Office of the Superintendent of Financial Institutions Canada

Bureau du surintendant des institutions financières Canada

Roadmap for Strengthening Solvency Control in the Chilean Insurance Industry

OSFI BSIF

International Advisory Group

FIRST initiative

Strengthening Financial Sectors

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APPENDIX

I. INTRODUCTION

In August 2005, the International Advisory Group (IAG) of the Office of the Superintendent of Financial Institutions, Canada (OSFI) was contracted by FIRST on a cost recovery basis to undertake Phase I of project: *"Roadmap for Strengthening Solvency Control in the Chilean Insurance Industry"*. The project was proposed by the World Bank on behalf of the Chilean authorities to follow-up on FSAP recommendations. The project's principal objectives are:

- Development and implementation of risk-based supervisory approach to be applied to both life and non-life insurance companies.
- Development of an ALM approach to be applied to life insurance companies in order to determine an adequate level of regulatory capital.

The main deliverables from Phase I of the project, which is the focus of this report, are:

- An agreed model for a risk-based supervisory framework for the Chilean insurance industry.
- An action plan or roadmap for the overall design and implementation of a programme of risk-based supervision that would meet the approval of Superintendencia de Valores y Seguros (SVS) management.
- An agreed model for risk-based capital test for the assessment of the solvency of life insurance companies.
- An agreed supervisory approach for ALM review at life insurance companies.

Project activities pursuant to Phase I deliverables were undertaken between late September 2005 and March 2006. The activities included a mix of desk review/research work in Canada and several visits to Santiago to hold discussions with the staff of the SVS and representatives from the insurance industry. Our draft report was presented and discussed with the management of SVS between April 10 and 12, 2006. The report therefore summarizes our conclusions and recommendations arising from our review and discussions.

The rest of the report is organized as follows: Section II summarizes the scope and nature of our review and main recommendations, Section III presents in chronological order the changes and initiatives required to ensure an orderly transition to risk-based supervision, Section IV presents A Chilean Risk-Based Capital Standard for life insurance companies, Section V discusses Asset Liability Management (ALM) for life insurance companies, Section VI suggests key issues for consideration in implementing a Risk-Based Capital Standard in Chile and Section VII concludes with a brief overview of the Terms of Reference (TOR) for the consultant undertaking Phase II of the project.

II. SCOPE AND NATURE OF REVIEW AND MAIN RECOMMENDATIONS

The SVS had some challenges understanding what OSFI's risk based supervision model is all about. Given the wide ranging implications of risk based supervision it is understandable that supervisors new to the model would need time and hands on experience to fully understand the implications of adopting risk based supervision. Officials at the SVS believed that risk based supervision is primarily using a risk based analysis tool to assess the safety and soundness of insurers. In OSFI's model this tool is commonly referred to as the "risk matrix". Consequently SVS officials were of the opinion that the project should focus on furthering their knowledge of the use of the "risk matrix" analysis tool. There is no doubt that having a standard tool/methodology to assess insurers' safety and soundness is critical to all supervisors.

OSFI's risk based supervision model is in fact much more than simply an analysis tool. Analysis of the supervisory information gathered to come up with a risk profile is very important but how the information is gathered and how the entire supervision process is managed is equally important. There are a number of key principles that form the basis of the supervision model OSFI uses. The most important key principles are that, where appropriate, OSFI relies on the work of the institution's internal management and control functions, on external auditors and actuaries. In Canada, for most insurers, OSFI is able to rely on risk management control functions, auditors and actuaries, thereby reducing its supervisory activities. In addition, further to its supervisory activities, OSFI communicates findings and recommendations to institutions to cause them to strengthen their risk management practices. Finally, with regards to certain key principles, which underpins its supervision model, OSFI calibrates the level and frequency of supervisory activities based on the risk profile of the institution.

The SVS has not been relying on the internal management control functions at the insurers nor the external auditors and actuaries. In addition, due to the prescriptive nature of its legislation it is difficult for the SVS to enforce "risk based management strengthening recommendations" that might fall out of risk based supervision. In the short term because of this difficulty in relying on the work of others and enforcing certain recommendations the SVS will not be able to reap all the benefits of risk based supervision.

Currently SVS officials have a much better understanding of OSFI's risk based supervisory model and the changes required to move from a rules based approach of supervision to a risk based approach. The implementation team recognizes the changes required and that these changes will have to be phased in over a period of time. In addition, the team will be responsible for much of the work that will have to be done since future advisors and or consultants are not the ones that should actually do the detailed work but provide advice and facilitate the transition. During Phase II the consultant will work closely with members of the SVS to facilitate the implementation and transition to risk based supervision.

The lack of certain pre-conditions does not mean that the SVS cannot adopt an "OSFI like risk based supervision model". The SVS will have to manage a longer phase-in period as it moves from its rules based approach to a risk based approach. To be successful, the transition will require some critical changes and initiatives having to be made in a timely fashion.

The staff at the SVS has been kept apprised of the decision to adopt a risk based supervision model and is very anxious to adopt the new methodology going forward. The enthusiasm is abundantly demonstrated during meetings we have held.

Senior management at the SVS is very committed to the transition to a risk based supervision model and confirmed they are willing to make the critical changes required and take the initiatives necessary to have a successful transition.

In addition, the meetings we have held with the industry, individual insurers, external auditors and actuaries have demonstrated that there is general support among the industry for the adoption of risk based supervision model. The larger foreign owned insurers and domestic insurers are the most supportive. The introduction of risk based supervision with its emphasis on good risk management control functions and corporate governance will be a challenge for the smaller closely held domestic insurers. These insurers will have to over time dedicate resources to improving their internal control mechanisms and appoint independent board members. This strengthening of internal control mechanism will enhance policyholder protection.
The SVS will have to implement the changes and initiatives listed below over a pre-determined phase in period in cooperation with the industry, external auditors and actuaries to ensure an orderly transition from a rules based approach to a risk based approach of supervision. It goes without saying that the government will have to be supportive of the transition. Since the Chilean government guarantees all of the annuities issued by the life insurers the government has a vested interest to ensure that its regulatory and supervisory agency is using the most up to date supervisory methodologies.

The changes and initiatives required to move to a risk based supervisory methodology can be grouped has follows:

A. **ORGANIZATION** Changes in organizational structure
B. **IMPLEMENTATION** Changes in supervisory procedures and practices
C. **RISK MATRIX** Changes to OSFI's Supervisory Framework document and risk matrix to reflect Chilean realities (little change required)
D. **BENCHMARKING** Initiatives to benchmark significant activities, insurance inherent risks, and risk management control functions
E. **TRAINING** Initiatives to train staff on the detailed elements of risk based supervision
F. **RELIANCE** Initiatives to introduce reliance on risk management control functions at insurers, external auditors and actuaries
G. **CHANGES TO LEGISLATION** Changes to legislation to enable SVS to enforce recommendations
H. **COMMUNICATION** Internal communications within SVS and external with industry and other stakeholders

The key players at the SVS in the risk based supervision project are:

Superintendent and intendente- Alberto Etchegaray and Osvaldo Marcias Munoz

Implementation Group- Ernesto Rios C., Maria Fernanda Plaza S. and Osvaldo Marcias Munoz

Risk Based Research and Development Group- members not yet assigned (possible members: Patricio Espinoza Arias, Jorge Mastrangelo and Esteban Flores)

The following are examples of detailed changes and initiatives required under the aforementioned major categories and constitute a road map the SVS could follow:

ORGANIZATION

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
A	Create within the SVS a small dedicated research and development group to develop, implement and maintain the risk based supervision methodology	Superintendent and intendente	As soon as possible
A	Reorganize the insurance sector of the SVS to have one supervisor responsible for the risk assessment and intervention actions of each insurer and introduce the "relationship manager" concept	Implementation group	June 2006
A	Reorganize the insurance sector to have some supervisors responsible for life insurers and others for property and casualty insurers	Implementation group	June 2006
A	Consider having the "relationship manager" responsible for both on site and off site supervisory activities	Superintendent and intendente	December 2006
A	Consider establishing a monitoring group of 2 or 3 persons to perform economic and macro industry analysis to provide background information to supervisors to enhance the quality of their risk assessments	Superintendent and intendente	December 2006
A	Consider setting up specialist groups from current pool of supervisors (or hiring from outside) with expertise in information technology, risk based capital tests, capital markets etc to assist supervisors in their inherent risks and risk management control functions assessments	Implementation group	December 2006

IMPLEMENTATION

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
B	Provide Superintendent and intendente with a list of all insurers identifying their level of risk to policyholders using current rating system/methodology	All supervisors coordinated by Maria Fernanda Plaza S.	May 2006
B	Decide on phase in of risk based supervision… do we want a gradual phase in over a number of years running a parallel system with the current methodologies or do we want a more rapid introduction	Superintendent and intendente	May 2006
B	Implement the 6 supervisory process steps contained in OSFI's Supervisory Framework: analysis, planning, action, documentation, reporting and follow-up and start allocating supervisory resources based on risk level of insurers developed in the analysis step	Implementation group	January 2007
B	Set up a quality assurance group made up of Ernesto Rios C. and Maria Fernanda Plaza S. and or senior managers of their respective groups to ensure consistency in ratings. This quality assurance group would set up forums whereby the supervisors present and discuss the risk analysis ratings of their insurers	Superintendent and intendente	October 2006
B	Implement new paper and electronic documentation requirements to support ratings of insurers, the documentation would explain and justify the "level of inherent risk and quality of risk management" assessments reported in the risk matrix of individual insurers, accordingly the documentation format would be closely aligned with the risk matrix for example by significant activity	Implementation group	November 2006
B	Implement new reporting format/letter to insurer to communicate findings and make recommendations	Implementation group	February 2007
B	Review portfolio of insurers and ascertain if there exists opportunity to practice consolidated supervision communicating where necessary with domestic and foreign regulators and supervisors	Risk Based Research and Development Group	February 2007
B	Introduce a supervisory intervention guide detailing actions to be followed further to specific conditions and circumstances	Implementation group	February 2007

RISK MATRIX

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
C	Make appropriate changes to the OSFI Supervisory Framework (20 page document) to make it Chilean specific	Risk Based Research and Development Group	June 2006
C	Make appropriate changes to risk matrix to make it Chilean specific	Risk Based Research and Development Group	June 2006
C	Decide on risk management control functions using OSFI 7(RMCF)	Risk Based Research and Development Group	June 2006

Further comments:

A copy of OSFI's risk matrix is attached on the next page for reference.

The SVS has confirmed that they have used the risk matrix template and it satisfies their requirements. The template was designed to be applicable to all financial institutions so it is reasonable that it would be applicable for risk analysis of Chilean insurers.

More specifically the SVS will use all of the columns and or boxes in the risk matrix template namely:

1. significant activities
2. materiality
3. inherent risks,--- all 7 risks and--- the 4 levels of inherent risk (low, moderate, above average, high)
4. quality of risk management,--- many of the management control functions and--- the 4 quality ratings of control functions (weak, needs improvement, acceptable, strong)
5. some management control functions such as financial analysis and risk management may not be included in the final Chilean template
6. net risk and overall net risk with--- the 4 levels of risk (low, moderate, above average, high)
7. direction of risk with --- the 3 directions (decreasing, stable, increasing)
8. capital and earnings with --- the 4 quality ratings (weak, needs improvement, acceptable, strong)
9. composite rating with --- the 4 levels of risk (low, moderate, above average, high)
10. direction of risk with --- the 3 directions (decreasing, stable, increasing)
11. time frame

FINANCIAL INSTITUTION RISK MATRIX AS AT

Significant Activities	Materiality	Inherent Risks	Quality of Risk Management		Net Risk	Direction Of Risk
Activity 1 Activity 2 Activity 3 Etc…		• Credit • Market • Liquidity • Insurance • Operational • Legal & Regulatory • Strategic	Operational Management	• Board Oversight • Senior Management • Risk Management • Internal Audit • Compliance • Financial Analysis		
Overall Rating						

Capital		Earnings			
Composite Rating		Direction of Risk		Time Frame	

BENCHMARKING

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
D	Create a list of significant activities for Chilean insurers and identify criteria used to consider an activity significant	Risk Based Research and Development Group	June 2006
D	Benchmark the level of inherent insurance risk for all insurance products and services offered in Chile	Risk Based Research and Development Group	September 2006
D	Benchmark the assessment criteria used to establish the quality of risk management control functions for Chilean insurers	Risk Based Research and Development Group	January 2007
D	Benchmark the assessment criteria to establish the quality of capital initially use a quantitative measure such as capital as a % of liabilities	Risk Based Research and Development Group	October 2006
D	Create standard file documentation (templates to be used by supervisors)	Risk Based Research and Development Group	October 2006
D	Create new reporting format/letter to insurer to communicate findings and make recommendations	Risk Based Research and Development Group	January 2007
D	Create a supervisory intervention guide detailing actions to be followed further to specific conditions and circumstances	Risk Based Research and Development Group	February 2007
D	Benchmark based on intervention guide a list of work around approaches to enforce "risk based management strengthening recommendations" until legislative changes are made	Lawyers	September 2006
D	Develop manuals to help supervisors with detail procedures and use as references to help in the exercise of judgement	Risk Based Research and Development Group	On going

TRAINING

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
E	Change management training for managers and supervisors	Implementation group	As soon as possible
E	Complete the pilot program using the risk matrix to come up with a composite risk rating for each insurer piloted and share the results with all supervision staff	Supervisors responsible for pilots	May 2006
E	Distribute and explain the 7 OSFI inherent risks	Risk Based Research and Development Group and Implementation group	June 2006
E	Distribute and explain the 4 OSFI levels of inherent risk	Risk Based Research and Development Group and Implementation group	June 2006
E	Distribute and explain SVS specific risk management control functions (these would be a sub set of OSFI 7 (RMCF)	Risk Based Research and Development Group and Implementation group	July 2006
E	Distribute and explain OSFI 4 quality ratings of risk management control functions	Risk Based Research and Development Group and Implementation group	July 2006
E	Distribute and explain 4 quality ratings for earnings and capital	Risk Based Research and Development Group and Implementation group	August 2006
E	Distribute and explain 4 levels of composite rating and linkages with intervention guide	Risk Based Research and Development Group and Implementation group	August 2006
E	Organize training on insurance products and industry	Implementation group	December 2006
E	Organize training on soft skills such as interviewing techniques, thinking on your feet, making presentations to company management, etc	Implementation group	March 2007

RELIANCE

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
F	Develop and implement strategy to rely on RMCF at insurers	Superintendent and intendente and Implementation group	December 2006
F	Develop and implement strategy to rely on external auditor	Superintendent and intendente and Implementation group	December 2006
F	Develop and implement strategy to rely on actuaries	Superintendent and intendente and Implementation group	January 2007

Further comments:

1. The SVS to initiate the reliance process could set up consultation groups with the external auditors and actuarial professionals in Chile to discuss the concept of reliance. Further to these consultations the SVS would assess the degree of reliance they can place on these professionals' work in the short, medium and long term.

2. Since the actuarial profession in Chile is developing the reliance possibilities will be limited in the short and medium term. Life actuaries are more established in Chile than general actuaries.

3. Based on the discussions the SVS should consider what supervisory changes (reduction in on site activities due to new reliance) could be made in the short, medium and long term.

4. The SVS could set up regular semi annual meetings with the auditors and actuaries to ensure a smooth implementation of the reliance process.

5. The reliance placed by the SVS and the responsibilities (whistle blowing) of the external auditors and actuaries falling out of the reliance process would be reflected over time in the legislation.

CHANGES TO LEGISLATION

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
G	Develop changes needed to legislation to enable SVS to fully enforce “risk based management strengthening recommendations” and consider work around solutions for enforcing recommendations until legislation amended	Risk Based Research and Development Group	December 2006
G	Cause changes to be made to the legislation to enable SVS to fully enforce “risk based management strengthening recommendations”	Superintendent and intendente and Implementation group and Lawyers	When possible to change legislation

COMMUNICATION

	CHANGES AND INITIATIVES	RESPONSIBILITY OF	TIMING
H	Have regular internal meetings with SVS staff to communicate progress in implementing risk based supervision and new supervisory methodologies	Implementation group	At regular intervals
H	Have regular meetings with SVS information technology support group to identify areas where both supervision and technology can cooperate for example in establishing the new documentation standards, consider visiting other supervisors to review their electronic document standards	Superintendent and intendente	May 2006
H	Meet periodically with industry including external auditors and actuaries to communicate progress in implementing risk based supervision and to seek their help	Superintendent and intendente	As needed
H	Disclose ratings (composite risk rating) to insurers (consider requiring that insurers keep their ratings confidential)	Supervisors	January 2008

III. CHANGES AND INITIATIATIVES REQUIRED TO ENSURE AN ORDERLY TRANSITION TO RISK BASED SUPERVISION

Changes and Initiatives Presented in Chronological Order			
	CHANGES AND INITIATIVES	**RESPONSIBILITY OF**	**TIMING**
A	Create within the SVS a small dedicated research and development group to develop, implement and maintain the risk based supervision methodology	Superintendent and intendente	As soon as possible
D	Develop manuals to help supervisors with detail procedures and use as references to help in the exercise of judgement	Risk Based Research and Development Group	On going
E	Change management training for managers and supervisors	Implementation group	As soon as possible
G	Cause changes to be made to the legislation to enable SVS to fully enforce "risk based management strengthening recommendations"	Superintendent and intendente and Implementation group and Lawyers	When possible to change legislation
H	Have regular internal meetings with SVS staff to communicate progress in implementing risk based supervision and new supervisory methodologies	Implementation group	At regular intervals
H	Meet periodically with industry including external auditors and actuaries to communicate progress in implementing risk based supervision and to seek their help	Superintendent and intendente	As needed
E	Complete the pilot program using the risk matrix to come up with a composite risk rating for each insurer piloted and share the results with all supervision staff	Supervisors responsible for pilots	May 2006
B	Provide Superintendent and intendente with a list of all insurers identifying their level of risk to policyholders using current rating system/methodology	All supervisors coordinated by Maria Fernanda Plaza S.	May 2006
B	Decide on phase in of risk based supervision… do we want a gradual phase in over a number of years running a parallel system with the current methodologies or do we want a more rapid introduction	Superintendent and intendente	May 2006
H	Have regular meetings with SVS information technology support group to identify areas where both supervision and technology can cooperate for example in establishing the new documentation standards, consider visiting other supervisors to review their electronic document standards	Superintendent and intendente	May 2006
A	Reorganize the insurance sector of the SVS to have one supervisor responsible for the risk assessment and intervention actions of each insurer and introduce the "relationship manager" concept	Implementation group	June 2006
A	Reorganize the insurance sector to have some supervisors responsible for life insurers and others for property and casualty insurers	Implementation group	June 2006
C	Make appropriate changes to the OSFI Supervisory Framework (20 page document) to make it Chilean specific	Risk Based Research and Development Group	June 2006
C	Make appropriate changes to risk matrix to make it Chilean specific	Risk Based Research and Development Group	June 2006
C	Decide on risk management control functions using OSFI 7(RMCF)	Risk Based Research and Development Group	June 2006
D	Create a list of significant activities for Chilean insurers and identify criteria used to consider an activity significant	Risk Based Research and Development Group	June 2006
E	Distribute and explain the 7 OSFI inherent risks	Risk Based Research and Development Group and Implementation group	June 2006

Changes and Initiatives Presented in Chronological Order			
	CHANGES AND INITIATIVES	**RESPONSIBILITY OF**	**TIMING**
E	Distribute and explain the 4 OSFI levels of inherent risk	Risk Based Research and Development Group and Implementation group	June 2006
E	Distribute and explain SVS specific risk management control functions (these would be a sub set of OSFI 7 (RMCF)	Risk Based Research and Development Group and Implementation group	July 2006
E	Distribute and explain OSFI 4 quality ratings of risk management control functions	Risk Based Research and Development Group and Implementation group	July 2006
E	Distribute and explain 4 quality ratings for earnings and capital	Risk Based Research and Development Group and Implementation group	August 2006
E	Distribute and explain 4 levels of composite rating and linkages with intervention guide	Risk Based Research and Development Group and Implementation group	August 2006
D	Benchmark the level of inherent insurance risk for all insurance products and services offered in Chile	Risk Based Research and Development Group	September 2006
D	Benchmark based on intervention guide a list of work around approaches to enforce "risk based management strengthening recommendations" until legislative changes are made	Lawyers	September 2006
B	Set up a quality assurance group made up of Ernesto Rios C. and Maria Fernanda Plaza S. and or senior managers of their respective groups to ensure consistency in ratings. This quality assurance group would set up forums whereby the supervisors present and discuss the risk analysis ratings of their insurers	Superintendent and intendente	October 2006
D	Benchmark the assessment criteria to establish the quality of capital initially use a quantitative measure such as capital as a % of liabilities	Risk Based Research and Development Group	October 2006
D	Create standard file documentation (templates to be used by supervisors)	Risk Based Research and Development Group	October 2006
B	Implement new paper and electronic documentation requirements to support ratings of insurers, the documentation would explain and justify the "level of inherent risk and quality of risk management" assessments reported in the risk matrix of individual insurers, accordingly the documentation format would be closely aligned with the risk matrix for example by significant activity	Implementation group	November 2006
A	Consider having the "relationship manager" responsible for both on site and off site supervisory activities	Superintendent and intendente	December 2006
A	Consider establishing a monitoring group of 2 or 3 persons to perform economic and macro industry analysis to provide background information to supervisors to enhance the quality of their risk assessments	Superintendent and intendente	December 2006
A	Consider setting up specialist groups from current pool of supervisors (or hiring from outside) with expertise in information technology, risk based capital tests, capital markets etc to assist supervisors in their inherent risks and risk management control functions assessments	Implementation group	December 2006
F	Develop and implement strategy to rely on RMCF at insurers	Superintendent and intendente and Implementation group	December 2006

Changes and Initiatives Presented in Chronological Order			
	CHANGES AND INITIATIVES	**RESPONSIBILITY OF**	**TIMING**
F	Develop and implement strategy to rely on external auditor	Superintendent and intendente and Implementation group	December 2006
G	Develop changes needed to legislation to enable SVS to fully enforce "risk based management strengthening recommendations" and consider work around solutions for enforcing recommendations until legislation amended	Risk Based Research and Development Group	December 2006
E	Organize training on insurance products and industry	Implementation group	December 2006
B	Implement the 6 supervisory process steps contained in OSFI's Supervisory Framework : analysis, planning, action, documentation, reporting and follow-up and start allocating supervisory resources based on risk level of insurers developed in the analysis step	Implementation group	January 2007
D	Benchmark the assessment criteria used to establish the quality of risk management control functions for Chilean insurers	Risk Based Research and Development Group	January 2007
D	Create new reporting format/letter to insurer to communicate findings and make recommendations	Risk Based Research and Development Group	January 2007
F	Develop and implement strategy to rely on actuaries	Superintendent and intendente and Implementation group	January 2007
B	Implement new reporting format/letter to insurer to communicate findings and make recommendations	Implementation group	February 2007
B	Review portfolio of insurers and ascertain if there exists opportunity to practice consolidated supervision communicating where necessary with domestic and foreign regulators and supervisors	Risk Based Research and Development Group	February 2007
B	Introduce a supervisory intervention guide detailing actions to be followed further to specific conditions and circumstances	Implementation group	February 2007
D	Create a supervisory intervention guide detailing actions to be followed further to specific conditions and circumstances	Risk Based Research and Development Group	February 2007
E	Organize training on soft skills such as interviewing techniques, thinking on your feet, making presentations to company management, etc	Implementation group	March 2007
H	Disclose ratings (composite risk rating) to insurers (consider requiring that insurers keep their ratings confidential)	Supervisors	January 2008

IV. A CHILEAN RISK-BASED CAPITAL STANDARD (CRBCS) FOR LIFE INSURANCE COMPANIES

Role of CRBCS in Risk-Based Supervision

The CRBCS is a key component of risk-based supervision in that it:

- provides appropriate levels of capital to deal with unforeseen events;
- creates incentives for improved risk management;
- discourages high-risk activities;
- provides alerts and triggers for varying levels of supervisory action with individual companies.

In practice, the CRBCS will be supplemented by supervisor assessments of corporate governance and risk management. In the Chilean context, such assessments will necessarily include investment policies and ALM.

Building on the Canadian Model

The Canadian Minimum Continuing Capital and Surplus Requirement (MCCSR) was modified and tested in an attempt to develop an initial factor-based formula suitable for use in Chile. During this process it became clear that, for the C-3 risk of the annuity business, a standard model based on parameters tailored for Chile would need to be developed in order to ensure a proper level of required capital.

Asset Default Risk

This component uses factors initially derived from a combination historic loss rates and informed judgment to calculate components of required capital for C-1 Risk (including loss of value of equities and the credit and market risk of derivative positions). The factors vary by level of risk including bond ratings. There appears to be no compelling reason to modify the existing factors for application in Chile but development should:

1. confirm that ratings of Chilean bonds are consistent with those elsewhere (i.e., that a B is a B for issuers everywhere);
2. confirm the treatment of certain asset types unique to Chile

Credit Risk on Reinsurance Coded

It is appropriate to have a factor for the counterparty risk of reinsurers related to their credit rating. Reinsurance agreements, however, are potentially longer and certainly less liquid than bonds. In Chile, offshore reinsurers are not subject to SVS supervision.

To deal with lower liquidity, higher concentration risk, and potential problems with recovery from offshore reinsurers, we are recommending two-tier counterparty risk factors that are multiples of the C-1 factor that would be applicable to the reinsurer's bonds. The factors should be applied to the sum of the reserves ceded and amounts receivable from each reinsurer. The recommended multiples are:

1. 2 x for domestic reinsurers supervised by SVS.

2. 4 x for offshore reinsurers.

The Canadian and U.S. systems do not permit the deduction of reserves ceded to "unregistered reinsurers" (i.e. reinsurers not supervised by the domestic regulator) and, in MCCSR, requires the ceding company to hold the capital required for this business. If the SVS is going to permit reinsurance to offshore companies not subject to its supervision, it will need to decide what approach it will follow for both of these questions. One possible answer would be to require the establishment in Chile of reinsurance trusts supporting these arrangements.

Insurance Risk

The original Canadian formula incorporated size adjustments for mortality and morbidity risk and recognized certain pass-through aspects of participating business. Lapse risk has also been reflected in a combination of a reserve recalculation requirement and reductions from retained earnings for the cash value floor.

Because of the small relative size of traditional life business in the Chilean industry, the different reserving methodology (including an explicit cash value floor in the technical reserves) and the need for simplicity of application we have:

i. eliminated a lapse-related component because lapse risk is fully provided for in the technical reserves through the elimination of negative reserves and maintenance of a cash value floor.
ii. retained the factor approach for mortality and morbidity risk
iii. increased the factor for annuity mortality from .010 to .015 because of the phased implementation of the 2004 mortality table and the need to extend its use to dependents.

Interest Rate Risk (C-3) for Annuities

In the Canadian system, provision for interest rate risk is specifically dealt with the Canadian Asset Liability Method (CALM) of determining technical reserves. For single premium immediate annuities the C-3 provisions in the policy liabilities are typically of the order of 2 % of reserves. In addition, the MCCSR formula requires a provision in capital of 1 % of reserves. While this is suggestive of a total provision of 3 %, this would not be adequate for use in Chile because:

1. the CALM provisions do not reflect the extremes that need to be covered by capital
2. the capital provision was set largely on the basis of judgement during a period of much less interest rate volatility
3. this line of business is not very important in a diversified Canadian company
4. interest rate levels (and volatility) in Canada are different from those in Chile
5. mortality rates used for CALM are fully projected
6. long duration debt instruments have been more readily available in Canada

Under the recommended "total balance sheet" approach, the required capital for C-3 risk will be determined as the amount of assets needed, over and above the technical reserves, to mature the annuity obligations under the most adverse of a set of prescribed scenarios.

Development of the cash flow projections will require either appropriate modeling capabilities in the companies or the development of a standard model by the SVS. While it is consistent with risk-based supervision and the encouragement of stronger risk management to expect companies to have their own modeling capabilities, there are legitimate concerns about:

1. varying levels of expertise in the companies,
2. lack of professional standards to ensure consistency of application,
3. the burden of review on the supervisor,
4. the need to ensure participants in this competitive market a level playing field

All of these considerations make the development of a standard SVS model both desirable and feasible and this is the approach we are recommending.

A number of companies are already using models as part of their ALM processes and additional incentive could be provided by contemplating eventual approval of companies' own more sophisticated models, under rigorous conditions, to calculate their required capital. These conditions should include both a strong internal control environment and, most importantly, use of the models in management of the business.

Operational Risk and Other Risks Not in Formula

Some risks are not explicitly addressed in the formula and this has usually been dealt with by supervisory requirements to maintain a capital ratio of at least (100 +m) %, where m represents a margin for these risks and is typically in the range 50 to 100.

Available Capital

Because reserves released under application of the CALCE Rule may not be a permanent part of retained earnings, these amounts should be classified as Tier 2 capital. Given the recent decline in interest rates and the high level of call activity on bonds we would expect this amount to reduce during 2006.

V. LIFE INSURANCE COMPANY ASSET LIABILITY MANAGEMENT (ALM)

Determinants of ALM Practices

The nature and extent of ALM in individual companies typically varies by necessity and capability.

Necessity
- significant exposure to interest rate risk
- company goals
- expectations and requirements of the supervisor

Capability
- product complexity and features
- asset complexity and options
- expertise of investment and actuarial management
- modeling capabilities
- sufficiency of the internal control environment
- governance practices

In Chile, the dominance of the immediate annuity business in most companies exposes them to interest rate risk and mortality improvement risk; we did not look for evidence of pricing risk but there appears to be a high level of market competition.

The SVS has attempted to focus attention on cash flow matching for this business through the application of its CALCE Rule. Unfortunately this rule does not require tight segmentation of assets, has used expected cash flows that do not adequately reflect call features of bonds, and appears less responsive than might be expected to the recent decline in interest rates and the resulting high level of call activity.

The SVS has also recently introduced a new 2004 mortality table for use in determining the technical reserves. However, the implementation of this table will not be complete for a number of years. For ALM purposes it would be appropriate now to use this table with full projection of mortality improvement.

Individual companies are practicing ALM to varying degrees. Companies with strong foreign owners are using asset segmentation and models provided by those owners. Domestic companies' ALM depends on company goals and investment management expertise. The degree of integration of actuarial and investment personnel in the process varies considerably. One obstacle to implementing more robust ALM may be the lack of a well-developed actuarial profession with consistent standards.

In the companies we visited, Board governance and related reporting are in place. The nature and extent of independent control mechanisms varied.

Best Practices Guidance and Risk-Based Supervision

A useful tool in a risk-based supervision is Best Practices guidance issued by the supervisor. While not having the full force of a regulation, it enables the supervisor to clearly communicate its expectations. Development of the guidance enables useful consultation with the industry on both the guiding principles and the practicalities of implementation. Such guidance may, with appropriate lead times, ultimately become regulation.

Appendix 1 outlines the elements of ALM Best Practices considering both company practices and supervisory expectations. These should be refined through development of an ALM Best Practices Paper to be issued by the SVS. This development could occur as a by-product of the CRBCS development.

The level of expertise and cooperation available from the industry suggests that a consultative approach to developing an SVS Best Practices Paper for ALM would be both feasible and desirable.

Linkage to CRBCS

Emerging practice internationally is to develop capital standards that contemplate both standardized and advanced approaches. The advanced approaches would typically be available only to companies that have the expertise, infrastructure, and controls (often achieved at considerable expense) to apply them.

It is reasonable to expect that, building on experience with the CRBCS, some companies who demonstrate to SVS the highest standards of ALM practice might be able to use their own models, if they are using them as an integral part of managing the business, to determine their capital requirement.

Evolution of Capital Markets

All of the companies we visited said that current SVS investment restrictions are not a problem; their focus is on the scarcity of long-term bonds. ALM best practices may identify needs for certain derivative products and long-term instruments that will facilitate development of capital markets in Chile.

VI. IMPLEMENTATION OF CHILEAN RISK BASED CAPITAL STANDARD

Integration with the Chilean Regulatory System

While both a risk-based capital standard and best practices guidance are consistent with risk-based supervision, it is worth noting that they represent a departure from previous Chilean regulatory approaches.

Traditionally the SVS has specified the bases for determination of the technical reserves and limited the amount of liabilities to a multiple of capital. For year-end 2005 the SVS has introduced a new adequacy of assets test with respect to the annuity business.

Risk-based supervision contemplates more use of judgment and influence by the supervisor and a more responsive approach to developing regulations and guidelines. Jurisdictions with risk-based capital standards make modifications frequently and the authority to change the regulations and guidelines rests clearly with the supervisor. Supervisors using best practices guidance expect it to be applied by the industry.

Other areas to consider would be:

- whether the criteria for the SVS to take control of a company will need revision
- given the government guarantee on the Social Security annuities, whether these policyholders should get priority over other creditors in any liquidation of a company

We see all of this as an opportunity to further modernize regulation and supervision, but thoughtful approaches to implementation will be required.

Broad Description of the Standard Model for Annuity Interest Rate Risk

Inputs:

The model will capture data on each of the fixed-income assets of the annuity segment and the surplus segment. This will include any call provisions or other relevant options. The model will also capture data on each of the annuity contracts including age of the annuitant(s), any guarantees for a minimum number of payments, and any cashout options.

Projections:

For each interest rate scenario tested the cash flows from both the assets and liabilities will be projected to the last cash flow for the annuities. The annuity cash flows will be projected using the 2004 mortality table for all annuitants incorporating full generational mortality improvements plus a provision for adverse deviation.

All of the fixed-income assets for the annuity segment will be used and assets from surplus will be added iteratively to the point that the asset cash flows are exactly sufficient to provide the last annuity cash flow.

The carrying value on the balance sheet for these assets gives the Total Balance Sheet (TBS) Requirement for that scenario.

Scenarios:

A number of interest rate scenarios will be tested aimed at capturing the extremes that are possible in the future. Parameters for each scenario will include a future stream of risk-free and related re-investment rates.

Capital Requirement:

The highest TBS Requirement of all the tested scenarios will be used to determine the Capital Requirement for Annuity C-3 Risk.

Capital Requirement = Max TBS Requirement - Annuity Technical Reserves

Key Considerations for Development of the Standard Model

1. **Needed Expertise**
    a. While the SVS will want to develop some in-house expertise, the initial development should employ consulting resources with hands-on experience in model building and ALM.

2. **Asset Segmentation**
    a. The companies should know at the outset that they will need to maintain distinct asset segments for Annuities and Surplus while segmenting Other Business according to their own needs.
    b. Equity investments should not be permitted in the Annuity segment. This is consistent with the views of both financial economists and most actuaries on appropriate assets to back annuity liabilities. It has the added practical advantage of greatly simplifying the model.

3. **Software Selection**
    a. Valuation software such as GGY's AXIS can easily produce the liability cash flows for single premium immediate annuities. The asset cash flows are more complicated because any optionality, e.g. call provisions, needs to be reflected. Systems such as Bond Edge can deal with these aspects for fixed-income securities.

4. **Scenario Selection**
    a. The Canadian CALM scenarios could provide a starting point but would need to be modified to incorporate the higher levels of stress more appropriate for determining the amount of assets required to ensure payment of the liabilities with a high degree of certainty.
    b. Work going on in both North America and Europe over the next year may provide useful input during the development period.

5. **Mortality Assumptions**
    a. These can be built using the 2004 Mortality Table for all annuitants.

6. **Verification**
    a. The accuracy and completeness of the Inputs to the model will need to be verified for each company. It would be consistent with a reliance model for the SVS to obtain suitable confirmations from the auditors rather than doing the detailed verification work itself.

7. **Phase-in of CRBCS**
    a. Typically, when this type of standard is introduced companies falling below the desired minimum capital ratio are given a period of time (we would recommend no more than three years) to reach the minimum level. The plan below leaves determination of the minimum target and of any phase-in rules to points where sufficient experience with the formula will be available to guide decisions.

8. **Filings with SVS**
    a. The Canadian MCCSR forms provide a starting point for developing the CRBCS filings for SVS. Appendix 1 outlines the changes to the 2005 MCCSR forms that would be needed to implement the CRBCS outlined above. The SVS will likely identify additional changes in the course of implementation.
    b. With respect to the Standard Model, the results of each interest rate scenario will need to be reported along with the final determination of capital required. The Inputs should be filed in electronic format to enable replication of results.

Suggested Implementation Plan Outline

The suggested objectives and timetable below appear both reasonable and feasible. The process envisages some form of industry technical committee, probably brought together by the Industry Association, to comment and advise on the CRBCS. While initial focus will be on the 2008 requirements, this is likely to be an ongoing mechanism for change as risks, knowledge, and practices evolve.

It is assumed that industry players recognize the loss of confidence and other potential ramifications that all companies would suffer if there were a failure in the industry. Everyone has a vested interest in an appropriate and well-functioning supervisory system.

Objectives

1. **Fully implement the CRBCS effective December 2008**

2. **Finalize factors and the standard model for clarity to the industry by June 2008**

Timetable

CRBCS Development	
Item	**Completion Date**
Confirm SVS commitment to CRBCS	June 06
Identify and Engage Consulting Resources	Sept 06
Share Proposed Formula and Approach with Industry	Sept 06
Agree structure and process for industry input	Sept 06
Select and obtain resources for Standard Model development	Dec 06
Finalize Asset Default and Insurance Factors	March 07
Develop First Version of Standard Model	June 07
Pilot Test Model with Selected Companies	Sept 07
Finalize Standard Model	Dec 07
Finalize Margin to set Minimum Target CRBCS Ratio	March 08
Issue 2008 Formula and Model	June 08
Obtain 2007 Year-end Results for each company on 2008 Formula	Sept 08
Decide Phase-in Requirements	Dec 08
Confirm full implementation	Dec 08

Schedule 1 – ALM Best Practices Outline

Components	Company Needs	Supervisor Expectations
Objectives of ALM	Relate to corporate financial goals for growth, profitability and acceptable risk.	Clearly stated and Board approved.
Expertise Level	Commensurate with objectives, complexity and regulatory requirements.	May want to apply "fit and proper" criteria.
Asset Segmentation	Segments consist of product groupings with similar characteristics.	Separate segments for payout annuities and surplus.
Allocation of Assets	Allocation is preferably carried out by "tagging" specific assets as belonging to particular segments.	Clarity, consistency, and continuity of allocation practices.
Investment Policy	Specifies limits and asset quality standards both overall and by segment.	Annual filing with SVS.
Cash Flow Modelling	Ability to project future cash flows for both assets and liabilities based on various assumptions for interest rates, policyholder behaviour, and optionality in assets.	May want to review models used. May set specific assumptions for stress-testing and/or capital standards.
Appropriate Quantification	Use of relevant metrics to measure risk exposures. For annuity segment: • duration measures inadequate; • stress-test required assets to meet policyholder payments under various interest rate scenarios.	May want to specify particular measures for regular reporting.
Segment Strategies	Relate to Objectives. For Annuity Segment: • cash flow matching for first 20 years (may want to use existing Tramos); • coverage of interest margins.	Approved by Board and/or Senior Management. Filing of results for major segments. Confirmation of coverage of required interest on technical reserves.
Liquidity Risk	Likely not a factor unless annuity cash flows not properly covered.	Confirmation of short-term liquidity.
Currency Risk	Requires segmentation by currency	Report on Assets and Liabilities by currency, any currency hedges.

Components	Company Needs	Supervisor Expectations
Use of Derivatives	Requires strongest control environment to mitigate operational risk. May not continue to be available under extreme circumstances.	Only for Hedging. Review of program and controls.
Control Environment	Independent verification of: • results • models • compliance with policies Enterprise Risk Management function where appropriate.	Separate channel to Board: usually Audit Committee or Risk Management Committee
Regular Reporting to Board	Covering • status, including key measures • exceptions and corrective action	Review on-site.

Schedule 2 – Revisions to Canadian 2005 MCCSR Forms for CRBCS

A. In the 20.xxx series of pages

1. Delete all references to negative reserves and cash value deficiencies because these elements do not arise in Chilean technical reserves

2. Delete all references to deferred or unrealized gains/losses on stocks or real estate because equities are marked for market in Chilean insurance accounting

3. Delete line 063 on page 20.030 and replace with the amount of reserves released by application of the CALCE rule carried in retained earnings

B. In the 31.xxx series of pages

1. Add the C-1 requirement for reinsurance ceded described in this report

2. Eliminate the special treatment re "Qualifying Participating Policies" by:

a) Making the 31.xxx pages apply to all assets
b) Deleting the 32.xxx series of pages

C. Delete page 35.010 as long as there are no index-linked pass-through products issued in Chile

D. In the 41.xxx series of pages

1. Eliminate the special treatment re "Qualifying Participating Policies" and delete the 42.xxx pages

E. In the 50.xxx series of pages

1. Delete all references to "Former Methodology"
2. Delete lines 070 and 080 on page 50.020

F. In the 55.xxx series of pages

1. Delete lines 001 to 055 on page 55.010 and use value A from line 049 on page 50.020 as value K at line 060
2. Delete page 55.020

G. Delete page 65.020

H. On page 80.010

1. Delete section E and D
2. Replace with a display of the results of the standard model arriving at the capital requirement for annuity C-3 risk
3. Delete page 85.010 and the reference to it

I. Delete the 90.xxx series of pages because there is no Segregated Fund business in Chile

J. Delete page 99.020 as this is a special purpose supplement and the basic information is captured on page 50.010

VII. TERMS OF REFERENCE FOR CONSULTANTS – PHASE 2

Phase II of the project will require the services of a consulting firm or individuals with expertise in developing and implementing risk-based supervision and risk-based capital test for insurance companies. The report documents several changes and initiatives required to implement risk-based supervision, AML reviews and risk-based capital test.

The consultant(s) will be required to work closely with the proposed Implementation and Research and Development teams at the SVS during Phase II, provide training and expert guidance to ensure successful implementation of the necessary changes and initiatives.

The consultant(s) with regard the implementation of risk based supervision will have to:

Provide advice and answer questions on the 8 categories of activities namely Organization, Implementation, Risk Matrix, Benchmarking, Training, Reliance, Changes to Legislation and Communications contained in the "Roadmap for Strengthening Solvency Control in the Chilean Insurance Industry" report.

Provide training to the implementation group where necessary.

Review each change/initiative with the SVS, to whom it has been assigned and its suggested timing and operationalize the entire implementation roadmap based on the appetite for change at the SVS, resources available, country realities, safety and soundness of Chilean insurers, and other related considerations at the time of implementation.

Facilitate, review and recommend changes, where required, to the Chilean specific benchmarks, manuals and other guidance developed by the SVS to complement and support the implementation of risk based supervision.

The consultant(s) with regard the implementation of the risk based capital test for life insurers (CRBCS) will have to:

Provide advice and answer questions. to assist in each stage of CRBCS development:

Advise on the selection of software for the Standard Model.

Develop Scenarios for the Standard Model.

Build or oversee building of the Standard Model.

Review and comment on results of testing.

Recommend a Minimum Target CRBCS Ratio.

Advise on a suitable phase-in of requirements.

Provide advice and assistance in the preparation of an SVS ALM Best Practices Paper.

APPENDIX A: SUMMARY OF VISITS TO CHILE

Project structure	Means of verifying progress	Progress	Comments and recommendation
ACTIVITIES: Review of FSAP and current situation in Chile		**After reviewing the Chilean FSAP report, Kim, Ralph and Jean on September 15 discussed with its author, Craig Thorburn, its major recommendations. The major recommendation is to have the SVS adopt a more risk based approach to supervision.** **Kim and Jean subsequently spent three days, October 3, 4, and 5, in Santiago meeting with industry and SVS officials. We met with both life and non-life sectors and insurers that are domestic and foreign owned. The purpose of the meetings was to inform the industry regarding risk based supervision and obtain their support for its implementation.** **The SVS dedicated senior resources to our meetings which is encouraging. The Intendente, Osvaldo Munoz participated in all of our meetings.** **We were pleased to note that the SVS has instituted pilot risk management projects with a couple of the larger foreign insurance companies. We suggested that the SVS may want to extend the pilots to some smaller domestic companies (for political purposes if nothing else) where the risk management may not be as far advanced.**	**The Superintendent Mr. Alejandro Ferreiro of the SVS confirmed he is committed to implementing risk based supervision and so are all of his insurance supervisors.** **The industry officials we met are supportive of the initiative in principle. However, one official mentioned that he is concerned that the current (civil code based) legislation does not empower the SVS to enforce "risk based management strengthening recommendations" that might fall out of risk based supervision. The current legislation is very prescriptive in what the SVS can look at and make recommendations on. The Superintendent assured us that the SVS could work around this issue.** **We recommended that work begin in the SVS on establishing "baseline" levels of inherent risk for all insurance company activities. This project will be longer term and will be taken up by SVS' research group.**

Project structure	Means of verifying progress	Progress	Comments and recommendation
Prepare study on ALM methodologies		**Mile Hale received and reviewed during January and February 2006 country specific information from the SVS concerning ALM methodologies and capital requirements.** **Mike and Jean visited the SVS during the week of January 23/06 for 5 days to discuss ALM methodologies and risk based capital requirements. During the visit Mike and Jean met with representatives of small locally owned life insurers and large foreign owned and locally owned life insurers.**	**The SVS has prescribed detailed formulae for calculating reserves required for asset and liability mismatch. These reserve formulae have become the "de facto" ALM methodology in use by most Chilean insurers.** **While the large international insurers report having good risk management control procedures over their AML activities there is room for improvements regarding control procedures over ALM methodologies of the other life insurers.**
High level review of current international approaches to risk based supervision and recommendations for implementation in Chile AND Agreed risk assessment framework		**Ralph and Jean spent 4 days November 14- 17/05 meeting in Santiago with SVS officials and external actuaries, whom we had not met during our initial visit in October to discuss risk based supervision. The SVS confirmed they had piloted the OSFI risk based approach with 2 of their insurers, which we reviewed. They again stressed that they are committed to adopting OSFI's risk based supervision model.**	**There is a general enthusiasm among all the supervisory staff to implement risk based supervision. Initially the Chilean model will not be OSFI's full risk based model because the SVS cannot rely on external auditors and actuaries as well as the risk management control functions at all of its insurers. However the risk analysis component of OSFI's model that prioritizes insurers by risk level is a very useful tool for the SVS. With proper action plans the SVS can resolve the reliance issue over time.**

Project structure	Means of verifying progress	Progress	Comments and recommendation
Agreed Action Plan		**Ralph and Jean during the November/05 visit discussed the need to reorganize the supervision sector of the SVS and hire additional staff. We underlined the importance of having some supervisors dedicated full time to the risk based supervision implementation project and to provide on-going support to the initiative.** **OSFI's report includes detailed changes and initiatives required to implement risk based supervision, new AML methodologies and risk based capital tests.**	**The SVS has confirmed they are willing to reorganize and are in the process of hiring additional staff with actuarial experience. The Superintendent is aware that an action plan has to be developed and it will have to address issues such as reliance on external auditors and actuaries as well as risk management control functions at the insurers and the SVS's ability to enforce "risk management recommendations" made further to risk based supervision.** **The SVS agrees with the changes and initiatives put forward in OSFI's report.**
Development of TORs in order to carry out the agreed action plan.		**Mike and Jean visited the SVS April 10, 11 and 12 to discuss the draft report. The meetings were fruitful and answered all of the SVS's questions on the report. Mike and Jean agreed to make some of the changes suggested by the SVS to the report so it would be clearer. OSFI's report includes detailed changes and initiatives required to implement risk based supervision, new AML methodologies and risk based capital tests.**	**The report identifies which changes and initiatives would be best facilitated by consultants.**