). In such a situation the local currency value of a dollar deposit helps mitigate negative international (and also local) portfolio returns. This is a covariance risk consideration, which in this case has been negative for Chile. However, this has not always been the case and it may not happen for certain asset classes, such as emerging market investments. In this case hedging emerging market currencies is likely to reduce volatility. We must also consider that hedging may be done without using derivatives (forwards, swaps or options). For example, if a portfolio has a dollar overweight (underweight) with respect to a benchmark, the AFP may consider selling (buying) forward foreign currency or, equivalently, selling (buying) dollar deposits and buying (selling) local currency deposits. Due to the uncertainty associated to exchange rate movements in the short term, it would be advisable that investment rules promote currency hedging, either through the use of derivatives or through the use of underlying currency assets. In addition, the SAFP should be required to assess the effectiveness of the hedging strategy adopted by the supervised entity in addition to the safeguards already provided for in the law. For this purpose, an explicit investment policy

²² Reinvestment of coupon and dividend income and investment of new flows or funds generated via asset sales by purchasing equity index/bond futures.

²³ Counterparty risk is one of such risks typically when derivatives are traded OTC.

²⁴“Inversión internacional de portafolio y cobertura cambiaria: una perspectiva local.” Forthcoming in *Economía Chilena*, Banco Central de Chile.

regarding hedging may be required. (This should also replace limit N°20). The subject of hedging a bond portfolio is addressed above in point (iv).

Recommendations: Recommended changes to global limits are summarized in table A3.1

b. Limits by issuer

1) Purposes of these limits

The main purposes of the limits by issuer are to achieve diversification within an asset class; to limit the power to control companies by AFPs; and to mitigate valuation difficulties. Other special considerations exist when financial instruments are issued by a related party. In what follows we discuss these issues.

a) Achieve diversification within each asset classes

This limit must be set as a fraction of the value of each portfolio. The number of securities necessary to achieve full diversification may differ across asset classes. For example, for local equity a smaller number of issuers may be necessary because there is less risk to be diversified (equivalently, there is more non-diversifiable risk locally). This may also be true for Latin American bonds, for example, since they are subject to common shocks. So here there may be a tradeoff between practical simplicity and conceptual first bests. Also, the portfolio approach says that for individual securities we should concentrate on the marginal contribution to overall portfolio risks. In other words, it may not always be reasonable to consider the diversification within each asset class, especially if it represents a small fraction of the total. Indeed, for fund E if the proposition of investing a small fraction in “variable income” securities, when percentage is small enough, we should not worry too much about the diversification within this small percentage.

b) Limit the power to control companies by the AFPs

This limit must be set as a fraction of the number or amount of securities outstanding of the same kind issued by a single issuer (held simultaneously by all funds of the same AFP), especially in the case of equity. The reason for this restriction is that asset managers are not supposed to control or manage individual firms. This cannot be taken for granted in the context of investors whose assets under management represent a significant fraction of GDP. From here it is immediately clear that this limit should be set for the sum of all funds and not for each individual one. The possibility of depriving AFPs of their voting power (or forcing them to buy only shares with no voting power) may be negative for corporate governance purposes. There is evidence indicating that AFPs have been important in this sense for the development of local capital markets. In the case of debt instruments, it is not obvious that the fraction of the amount outstanding must be limited for control reasons.

c) Mitigate valuation difficulties

In general, if a single AFP buys a significant fraction of an outstanding security (a bond series, for example), it may become hard to regularly price that instrument, given that it is less likely to be traded. However, we should concentrate not on the fraction of a series held by a single manager but rather on the number of close substitutes that are traded, which end up determining how difficult it is to price a security.

2) Where and how these limits should be set

We agree with the existing proposal by the Superintendencia that these limits need not be set specifically in the law. The law should specify the general purpose of these limits and let the details be set in a lower rank legal instrument, such as a “Decreto Supremo”. In any case, we have to make sure that the proper checks and balances are set in place in order to ensure that only technical motivations are behind the setting of these limits. As mentioned above, the “Consejo asesor para la reforma previsional” has proposed to create a technical advisory body (the “Consejo Técnico de Inversiones”), similar to our Technical Advisory Board, who should be in charge of periodically revising and recommending changes to the finer investment limits. Their proposal also suggests that the specific instruments considered inadequate for pension funds by this advisory board, or rejected by it, cannot be required by the lower-level regulations determined by the SAFP. Their proposal also establishes that the lower level regulations cannot establish minimum investment limits, prohibit instruments already approved in the law, or establish stricter investment limits than those in the law.

As explained, we generally agree with the creation of an independent advisory board and its purpose. Thus, for the detailed investment limits, the law should generally establish the broad criteria and purposes of these finer investment limits. Some of these purposes have been discussed (such as diversification, control and valuation). The other aspects that should be explicitly mentioned in the law are liquidity, corporate governance standards, related party investments, and general use of derivatives.

3) Conflicts of interests between the same manager’s funds

Limits set for control purposes (as a fraction of total equity outstanding, of total debt outstanding or the sum of the two) imply allocating a scarce resource between the different funds (just as it happens today with the aggregate limit to investing abroad). AFPs are likely to assign strategically the available investment possibilities in a single security across funds, in order to maximize its own aggregate benefits. For example, if Funds A and B concentrate the higher income and better informed pension fund members, then these funds are likely to be disproportionately favored in the allocation of apparently good investment opportunities. Obviously, this implies that the members of the other funds are relatively disfavored. So this is a situation where conflicts of interest between funds are likely to arise. It is also a natural candidate to be regulated using a RBS approach, requiring explicit investment policies. The kind of solution expected to be proposed by the AFPs is one in which a rule is automatically followed. For example, that the new investment should be pro-rated to each fund in the proportion represented by the asset class to which the new investment belongs, when possible.

4) General limit structure by issuer

In annex A3, Tables A3.3-A through A3.3-D summarize current investment limits by issuer. For most investment categories there are certain common features that can be identified and discussed from the beginning:

- Systemic risk and the Unique Multiples (“Múltiple Único”). These multiples exist for the financial, leasing and corporate sectors. They are set by the Central Bank. The ranges set in the law and their current values are the following:

	Min	Max	Current
Financial Sector	0.5	1.5	1
Leasing	0.5	1	0.7
Corporations	0.08	0.12	0.12

These factors multiply a measure of the size of each bank or firm, considering either total equity or assets. The purpose of these multiples presumably is to mitigate certain systemic risks. In the case of banks a single AFP should not be able to buy debt instruments for more than once the total net worth or accounting equity of banks. In the case of the local corporate sector it is 12% of assets in the form of debt instruments. Perhaps the purpose is to limit the extent to which the corporate and banking sectors can depend on a single pension fund. In such a case, this limit should be imposed on banks and firms, and not on each pension fund. If the issues are control or diversification, these are addressed elsewhere. We thus propose eliminating these multiple-related limits altogether, and if in the banking sector it is considered risky to obtain financing from a single fund provider by more than once the bank’s accounting equity, it should be addressed in the banking law.

- Limits to control. In the case of equity, both for banks and for the corporate sector, there are limits imposed at every fund level regarding the fraction of each equity series outstanding that can be purchased and also on the weighted average of all equity series of the same issuer. These limits are imposed again on the sum of funds. It is redundant to establish these limits at each fund level and also at the sum of funds level. If the maximum control needs to be limited, it is enough to establish it for the sum of funds. Following the long tradition regarding these investment limits, the 2.5% limit for bank share ownership and 7% for corporate shares may be reasonable to keep, but perhaps increasing the former to one-half of the latter. These limits are complicated further because they are set at the individual series level, provided that a single bank or corporation may issue more than one series of shares. This is probably unnecessarily complex and restrictive. The purpose is to limit control, which is related with voting rights. Therefore, voting rights for a single AFP may be restricted at 7% and 3.5% for corporations and banks, independently of how these percentages are completed using different series. The possibility of pension funds buying non-voting shares should not be dismissed from the start, notwithstanding the need for monitoring reasonable

corporate governance practices and possible conflicts of interest. This is addressed below.

- Concentration factors and corporate governance. In the cases of local investment in the equity of banks and corporations, “concentration factors” multiply the fraction of each pension fund that can be invested in a given issuer. Concentration has been a matter of concern from the perspective of the authorities since the privatization years in the mid-eighties. In the absence of other mechanisms, restricting a pension fund investments’ in equity as a function of the level of concentration (allowing a higher investment in less concentrated firms) is a way of controlling for the possibly undesirable secondary effects of concentration, which are related with the potential (horizontal) conflicts of interest between controlling and minority shareholders.²⁵ The assumption is that less concentrated firms should exhibit lower levels of conflicts of interest. So this concentration factor should reflect expropriation risk. It is clear that we should be concerned with the latter risk and not necessarily with concentration per se. This suggests a slightly different approach: to restrict the level of investment in firms which are considered to have negative track records or no safeguards regarding corporate governance practices and policies. Two alternative approaches can be adopted here: to require every AFP to explicitly declare a policy regarding corporate governance standards of the firms they invest in, or establishing certain requirements in the regulations. In our opinion, given that herding behavior will continue to exist, self-restricting investments in poorly governed firms will not hold in the long-run, given that tighter restrictions relative to other AFPs also imply restricting more the investment opportunities, which may imply competitive disadvantages. Therefore, we propose local firms to be grouped into (three) categories regarding governance, restricting the investment in the firms that offer fewer guarantees in this respect. There are several possible candidates for performing this classification: the very CCR, auditing companies, risk rating companies, or even the SVS. In any case, if restrictions are applied to the fund fraction that can be invested in individual issuers as a function of this governance indicator, we need to keep in mind that this investment limit would generally be binding only for the larger firms (for most firms the binding investment limit is the fraction of total outstanding equity that can be purchased by the sum of all funds). A probably preferable alternative is to utilize aggregate limits according to governance ratings. Competition between issuers for being considered in a less restrictive limit may actually improve governance practices. It is important to realize that this approach allows us to eliminate the restriction associated with CCR approval (unless the CCR is given the role of rating governance).

- Liquidity and pricing issues.

²⁵ See Fernando Lefort, 2005. Ownership structure and corporate governance in Latin America, *ABANTE*, Vol. 8, N° 1, pp. 55-84 (April)

- Liquidity factor. This factor accompanies the fraction that each fund can invest in one issuer. Its purpose is probably to reduce investments in securities that are either harder to sell without a significant discount or to fairly price. Regarding the former, given that net inflows will continue to be significant in the near future, the ease of selling issue is probably less important. If a pension fund for some reason needs to be liquidated, this can be done by transferring its securities to the destination pension fund. So we should be concerned with valuation. We propose a portfolio approach and limit the aggregate maximum exposure to securities that are harder to value (and or sell), which will also tend to be the less liquid instruments. Tentatively, this limit can be set at 20% of each fund.
- Limiting the fraction of new issues (flow). This limit is set for the sum of funds at different levels for all new issues (20% in the case of equity, 35% for a single series of bonds and local investment and mutual funds, 7% for foreign issuers traded locally).²⁶ It reflects concern regarding the fairness of the price paid and the possible lack of external price references. In the cases of securities that are deeply traded or that have close pricing references this limit may be unnecessary. On the other hand, this limit may have undesirable consequences in some cases, such as bond issues, since it has the opposite effect of promoting competition on the demand side. If the concern is that a fair price is paid, there is room here for a RBS approach: AFPs should be able to demonstrate that ex ante the analysis indicated that the offered price was fair. With a procedure such as this one in place, it is possible to relax the restrictions on the fraction of a new issue that can be purchased by a single AFP. We propose increasing it to 50% in the case of bonds and eliminate it in the cases of new share issues.
- Limiting the fraction of the amount outstanding of a single series. This limit is set at 35%. It probably reflects concerns with fair valuation issues and transactions in secondary markets. The logic behind this is that if an entire bond series is purchased by a single AFP, there may be no secondary market transactions and it will be difficult to determine fair prices for it. In practice however, corporate bonds are not traded often, so this restriction does not seem to be effective in this sense. On the other hand, we should be concerned with the possibility of fairly valuing a security, which is related with the number of close substitutes traded. If certain securities indeed seem vary hard to value, because of special features, it could be included in a global limit for illiquid securities. This may allow relaxing this restriction. We propose a similar approach to the one described in the previous bullet, but increasing this limit to 60%, so

²⁶ There is no limit for foreign mutual funds, but this is taken into consideration in the CCR approval procedures. However, in certain cases a significant fraction of a foreign mutual fund may end up in the hands of AFPs. In the case of Emerging Markets it may be the case that AFPs as a whole are not price takers, as we may assume for other more developed markets.

that there is additional slack with respect to what could be purchased when initially issued, since this may induce additional transactions.

- Limiting the fraction of outstanding investment fund shares. This limit is set at 35%. It probably reflects a concern with fair valuation issues and also with control. Local investment funds in fact are not traded, and in the case of those specialized in real estate and “venture capital”, there is no market price. In the first case they use appraisal values by independent entities and in the latter valuation has to be performed once a year by independent experts.²⁷ So the liquidity and or valuation issue is not solved by this restriction. Besides the risks of bypassing other investment restrictions and of charging fees directly to the funds, which is not allowed in the case of AFP portfolios, there are no obvious reasons for this limit. On the contrary, this limit restricts delegated portfolio management and provides herding incentives. We therefore propose eliminating this limit altogether for closed-end funds, but at the same time to use other mechanisms in order to mitigate the potential problems described. Specific mechanisms for not by-passing aggregate investment restrictions should be declared in AFP investment policies. Regarding expenses charged to the funds, explicit conflict of interest mechanisms should also be included in AFP investment policies, and expenses should be capped, as it is done today. Notice that the issue of fees charged to the funds is not directly related with the fraction of the total fund shares purchased by a single AFP. Indeed, an AFP could invest in one or in three investment funds. Total expenses could be higher in either case.
- Approval by the CCR. We propose eliminating the CCR’s role in terms of approving local investment instruments. Its role should be assumed by local risk rating agencies and the AFPs themselves. Thus the sub-limits associated with the CCR should be eliminated. However, given its proven historical independence, the CCR could be used for assigning local equity issuers into three groups, based on their track records and safeguards regarding corporate governance practices and policies.
- Risk factors. Risk factors also appear multiplying the fraction of each fund which can be invested in a single debt instrument. The implicit assumption is that in order to obtain a diversified portfolio, we need more instruments if they are riskier. This is probably true, but it does not take into account that these investments may already be small enough in the context of pension fund portfolios. An alternative approach is to consider default risk only at the portfolio level, which is what we propose here. Investment grade instruments should all be considered in a single aggregate category, and non-investment grade instruments can be included in the aggregate “local variable income” limit.

²⁷ In the case of local equity investment funds, they are priced based on their net asset value.

- Diversification factors. The fund percentage that can be invested in local investment fund shares is multiplied by a diversification factor. This has a sound conceptual basis, but it is meaningful only when the amount invested in such an instrument represents a large fraction of the total. If not, it does not make sense to require a diversified fund to buy diversified instruments, since it may be costly, redundant and impede specialization in the management of certain asset classes. We thus propose eliminating this multiplicative factor (setting it to 1).
- Foreign mutual funds. The upper limit for investing in foreign mutual funds is 1% of the value of each fund. This is inconsistent with the significantly higher limits that are allowed for local investment funds, since foreign mutual funds tend to be much more diversified than local ones. There is no reason for this inconsistency and in principle these limits should be the same. However, there are certain specialized foreign mutual funds (high tech funds, industry funds, hedge funds, et cetera) which could face tighter investment limits.
- Direct investment in foreign debt and equity. For foreign equity, the current limit is 0.5% of the fund and for debt, such limit is 5% of the fund, multiplied by a risk factor. The first limit implies that 200 issuers are needed in order to achieve a fully diversified international equity portfolio. This may be reasonable, but it does not avoid the potential problem of concentration in certain countries, industries or investment styles. In the case of debt, we propose eliminating the multiplicative risk factor, and using instead aggregate limits, as described in that section.
- Limits to currency hedging using forwards. Currently 4% of the fund is the maximum exposure with a given bank. This exposure is measured in terms of the net position in the underlying asset, provided that the forward contracts expire in a given month. For example, if for May 2007 one fund is selling USD10m forward into CLP and buying USD3m with CLP, the net exposure is USD7m for May. If for June 2007 there is another forward contract for buying USD7m (all of the above with a single bank), then the net underlying asset position is USD14m (net sales of USD7m in May and net purchases of USD 7m in June). This amount cannot represent more than 4% of the pension fund, e.g. it is measured using the net value of the underlying positions in each month. Notice that currently pension funds can only be net forward sellers of foreign currency by the amount of the investments abroad. Thus, they can buy dollars forward only if they covered part of their investment abroad in the first place. If they do not, foreign currency cannot be purchased using forward contracts. It is also important to keep in mind that this limit is considered completely separately from the other limits for banks. Given that interest rate volatility is very low in comparison with exchange rate volatility, the net positions may be calculated using the simple sum of all forward positions, given that the correlation of all forward contract net values is close to one, almost independently of their expiration dates. To determine if this 4% aggregate limit is reasonable in the context of the new proposed structure, let us assume that 70% of fund A is invested abroad, and that all of this investment wants to be hedged back into local currency. In this case 17.5 banks are needed to

complete this transaction. A number closer to 15% seems more reasonable in this case. However, the principal purpose of the limits by issuer is to diversify risk. In this case, the relevant marginal risk is that a bank defaults on its forward contracts, an event which is extremely unlikely, which would imply a net loss equal to the difference between the market price and the forward prices. It may therefore be more reasonable to add the net current market value of the forward contracts to that of the other liabilities', and consider these limits jointly. This should be complemented with a value at risk calculation, such that with a certain probability the overall bank limit is not surpassed within a period of one to three months, for example. This second alternative probably reflects better the spirit of the limits by issuer.

- Limits to other derivatives. These can be set using the same spirit proposed for currency forwards.
- Limits to investments in related parties. This is a potentially complex issue. Transactions with related parties at unfair prices imply expropriation to pension fund members, and are usually considered to be fraudulent. Here we consider two possibilities: first, to outright forbid investments in related parties; and second, to require explicit statements in AFP investment policies in this regard. For example, investment policies should establish that a given instrument will be purchased (sold) only if the transaction is performed under equal or better conditions than the other existing alternatives. A complication with the first alternative is that in Chile property is concentrated and these situations may happen more often than expected. Also, in some cases this may be unnecessarily restrictive. The complication of the second one is that supervision may be complex. However, if the latter problem can be overcome, we would propose the second alternative.

Recommendations: Annex 3 summarizes the proposed limit structure.

6.2.8 Use of Derivatives

Derivative instrument use is best approached as an end to a means, not a separate activity. It is an integral part of risk management which itself is an element of the investing process. Further work is necessary to assist the SAFP in preparing regulations to permit expanded use of derivatives and creating a suggested set of derivatives-related policies and procedures that comport with industry best practices as regards valuation, risk analysis and operational controls. These instruments should encompass the objectives of using derivatives, the uses to which they can be put, a requirement to assess their impact on the risk of the whole portfolio and on means of monitoring their usage and impact.

The Pension Law allows AFPs to use currency and interest rate options and swaps, but the SAFP Circular that would regulate the use of these instruments has not been issued yet. Moreover, stock options are not allowed by the Law. As a result, AFPs are currently restricted to the use of currency forwards. The AFP industry claims that these restrictions have hindered risk management and contributed to inefficient portfolios.

When used properly, derivatives would indeed offer AFPs an opportunity to transform cash flows, reduce risk, synthesize asset class exposures not otherwise available and possibly reduce transaction costs. However, as shown in the accompanying table, the use of derivatives introduces new risks.

Table 14: Derivatives-Related Risks

Risk Category	Description
Credit	Risk that a counterparty defaults and transaction must be replaced or unwound at a loss
Legal	Risk that a contract is not legally binding
Liquidity	Risk that a transaction cannot be unwound or offset with another transaction quickly, if at all
Market	Risk of adverse price changes that reduce transaction value
Operational	Risk of human or technology error
Settlement	Risk that a counterparty will not settle its obligations on time, if at all

Source: Risk Management for Pensions, Endowments, and Foundations by Susan M. Mangiero (John Wiley & Sons, Inc.), 2005

The extent to which incremental risks arise depends on a host of factors such as product, application, strategy, prevailing law, secondary market liquidity, document standardization, counterparty exposure and collateralization. As shown in table 15, the user can create a matrix that compares and contrasts different products. An expanded version would look at strategies and/or combinations of derivatives.

Table 15: Derivative Risk Comparison

Instrument Class	Futures	Over-the-Counter Options	Swaps
Credit Risk	Lower because of clearinghouse and daily settlement	Higher because of direct contracting with counterparty	Higher because of direct contracting with counterparty
Economic Risk	Depends since standardized terms make it harder to hedge exact underlying exposure but easier to value derivative instrument	Depends since customized terms make it easier to hedge exact underlying exposure but harder to value derivative instrument	Depends since customized terms make it easier to hedge exact underlying exposure but harder to value derivative instrument
Legal Risk	Lower due to regulation	Higher due to evolving case law	Higher due to evolving case law
Liquidity Risk	Lower for most contracts because of standardized terms	Higher especially for longer-term contracts	Higher but partially reduced because of intervening cash settlements
Operational Risk	Depends on quality of staff and technology systems in place to track and make daily settlement cash flow transfers	Depends on availability and knowledge of staff to monitor and exercise options (systems may be required if many options are bought or sold.)	Depends on quality of staff and technology systems to track and make intervening settlement cash flow transfers

Source: Risk Management for Pensions, Endowments, and Foundations by Susan M. Mangiero (John Wiley & Sons, Inc.), 2005

From a regulatory perspective, the SAFF would need to do its own assessment of derivatives-related risk before embarking on a relaxation. One area that is causing some additional concern of late is the risk associated with the use of credit derivatives. Inasmuch as several AFPs explicitly stated a desire to employ credit derivatives, their specific risks merit detailed review. In particular, the SAFF could evaluate competing models of counterparty default risk, coupled with alternative ways of mitigating credit risk through special purpose vehicles, collateralization, and letters of credit. Notwithstanding marginal risks, AFPs made a valid point by citing the benefits of credit derivatives to at least partially offset the full risk associated with a long equity position.

Interest rate swaps was another product often cited by AFP investment professionals as desirable. Their global popularity is reflected in a market size that exceeds \$172 trillion according to the Bank for International Settlements.²⁸ While swaps permit extension of duration and hedging of interest rate risk, among other benefits, counterparty risk exists for these over-the-counter instruments. Swaps in major currencies, with standardized terms and documentation often trade in relatively deep secondary markets.²⁹ However, their maturities can extend as long as ten years. Often priced as a portfolio of forward rate agreements, incremental risks associated with the use of interest rate swaps will be, *ceteris paribus*, bigger than similar instrument exchange-traded fixed income products with a shorter time to expiry.

One of the risks that accounts for many of the publicized losses involving derivatives is operational risk. It is defined broadly as “the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.”³⁰ The implications are clear. Use of derivatives entails a cohesive, high quality processing system that involves the front office and the back office, as well as the internal and external auditors. In an entire book on the topic of derivatives, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) provides guidance as to appropriate internal controls. Some of the many recommendations are shown in Table 16.

Operational risk is a huge topic and requires significant attention to detail. An area often overlooked is the integrity of the information systems in place that track limits and generate management reports. Different than trading, personnel in both the front and back office must have specialized skills that allow for detection of fraud or early warning about breach of limits. Often times, this need for knowledge across disciplines and at a detailed level is overlooked. Training is discussed elsewhere in this chapter but should be noted as equally beneficial for those on the processing side as well as trading. Experienced and knowledgeable operations staff members can serve as the line of first defense against large losses due to rogue trading or honest mistakes. Unfortunately, they are often not compensated in proportion to their responsibilities. The SAFF could conduct

²⁸ <http://www.bis.org/statistics/otcder/dt07.pdf>

²⁹ The SAFF would find a review of ISDA (International Swaps and Derivatives Association) master documents worthwhile. See <http://www.isda.org>.

³⁰ “Supervisory Guidance on Operational Risk: Advanced Measurement Approaches for Regulatory Capital”, Office of the Comptroller of Currency, U.S. Department of Treasury, July 2, 2003.

a survey of compensation for traders and operations personnel across AFPs and compare to incidents of problems.

Table 16: Suggested Elements of a Derivatives Internal Control Process

Independence of front office from back office
Telephone calls of executed trades are taped
Executing parties maintain separate records and include a running account of positions
Policies and procedural manuals are detailed and comprehensive
Tracking of liquidity and/or credit limits is separate and independent of traders
Confirmations are sent to the attention of someone at the counterparty organization who is independent of the traders
Discrepancies are recorded and made known to the operations manager right away
Internal risk control unit reports directly to the board
Mark-to-market policies are documented
Price quotes are verified independently of traders

Source: "Internal Control Issues in Derivatives Usage: An Information Tool for Considering the COSO Internal Control – Integrated Framework in Derivatives Applications", Committee of Sponsoring Organizations of the Treadway Commission, 1996.

Besides addressing issues as to how to measure and manage derivative instrument liquidity, transparency, strategy, operational controls and hedge effectiveness testing, the SAFP should clarify the standards for fair value assessment of derivatives, by product and strategy. Additionally, a Phase Two project should examine model risk and its likely impact on valuation numbers. Unfortunately, when valuation numbers are incomplete or inaccurate, a host of problems occur. Risk management techniques, including the adjustment of hedges, are more difficult to implement. Strategic asset re-allocation and/or portfolio re-balancing decisions could be outright wrong if based on bad valuation inputs. The problem is arguably more acute with lesser traded instruments and/or when derivatives are embedded in complex securities and not traded separately.

According to "Derivatives: One Size Does Not Fit All", identification of an appropriate method is necessary but insufficient. Questions of data integrity and source, robustness of model and appropriate by type of derivative are likewise important.³¹ The team discussions with the SAFP suggest that valuation issues are in need of review. This would be especially apropos with respect to derivative instruments since they "derive" their value from the underlying asset. At the same time and under certain market conditions, the value of derivative instruments can decouple from the base asset. When that occurs, the result is potentially lethal. A long security could drop in value at the same time that the derivative instrument, used for hedging let's say, is similarly falling in value.

Recommendation: Allow expand the use of derivatives, including a relaxation of restrictions as regards product type, following the development of comprehensive regulations covering these activities.

6.2.9 Reviewing the role of the CCR

³¹ See "Research from Our Experts: Derivatives Valuation: One Size Does Not Fit All" by Susan M. Mangiero, The Michel-Shaked Group, 2003

a. *The current situation*

Currently, the CCR has the role of approving or rejecting all instruments eligible by pension funds, except for the ones with State guarantee.

Local instruments include fixed income and stock of publicly traded companies, that comply with the minimum requirements established in the law (DL 3500) and also those whose approval is requested by the issuer (without having to pay for the approval process), provided that it presents two reports issued by a risk-rating agency. The law does not require issuers to provide information to the CCR, if requested.

The approval or rejection of foreign instruments is determined after being requested by an AFP, and in the cases of mutual and investment funds, investment management firms sign an agreement regarding the regular provision of up to date information. With respect to equity and clearing houses, they are approved if it is decided that there is enough information as to perform reasonable analysis on an ongoing basis. For the approval of foreign fixed income instruments, international risk rating agencies provide relevant information, notwithstanding the abundant information which usually can easily be gathered.

For local fixed income, when it approves an issue, it may implicitly be giving a State guarantee, given its board composition – in opinion of the CCR’s Secretary. The issuer assumes no compromise in terms of providing information to the CCR, but only to local risk rating agencies. In other words, the CCR must approve local bond issues without having the possibility of requesting additional information, having to base its decision only on the reports of the risk rating agencies.

There are two alternative mechanisms contemplated in the law for shares to be approved by the CCR. The first one contemplates only complying with certain minimum accounting indicators, where the issuer does not need to provide any information or pay any costs to the CCR. The CCR argues that this does not allow it to base its decision on relevant information. The second mechanism consists of requesting reports from two risk rating agencies, which requires a certain compromise to regularly provide information. Only issuers that are truly interested in being eligible by pension funds choose this alternative.

Local investment funds shares are approved based on a plan for the fund, without much additional information, generating again – in the opinion of the CCR’s Secretary – an implicit government guarantee.

Regarding foreign instruments, equity is approved in consideration of the quality of regulation, information, history and liquidity of the markets where these instruments are traded in. The general principle is that if a market is approved, all instruments traded in it also are. Regarding mutual and investment funds, the CCR analyzes the relative regulatory risks, the fund structure, experience by the manager and share liquidity. Issues such as volatility or solvency of the issuers in each fund are not considered.

Derivatives' counterparties are approved based in their risk ratings, and in the case of clearing houses, experience and solvency.

b. Proposed changes

It is true that the local market may perceive a certain implicit government guarantees given that in the Board of the CCR official representatives of the three main supervisory entities (securities, banks and AFPs) are present, so there may be a moral hazard problem. It seems reasonable for these regulatory entities to appoint independent members to the CCR board, but it does not seem reasonable to have the Superintendents themselves as members. We propose this change.

Regarding local securities, and provided that other institutions exist, we propose eliminating the CCR's role in approving or rejecting specific local instruments. However, this is one of the possible institutions that can be used in order to classify firms in groups, according to the quality of their corporate governance standards.

There seems to be consensus among industry participants that the CCR plays a useful role regarding foreign issuers. Perhaps it should be allowed to charge a fee to the issuers interested in getting their instruments approved, but in any case, it performs a valuable job and also avoids free-riding, at least on the part of AFPs.

Recommendation: Eliminate the CCR's role regarding local instruments; consider assigning rating corporate governance to it; keep its role with respect to international investments.

6.2.10 Promoting market mechanisms which help reducing final pension risk

Defined contribution systems (a world trend) in general involve high risk in pension levels upon retirement, an important part of which corresponds to reinvestment risk. If real interest rates upon retirement are low, for the same accumulated lifetime savings pensioners get low pensions. Thus, it seems natural to allow pension members to allocate a fraction of their savings to low risk, indexed long-term bonds, perhaps similar to the historical "recognition bonds", issued during the system's transition, to be held in separate accounts much before retirement. Currently annuity providers are rated AA, so AA bonds could be consistent with this. Securitization may be used to create ad hoc near riskless long-term securities. These investments must not be marked to market, except for pricing contributions or withdrawals, because they would have very large short term volatilities at market prices (which by the way illustrates why in many cases volatility is a bad measure of risk). This volatility is hard to understand by members. Another possibility is a "super deferred inheritable annuity" or more simply bonds issued by the same companies. But allowing this may require legal modifications of Insurance Laws. For these alternatives to be attractive, though, decisions must be reversible (we must be able to trade these bonds or annuities). Naturally, implementing something like this may be quite complex, particularly controlling the credit risk of very long-term issuers. It is probably this very risk that has led firms all over the world to switch away from defined contribution to defined benefit. But the point is that final pension risk can at least be

reduced by buying long-term real bonds, and it is worthwhile trying to create a technology based on market mechanisms that could help mitigating this risk.

Recommendation: A point that may be studied in order to help future pensioners understand the concept or reinvestment risk, and to promote its reduction, is how to estimate risk indicators that closely represent it. A simple alternative is to measure portfolio volatility relative to that of a long-term bond index. Returns of a long-term bond index should be highly positively correlated with and thus represent variations in annuity costs.

6.2.11 Strengthening licensing rules for AFPs

Current authorization, or licensing, processes summarized in Section 4.1.2 are deficient in significant respects.

First, they do not include a *'fit and proper'* test covering both ownership of an AFP and its directors and senior managers. Such a test is essential for entrants to an industry that is as socially and economically significant as the pension sector.³²

The SAFP should have power to reject AFP authorization applications, or proposals for changes in AFP ownership on the basis of a formal fit and proper test. Some objective threshold tests such as a company's record of prosecutions under Corporations Law are feasible. Foreign applicants should be regulated in their home country and have the support of their home regulator.

The SAFP should also have power to make authorization conditional on an applicant's possessing a board of directors and senior management team that are competent for their roles. Competence can be demonstrated by a track record of experience in managing similar business operations and/or by educational and other professional qualifications. The regulator should also have power to veto the participation of senior officers who have previously been convicted of fraud or other gross misconduct, or who have for any reason been disqualified from holding senior corporate jobs in Chile or another country.

The same tests as described above should be applied to companies and individuals involved in applications to take over existing AFPs.

The second deficiency in the current licensing regime is in relation to *management systems*. While applicants must submit business plans and explain their strategic objectives, this is not sufficient to demonstrate an ongoing ability to manage a substantial and complex business prudently and efficiently. In addition to current requirements, applicants should be required to demonstrate that the proposed business will have adequate risk management plans and control systems, including effective control over outsourced activities. This would be done through the presentation of documentation

³² Proposed draft amendments to the Capital Market Law contain a clause introducing a fit and proper test for a *change* in the ownership of an AFP, thus allowing the SAFP to stop the transaction if the new owner does not have the proper credentials. However, the draft amendment does not include a clause extending the fit and proper test to the licensing stage.

describing management systems and risk controls and with information about the quantity and quality of staff, information technology systems and other resources to be employed.

While potentially onerous, such licensing conditions should not present excessive barriers to new entry - especially for existing managers of voluntary pension contributions and other funds management businesses which are the most likely candidates as new AFPs.

It should also be a condition of authorization that the various tests at entry *continue* to be met. Continuing compliance with the standard licensing tests and any others specified by the regulator would be a focus for the SAFP's risk-based supervision under upgraded supervisory arrangements.

It may be that the present statutory provisions that place a responsibility on AFPs for ensuring appropriate yield and security in the investment of pension fund resources, together with existing licensing powers, provide sufficient legislative support for new SAFP regulations specifying the authorization standards recommended here.

Recommendation: The SAFP's powers to license AFPs should be widened to cover fitness and propriety of applicants and to prescribe minimum standards for the management systems of applicants. The same fitness and propriety tests that apply to applicants for licensing as AFPs should apply to those who wish to acquire existing AFPs.

Finally, it is a deficiency in the current licensing or authorization arrangements that the SAFP does not have to justify its rejection of an application. In the interests of transparency in regulation, to promote confidence in the regulator's procedures and to protect against capricious decisions, the SAFP should be obliged to explain publicly and to justify a rejection decision whenever an applicant seeks such an explanation. On appeal, an independent tribunal or court could be given the power to hear such cases and to overturn the SAFP's decisions where warranted. As long as the SAFP applies sound prudential tests objectively and observes the principles of procedural fairness, an appeal body would be extremely cautious about overturning one of the regulator's decisions.

These changes to improve the accountability of the regulator would become warranted even more strongly if the SAFP's grounds for rejecting an application were widened and strengthened as recommended here.

Recommendation: The SAFP should be required to justify decisions to reject AFP license applications and rejections should be reviewable by an independent judicial body.

6.2.12 Resolution powers

As noted in section 5, the SAFP does not have clear powers in the Pension Law to intervene in an ailing AFP in financial difficulty and take over temporarily its administration while a resolution is devised. On the rare occasions when such action was needed the SAFP was able to rely on its broad powers of enforcement. However, in such circumstances it is

essential that the regulator's powers to act in the interests of members are clear and unchallengeable and can be implemented quickly. The banking and insurance regulators have such powers.

The SAFF should be accountable after the event for its exercise of such powers, but this accountability should not impede taking decisive action that the agency deems to be necessary.

Recommendation: The SAFF's powers to intervene in a troubled AFP to protect the interests of pension fund members should be clearly specified in law.

6.2.13 Strengthening SAFF powers over outsourcing

The importance of outsourcing in the pension fund sector means that AFPs and their affiliates rely heavily on the financial soundness and satisfactory performance of external providers. Consequently, there must be stronger and more consistent prudential regulation of outsourcing arrangements than the existing regulations described in section 4.1.8. These regulations should specify the minimum acceptable features of outsourcing arrangements for any business operations and activities whose performance is critical to adequate investment outcomes and service delivery by AFPs to their affiliates.

In addition, with limited exceptions, the SAFF does not currently have the authority to inspect the operations of external service providers or to regulate them, except indirectly through the AFPs. This is inadequate for an effective supervisory system because it prevents the SAFF conducting on-site surveillance of the service providers to determine the risk of service disruptions, to identify the scope for improved methods and procedures, and to enforce adequate solutions where necessary. In practice, service providers might provide access to the SAFF on the basis of goodwill or, in the case of regulated entities such as DCV, under pressure from the relevant regulatory agency - but this is hardly a robust arrangement because it might fail when it is needed most.

The main elements of a generic outsourcing policy would be:

A. Rules on how AFPs should select their service providers:

- tendering process
- due diligence investigation of short-listed tenderers
- objective evaluation and decision-making

B. Necessary provisions in contracts with service providers:

- clear definitions of the services to be supplied
- term of the contract, and renewal arrangements
- schedule of fees and payment arrangements

- conditions governing subcontracting by the provider: it is essential that providers do not reduce the quality of service and protection ultimately supplied to AFPs by engaging another entity to perform some parts of the functions that it has contracted to provide
- service level agreements, specifying performance standards that are both meaningful and measurable
- penalties for non-performance against standards
- liability and indemnity provisions to protect the AFP and funds from mismanagement by a service provider or its failure
- audit requirements that allow AFPs to monitor compliance with contractual provisions
- confidentiality conditions to protect the AFP's proprietary information in the hands of providers – this is particularly important when service providers have contracts with more than one AFP
- provisions for business continuity/disaster recovery
- dispute resolution arrangements, possibly involving an independent third party
- default and termination provisions
- right of the SAFF to demand information from the provider and to inspect relevant aspects of the provider's operations whenever deemed necessary; these rights must extend also to subcontractors. Where the provider is regulated by another agency, these arrangements would be coordinated under an inter-agency memorandum of understanding.

C. Provisions for an AFP's exit and transition to another provider:

- there must be agreed arrangements that ensure continuity of operations for affiliates and protection of the AFP's information when an outsourced function is transferred to a new service provider.

In the relatively small Chilean market, where there will often be few competing providers (and perhaps only one), regulations about tendering and termination of contractual arrangements might have only restricted applicability. The limitations on the flexibility of AFPs to select and to change service providers increases the importance of the other parts of an outsourcing policy - especially requirements for meaningful performance standards, and the need to have contractual penalties or other effective sanctions for poor performance by a service provider .

If only one or two service providers are performing functions for the entire industry – as could be the case in Chile – the regulator needs to pay close attention to the operational risks from such concentration and also the potential for anti-competitive behavior.

The generic outsourcing policy and regulations would be supplemented by specific regulations for certain external providers as necessary - for example, the present rules on foreign custodians.

It was noted above that arrangements for the SAFP to inspect a service provider regulated by another agency would need to be coordinated in some way to avoid unnecessary overlapping or duplication. This could be achieved through a memorandum of understanding. It is also possible that conflicts could arise between regulators with different interests (e.g. where the SAFP might wish to deal with a problem confidentially but the companies regulator thought disclosure was more important in the interests of an informed market). If such conflicts are possible it is advisable to have formal protocols for dispute resolution, either in primary or secondary legislation.

In principle, there is no regulatory reason to limit the extent of outsourcing and there may well be efficiency advantages. There are pension funds in some countries where the entity (administrator) ultimately responsible for the management of pension savings has outsourced *all* significant functions to specialist providers, including daily management of members' accounts, administration of collections and payments, investment of funds and custodianship. To permit this, however, the legal system needs to be robust enough to support the enforcement of contractual arrangements between administrators and providers and the regulator needs sufficient powers to be able to 'look through' contractual arrangements and satisfy itself that all key functions are being carried out prudently to the same level of assurance as if those functions were performed by the primary regulated entity itself.

Recommendation: The SAFP's regulation of outsourcing by AFPs should be strengthened and its powers over key service providers increased. Cooperative arrangements with other regulators should be strengthened where necessary.

6.2.14 Reviewing corporate governance rules for AFPs

The main corporate governance rules applying to AFPs were noted in section 4. The most relevant for prudential supervisory purposes is the provision of the Pension Law which establishes that an AFP should conduct all necessary actions to ensure an adequate yield and security of the pension funds' investments (Article 147). In addition the Pension Law says that AFP directors and senior officers are liable for any financial damage caused to a Pension Fund due to an action or omission (Article 149).

These governance rules, together with the others referred to earlier, provide the basis for a robust supervisory system and are generally sound. However, they have not been supported with meaningful and enforceable requirements in secondary regulation. The SAFP's Legal Division advises that there is no secondary regulation aimed at ensuring that an AFP has taken all 'reasonable' actions (in view of some standard of best practices)

to ensure an adequate yield and security of the pension funds' investments. This lack of secondary regulation on risk management systems is clearly related to, and follows from, the detailed compliance-based supervisory approach currently employed. This, in turn, relies heavily on the investment limits set by the Pension Law and the minimum return requirement.

Another example of the lack of secondary regulation is in relation to the requirement for AFP directors to issue a judgment on the internal controls put in place by the AFP to ensure compliance with the rules establishing AFP responsibilities and prohibitions in regard to potential conflicts of interest. On this matter, the only action taken so far has been to require each AFP to inform the existing internal control.

The SAFF's Legal Division is of the view that a supervisory requirement to implement a minimum internal risk management standard could be justified on the legal basis provided by these general governance rules, along with some others aimed at regulating, under a compliance-based approach, some procedures in the areas of collection of contributions and the payment of benefits. In particular, in the areas of investment decision process and its execution, the SAFF power to interpret the scope of the Pension Law allows it to issue instructions - subject to the legal boundaries imposed by the same body - regarding the implementation and enforcement of an internal management and scoring system.

As a result, based on the general principles stated above, the SAFF has the legal ground to enforce the responsibility of the board and senior officers in the proper operation of the internal controls and risk management systems. The detailed drafting of such regulations would need to be consistent with other parts of the regulatory framework, in particular the prescribed investment portfolio limits.

Recommendation: The SAFF should issue secondary regulation aimed at enforcing the general principles established in Articles 147 and 157(b) regarding the proper management of pension funds, in view of the recommendations of sections 6.2.9, 6.2.11 and 6.3.4.

6.2.15 Setting minimum internal risk management standards for AFPs, and the role of auditors

As an integral feature of a risk-based supervisory system for pension funds, the supervisor puts the onus on the regulated fund administrator to develop internal management systems that are adequate to safeguard the interests of the fund's members. Critical components of those management systems deal with the identification, control and monitoring of risks, with the main focus being on risks to the long-term growth of members' investments and the accurate recording and ultimate payment of those investments. These risks include investment risk and a range of operational risks. When the current detailed quantitative restrictions on investment by AFPs are liberalized, as recommended, it will be essential that the regulatory system can be assured of the quality of their systems for managing investment risk, in particular to ensure that risk-taking

remains within prudent bounds. While investment portfolios will still be subject to various limits, AFPs will have more freedom in portfolio allocation than previously.

As an essential step in introducing risk-based supervision, the SAFP must establish, and then enforce, a minimum acceptable standard for AFPs' internal risk management systems. One way of doing this would be to mandate adherence to an existing external standard of good practice, such as the COSO framework that is widely used in the United States and other countries, and that seems to be followed by some AFPs and their external auditors.

The COSO Framework defines internal control as 'a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives' in three categories--effectiveness and efficiency of operations; reliability of financial reporting; and compliance with applicable laws and regulations. COSO further stated that internal control consists of: the control environment, risk assessment, control activities, information and communication, and monitoring. In this definition, the scope of internal control extends to policies, plans, procedures, processes, systems, activities, functions, projects, initiatives, and endeavours of all types at all levels of an entity.

COSO is a sound and comprehensive framework for designing and evaluating internal controls. However COSO, and similar standards such as ISO, contains generic standards and principles intended for application to any industry or company. It is not specifically applicable to financial institutions and, as a result, would need considerable further development before being applied in practice by the SAFP.

The approach recommended here is for the SAFP to develop its own minimum criteria for risk management systems for the pension funds. These should be tailored to the specific circumstances of the AFPs, including compliance with the various regulations (portfolio limits, encaje etc) that would continue to apply. The question is how prescriptive these regulations should be. In designing these regulations, the SAFP should consider three existing models or approaches, namely, the regulations for internal risk management of pension funds in Mexico and Australia, and the regulations for internal risk management of Chilean banks, imposed by the SBIF.

Mexico has adopted a very prescriptive approach in this area. Resolution 62.1 issued by the Supervisor (CONSAR) in February 2006, stipulates in detail the internal risk management architecture that each AFP in Mexico must implement. It includes, *inter alia*, the creation of two Board committees, one dealing with operational risk management and the other with financial risk management. The members of these committees must include two Board members, of which one independent, the CEO, and the Chief Risk Officer. This regulation also imposes the creation of a central risk management unit (headed by the Chief Risk Officer) with reporting responsibilities to the CEO, the board and the supervisor. Finally, the regulation describes in detail the duties and obligations of the committees and the central risk management units, and its relations with the tasks performed by the chief investment officer.

Australian regulations also impose minimum risk management standards, including a risk management plan and a risk management function. However, Australian regulations are much less prescriptive and detailed than those recently introduced in Mexico. In Australia, each pension fund must have a risk management strategy and a plan that sets out ‘the reasonable measures and procedures the licensee is to apply to identify, monitor and manage risks that arise’ in operating the fund. In particular, the plan must address any material risks to the fund, where ‘material’ means any risks that could adversely affect the interests of members or have a significant negative impact on the business operations, reputation, rates of return, or net assets of the fund.

Regarding control processes, the plan must describe the arrangements for internal oversight, implementation of controls and reporting on the management of material risks. The plan must be reviewed at least annually to ensure that it remains relevant and up to date. External auditors must audit the risk management plans annually and attest to the regulator whether the framework adopted to identify, assess, control, report and review material risks has been implemented and is operating effectively.

The Chilean **SBIF** specifies a list of the risk management features that it expects to see in a well-run bank, but does not mandate the use of any particular external standard. The control areas covered are: (i) credit risk management; (ii) financial risk management and treasury operations; (iii) management of operational and technological risk; (iv) control of overseas resources; (v) management of business strategy and capital; (vi) management of client information; (vii) anti-money laundering; (viii) internal audit and role of a board audit committee.

The SBIF approach was developed for banks and would need to be adapted to AFPs managing defined contribution plans. However, the SBIF regulations merit consideration by the SAFP because they take into account local features of the Chilean economy and financial system. Moreover, cooperation with the SBIF would allow SAFP staff to acquire more rapidly the skills and experience of their SBIF counterparts and facilitate a more rapid move to a risk-based supervisory system.

Recommendation: The SAFP should require that each AFP has internal risk management controls that meet a minimum standard to protect the interests of affiliates. The models that may be considered include the Mexican and Australian models for pension funds and a modified version of the SBIF’s prudential standard for risk management by Chilean banks.

One specific prescription that is recommended is that each AFP should appoint a Risk Officer with clear responsibility for the design and maintenance of risk control systems across all AFP operations. This would be a senior position with direct accountability to the Chief Executive Officer. There should also be a Risk Committee to oversee the risk control policy and give authority to the Risk Officer. To ensure that AFP boards are informed about the risk control framework and are aware of their ultimate responsibility for it, at least two directors should sit on the Risk Committee, of which at least one

independent, along with the chief executive officer the chief risk officer and possibly other senior officers.

Recommendation: Each AFP should have a Risk Officer with responsibility for design and management of risk management systems across all AFP operations and with a direct reporting line to the Chief Executive Officer. There should also be a Risk Committee including at least two directors, of which one independent director.

Hiring and retaining a Chief Risk Officer who can effect meaningful change depends on several things. First, the person must have autonomy in the sense of a straight-line report to the Board of Directors or similar governing body. His compensation must be tied to achieving risk-based goals and not ones that are linked to earnings or cash flow. Moreover, performance should be evaluated on the basis of a time period that is long enough to allow for change to have occurred. For example, much of the risk management process depends on getting information that is timely, easy to interpret and comprehensive. That almost always requires spending money on technology infrastructure. Last but not the least, the Chief Risk Officer should be knowledgeable in several different areas and have a solid understanding of the interdependence between operations and investing and other related areas.

The development of standards and an initial assessment of existing AFP systems against those standards will be a substantial task and it the SAFP should consider calling on external assistance. One possibility would be to engage external auditors in the process, but this could raise conflicts of interest with respect to their future regular role. Another option is to work with an agency that specializes in rating the risk control systems of funds managers – this could both assist the SAFP in developing minimum standards and provide an initial assessment of AFP systems, identifying significant gaps with good practice and providing certification where systems were satisfactory.

Recommendation: The SAFP should consider seeking external assistance in developing its minimum standards for AFP risk management systems and for conducting an initial assessment of those systems as they are currently operating.

When standards are established there needs to be a process by which the SAFP is assured that AFPs' risk management systems comply with them and continue to do so.

One issue is whether external auditors should be required to provide an attestation that AFP risk management strategies, plans and controls are working effectively. In many regulatory systems the external auditors have been given such a role. Reasons for doing this include:

- to leverage off work that the auditors would do in the normal course of their annual program
- to engage skills that the regulator does not possess
- to reduce the burden on the regulator's limited resources, especially for regulated industries with many participants

- to shift some of the regulatory cost to industry.

Some of these factors are not so important in Chilean pension regulation – in particular, the number of regulated entities is small at present and the SAFP appears to have quite strong auditing skills in its Control division. It might also be considered that the assessment of risk management systems, broadly defined, is beyond the capacity of the local audit industry.

For these reasons it seems desirable for SAFP staff to make their own annual assessments of risk management systems, rather than calling for a formal report from external auditors. This would also provide valuable training and experience to SAFP officers in risk-based supervision, would assist in the refinement of minimum standards and would be integrated with the risk scoring of AFPs.

Recommendation: SAFP staff should conduct annual assessments of each AFP's risk management systems when minimum standards have been developed and staff have been trained in their use.

A second question about the role of auditors, both internal and external, is whether they should have more responsibility for the present work of SAFP Control division staff in checking the accuracy of pension fund records, AFPs' transaction-processing and so on. Control has 16 staff engaged in on-site inspection, checking and testing of such records and the systems that generate them. The SAFP itself describes these activities as case-by-case, not risk-based, and reactive rather than forward-looking. The work is very much in the nature of routine audit work and there almost certainly is (or should be) significant overlap with the regular work of internal audit and the tests that external auditors conduct, including as inputs to their annual report on procedures and controls.

The SAFP should consider whether, in a risk-based supervisory system, it is productive to allocate its resources to this detailed audit work, at least to the present large extent. As an alternative, it would seem more efficient to require, as part of operational risk management, AFP auditors to conduct periodic tests of recording and processing systems, with those reports given to the SAFP. The SAFP would decide which systems were more critical and should therefore be tested more frequently.

A reduction in the SAFP's own work in this area would not only economize on its resources, but could strengthen the authority of the AFPs' internal auditors and encourage improvement in the quality of their oversight. Results from the various audit reports would be inputs to the SAFP's overall assessment of internal controls, its risk scoring and its setting of supervisory action priorities.

External auditors' annual reports on management systems should continue to be produced, but the auditors should be required to provide these directly to the SAFP, rather than through AFP management. Their auditors should have whistle-blowing protection to encourage candor. They should also be subject to penalties, including

professional disqualification, if it was discovered that they were aware of a material system deficiency, or uncontrolled risk, and did not report it immediately to the SAFFP.

Recommendation: The SAFFP should reduce its routine audit work and instead rely more on the work of AFPs' internal and external auditors. The obligations of external auditors to report problems to the SAFFP, and whistle-blowing protection, should be strengthened.

At present there are many regulations dealing in great detail with transaction processing and record-keeping by AFPs. It has been beyond the scope of this report to assess the value of this mass of prescriptive regulations other than those governing investment portfolios. However, in conjunction with the move to more risk-based supervision, the development of minimum standards for AFP internal controls and greater reliance on external auditors for compliance checking, there should be a thorough review of existing circulars and other regulation. This review would vigorously seek opportunities to simplify such regulation and pursue a better balance between its costs and benefits.

Recommendation: As part of the move to more risk-based supervision there should be a thorough review of existing regulations with a view to simplifying them and reducing unnecessary compliance burden on AFPs.

6.3 Adopting Supervision Based on Risk

6.3.1 Increasing the financial resources and authority of the SAFFP

The recommendations in this report for a more risk-based, less compliance-focused form of supervision will require various changes of the SAFFP – including in its regulatory style, the skills of its staff (see section 6.3.3) and its internal organization (section 6.3.2). It is not clear, however, whether the agency's financial resources will need to increase, in the absence of a significant increase in the number of AFPs.

Earlier sections of this report have noted that, although the SAFFP works within an externally-determined budget that relies on government funding, the agency appears not to be tightly budget-constrained now or in the recent past. By international standards it has a generous number of supervisors for six AFPs, even allowing for the particularly intense nature of their supervision and the correspondingly lower use of external auditors.

The move to a more risk-based style of supervision will require the SAFFP to recruit people with more skills in risk analysis and investment management and capable of assessing operating controls against minimum standards of good practice. Even though its present salaries are said to be competitive with the market, recruitment of people with such skills into middle level and senior supervisory roles would seem likely to require an increase in average salary levels. The SAFFP will also need to invest more heavily in training to upgrade the skills of existing staff and possibly to fund a small number of short-term secondments from other agencies, both local and foreign. These two factors will put upward pressure on the SAFFP's staff costs. On the other hand, there should be

scope to reduce the total number of supervisory staff, especially if the SAFP places more reliance on the work of internal and external auditors, and the net impact on the agency's budget from these changes might well be neutral or even negative.

Of course, if there were many new entrants to the mandatory pension sector this conclusion could change. Under the recommendations of this report the licensing of new AFPs would be a more intense process than in the past.

Recommendation: While the SAFP appears to have adequate aggregate financial resources for a move to risk-based supervision, this position should be kept under close review. There could be a temporary increase in costs during the transition phase, due to engagement of external assistance, training and the revision of regulations.

While access to sufficient financial resources does not appear to be an immediate problem for the SAFP, there are reforms that should still be considered to enhance its autonomy and its standing in the financial system. Under a risk-based system of supervision a prudential regulator is called upon to exercise judgment and make assessments, with elements of subjectivity, to a greater extent than in a rules-driven, compliance-focused regulatory regime. The effectiveness of such a system and the confidence that the general community places in it depends importantly on the both on the competence and 'track record' of the regulator and the respect it commands in the financial industry, with government and in the general community. Clearly, earning this respect will depend heavily on the regulator's performance and demonstrated competence. However, the way the agency is structured and financed and the powers it wields also contribute to its status and authority.

A number of changes should be made to enhance the authority of the SAFP as part of the move to risk-based supervision. These would also bring it more into line with recently-developed international standards of best practice for pension regulators, as summarized in s. 5.1. In particular, the lack of clear rules for removing the Superintendent creates scope for political interference or less overt pressure to be applied in the supervisory process. Further, a board of independent non-executive directors can add authority and expertise to a supervisory agency and help protect the executive from undue political or industry pressures, at the same time giving the industry some comfort that the executive will not engage in capricious or unreasonably heavy-handed supervisory practices.

The changes in regulation that are recommended in this report will increase the power of the SAFP by broadening the scope of its discretion while reducing the burden of detailed regulation for AFPs. A further desirable change in the area of the regulatory powers is to remove the role of the central bank in mandating investment limits (if any of these limits remain). It is fundamentally important that the regulatory agency itself has full responsibility for regulations that now exist solely for prudential purposes, and the present arrangements send a public message of lack of confidence in the SAFP's competence and/or its integrity.

In return for these increases in its autonomy and authority the SAFP would be subject to enhanced accountability and scrutiny over the use of its powers. This would include, as

recommended in section 6.2.7, an avenue of appeal and review for unsuccessful license applicants.

Recommendation: The autonomy and authority of the SAFF should be increased as part of a move to risk-based supervision. At a minimum, steps should include the introduction of formal public processes and criteria for the early removal of the Superintendent and the abolition of other agencies' authority over prudential regulations. The creation of a board including non-executive directors for the SAFF should also be considered.

6.3.2 Reviewing the internal organization of the SAFF

The move to a more risk-based supervisory system will mean changes in the functions of the SAFF, and necessitate a review of its internal organization. While final details will depend on the extent of changes made in its functions, some general recommendations can be made.

We are recommending substantial winding back of the current detailed investment restrictions and a review of other compliance-based regulations. This will reduce the routine monitoring and checking carried out by SAFF officers. On the other hand, there will be enhanced supervisory focus on funds' investment management practices and on the management systems that control operational risks, including the accuracy of funds' record-keeping and transaction processing. Supervisors will need to conduct periodic assessments of all internal risk control systems as inputs to the scoring system (section 6.3.4).

There should be a program to rotate supervisory staff so that they do not work on one AFP for more than two or three years. This is to reduce the risk of 'regulatory capture' that can occur when a supervisor works on one institution for a long time, to ensure that a fresh view is brought to the oversight of each AFP every couple of years, to broaden experience of the analysts and to help achieve consistency in risk assessment and scoring.

It is common practice in other regulatory systems to form a Risk unit, separate from but working closely with the front-line supervisors. The people in this unit develop a knowledge of particular risk areas - investment, operational, outsourcing etc - that is deeper and more specialized than needed in normal supervisory work. The Supervision division is able to call on this unit for advice and assistance in analyzing and/or resolving problems that arise with key risk areas of the institution for which they are responsible.

If the number of AFPs remains much as now this would need to be only small group – five or six people – and the unit could be part of the Studies division, rather than being separate.

Recommendation: The SAFF should review and reform its internal organization structure as it moves to adopt risk-based supervision. It should consider introducing a single Supervision unit, supplemented by a specialist Risk group.

6.3.3 Addressing the skills mismatch

While there is no rigid dividing line between the two approaches to supervision, moving from a compliance-based supervisory regime to a more risk-based regime will require the SAFP staff to have a different *mix* of supervisory skills.

Section 5.2 summarized the educational background and work experience of SAFP staff in Finance and Control, the core supervisory divisions. It noted that the highest tertiary qualification for most staff in Control is in auditing or public accounting, while for Finance staff it is a BA in Business from a Chilean university.

To summaries at the highest level, risk-based supervision requires a greater understanding of the inner workings of a regulated entity in addition to a capacity to observe the outcomes against objective benchmarks such as asset ratios. In a risk-based regime the regulators of a pension fund need an understanding of the analytical tools and the daily decision processes of a competent investment manager. They also need to understand all the risks, other than the investment risks, that are entailed in operating a pension fund and to have an appreciation of the risk identification and mitigation strategies that a well-run fund manager will have in place.

Developing such skills in the SAFP will take time and will require a multi-part program, including:

- training for some existing staff in investment theory, techniques of risk analysis and control and the methodology of risk-based supervision – to expedite the upgrading of skills, one of the universities might be commissioned to develop a special-purpose program
- transfer of some Studies staff who have more advanced technical skills to front-line supervisory roles
- recruitment of a small number of professionals with investment experience from the pension fund industry
- a small number of secondments from regulatory agencies, both domestic and foreign, with experience in risk-based supervision techniques; secondments to and from the SBIF will be valuable if the SAFP adopts modified versions of the banking regulator's approach to risk management assessment and ratings system.

Recommendation: The SAFP should upgrade and re-balance its skill mix with a coordinated program of recruitment, training and secondments. This will require a significant investment of time and finance during the transition to a more risk-based supervisory regime.

6.3.4 Risk-scoring system

A formal system for rating or scoring the riskiness of pension funds is integral to risk-based supervision. Such systems can deliver the following benefits:

- they help regulatory agencies to priorities their activities and allocate scarce staff and other resources across their span of responsibility
- they provide a structured framework for supervisors to assess and make judgments about the entities they regulate based on an evaluation of the main risk components; this should incorporate a weighting of risks by importance, another important feature of a risk-based supervisory system
- where scores are communicated to a regulated entity they convey a clear objective message on how the regulator rates it now and what the regulator's expectations and requirements are for remedial steps and improved performance
- they provide an audit trail to explain regulatory action
- after being used for some time they provide information on trends in riskiness and other features of the industry that can be useful for research purposes.

The need for a system to guide resource allocation is probably less in Chile than in countries that have a greater number of pension funds, but resource allocation decisions still need to be made (and are made today), and this will become more of an issue in future if there is more entry to the industry without a proportionate increase in SAFP resources. It will also become more important when there is staff turnover that reduces the extent to which the agency can rely on the institutional memory of long-serving staff.

Two models for a risk-scoring system are summarized here – one based on that used in Australia (model A) and the other on that used by SBIF, the Chilean banking regulator (model B). *The design of the scoring system will need to be fully consistent with the minimum standards prescribed for risk management systems (see s. 6.2.11)*

- Model A scoring system

In this model, the first step is to identify the key sources of risk for pension funds. One classification would be:

- investment risk: risk of losses due to movements in interest rates and other market prices
- liquidity risk: the risk that an AFP will not be able to meet its payment obligations as they fall due, without excessive cost
- insurance risk: the risk that insurance cover will not be available as expected when needed

- operational risk: the risk of losses, service interruption or incorrect record-keeping due to inadequate internal processes, people and systems – whether these are internal to the AFP or in one of its service providers
- legal and compliance risk: the likelihood of adverse consequences arising from failure to comply with all relevant laws and regulations
- strategic risk: risks to the continued viability of an AFP as a result of change in its operating environment, including internally driven change such as merger or rapid expansion resulting from a marketing drive
- contagion and related party risk: risks to an AFP’s business as a result of its close association with another entity – such risk could be direct through financial exposure or indirect through reputation damage.

Each risk would be weighted according to its relevance - for instance, liquidity risk for AFPs would be rated much lower than investment risk; contagion risk might be considered very low, but operational risks would always be high. These ratings may vary from one AFP to another, or a common weighting could be imposed since the features of all AFP operations are so similar.

Each risk is then given a rating on a four or five point scale from ‘low’ to ‘extreme’ by drawing on agreed qualitative and quantitative criteria. The ratings are for *inherent risk* – that is assuming that there are no risk controls in place.

The next step is to rate the quality of an AFP’s *controls* to mitigate the inherent risks, using a four or five point scale from ‘excellent’ to ‘very poor’. The controls or *mitigants* of these gross risks might be classified as:

- quality of directors and senior management: covers their understanding of responsibilities, their experience, competence and integrity and the significance of any conflicts of interest
- effectiveness of operational management: this would include human resource policies (recruitment and training) and management of outsourced operations – with outsourced services, the supervisor needs to assess the systems of the external parties as well as the protections that the fund has under its contracts with these parties
- an AFP’s information systems and financial controls: capacity to produce timely and reliable information for regulators and members
- risk management systems: quality of an AFP’s arrangements for determining risk appetite, identifying and measuring risk, setting limits, and monitoring compliance
- an AFP’s access to additional capital if needed
- an AFP’s compliance culture and procedures: this would relate to compliance with laws and regulations and involve assessment of the competence, integrity and independence of responsible staff, as well as information systems
- the adequacy of independent review: an assessment of the competence and independence of internal and external audit.

Next, the assessments of significance, inherent risk and controls are combined to produce *net risk* ratings that are aggregated to produce an overall rating for the AFP and its funds. A risk area may be rated as inherently quite high, but the quality of controls might also be high so that the net risk is only ‘moderate’ or even ‘low’. The calculation of the net overall risk may use simple aggregation and subtraction or a more complex formula.

The final step in this model is to determine the *supervisory action plan* that is linked to the net risk rating. Clearly an AFP with assessed high risk will warrant closer attention than one with a low risk rating.

Typically in such rating systems, the net risk rating is modified by a measure of an institution’s size, so that if two entities have a similar assessed risk the larger one will receive greater supervisory attention. This feature could not be justified in the Chilean pension system because there is only a small number of AFPs and, although they vary in size, each is large enough to be systemically important for the pension sector’s soundness and for the regulator’s reputation.

The details of investment risk will depend on changes made in investment regulation. If the minimum return benchmark is retained and is quite narrowly defined, the less need there will be for supervisory assessment of investment objectives because these will effectively be given to AFPs. Similarly, the more closely prescribed investment portfolios are, the more the assessment of investment risk management will be compliance-focused – that is, checking that the various portfolio restrictions have been observed.

If there continue to be numerous quantitative restrictions that AFPs must observe in managing asset portfolios the SAFP would monitor compliance with these restrictions. Input to the risk assessment would then include the number of breaches of the rules and an AFP’s systems to detect breaches, to ensure that closeness to a limit does not become a breach etc. And even with a quite detailed regime of investment regulation the supervisor should still be making a call on whether AFPs’ staff and systems are capable of maintaining consistent compliance and assessing whether their systems are robust against fraud and other operational risks.

- Model B scoring system

Model B is a modified version of the one presently used by the SBIF for Chilean banks (see section 6.2.11). It requires some adaptation because of the different concerns of banking and pension regulators, but there are also many features in common. It is somewhat less complex than model A, being less numerical and not requiring analysts to make a separate assessment of inherent risk.

In model B, analysts would rate AFPs and their funds under two broad heads: financial condition and management quality. The ratings are combined into an overall classification that determines the supervisory attitude/intensity of scrutiny.

The assessment of *financial condition* would consider such factors as:

- the AFP's capital surplus (if any); profitability; access to additional capital if necessary
- condition of the funds' investment portfolios - e.g. asset concentration; exposure to complex or exotic instruments? [Similar issues arise as with Model A regarding the rating of investment risk, and its management, in a regime where AFPs have constrained discretion.]

Management would be assessed on the following qualities:

- financial risk management and treasury operations
- management of operational risk
- management of internal audit function, the role of the audit committee
- management of regulatory risk
- management of long-term strategy
- quality of external audit

Rating would be according to a five-point scale – from ‘total compliance’ to ‘non-compliance’ – on each of these criteria, and a composite assessment of management on an A-B-C scale would be produced. While the SBIF talks of compliance with ‘best practices and application of sound principles that characterize proper management’, it also states that it is not its role to specify internal management standards. Even so, its descriptions of the assessment criteria it uses give a clear idea of what is expected for ‘compliance’.

The combination of scores for financial condition and management determine an overall rating that feeds into supervisory plans and, if necessary, regulatory action.

Both models rely to a large extent on the supervisors' judgments. A key requirement is that these people have sufficiently well developed benchmarks for these assessments. Clearly, the more those benchmarks are quantitative the less will be the reliance on subjectivity and the more consistent will assessments be across AFPs and through time. But assessments of management competence and risk management systems will unavoidably involve qualitative elements. The judgment of analysts becomes more confident as they gain experience, and as they observe a variety of institutions and situations and see how a number of problems in regulated entities evolve over time.

The SAFP should tell each AFP its result from the scoring model and should explain the reasons. The SAFP should decide the minimum level of aggregation needed to disclose the results of its scoring methodology to the public large to avoid the risk that they be used improperly for a commercial competitive purpose, or that they be misinterpreted by affiliates, create unnecessary worry and encourage disruptive movement of funds among AFPs.

Recommendation: The SAFP should develop a risk-scoring system to help identify pension fund risks in a systematic way and to guide the allocation of its supervisory resources. The SAFP should tell each AFP its score and the reasons.

6.4. Summary of Recommendations

Recommendations for Changes to the Investment Regime

- Leave only the broader investment restrictions in the law and create a sound and clear legal basis for the SAFP to create the necessary secondary regulations.
- Create a Technical Advisory Board (following the model of the CCR) whose mission is to help SAFP at setting detailed investment restrictions, among other things.
- Keep the minimum return requirement, and the associated encaje
- Require the Superintendent to report to Congress on the main issues faced during the year.
- In order to determine the minimum return requirements start using adjusted system's lagged portfolios as benchmarks, and consider switching to exogenous ones in the future.
- Make the detailed information of AFP portfolios' available only once per year with a three-month lag.
- Implement a simplified aggregate and issuer limit structure as recommended in Annex 3.
- Allow expand the use of derivatives, including a relaxation of restrictions as regards product type, following the development of comprehensive regulations covering these activities
- Eliminate the CCR's role regarding local instruments; consider assigning rating corporate governance to it; keep its role with respect to international investments.
- Require AFP's investment policies to complement the body of regulations in specific issues.

Recommended Changes to Other Regulations

- Licensing rules should include fitness and propriety tests of applicants and demonstrated capacity to manage risk.
- The same fitness and propriety tests that apply to applicants for licensing as AFPs should apply to those who wish to acquire existing AFPs.
- The SAFP should be required to justify decisions to reject AFP license applications and rejections should be reviewable by an independent judicial body.

- The SAFP should issue secondary regulation aimed at enforcing the general principles established in Articles 147 and 157(b) regarding the proper management of pension funds, in view of the recommendations of sections 6.2.9, 6.2.11 and 6.3.4.
- The SAFP should require that each AFP has internal risk management controls that meet a minimum standard to protect the interests of affiliates. Existing models that may be considered include the Mexican and Australian models for pension funds and the SBIF's prudential standards for risk management by banks.
- Each AFP should have a Risk Officer with responsibility for design and management of risk management systems across all AFP operations and with a direct reporting line to the Chief Executive Officer. There should also be a Risk Committee including at least two directors, of which independent.
- The SAFP should consider seeking external assistance in developing its minimum standards for AFP risk management systems and for conducting an initial assessment of those systems as they are currently operating.

Recommended Changes to the Supervisory Framework

- The SAFP's powers to intervene in a troubled AFP to protect the interests of pension fund members should be clearly specified in law.
- The SAFP's regulation of outsourcing by AFPs should be strengthened and its powers over key service providers increased.
- SAFP staff should conduct annual assessments of each AFP's risk management systems when minimum standards have been developed and staff has been trained in their use.
- The SAFP should reduce its routine audit work and instead rely more on the work of AFPs' internal and external auditors. The obligations of external auditors to report problems to the SAFP, and whistle-blowing protection, should be strengthened.
- As part of the move to more risk-based supervision there should be a thorough review of existing regulations with a view to simplifying them and reducing unnecessary compliance burden on AFPs.
- While the SAFP appears to have adequate aggregate financial resources for a move to risk-based supervision, this position should be kept under close review. There could be a temporary increase in costs during the transition phase, due to engagement of external assistance, training and the revision of regulations.
- The autonomy and authority of the SAFP should be increased as part of a move to risk-based supervision. At a minimum, steps should include the introduction of formal public processes and criteria for the early removal of the Superintendent and

the abolition of other agencies' authority over prudential regulations. The creation of a board including non-executive directors for the SAFP should also be considered.

- The SAFP should review and reform its internal organization structure as it moves to adopt risk-based supervision. It should consider introducing a specialist Risk group.
- The SAFP should upgrade and re-balance its skill mix with a coordinated program of recruitment, training and secondments. This will require a significant investment of time and finance during the transition to a more risk-based supervisory regime.
- The SAFP should develop a risk-scoring system to help identify pension fund risks in a systematic way and to guide the allocation of its supervisory resources. Existing scoring models that may be relevant for Chile, with the necessary adaptations, include the Australian model for pension funds and the SBIF scoring model for Chilean banks. The SAFP should tell each AFP its score and the reasons, and consider disclosing the scores.

7. PROPOSED COMPONENTS FOR THE SECOND PHASE OF THE PROJECT

7.1 The Favorable External Environment for Reforms

The new Chilean Government that took office in January 2006 formed at the beginning of the year a commission to examine the flaws in the pension system and make recommendations for reform. The reform commission presented a document to the president whose main points were disclosed to the public. The recommendations include measures to strengthen the first pillar and measures to improve the performance of the second pillar. Among these measures, the commission recommended shifting investment regulations from the main pension law to secondary regulation and relaxing the investment regime. These and other recommendations affecting the second pillar are fully consistent with the recommendations of this report.

During 2007 and future years the SAFP will face favorable conditions for making further progress in adopting a risk-based approach. The envisaged changes in the legal framework will support a move in this direction, and some AFPs are already beginning preparations for strengthening their internal risk management systems. The success of these reforms will depend critically on guidance and leadership by the SAFP. The objective of the phase 2 of this FIRST project is to assist the SAFP in the drafting of key regulations, and strengthen the SAFP's capacity to conduct risk-based supervision.

7.2 Tasks Envisaged in the Second Phase of the Project

The SAFP is in broad agreement with the diagnostic and the recommendations of the report, and indicated a strong interest in implementing seven tasks proposed in chapter 6. Among these seven tasks, the SAFP identified four priority tasks that would be supported by the FIRST project and three tasks that may be supported by other donors or from the SAFP's own resources.

The seven tasks include: 1) the drafting of secondary regulation on internal risk management of AFPs; 2) the drafting of secondary regulation on the use of derivatives by AFPs; 3) the drafting of secondary regulation on outsourcing by AFPs; 4) the reorganization of the SAFP; 5) the development of a risk scoring model to guide supervisory actions; 6) the training the SAFP staff will require to implement the new framework; and 7) the simplification of the complex body of regulations, eliminating those elements that do not add regulatory value or would hamper the successful implementation of the new risk based supervision model.

The SAFP requested further FIRST support to finance tasks (1), (2), (5), and (6), i.e. the drafting of regulations on internal risk management and the use of derivatives, the development of a risk scoring model, and the training of SAFP staff in key topics of risk management. The terms of reference for these tasks are outlined in the next section.

Regarding the other three tasks, the SAFP indicated that its legal department had initiated the drafting of regulations on outsourcing, based on the detailed recommendations of the

report. Further external assistance may not be necessary in this case. The cleaning and simplification of past regulations is a task that may be also carried out by the SAFF's own staff. Finally, the reorganization of the SAFF may be supported by a separate project with the Inter-American Development Bank (IDB). The need for a separate project to address this task stems from the fact that the SAFF's responsibilities will be enlarged, to include the supervision of the new first pillar in Chile. This will prove a complex and time-consuming task, including elements that are outside the scope of the FIRST project. However, the SAFF also indicated that it would like to have the option to approach FIRST for assistance in these areas, if it feels that further assistance is needed, and if there are sufficient resources available, after implementation of the four priority tasks.

7.3. Draft Terms of Reference for the Four High Priority Tasks

7.3.1 Drafting of Secondary Regulation on Internal Risk Management

The purpose of this regulation is to introduce minimum standards of internal risk management and internal controls that all AFPs would have to adhere to. The consultant would need to examine similar regulations in other countries, especially in Mexico and Australia, as possible benchmarks for the drafting of this type of regulation in Chile. The consultant would also examine the regulation on risk management that has been applied to Chilean banks by the SBIF, and assess whether this regulation could be reasonably adapted to AFPs. The consultant would also hold consultations with AFP boards and management, auditors, and service providers, to determine the quality of AFP internal systems, and the efforts that the AFPs would need to make to comply with these minimum standards.

In drafting the SAFF *Circular* on risk management, the consultant would interact closely with SAFF staff, especially the staff designated to work on this task. This may include bank regulators brought to the SAFF as part of a rotation and exchange program. After the regulation is drafted the consultant would discuss its contents and implications with the industry and collect feedback from market participants, as directed by the SAFF.

7.3.2 Drafting of Secondary Regulation on the Use of Derivatives

Current regulation permits pension funds to invest in interest rate and foreign currency options, futures and forwards written for hedging purposes only. When used properly, these derivatives offer organizations an opportunity to transform cash flows, reduce risk, synthesize asset class exposures not otherwise available and possibly reduce transaction costs. However, the use of derivatives introduces new risks including: 1) counterparty risk; 2) liquidity risk; 3) market risk; 4) settlement risk; 5) legal risk; and 6) in practice, operational risk associated with the quality of staff, technology systems, and internal controls necessary for an AFP to trade in derivatives.

The production of a dedicated secondary regulation in the use of derivatives is structured in two phases.

Phase 1

During the first phase of this TA a consultant with substantial practitioner experience in the use of derivatives acquired working for an asset manager would be retained to:

- Assess the risk profile of AFPs portfolios and recommend an action plan for relaxing the use of derivatives both in terms of scope and type, by AFPs. Among other things, this assessment will include: 1) whether OTC derivatives can be traded or whether trades need to be limited to organized markets; 2) whether derivatives should be used only for “hedging” purposes or also for speculative purposes; 3) alternative principles that the AFPs should follow in the use of derivatives; 4) whether derivatives can be used for underlying assets that AFPs cannot directly trade; and 5) a diagnostic of derivatives valuation methodologies currently used and recommendations for their improvement.
- Assess the operational risk associated with the current use of derivatives and the modified use stemming from the recommendations made in the previous task. This would include an assessment of the skills of the derivative traders working for AFPs, independence of back office from front office, role of risk managers, integrity of the information system, et cetera.
- The consultant would prepare a report on the use of derivatives, indicating an action plan for issuing regulation, improving investment and operational risk management among AFPs, and improving capacity as needed both in the AFPs and in the SAFP.
- The consultant would discuss its report with the AFPs and SAFP in order to gather and include comments as a means to create consensus among stakeholders on the strategy to relax the use of derivatives among AFPs.

Phase 2

During phase two of this TA a consultant with legal expertise will be retained to draft secondary regulations on the use of derivatives for AFPs.

Such regulation would draw on the recommendations made during phase 1 of the TA. In particular, the new draft regulation would define: 1) the preconditions, for licencing or authorization, that need to be met by AFPs before they can be allowed to use derivatives; 2) the circumstances under that would determine the suspension of the use of derivatives; 3) the markets (OTC and/or organized) in which derivatives can be traded; 4) the types of derivatives that AFPs can be allowed to trade; 5) the scope for trading in derivatives; 6) the types of counterparts and brokers that AFPs can use to trade in derivatives; 7) valuation methods to be used for derivatives not traded in organized markets and for which market prices are not available; This could include minimum requirements regarding operational risk management and relevant certifications of personnel involved in the use of derivatives.

The consultant will discuss with SAFP and AFPs the proposed draft regulation to gather and include comments and as a way to create consensus on the proposed draft.

7.3.3 Elaboration of a Risk Scoring Model

The purpose of this task is to elaborate a model that identifies the operational and financial risks to which AFPs are exposed to, and the capacity of AFPs to manage these risks. The model would help SAFP identify the institutions and areas that need closer monitoring and therefore guide supervisory actions more effectively than currently. By allocating more supervisory resources to the more deficient areas, the regulatory burden would be reduced and the institutions would be pressed to remedy those deficiencies.

Most bank supervisory agencies already operate risk scoring models, but this technique has been introduced only recently among pension supervisors. As mentioned in sections 5 and 6, the SAFP can draw on the experience of Australia and the SBIF to develop its own risk scoring model. The Australia model has the advantage of being a model adapted to defined contribution pension funds, but the disadvantage of having been developed for a country with a different institutional and regulatory setting. The SBIF model has the advantage of having been developed for the Chilean context, but the disadvantage of having been developed for banks.

The consultant would examine carefully the two risk scoring models, identify the elements that would be relevant for the pension sector in Chile, and develop a model tailored to the Chilean circumstances. The main elements of the two models are described in section 6 and will not be repeated in this section. An important logistical issue that needs to be taken into consideration involves the possibility of an exchange program between the SAFP and the SBIF in the near future. The SAFP and the SBIF may agree on an exchange program that entails an expert of the SBIF working with SAFP staff in the development of a risk scoring model. The terms of reference for the consultant can only be defined after a decision of the SAFP on this issue.

7.3.4 Training of SAFP Staff

7.4. Draft Terms of Reference for the Three Additional Tasks

7.4.1 Drafting of Secondary Regulation on Outsourcing

The report of the Presidential Advisory Commission known as “Comisión Marcel” included several recommendations in the areas of unbundling and outsourcing aimed at fostering competition in the market and reduced marginal costs of operation. With increased reliance on outsourcing, a policy concerns related to consumer protection naturally arises on how to ensure that the SAFP can maintain adequate oversight of outsourcing contracts.

A consultant with legal expertise will be retained to draft secondary regulation on outsourcing. Such piece of regulation would cover:

- Rules on how AFPs should select their service providers; including 1) tendering process; 2) due diligence investigation of short-listed tenderers; and 3) objective evaluation and decision-making.
- Necessary provisions in contracts with service providers; including 1) clear definitions of the services to be supplied; 2) term of the contract, and renewal arrangements; 3) schedule of fees and payment arrangements; conditions governing subcontracting by the provider; 4) service level agreements, specifying performance standards that are both meaningful and measurable; 5) penalties for non-performance against standards; 6) liability and indemnity provisions to protect the AFP and funds from mismanagement by a service provider or its failure; 7) audit requirements that allow AFPs to monitor compliance with contractual provisions; 8) confidentiality conditions to protect the AFP's proprietary information in the hands of providers ; 9) provisions for business continuity/disaster recovery; 10) dispute resolution arrangements, possibly involving an independent third party; 11) default and termination provisions; 12) right of the SAFF to demand information from the service provider, including its subcontractors, and to inspect relevant aspects of the provider's operations whenever deemed necessary.
- Eventual standard default contract of services to be supplied.
- Provisions for an AFP's exit and transition to another provider to ensure continuity of operations for affiliates and protection of the AFP's information.

In addition, the proposed new regulation will pay consideration to measures for mitigating the operational risk associated with the limitations on the flexibility of AFPs to select and to change in a market where service providers can be substantially concentrated. It will include rules for certain external providers (as it is currently the case with foreign custodians) complementing generic outsourcing policies. Finally, it would require the SAFF to define appropriate coordination mechanisms with other supervisory authorities to oversee the performance and regulatory compliance of service providers to avoid unnecessary regulatory burden on the same. The consultant will discuss with SAFF and AFPs the proposed draft regulation to gather and include comments and as a way to create consensus on the proposed draft.

7.4.2 Review existing circulars and other regulations

The simplification of the current regulatory framework is a means to lower barriers to entry and a necessary condition to facilitate the adoption of the new risk based supervision framework. At present there are many regulations dealing in great detail with transaction processing and record-keeping by AFPs. It has been beyond the scope of this report to assess the value of this mass of prescriptive regulations other than those governing investment portfolios. However, in conjunction with the move to more risk-based supervision, the development of minimum standards for AFP internal controls and greater reliance on external auditors for compliance checking, there should be a thorough

review of existing circulars and other regulation. This review would seek opportunities to simplify such regulation and pursue a better balance between its costs and benefits.

This task could be conducted internally by the SAFF with the support of an external junior legal consultant hired through FIRST. This task would have several distinct outputs:

- Preparation of a compendium of existing regulation. At present, such a compendium is not available and its absence is believed to represent a barrier to entry in the market. For this task a junior legal consultant would work with the legal department of the SAFF to catalogue and prepare such compendium.
- Assessment of existing circulars and other regulation. This assessment is aimed at seeking opportunities to simplify such regulation through amendments, consolidation or eventual repeal of current regulations and pursue a better balance between its costs and benefits.
- Draft eventual secondary regulations amending, consolidating or repealing (as needed) current regulations.
- Institute an ongoing consultation mechanism, as needed, through which the SAFF can effectively seek market coordination in its process of simplifying excessively detailed prescriptive regulations.

The consultant will discuss with SAFF and AFPs the output of this task to gather and include comments and as a way to create consensus on the process of reviewing existing circulars and other regulations.

7.4.3 Organizational changes in the SAFF

The adoption of a new risk based supervision model will require modifications in the internal organizational structure of the SAFF as well as recalibration of the skill mix of its staff.

A consultant with management expertise will need to be retained to:

Assess and propose changes in the internal organization of the SAFF. This would include the creation of specialist unit including risk managers, financial and derivative analysts. The approach suggested to group specialists in one part of the organization assumes that professionally qualified staff would provide technical support to inspectors and analysts rather than actually being inspectors and analysts themselves. The report would also recommend needed changes in the internal communication and work flow of the SAFF as to best integrate the services of this unit within SAFF.

In this report we recommended a substantial simplification of the current detailed investment regulations and a review of other compliance based regulations. The

consultant would define an action plan for rebalancing skills in the SAFP to meet the new challenges of the SAFP in overseeing the risk management functions of the AFPs. This action plan would include a coordinated program of recruitment, training and secondment focusing on, but not necessarily limited to, increasing investment theory, risk analysis techniques, methodology of risk based supervision and decreasing the emphasis on regulatory compliance to quantitative investment rules.

The consultant will discuss with SAFP and AFPs the output of this task to gather and include comments and as a way to create consensus on reviewing the internal organization of the SAFP and rebalance its skill mix.

ANNEX 1

Questionnaires to AFPs and Summaries of Interviews

Table A1.1: AFP Questionnaire: Use of External Money Managers

1.	How do they select investment managers? Auction? Strategy? Asset category? Expertise?
2.	How do they evaluate money managers' performance? Global Investment Performance Standards("GIPS®")? Gross of fees? Net of fees?
3.	How often are money managers reviewed, interviewed, changed?
4.	Does the selection vary by asset class? Country? Strategy?
5.	How are money managers compensated? Timing of fees? Performance-based?
6.	How managers asked about their portfolio holdings? Risk management strategies? Operational controls?
7.	What databases (if any) are being used to track money managers on the basis of absolute return performance, peer performance and relative performance, vis-à-vis a specified benchmark?
8.	Are full attribution analysis reports being generated for external money managers?
9.	What percentage of funds under management are managed externally?
10.	Do external money managers use derivatives? If so, when, how and to what extent?
11.	Can they provide us with a typical Request for Proposal ("RFP")?

Table A1.2: AFP Questionnaire: Compensation

1.	How are AFP money managers compensated and does it vary by asset class and/or strategy?
2.	How are AFP money managers reviewed?
3.	Who reviews their performance?
4.	How many internal money managers exist?
5.	What is the recourse for a money manager not performing well? (What constitutes "sub-par" performance?)
6.	What is the training and experience background of the typical AFP money manager?

Table A1.3: AFP Questionnaire: Asset Allocation

1.	How does the AFP determine its strategic asset allocation mix?
2.	Before they create a strategic allocation mix, do they have a target rate of return and/or replacement ratio in mind? Does this vary by fund?
3.	Does it apply judgment, experience and/or model? Is it disciplined?
4.	What records are kept as to what constitutes each asset category (example: equity drill down into small cap, large cap, etc)? How often are these holdings updated internally?
5.	Do they invest in any closed-end funds? If so, which ones?
6.	What is their international exposure by country, currency, region? How often does it change?
7.	How do they investigate new international opportunities?
8.	What does the turnover compare for the domestic versus international portfolios?
9.	What is the thought process with regard to investing in a certain asset class and the allowable limits?
10.	Does the equity-fixed income mix differ for domestic versus international investments?
11.	Do they invest in commodities? If so, how? Mutual funds?
12.	How often does rebalancing occur and on what basis?

13.	How are performance numbers generated, by whom and how often?
14.	What kind of flexibility would they like with respect to asset allocation?
15.	Is there a chief investment officer in place?
16.	Are trades processed by non-traders?
17.	Is modern portfolio theory applied to any or all of the monies under management? Is there a “portfolio” distinction made between internally managed monies versus externally managed monies?
18.	Are investments made with any consideration to liquidity needs at specific points in time?
19.	Is there an interest in assuming greater credit risk?
20.	What investments are currently prohibited but worth investigating?
21.	How do they decide between passive and active investing?
22.	How do they choose investment benchmarks?
23.	How do they measure deviation? Tracking error? Relative Value at Risk? Other?

Table A1.4: AFP Questionnaire: Risk Management

1.	How are risk drivers identified and does the process differ by asset class and/or strategy?
2.	What are the risk management objectives for each fund?
3.	Is there a chief risk officer?
4.	How is interest rate risk identified, measured and managed?
5.	Are duration and convexity driven strategies employed?
6.	What is the average duration of each portfolio? Is it stable over time?
7.	How is equity risk identified, measured and managed?
8.	What is the beta of each equity portfolio? Is it stable over time?
9.	How do they identify, measure and manage credit risk?
10.	How do they identify, measure and manage liquidity risk?
11.	How do they identify, measure and manage volatility risk?
12.	How is foreign currency risk identified, measured and managed?
13.	Would they use foreign exchange and/or interest rate swaps and options, if available?
14.	How often does stress testing and scenario analysis take place?
15.	What risk management software is being used?
16.	What risk metrics are used (by asset class)?
17.	What kind of risk reports are created and published?
18.	Who uses them and how?
19.	Can we get a sample risk report?
20.	In the absence of a minimum guarantee level, how would they prevent rogue trading and/or operational meltdowns or use of excess leverage?

Table A1.5: Summary of Interviews with AFP Habitat

Functional Area	Discussion Points
Investing	<ol style="list-style-type: none"> 1. The AFP should still have to manage to a “shadow” liability. 2. Commercial incentives encourage AFPs to focus on wealthier clients. 3. There is a relationship between risk tolerance and net worth. Wealthier people don’t care as much about risk since they have more assets outside the Chilean pension system. They have a high tolerance for loss vis-à-vis Chilean pension investment fund choice. 4. Most of their fee income is derived from a handful of clients who are less risk-averse. 5. They do not like fixed fees. 6. Lifestyle funds may not be suitable unless an individual investor understands how to make a proper choice. Efforts to educate consumers must exist before relaxing controls. 7. The minimum guarantee return encourages everyone to act collectively. 8. Since risk is ignored, there is no difference (for clients and regulators both) in the way the funds are presented. For example, there is little opportunity to differentiate one Fund B from another Fund B. Fund D may in fact be riskier than Fund C. Investment performance numbers are of limited use. 9. Twice per year, specific holdings are published in the newspaper. However, anyone can ask for the holdings at any time. 10. They calculate absolute and relative Value at Risk (“VAR”). 11. There are only twelve CFA in Santiago. 12. They would like to create more aggressive funds and to use derivatives such as futures and options. 13. They invest in cash on a residual basis (i.e. when there is nothing else worthwhile). Their current cash position accounts for about twenty percent of the portfolio. 14. Buying structured notes could save them more than two percent in fees and permit them to synthesize desired asset class exposure. 15. They emphasize emerging market exposure (ex. Russia, Brazil). 16. They felt that there is no need to have a strategic asset allocation policy since they “confirm” proper investing by evaluating the rest of the market. 17. Limiting foreign investments may be a good thing. When the rest of the world was doing poorly because of technology investments, Chilean funds realized in excess of five percent per year. 18. Increasing international exposure may not improve anything as long as Fund A is compared to Fund A and so on. 19. Increasing the international investment limits would help when domestic capital markets are too small to absorb plan assets. For example, an AFP has one billion CLP but the Central Bank of Chile only issued 700 million CLP. 20. Their goal is to have customers stay with them for a long time. 21. If derivatives were permitted, they could equitize cash, buy an emerging market put for three or four percent or write covered calls. 22. Regulators need more training in investments. 23. The domestic equity portfolio composition is the same for all five funds. There is no way to differentiate. They prefer to see managers hired on the basis of alpha selection.

	<ol style="list-style-type: none"> 24. They look at returns, net of fees. 25. They use a “bottoms up” approach and select individual companies versus industries for domestic equity selection and domestic fixed income selection. 26. Most of their domestic fixed income investments are duration bets and driven by yield curve expectations. 27. For international equity and fixed income, they use a “top down” approach and choose from large cap, small cap, growth and/or value. Geographic classifications include the UK, Europe, Japan, Pacific, Latin America, Emerging Europe and Emerging Asia. 28. They don’t have much invested in international fixed income at the present. 29. They do have an asset allocation committee that meets once per month. The investment committee consists of three board members (out of six board members), the Chief Investment Officer and the Chief Executive Officer. 30. Once per week, the three asset class portfolio managers meet and decide on over-weighting versus under-weighting, relative to the benchmark. 31. Had there not been a motivation to invest to the benchmark, the AFP would not have forty percent of the portfolio in emerging markets. 32. Techniques include discounted cash flow analysis. 33. Their bias is on value and the use of cash models. 34. For domestic equities, turnover is limited because of market size. 35. They want more flexibility to invest in international fixed income without “using up” the equity limit. 36. They would like to have better currency limits. For example, when they invest in a Japanese fund that trades in U.S. dollars, the exposure is classified as U.S. dollar exposure. Similarly, with emerging market dual funds, the exposure is classified as U.S. dollar based. 37. They use foreign currency forwards and favor them over futures. 38. They would like to use swaps if possible.
Operations	<ol style="list-style-type: none"> 1. Before a transaction, limits are checked before pre-authorizing a trade. The trade then gets included in the portfolio tracking system. 2. Tracking administrative errors is done differently for local versus international trades. 3. If there is a mistake in the operations area, the responsible person ends up paying. 4. Mutual funds are pre-checked. Investments other than mutual funds are checked after the fact. 5. There is a tape recording of domestic trades. 6. Several broker quotes, sourced from Bloomberg, are used to obtain prices for exchange-trade funds (“ETF”). 7. Their back-up system consists of a five-year archive, as required. Apparently, the SAFP would like to extend the back-up to ten years. 8. There seems to be a loophole inasmuch as the anyone working in the investment area could trade through a foreign account. 9. In Chile, it is easy to check someone’s background due to the national numbering system. 10. Mutual funds are purchased from a bank directly. 11. Tracking error is very small (relative to competition). 12. Shareholders in Chile have a presumptive first right to buy stock.

	<p>13. There are three IT/operations persons. Their goal is to fulfill the company mandate to build internal systems.</p> <p>14. Investment limits are thought to be overly complicated. For example, there are global limits, local limits, liquidity limits, percent of assets under management, trading limits, etc.</p>
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Table A1.6: Summary of Interviews with AFP Bansander

Functional Area	Discussion Points
Executive Management and Legal	<ol style="list-style-type: none"> 1. The rating for their bank owner is rated AA+. 2. Bansander AFP financials are not consolidated with the parent company's financials.
Investing	<ol style="list-style-type: none"> 1. There are currently twelve people who work in the investment area. 2. Their process starts with asset allocation, followed by regional preferences (i.e. emerging markets versus developed markets versus Chile) and then ends with an assessment of company preferences. 3. There are ten people who sit on the macroeconomic committee which decides on asset allocations. Six of these people work on "variable" investment issues. 4. Macroeconomic factors such as growth, inflation, politics and monetary policy are part of the analysis. 5. IBES price-earnings data is used as a selection gauge. If the P/E multiple for a company exceeds the long-run average of 15.0 times, the company's stock is given a neutral rating of zero. 6. Other metrics are used in conjunction with the P/E multiple to decide if fixed income better than equity. Leading earnings are used for P/E multiple analysis. 7. The J.P. Morgan "sentiment" indicator is another metric. 8. The sentiment indicator is back tested. 9. Since the AFP cannot take a short position, the investment team would like the flexibility to buy a put. 10. An equity scoring model forms the basis of asset allocation decisions and is similar to the J.P. Morgan Fleming and Black-Litterman models, respectively. 11. All fixed income is domestic now because of SAFP limits. (This was the same comment made by AFP Habitat.) 12. There is a macroeconomic committee inside the asset management group that covers pension funds and mutual funds. 13. They don't do any kind of natural hedging. 14. Interest rate forwards exist but in limited amounts. 15. They would like to use credit swaps if they existed as a way to create a bond spread exposure that captures BBB-rated debt performance versus higher quality rated bonds. 16. The duration of Fund A is negligible. 17. The duration of Fund A is less than the duration of Fund E. 18. The duration for Chilean domestic bonds is set to zero. 19. Local and government bonds pay interest on a semi-annual basis. 20. Mortgage-backed bonds pay interest on a quarterly basis. 21. The type of bond determines related investment risk issues such as derivative.

	<p>22. They feel constrained by the small size of the local market, making it difficult (perhaps impossible) to optimize in a mean-variance sense.</p> <p>23. They use beta as part of the equity selection process.</p> <p>24. The investment team prefers domestic CDs in lieu of U.S. treasuries in order to avoid inflation and currency risk.</p> <p>25. They look at yield curve movements. Since 2000, the negative yield curve switched to positive and has now flattened.</p> <p>26. Local Chilean bonds are typically callable.</p> <p>27. Regarding equity, the strategy is to be active with respect to regional allocation while taking a passive stance in selecting funds.</p> <p>28. They assume that a fixed income manager will hedge currency risks.</p> <p>29. In an ideal world, the investment team would like to invest in international equity beyond the current limit of thirty percent. They would like to be able to consider the use of derivatives.</p> <p>30. They encounter problems now when their model tells them to invest different amounts in international equity and regions than prevailing benchmark limits allow.</p> <p>31. Percent holdings are compared to the percent holdings for other AFPs. This “sistema” information is published once per month with a ten-day lag.</p> <p>32. They also do some credit analysis themselves as a check of the CCR rating analysis.</p> <p>33. Limits differ by fund.</p> <p>34. AAA-rated bonds are considered liquid.</p> <p>35. Many of the corporate bonds do not have a rating of AAA.</p> <p>36. Liquidity is not a concern.</p> <p>37. They measure liquidity on the basis of trading volume. For example, if they own ten percent of a Chilean company’s stock, it might take twenty days to unwind the position.)</p> <p>38. Interviewees said they do not feel comfortable using the rating results from private sources and rely on CCR for guidance.</p> <p>39. Their internal analysts visit Chilean companies often.</p> <p>40. Optimizing allocation decisions for international equity is done on the basis of a designated currency. For example, an investment in a Japanese mutual fund is assumed to carry a yen exchange risk.</p> <p>41. Tracking error is usually measured on a daily basis for the most recent one-year period.</p> <p>42. They use MATLAB.</p> <p>43. There are over 23,000 financial instruments in their portfolio.</p> <p>44. They do consider the coefficient of variation though it is not shown in their reports.</p> <p>45. Tracking error probabilities assume the gamma distribution.</p> <p>46. They have a budget for tracking error.</p> <p>47. They create, and examine, a variance-covariance matrix that depends on weekly returns and covers a rolling two-year period.</p> <p>48. They are starting to think about stress testing. (Why haven’t they used stress testing before?)</p> <p>49. They would like to hedge as much as possible on the international side.</p>
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	<p>50. Investment managers are compensated on the basis of performance as measured on the basis of one-year and three-year returns. Ranking is given more weight than average fund return or consistency.</p>
<p>Operations</p>	<ol style="list-style-type: none"> 1. SAFF does not look at internal controls. 2. Santander hires technical advisors such as Sonda to perform technical audits. 3. Their auditor, Deloitte, implemented post-Enron audits that are broader and more integrated than before. 4. Interviewees said that they want to have good controls as their reputation is important. 5. Legal, normative (regulatory) and conflict of interest restrictions are automated. 6. Technology is approximately six percent of AFP total expenses. 7. If an investor wants to switch to a different AFP, they must receive funds within two months (versus the former four months allowed to transfer money). 8. There is a negligible cost for someone who chooses a different AFP and needs to switch. 9. Of the 700 people who work for Bansander AFP, traders are provided with an internal policy that includes legal, normative (regulatory) and conflict of interest restrictions. 10. It takes nine months of generated commission income before a new employee can start to contribute to AFP profitability. Set-up costs, commission payouts, paperwork and marketing costs are part of the sunk costs. 11. Bansander AFP has two controllers. One person handles commercial activities. The second person handles operational issues. 12. They have a system to address controls with respect to limits as well as embedded risk controls. 13. The goal is to marry together compliance and process improvement. 14. They rely on ISO norms and said that the size of their business does not warrant the use of Six Sigma methodology. 15. Their software is developed internally. 16. The Operations Area is set up to handle risk issues for investments and commercial services, respectively. 17. Different risk items include collections, transfers from one AFP to another and savings withdrawals. 18. Each transaction flow has its own controls. 19. Loss examples include incorrect commissions, missing statements and/or lags in properly crediting funds to an account. 20. Bansander AFP operations staff said that they are the only AFP to have completed and passed the ISO process. 21. The use of a traffic light system simplifies things. Red indicates poor performance and means that the offending person must go to the CEO to explain what has happened, why and how the problem will be fixed.

Table A1.7: Summary of Interviews with AFP Santa Maria

Functional Area	Discussion Points
Executive Management and Legal	<ol style="list-style-type: none"> 1. Interviewees said that they will eventually have to comply with Sarbanes-Oxley. 2. The Board meets monthly and looks at the investment benchmark. 3. Most of the seven-person AFP Board are members of the insurance company Board as well and must sign that they are not involved in daily operations. 4. They have an operational risk management person as well as an investment risk management person. 5. Management acknowledges a continued focus on the benchmark even if the limits are eventually relaxed by the SAFP. 6. They acknowledge that the “cost” of relaxed SAFP investment limits is more time and money spent on educating their affiliates about risk. 7. Management would like to have instantaneous (or at least daily) details about investment holdings for every fund and every AFP. 8. Their target (ideal) clients are high income earners, loyal and willing to forgive some underperformance. 9. They try to differentiate via financial planning advice. 10. Competitive barriers exist in the form of high regulatory costs. Management favors an incentive for niche players such as offering a plan for bakers or teachers, etc. 11. ING has enjoyed success in Peru by targeting high income clients perhaps because of more stable market conditions and the absence of political sensitivities about the pension system.
Investing	<ol style="list-style-type: none"> 1. There are fourteen people who work in the investment area plus five people who work in the market and credit risk management section. 2. There are two types of controls. One has to do with exposure to six asset classes. The second type has to do with risk measures such as relative Value-at-Risk, duration and so on. 3. They use internal software. 4. Their research pulls information from around the world. 5. A scoring system is used for international investments. 6. An investment policy is formulated and proposed by the Chief Investment Officer and approved by the Board. There is an Investment Committee. 7. There are three asset class specialties: domestic fixed income and currency, international (variable income) and domestic equity. 8. The most serious investment constraint is the international investment limit. Interviewees said they would like to invest as much as eighty percent of AFP assets abroad. 9. One interviewee said that all investment limits should be relaxed so that AFPs can differentiate themselves. 10. A risk management report is issued monthly. 11. There are plenty of manuals. 12. The risk managers report to the CEO of the holding company. 13. Compensation is based on meeting management objectives for the group. 14. There is a matrix of different responsibilities within Chile and also Amsterdam.

	<ol style="list-style-type: none"> 15. The AFP pays for Human Resources, Research and Services (internal to ING). 16. The process is macro-oriented. 17. To stand out in a market characterized by herding, the Chief Investment Officer advocates a “bottoms up” approach, focusing on countries and then picking funds after assessing tracking error and volatility. 18. Once a fund has been selected, it is labeled “bad” or “good”. 19. It is thought that herding led to other AFPs copying Santa Maria’s strategy of investing in Russia and Korea. 20. A sensitivity model is used to estimate changes in tracking error in the event of a change in country allocation. 21. The Chief Investment Officer thinks that most people do not realize the full extent of their investment risk. For example, should an increasing exposure to emerging market risk be considered excessive? This could mean that smaller funds are taking a disproportionately higher amount of risk than larger AFPs. 22. The Chief Investment Officer would like to see aggregate AFP holdings provided in lieu of detailed positions. 23. They feel that it is difficult to find people with risk management concept knowledge, stating that “there are likely twenty people in Chile who really know Value-at-Risk concepts). 24. ING encourages employees to pursue the CFA (Chartered Financial Analyst) charter. In their Peru office, an investment professional must either have three or more years of experience or be studying for the CFA Level I exam. 25. The Chief Investment Officer said that index funds are favored in the U.S. based on the notion of efficient markets. In contrast, emerging market investors are more active. 26. Their fees average about ninety basis points. 27. They analyze the expense ratio in the context of fund size. 28. When talking to external fund managers, they query about a fund’s holdings. They don’t want their money to represent more than ten percent of a fund’s assets. 29. Fund A averages about sixty funds across AFPs. AFP Santa Maria pays about forty basis points and invests in about 120 funds. 30. They do not ask fund managers about their hedging policies. 31. The currency issue is a challenge. Should a Japanese fund which is listed in the US count as a USD exposure or a Japanese yen exposure? 32. Their internal hedging policies are reviewed every week with respect to changing oil and other commodity prices. 33. The Chief Investment Officer described the Chilean model as a combination approach that is part hedge fund (with an absolute return focus) and part index model. 34. The investment team would like to expand currency exposure beyond Japanese yen, USD and Chilean peso. 35. They favor the idea of a futures contract on IBSA. 36. They have no international fixed income investments currently because of limit constraints. 37. Five team members track credit risk and market risk. 38. Two people focus on AFP benchmarks and performance attribution
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	<p>while another person looks at credit risk for the entire group.</p> <ol style="list-style-type: none"> 39. Risk metrics include monthly credit risk and duration limits. 40. They are looking at MATLAB and KMV analytics. However, KMV requires stock price data inputs and there are no readily available prices for Chilean municipal project investments. 41. They did not buy any of the RiskMetric products because there is no local market data to use as inputs. 42. The amount of public information about local bonds is limited to duration, average interest rate and average peso amounts invested. 43. They would like more data from the SAFP such as the true shape of the yield curve. (We were told that the SAFP provides a step or laddered yield curve.) 44. Seventy-one vectors are employed to measure relative Value-at-Risk and absolute Value-at-Risk. 45. They employ sixteen vectors to evaluate international equity, ten vectors to evaluate domestic equity and ten vectors to assess bank mortgages. 46. Value-at-Risk numbers go to the Chief Investment Officer but not to the board and are checked against existing limits. 47. The relative Value-at-Risk limits are based on historical experience. 48. The Chief Investment Officer would like the SAFP to more accurately monitor limit violations. (The SAFP currently allows an AFP two to three years to correct a price effect.) 49. Fraud has not been a problem. 50. The Chief Investment Officer thinks the pension investment focus should emphasize long-term performance. 51. There is a December effect with respect to how AFPs compensate investment professionals because of the focus on end-of-year performance. AFP Santa Maria is trying to move away from this yearend focus. 52. Compensation for risk management professionals consists of a bonus, thirty percent of which is a function of staying within investment management risk limits. 53. The risk manager does not report to the CEO and sends the report to investment professionals. 54. A traffic light system (green, yellow, red) is the basis of necessary corrections. 55. In the event of a problem, the risk manager alerts the audit team. 56. Three people handle domestic equity research with reliance on external services such as Fitch and research from various brokers. 57. Their holdings average \$100 million in domestic equity and they would like to augment their exposures.
<p>Operations</p>	<ol style="list-style-type: none"> 1. Back office staff services both the AFP and the insurance company. 2. The main challenge is a change to an electronic point system that measures operational risk. 3. Risk studies are underway. 4. Policy and procedure manuals were updated last year after incurring a few fines. 5. The investment operations person reports to the operations team. 6. There are three areas that include trading, cash distribution and accounting.

	<ol style="list-style-type: none"> 7. Atlanta is the risk management headquarters for ING Americas. 8. Contracts with information technology vendors allow ING to make onsite audit visits. 9. Last year, they worked on a G1 project, similar to an ISO initiative. 10. The AFP Operational Risk Committee is chaired by the CEO who reports to the corporate operational risk manager for all of ING. 11. Corporate operational risk management at the headquarters level involves the CEO, COO, legal officer and others. 12. The operational person is not an employee of the AFP but rather an employee of the holding company. 13. ING headquarters employs Basel 2 as the basis of their operational risk policies and procedures. 14. Basel 2 requires the existence of a system to measure operational risk. They use a scorecard system. 15. There is no chief risk officer at the top for all risks. 16. Peru is the only Latin American unit with a Chief Risk Officer. 17. Operational risk methodologies include (a) a self-evaluation and risk control audit (b) KRI (key risk indicator) reporting (c) audit findings action tracking and (d) report of incidents. 18. ING has 650 auditors throughout the world and they utilize COSO principles. 19. There are fourteen internal auditors who meet weekly. 20. Special projects include (a) the creation of a business continuity plan in the event of disasters such as the earthquake that occurred in September 2001 when the AFP was owned by Aetna (b) global wide area network creation pursuant to ISO 17799 and (c) development of guidelines for Sarbanes-Oxley compliance for 2007 implementation. 21. Since transfer of ownership from Aetna to IN, AFP insiders say there are more controls and that their internal policies and procedures put them ahead of the SAFF. 22. Many of the voluntary internal controls are costly. 23. Ernst & Young is the external auditor. 24. PriceWaterhouseCoopers is the auditor for SOX compliance purposes.
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Table A1.8: Summary of Interviews with AFP Plan Vital

Functional Area	Discussion Points
Investing	<ol style="list-style-type: none"> 1. They follow tracking error. Any deviation from the benchmark is proportionately worse for them accordingly. 2. They report on a monthly basis. 3. Reports show purchases, sales, tracking error and deviation from self-imposed limits. 4. The Investment Committee includes the Chief Investment Officer and the CEO. Their job is to write the investment policy and internal policies, each of which must be approved by the Board of Directors. 5. They rely on external analysts to help them research international fund managers. 6. A scoring system is used for international fund selection and is based on performance. 7. There are five people in investments. 8. Currency exposure strategies are determined after meeting on a

	<p>monthly basis with economists.</p> <ol style="list-style-type: none"> 9. Currency hedging decisions used by other AFPs are of reviewed. 10. They would like to invest more abroad. 11. A preferred international investing limit would exceed fifty percent. 12. They would like to use derivatives such as options and swaps. 13. They describe their clients as sophisticated but with lower incomes. 14. Their estimate that clients leave them after about a year. 15. The CEO says that stable market share makes it hard to grow. 16. The investment management team members have been compensated by wages in the past but are likely to earn performance-based bonuses going forward. 17. They are currently speaking to Standard & Poor’s about standardizing the investment process. 18. They current invest eighty percent of funds in equities with a majority of the money being allocated to emerging markets.
<p>Operations</p>	<ol style="list-style-type: none"> 1. There is no internal control system other than their use of the Sonda system. 2. They don’t want to “work for the SAFP sixty percent of the time.” They would like “smarter” regulation. 3. If they needed to have more controls, they would ask Sonda to assist with implementation. 4. They want their clients to know more about risks.

ANNEX 2

Relative VaR and Minimum Return Requirements

In the cases of funds A and B underperforming by an average of 4% in three years (or one half of the system's return) implies falling below the minimum. Assume an average return of 8% per year for the system. The minimum average return is thus 4%. In three years the cumulative difference must be -13.5% in order to fall below the minimum. If ex ante expected returns are the same, and we are planning the following three (two or one) years, the manager should ask herself for the maximum forward looking tracking error which implies a probability of underperforming by x%. Assuming Normal iid return differences, the results are:

**Table A2.1:
Minimum Return Requirement
Implicit Allowable Tracking Errors**

Prob. of underperforming (cumulative return difference less than -13.5%):	Maximum avg. Annual TE		
α	Next 3 Years	Next 2 Years	Next 1 Year
5%	0.14216	0.11607	0.08207
2.5%	0.11930	0.09741	0.06888
1%	0.10051	0.08207	0.05803
0.5%	0.09078	0.07412	0.05241
$TE = -0.135(z_\alpha n^{0.5})^{-1}$			

The point is that managers themselves, without any additional restrictions, will impose an upper limit to tracking error, given their risk tolerance and abilities. Notice also that if a manager has already underperformed the system by, say, 3%, then the tolerance level for the remaining two years will be reduced. This same example becomes:

**Table A2.2:
Minimum Return Requirement
Implicit Allowable Tracking Errors
(After 1 year of 3% underperformance)**

Prob. of underperforming (cumulative return difference less than -10.5%):	Maximum avg. Annual TE		
α	Next 3 Years	Next 2 Years	Next 1 Year
5%	-	0.09028	0.06384
2.5%	-	0.07576	0.05357
1%	-	0.06383	0.04514
0.5%	-	0.05765	0.04076
$TE = -0.105(z_\alpha n^{0.5})^{-1}$			

ANNEX 3

TableA3.1: Summary of proposed aggregate limit structure

	A	B	C	D	E	Items in the Law merged here
1. Government plus high grade (equal or better than local sovereign) currency hedged foreign bond portfolios	No limit					1 and partially 11
2. Local investment grade bank fixed income and deposits	60%					2, 3, 4, 15
3. Local investment grade non-bank fixed income plus international investment grade currency hedged bond portfolios	60%					5, 10, 16 and partially 11
4. Local variable income	70%	50%	30%	15%	5%	6, 7, 8, 9, 16, 17, 18, 19. Include here also non-investment grade bonds
5. Investment abroad	70%	50%	30%	15%	5%	11, Include here also non-investment grade bonds, convertibles, structured notes
6. Sub-limit for “emerging markets” included in 5 as a fraction of it	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	We propose that this limit be periodically revised by the Technical Advisory Board, but the concept should be in the law.
7. 4+5	100%	75%	50%	25%	7.5%	
8. Currency hedging	No minimum or maximum required, subject to overall investment limits					20, 21
9. Other derivatives	Assimilate to the replicating portfolio in the underlying asset categories'					20, 21
10. Fund differentiation	Limits that seek fund differentiation should be determined by each AFP in the declared investment policies; subject to supervision					
11. RBS / Investment policy approach to: maximum balances in checking/overnight accounts; security lending, etc.	Limits should be determined by each AFP in the declared investment policies; subject to supervision					11b, 11d, 11e

Table A3.2: Current Global limits by instrument type

	A	B	C	D	E	Comments
1. Government bonds	40%	40%	50%	70%	80%	Eliminate lower and upper limits
2. Domestic deposits	40%	40%	50%	70%	80%	Merge into aggregate limit "Local Bank Fixed Income and Deposits"
3. Bank bonds	40%	40%	50%	70%	80%	Merge into aggregate limit "Local Bank Fixed Income and Deposits"
4. Mortgage-bonds	40%	40%	50%	60%	70%	Merge into aggregate limit "Local Bank Fixed Income and Deposits"
5. Corporate bonds of public and private firms	30%	30%	40%	50%	60%	Merge into aggregate limit "Local Non-Bank Fixed Income"
6. Convertible corporate bonds of public and private firms	30%	30%	10%	5%	---	Merge into aggregate limit "Local Variable Income"
7. Corporate shares	60%	50%	30%	15%	---	Merge into aggregate limit "Local Variable Income"
8. Real-estate corporate shares	60%	50%	30%	15%	---	Merge into aggregate limit "Local Variable Income"
9. Investment fund shares , mutual funds shares	40%	30%	20%	10%	---	Merge into aggregate limit "Variable Income"
10. Commercial paper	10%	10%	10%	20%	30%	Merge into aggregate limit "Local Non-Bank Fixed Income"
11. Foreign securities	Allowable maximum range: 30% Fund Value (A + B+ C + D + E)					
11a. Bonds convertible in equity and equity issued by foreign banks and firms.	Global foreign limit	Global foreign limit	10%	5%	---	Included in global foreign limit.
11b. Bank checking accounts abroad (30 day moving average)	0,20%	0,20%	0,20%	0,20%	0,20%	Eliminated; use RBS approach
11c. Structured notes by foreign issuers.	4%	3%	2%	2%	---	Included in global foreign limit.
11d. Short-term deposits (overnight and time deposits).	2%	2%	2%	2%	2%	Eliminated; use RBS approach
11e. Transactions and contracts involving lending of securities issued by foreign issuers, as a fraction of lent securities	1/3 Foreign Inv. A	1/3 Foreign Inv. B	1/3 Foreign Inv. C	1/3 Foreign Inv. D	1/3 Foreign Inv. E	Eliminated; use RBS approach
12 Other publicly traded securities	For each type of instrument mentioned in this number, the maximum investment limits for funds A,B,C,D and E may be no less than one percent and no more than five percent of the value of the respective Fund. The Central Bank of Chile is responsible for deciding these.					
12.a Investment funds of foreign capital shares	1%	1%	1%	1%	---	Included in global foreign limit.

	A	B	C	D	E	Comments
12.b Other commercial papers	5%	5%	5%	5%	5%	Eliminate it.
13. Unhedged foreign currency position	40%	25%	20%	15%	10%	Eliminate it.
14. Loans of financial securities	15%	10%	5%	5%	5%	Eliminated; use RBS approach
15. Deposits, bonds and other securities	40%	40%	50%	70%	80%	Eliminate them; already considered above
16. Bonds of public and private companies+ convertible bonds	30%	30%	40%	50%	---	
17. Corporate shares +real estate corporate shares	60%	50%	30%	15%	---	
18. Other local mutual fund shares	5%	5%	5%	5%	---	Include in variable income, above
19 Promised investment fund contributions	2%	2%	2%	2%	---	Include in variable income, above
20 Derivatives	Investment for hedging purposes					
21 Investment for hedging purposes	Additional limits in "circular 1216"					

Table A3.3-A: CURRENT STRUCTURE OF LIMITS BY ISSUER

Instruments issued by banks

	By fund	Sum of funds
Debt instruments	Checking account deposits + debt instruments issued or guaranteed < min(Unique Multiple for Banks x Bank Net Worth; 10% x Fund Value x Risk Factor)	Unique Multiple for Banks x Bank Net Worth
Equity	2.5% of a single series; 2.5% of the weighted average of all series; 2.5% fund value x Weighted Avg. Liquidity Factor x Concentration Factor	2.5% of a single series; 2.5% of the weighted average of all series; 20% of a new issue (flow)
Equity not approved by the CCR	2.5% of a single series; 2.5% of the weighted average of all series; 0.15% fund value	2.5% of a single series; 2.5% of the weighted average of all series; 20% of a new issue (flow)
All instruments by the same issuer	7% of fund value	
Net hedging positions	4% fund value	

Table A3.3-B: CURRENT STRUCTURE OF LIMITS BY ISSUER

Instruments issued by open local corporations

	By fund	Sum of funds
Debt instruments by Individual local firms	All kinds of debt instruments < min (Unique Multiple for Open Corporations x Accounting value of assets ; 7% of fund value x Risk factor)	All kinds of debt instruments < min (Unique Multiple for Open Corporations x Accounting value of assets ; 0,35 x Total number of units of a single series)
Debt instruments by Leasing companies	Unique Multiple for Leasing Companies x Accounting equity value	Unique Multiple for Open Corporations x Accounting equity value
Debt instruments of Securitizing agencies	Limits applied to separate pools of securitized assets.	
Bonds, convertible bonds, commercial paper issued by a parent company or its subsidiaries or guaranteed by them	Unique Multiple for Open Corporations x Net Consolidated Accounting Value of Assets	Unique Multiple for Open Corporations x Net Consolidated Accounting Value of Assets
Debt instruments of Issuers with less than 3 years of history	3% Fund Value x Risk Factor	0,35 x Total number of units of a single series.
Shares approved by the CCR	7% of a single series; 7% of the weighted average	7% of a single series; 7% of the weighted average

	of all outstanding series; 5% fund value x Liquidity Factor x Concentration Factor	of all outstanding series; 20% of new issues
Shares in real estate corporations approved by the CCR	20% of a single series; 20% of the weighted average of all outstanding series; 5% fund value x Concentration Factor	20% of a single series; 20% of the weighted average of all outstanding series; 20% of new issues
Local shares not approved by the CCR	7% of a single series; 7% of the weighted average of all outstanding series; 0.15% fund value x Liquidity Factor x Concentration Factor	7% of a single series; 7% of the weighted average of all outstanding series; 20% of new issues
Instruments of the same issuing firm (Stocks, bonds, commercial paper, convertible bonds)	7% of fund value	
Instruments of the same Conglomerate of firms (Stocks, bonds, commercial paper, convertible bonds)	15% of fund	

Table A3.3-C: CURRENT STRUCTURE OF LIMITS BY ISSUER
Local investment funds and mutual funds

	By fund	Sum of funds
Investment funds shares of law N° 18.815, approved by the CCR	Actual + Promised Share purchases < 35% x (Total Actual+Promised) Actual+Promised amount invested < 5% of fund value x diversification factor Promised Share purchases < 0.5% of fund value	Actual + Promised Share purchases < 35% x (Total Actual+Promised) Total subscription of new shares < 35% shares issued
Investment funds shares of law N° 18.815, not required of approved by the CCR	Shares held < 35% outstanding 0.15% x Fund Value	Shares held < 35% outstanding Total subscription of new shares < 35% shares issued
Mutual fund shares of D.L. N° 1.328 of 1976 approved by the CCR	Shares held < 35% outstanding 1% x Fund Value	Shares held < 35% outstanding
Mutual fund shares of D.L. N° 1.328 of 1976 not requiring approval by the CCR	Shares held < 35% outstanding	Shares held < 35% outstanding

	By fund	Sum of funds
	0.15% x Fund Value	

Table A3.3-D: CURRENT STRUCTURE OF LIMITS BY ISSUER
Investment abroad

	By fund	Sum of funds
Equity or negotiable certificates representative of equity	0.5% x Fund Value	
Debt or negotiable certificates representative of debt	5% x Fund Value x risk factor	
Shares in foreign mutual or investment funds	1% x Fund Value	
Equity of foreign issuers traded in a Chilean formal secondary market that do not require approval by the CCR	7% of weighted average of all outstanding share series 0.15% of fund value	7% of weighted average of all outstanding share series 7% of any individual series
Shares of foreign investment funds traded in local formal secondary markets that do not require approval by the CCR	35% of outstanding shares 0.15% of fund value	35% of outstanding shares
Foreign mutual funds registered in the registry of foreign securities in the SVS that do not require approval of the CCR	35% of outstanding shares 0.15% of fund value	35% of outstanding shares

Table A3.4: PROPOSED (INITIAL) LIMIT STRUCTURE BY ISSUER³³

	Diversification - Fraction of each fund	Control (Applies jointly to all funds of the same AFP)¹	Liquidity and pricing-related limits (Applies jointly to all funds of the same AFP)¹
Illiquid securities²	20%		
Corporate governance categories for local equity	I: 100%; II: 50%; III: 25% of local variable income		
Local bank shares	2.5%	3.5% of voting rights	No sub limit on fraction of new issues
All instruments by the same bank (Include here the net current market value of the forward contracts and other derivatives plus a <i>value at risk</i> calculation, such that with a certain probability the overall bank limit is not surpassed within a period of one to three months)	5%		50% limit on new bond issues; 60% limit on outstanding series ³
Debt instruments by individual local firms	5%		50% limit on new bond issues; 60% limit on outstanding series ³
Debt instruments by leasing companies	5%		50% limit on new bond issues; 60% limit on outstanding series ³
Debt instruments of Securitizing agencies	5% applied to each separate pool of securitized assets		50% limit on new bond issues; 60% limit on outstanding series ³
Corporate shares and shares of real estate corporations	2.5%	7% and 49% of voting rights	No sub limit on fraction of new issues ³
Instruments of the same issuing firm (Stocks, bonds, commercial paper, convertible bonds)	5%		
Instruments of the same Conglomerate of firms (Stocks, bonds, commercial paper, convertible bonds)	7%		
Investment funds shares of law N° 18.815	Actual + Promised < 2.5%	No limit ⁴	No limit ⁴
Mutual fund shares of D.L. N° 1.328 of 1976	2.5%	35% of outstanding	

³³ Should be reviewed at least annually by and advisory board.

		shares	
Equity or negotiable certificates representative of foreign equity	1%	7% voting rights	No limit ³
Debt or negotiable certificates representative of foreign debt	5%		50% limit on new bond issues; 60% limit on outstanding series ³
Shares in foreign mutual or investment funds	5% (x Factor reflecting fund specificity)	Strict limit ⁵	Strict limit
Equity of foreign issuers traded in a Chilean formal secondary market	1%	7% voting rights	No limit ³
Shares of foreign investment funds traded in local formal secondary markets	2.5%	No limit ⁴	No limit ³
Foreign mutual funds registered in the registry of foreign securities in the SVS	2.5%	35% of outstanding shares	No limit ³
Related party investments⁶			
Required statements in AFP investment policies	<p>AFP's should declare the way in which potential conflicts of interest between funds are handled.</p> <p>Require each AFPs to explicitly and periodically give an opinion regarding the fair value of illiquid securities in each fund</p> <p>AFP's should be able to demonstrate that the price paid (or received) is fair</p> <p>AFP's should declare that the fund's investment policy will be consistent with the overall restrictions faced by pension funds</p> <p>This is part of the criteria currently considered by the CCR in order to approve a foreign investment fund</p> <p>Require explicit statements in AFP investment policies in this regard. For example, investment policies should establish that a given instrument will be purchased (sold) only if the transaction is performed under equal or better conditions than the other existing alternatives.</p>		

