Notice No: **MAS 312**
Issue Date: **8 May 2007**

This Notice replaces MAS 312 dated 20 June 2005.

STRESS TESTING ON FINANCIAL CONDITION OF DIRECT LIFE INSURER

Introduction

1. This Notice is issued pursuant to section 64(2) of the Insurance Act (Cap. 142) ("the Act"). It comprises both mandatory requirements (Part I) and guidelines (Part II).

2. This Notice shall be read in conjunction with the provisions of the Act and the Insurance (Valuation and Capital) Regulations 2004, the Insurance (Actuaries) Regulations 2004 and the Insurance (Accounts and Statements) Regulations 2004.

3. This Notice applies to any direct insurer registered to carry on life business and shall come into effect on 8 May 2007.

Definition

4. For the purposes of this Notice:

   (a) "stress test" means a prospective test of the financial condition of each insurance fund established and maintained by the insurer under the Act, conducted or to be conducted by the appointed actuary of the insurer pursuant to regulation 11(b) of the Insurance (Actuaries) Regulations 2004;

   (b) "stress test report" means a report on any stress test prepared or to be prepared by the appointed actuary of the insurer pursuant to regulation 12(1) of the Insurance (Actuaries) Regulations 2004;

   (c) "short-term scenario" means any event that has a low probability of occurring in the normal course of the business of the insurer, but which occurrence will have a major impact on the financial position of the insurer through adverse effects on either a single risk factor or multiple risk factors of the insurer;

   (d) "medium-term scenario" means any possible trend of the gradual deterioration in either a single risk factor or multiple risk factors of the insurer, which may impair the financial condition of the insurer.

5. The expressions used in this Notice shall, except where expressly defined in this Notice or where the context otherwise requires, have the same respective meanings as in the Act, the Insurance (Valuation and Capital) Regulations 2004, the Insurance (Actuaries) Regulations 2004 and the Insurance (Accounts and Statements) Regulations 2004.

Guiding Principles

6. In order to develop a sound risk management strategy, an insurer needs to consider a wide range of plausible shocks and their potential impact to its current and expected future financial position. Stress testing is an important tool which an insurer can use to assess the impact of various risks on its financial condition, and thus should be a fundamental element in an insurer's overall risk management framework. Through stress testing, an insurer can:

   (a) assess whether it has sufficient resources to withstand certain adverse shocks;

   (b) determine the possible range of management actions that can be taken to recover from the shocks; and

   (c) identify measures that can be implemented to mitigate its exposure to risks .

7. The board of directors and senior management of an insurer are primarily responsible for its sound and prudent management. In this regard, it is important that each stress test report is deliberated upon by the board of directors and senior management.

Part I – Mandatory Requirements

8. The appointed actuary of the insurer shall conduct each stress test in relation to the insurer by projecting, in accordance with paragraphs 9 to 12, the financial and capital adequacy positions of the insurer under various scenarios, including:

   (a) the base scenario;

   (b) short-term scenarios; and

   (c) medium-term scenarios.

Base Scenario

9. The base scenario projections shall comprise projections of the financial and capital adequacy positions of the insurer, based on best estimates of risk factors made by the appointed actuary, over the five-year period immediately following the end of the accounting period to which it relates. The projections shall be in the format prescribed in Appendix A.

Short-Term Scenarios

10. The short-term scenario projections shall comprise projections of the financial and capital adequacy positions of the insurer over the one-year period immediately following the end of the accounting period to which it relates, in the format prescribed in Appendix B and based on the following adverse scenarios:

(a) the two short-term scenarios prescribed in Appendix C;

(b) at least one additional short-term scenario constructed with risk factors specified in Appendix C taken into account; and

(c) any other scenario that the Authority may specify from time to time.

Medium-Term Scenarios

11. The medium-term scenario projections shall comprise projections of the financial and capital adequacy positions of the insurer over the five-year period immediately following the end of the accounting period to which it relates, in the format prescribed in Appendix A and based on at least three adverse scenarios constructed by the insurer.

12. In constructing the adverse scenarios, the insurer shall take into account risk factors specified in Appendix D and all other factors not specified in Appendix D that have significant relevance to the insurer's business.

Stress Test Report

13. The appointed actuary shall prepare the stress test report in the format prescribed in Appendix E and lodge it with the Authority in accordance with regulation 15(a) of the Insurance (Accounts and Statements) Regulations 2004.

Submission of Board of Directors' Deliberations on Stress Test Report

14. The insurer shall submit to the Authority an extract of the minutes of the board of director's meeting detailing the deliberations made by the board of directors on the stress test report and any recommendations made on or arising out of the stress test report (the 'Extract of the minutes') at the time of lodgment of the stress test report in accordance with paragraph 13. If an insurer is unable to submit the Extract of the minutes together with the stress test report, the insurer shall undertake and confirm in writing to the Authority the date by which the Extract of minutes will be submitted to the Authority. The insurer shall submit the Extract of the minutes no later than four months from the date of lodgment of the stress test report with the Authority.

Contravention of Requirements Imposed

15. Contravention of any requirement imposed under Part I of this Notice shall be an offence and shall attract the penalty specified in section 55(2) of the Act.

Part II – Guidelines

Base Scenario

16. In order to perform each stress test properly and effectively, the appointed actuary should construct the base scenario in a manner that is consistent with the insurer's business plan. The base scenario should take into account the insurer's management and business philosophy and strategies such as

marketing plans, sales objectives, investment policies, pricing philosophy, underwriting philosophy, reinsurance practices and its policy on allocation to participating policyholders and shareholders.

17. The appointed actuary should observe the following guidelines for the construction of projections:

    (a) The projections should be comprehensive in scope and cover all key products and lines of business and all assets of the insurer that are material to the solvency of the insurer.

    (b) Separate projections should be made for each insurance fund established and maintained by the insurer under the Act.

    (c) Where the assets or liabilities of an insurance fund that are material to the solvency of the insurance fund have different inherent characteristics, the appointed actuary should make separate projections by major product lines and asset classes within the insurance fund.

18. The appointed actuary should also conduct adequate checks on the appropriateness of any data or projections that form the bases for the stress test report. If the appointed actuary relies on any other person for any aspect of the data or projections used to support his opinion, the appointed actuary should be satisfied that the person relied on is qualified for such purposes. The nature and extent of the reliance on such person and his particulars should be disclosed in the stress test report.

Constructing Short-Term Scenarios

19. In constructing the short-term scenarios, the appointed actuary should analyse the key risk exposure of the insurer in the face of catastrophic events such as natural calamities, a severe economic recession or a major crash in the equity, property or bond market. The appointed actuary should also take into consideration the prevailing environment, including the economic, medical, demographic, social and political situation at the relevant time.

20. The appointed actuary should present in the stress test report the likely scenario or scenarios that will have the largest impact on the financial condition of the insurer, together with the reasons for the choice and construction of the scenarios presented in the stress test report.

Constructing Medium-Term Scenarios

21. In constructing the medium-term scenarios, the appointed actuary should analyse the insurer's ability to withstand continuous adverse developments over the period of projection. Such adverse developments should include persistent inflation, recession, falling stock markets and claims experience. In deriving the assumptions relating to the scenarios, the appointed actuary should consider the differing nature of various assumptions as compared to others:

(a) Some assumptions, such as mortality or renewal expenses in real terms, may reasonably be relied on as fairly stable or having a stable trend. However, attention should be paid to both the risk of sudden change (e.g. a new infectious disease) and the possibility of a change in the trend.

(b) Other assumptions, for example policy persistency, may need to be considered in the context of both historical experience and changes anticipated in the light of different operating methods now used by the insurer.

(c) Yet other assumptions may be highly uncertain and totally outside the control of the insurer. This is particularly true of investment conditions, the volatility of which may have significant implications for the financial condition of the insurer.

22. The appointed actuary should also take into consideration the prevailing environment, including the economic, medical, demographic, social and political trends at the relevant time.

23. In deciding the scenarios to be included in the stress test report, the appointed actuary should investigate a wide range of scenarios and select those which he considers likely to have a material effect on the financial position of the insurer. The appointed actuary should specify the reasons for the choice and construction of the scenarios presented in the stress test report.

Contagion Effects

24. Contagion effects refer to the consequential effects on other assumptions relating to the scenario as a result of the interdependence of these assumptions with the principal assumptions made to construct the scenario.

25. During the analysis and construction of each short-term and the medium-term scenario, including but not limited to those prescribed by the Authority, the appointed actuary should consider contagion effects on the principal assumptions made. The principal assumptions and contagion effects considered by the appointed actuary should be clearly identified in the stress test report.

Management Action

26. The stress test report should show the impact on the insurer's financial condition if no management action is taken, and the appointed actuary should then demonstrate how, with appropriate and timely management action, the insurer can maintain or regain a satisfactory financial condition. Management action refers to actions taken by an insurer in direct response to the shocks in each scenario. These include, but are not limited to, injection of capital, cuts in bonus rates and restructuring of assets.

27. The appointed actuary may propose several alternative courses of management action the insurer could take to mitigate its financial loss in any given

scenario. The rationale for each course of action, and the potential implications should be clearly described in the stress test report.

28. If more than one course of management action is proposed, the appointed actuary shall select the course of management action that he views most beneficial to the insurer for each scenario. The financial impact of pursuing that course of action shall be reflected in the tables of Appendices A and B.

Key Areas of Concern and Recommendations

29. The appointed actuary should identify the key areas of concern noted from the stress test results and recommend in the stress test report measures that could be put in place to mitigate the risks and the timeframe for implementing these measures. The appointed actuary should comment in the stress test report on the adequacy of the mitigating measures, and where applicable, conduct further analysis to quantify the likely impact of such measures and set out the results of the analysis in the stress test report.

30. These measures may include, but are not limited to, changing the asset mix, hedging investment risks wherever appropriate, changing the mix of new business, withdrawing from certain lines of business or revising reinsurance arrangements.

31. The senior management of the insurer should study the stress test report and also make its recommendations to the board of directors.

Board of Directors' Deliberations

32. For purposes of ensuring an insurer's compliance with the requirements in paragraph 14, the board of directors should:

    (a) deliberate on both the results of the stress tests as well as the recommendations of the appointed actuary and senior management;

    (b) comment on the feasibility of the management action proposed to mitigate the impact of the potential shocks after the shock materializes; and

    (c) comment on the recommendations of the appointed actuary and senior management, and ascertain and conclude whether any measures need to be taken by the insurer, whether immediately or in the near future.

33. If capital injection is amongst the management actions proposed for any of the scenarios, the board of directors should also ascertain and conclude whether such capital resources are available, and the source or likely source of those capital resources.

5 Year Projections

Insurance Fund: Non-Participating/ Participating/ Investment-Linked/ General Insurance
Base Scenario/ Medium-Term Scenario (1/ 2/ 3)

Fund Balance Sheet

Description	**Rows of Form 1**	**Past 3 Years' Actual Experience**			**Projection Years (before Management Action)**					**Projection Years (after Management Action, if any)**				
		-3	-2	-1	1	2	3	4	5	1	2	3	4	5
ASSETS														
Equity securities	1													
Debt securities	2													
Land and buildings	3													
Loans	4													
Cash and deposits	5													
Other invested assets	6, 7													
Fixed assets	12													
Other assets	8, 9, 10, 11, 13, 14													
Total Assets	**15**													
LIABILITIES														
Policy liabilities	16													
Other liabilities	17 to 23													
Total Liabilities	**24**													
SURPLUS	**25**													

Fund Profit & Loss Account

Description	**Rows of Form 2**	**Past 3 Years' Actual Experience**			**Projection Years (before Management Action)**					**Projection Years (after Management Action, if any)**				
		-3	-2	-1	1	2	3	4	5	1	2	3	4	5
Gross Premiums	1													
Less: Outward reinsurance premiums	2													
Investment revenue	3													
Less: Investment expenses	4													
Other income	5													
Total Income	**6**													
Gross claims settled	7													
Less: Reinsurance recoveries	8													
Management expenses	9													
Distribution expenses	10													
Increase (decrease) in net policy liabilities	11													
Provision for doubtful debts/ bad debts written off	12													
Taxation expenses	13													
Other expenses	14													
Total Outgo	**15**													
NET INCOME	**16**													

Fund Solvency Requirement

Description	Rows of Form 21	Past 3 Years' Actual Experience			Projection Years (before Management Action)					Projection Years (after Management Action, if any)				
		-3	-2	-1	1	2	3	4	5	1	2	3	4	5
FINANCIAL RESOURCES														
Balance in the surplus account (par fund)	1													
Add: Allowance for provision for non-guaranteed benefits (par fund)	2													
Surplus of insurance fund (other than par fund)	5													
Less: Reinsurance adjustment	6													
Financial resource adjustment	7													
Financial Resources	**13**													
TOTAL RISK REQUIREMENT														
<u>Component 1 Requirement</u>														
Life Insurance Risk Requirement														
Policy liability risk requirement	15, 24													
Surrender value condition risk requirement	18, 27													
General Insurance Risk Requirement														
Premium liability risk requirement	31													
Claim liability risk requirement	32													
Total C1 Requirement	**33**													
<u>Component 2 Requirement</u>														
Equity investment risk requirement	34													
Debt investment and duration mismatch risk requirement	37													
Loan investment risk requirement	48													
Property risk requirement	49													
Other risk requirement	50 to 52													
Total C2 Requirement	**53**													
Total C3 Requirement	**61**													
Total Risk Requirement	**62**													
Fund Solvency Ratio (%)														

5 Year Projections

Shareholders’ Fund and Overseas Branch Operations
Base Scenario/ Medium-Term Scenario (1/ 2/ 3)

Global Business Balance Sheet

Description	Rows of Form 8	Past 3 Years’ Actual Experience			Projection Years (before Management Action)					Projection Years (after Management Action, if any)				
		-3	-2	-1	1	2	3	4	5	1	2	3	4	5
ASSETS														
Equity securities	1													
Debt securities	2													
Land and buildings	3													
Loans	4													
Cash and deposits	5													
Other invested assets	6, 7													
Fixed assets	12													
Other assets	8, 9, 10, 11, 13, 14													
Total Assets	**15**													
LIABILITIES														
Policy liabilities	16													
Other liabilities	17 to 23													
Total Liabilities	**24**													
NET ASSETS	**25**													
SHAREHOLDERS EQUITY & SURPLUS														
Paid-up Capital	26													
Reserves:														
Unappropriated profits	27													
Other reserves	28													
Surplus	29													
Total	**30**													

Global Business Profit & Loss Account

Description	**Rows of Form 9**	**Past 3 Years' Actual Experience**			**Projection Years (before Management Action)**					**Projection Years (after Management Action, if any)**				
		-3	-2	-1	1	2	3	4	5	1	2	3	4	5
Gross Premiums	1													
Less: Outward reinsurance premiums	2													
Investment revenue	3													
Less: Investment expenses	4													
Other income	5													
Total Income	**6**													
Gross claims settled	7													
Less: Reinsurance recoveries	8													
Management expenses	9													
Distribution expenses	10													
Increase (decrease) in net policy liabilities	11													
Provision for doubtful debts/ bad debts written off	12													
Taxation expenses	13													
Other expenses	14													
Total Outgo	**15**													
NET INCOME	**16**													

Total Risk Requirements

Description	**Rows of Form 22**	**Past 3 Years' Actual Experience**			**Projection Years (before Management Action)**					**Projection Years (after Management Action, if any)**				
		-3	-2	-1	1	2	3	4	5	1	2	3	4	5
TOTAL RISK REQUIREMENT														
<u>Component 1 Requirement</u>														
Life Insurance Risk Requirement														
Policy liability risk requirement	2, 11													
Surrender value condition risk requirement	5, 14													
General Insurance Risk Requirement														
Premium liability risk requirement	18													
Claim liability risk requirement	19													
Total C1 Requirement	**20**													
<u>Component 2 Requirement</u>														
Equity investment risk requirement	21													
Debt investment and duration mismatch risk requirement	24													
Loan investment risk requirement	35													
Property risk requirement	36													
Other risk requirement	37 to 38													
Total C2 Requirement	**39**													
Total Risk Requirement	**40**													

Capital Adequacy Requirement

Description	**Rows of Form 23**	**Past 3 Years' Actual Experience**			**Projection Years (before Management Action)**					**Projection Years (after Management Action, if any)**				
		-3	-2	-1	1	2	3	4	5	1	2	3	4	5
FINANCIAL RESOURCES														
<u>Tier 1 Resource</u>														
Aggregate of surpluses of all insurance funds other than participating funds	1													
Balances in the surplus account of each participating fund	2													
Paid-up ordinary share capital	3													
Unappropriated profit (loss)	4													
Irredeemable and non-cumulative preference shares	5													
Any other capital instrument approved by the Authority as a Tier 1 resource	6													
Less: Reinsurance adjustment	7													
Financial resource adjustment	8													
Total Tier 1 Resource	**14**													
<u>Tier 2 Resource</u>														
Irredeemable and non-cumulative preference shares not recognised as Tier 1 resource	15													
Irredeemable and cumulative preference shares	16													
Any qualifying Tier 2 instrument approved by the Authority as a Tier 2 resource	17													
Total Tier 2 Resource	**18**													
Aggregate of allowance for provisions for non-guaranteed benefits of participating funds	**19**													
Financial Resources	**20**													
TOTAL RISK REQUIREMENT														
Total risk requirements of insurance funds	21													
Total risk requirements of assets and liabilities that do not belong any insurance fund	22													
Total Risk Requirement of Insurer	**23**													
Capital Adequacy Ratio (%)	**24**													

Breakdown of Profit and Loss Items for Base Scenario

Description	**Past 3 years' Actual Experience**			**Projection Years**				
	-3	-2	-1	1	2	3	4	5
Gross Premiums (Annex 2A of Form 2)								
Individual Business								
Single premiums								
Regular premiums - new business								
Regular premiums - renewal business								
Group Business Premiums								
Inward Reinsurance Premiums								
Total Gross Premiums								
Investment Revenue (Annex 2C of Form 2)								
Equity securities								
Dividend income								
Capital gains/ losses								
Debt securities								
Interest income								
Capital gains/ losses								
Land and buildings								
Rental income								
Capital gains/ losses								
Loans								
Interest income								
Capital gains/ losses								
Cash and deposits								
Other invested assets								
Income								
Capital gains/ losses								
Total Investment Revenue								
Gross claims settled (Annex 2E of Form 2)								
Death, total permanent disability, critical illness								
Accident and health benefits other than total permanent disability and critical illness								
Maturity / Anticipated endowment								
Surrenders								
Annuities								
Cash bonuses								
Others								
Total Gross Claims								
Distribution Expenses (Annex 2G of Form 2)								
Individual new business - single premium								
Individual new business - regular premium								
Individual renewal business								
Group business								
Other distribution expenses								
Total Distribution Expenses								

1 Year Projections of Short-Term Scenario
Insurance Fund: Non-Participating/ Participating/ Investment-Linked/ General Insurance

Fund Balance Sheet

Description	Rows of Form 1	1 Year Projections (before Management Action)				1 Year Projections (after Management Action, if any)		
		Base	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
ASSETS								
Equity securities	1							
Debt securities	2							
Land and buildings	3							
Loans	4							
Cash and deposits	5							
Other invested assets	6, 7							
Fixed assets	12							
Other assets	8, 9, 10, 11, 13, 14							
Total Assets	**15**							
LIABILITIES								
Policy liabilities	16							
Other liabilities	17 to 23							
Total Liabilities	**24**							
SURPLUS	**25**							

Fund Profit & Loss Account

Description	Rows of Form 2	1 Year Projections (before Management Action)				1 Year Projections (after Management Action, if any)		
		Base	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Gross Premiums	1							
Less: Outward reinsurance premiums	2							
Investment revenue	3							
Less: Investment expenses	4							
Other income	5							
Total Income	**6**							
Gross claims settled	7							
Less: Reinsurance recoveries	8							
Management expenses	9							
Distribution expenses	10							
Increase (decrease) in net policy liabilities	11							
Provision for doubtful debts/ bad debts written off	12							
Taxation expenses	13							
Other expenses	14							
Total Outgo	**15**							
NET INCOME	**16**							

Fund Solvency Requirement

Description	Rows of Form 21	1-yr Projections (before Management Action)				1yr- Projections (after Management Action)		
		Base	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
FINANCIAL RESOURCES								
Balance in the surplus account (par fund)	1							
Add: Allowance for provision for non-guaranteed benefits (par fund)	2							
Surplus of insurance fund (other than par fund)	5							
Less: Reinsurance adjustment	6							
Financial resource adjustment	7							
Financial Resources	**13**							
TOTAL RISK REQUIREMENT								
<u>Component 1 Requirement</u>								
Life Insurance Risk Requirement								
Policy liability risk requirement	15, 24							
Surrender value condition risk requirement	18, 27							
General Insurance Risk Requirement								
Premium liability risk requirement	31							
Claim liability risk requirement	32							
Total C1 Requirement	**33**							
<u>Component 2 Requirement</u>								
Equity investment risk requirement	34							
Debt investment and duration mismatch risk requirement	37							
Loan investment risk requirement	48							
Property risk requirement	49							
Other risk requirement	50 to 52							
Total C2 Requirement	**53**							
Total C3 Requirement	**61**							
Total Risk Requirement	**62**							
Fund Solvency Ratio (%)								

1 Year Projections of Short-Term Scenario

Shareholders' Fund and Overseas (Branch) Operations

Global Business Balance Sheet

Description	**Rows of Form 8**	**1 Year Projections (before Management Action)**				**1 Year Projections (after Management Action, if any)**		
		Base	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 1**	**Scenario 2**	**Scenario 3**
ASSETS								
Equity securities	1							
Debt securities	2							
Land and buildings	3							
Loans	4							
Cash and deposits	5							
Other invested assets	6, 7							
Fixed assets	12							
Other assets	8, 9, 10, 11, 13, 14							
Total Assets	**15**							
LIABILITIES								
Policy liabilities	16							
Other liabilities	17 to 23							
Total Liabilities	**24**							
NET ASSETS	**25**							
SHAREHOLDERS EQUITY & SURPLUS								
Paid-up Capital	26							
Reserves:								
Unappropriated profits	27							
Other reserves	28							
Surplus	29							
Total	**30**							

Global Business Profit & Loss Account

Description	Rows of Form 9	1 Year Projections (before Management Action)				1 Year Projections (after Management Action, if any)		
		Base	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Gross Premiums	1							
Less: Outward reinsurance premiums	2							
Investment revenue	3							
Less: Investment expenses	4							
Other income	5							
Total Income	**6**							
Gross claims settled	7							
Less: Reinsurance recoveries	8							
Management expenses	9							
Distribution expenses	10							
Increase (decrease) in net policy liabilities	11							
Provision for doubtful debts/ bad debts written off	12							
Taxation expenses	13							
Other expenses	14							
Total Outgo	**15**							
NET INCOME	**16**							

Total Risk Requirements

Description	Rows of Form 22	1 Year Projections (before Management Action)				1 Year Projections (after Management Action, if any)		
		Base	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
TOTAL RISK REQUIREMENT								
Component 1 Requirement								
Life Insurance Risk Requirement								
Policy liability risk requirement	2, 11							
Surrender value condition risk requirement	5, 14							
General Insurance Risk Requirement								
Premium liability risk requirement	18							
Claim liability risk requirement	19							
Total C1 Requirement	**20**							
Component 2 Requirement								
Equity investment risk requirement	21							
Debt investment and duration mismatch risk requirement	24							
Loan investment risk requirement	35							
Property risk requirement	36							
Other risk requirement	37 to 38							
Total C2 Requirement	**39**							
Total Risk Requirement	**40**							

Capital Adequacy Requirement

Description	**Rows of Form 23**	**1 Year Projections (before Management Action)**				**1 Year Projections (after Management Action, if any)**		
		Base	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
FINANCIAL RESOURCES								
Tier 1 Resource								
Aggregate of surpluses of all insurance funds other than participating funds	1							
Balances in the surplus account of each participating fund	2							
Paid-up ordinary share capital	3							
Unappropriated profit (loss)	4							
Irredeemable and non-cumulative preference shares	5							
Any other capital instrument approved by the Authority as a Tier 1 resource	6							
Less: Reinsurance adjustment	7							
Financial resource adjustment	8							
Total Tier 1 Resource	**14**							
Tier 2 Resource								
Irredeemable and non-cumulative preference shares not recognised as Tier 1 resource	15							
Irredeemable and cumulative preference shares	16							
Any qualifying Tier 2 instrument approved by the Authority as a Tier 2 resource	17							
Total Tier 2 Resource	**18**							
Aggregate of allowance for provisions for non-guaranteed benefits of participating funds	**19**							
Financial Resources	**20**							
TOTAL RISK REQUIREMENT								
Total risk requirements of insurance funds established under the Act	21							
Total risk requirements of assets and liabilities that do not belong any insurance fund established under the Act	22							
Total Risk Requirement of Insurer	**23**							
Capital Adequacy Ratio (%)	**24**							

Notes to Appendices A and B

1. For any scenario for which the appointed actuary has recommended more than one course of management action, the appointed actuary shall present the financial impact of the course of action which he views as most beneficial to the insurer for mitigating the losses arising in that scenario.

2. Monetary figures will be presented in S$ millions rounded up to 1 place of decimal. However, fund solvency and capital adequacy ratios must be computed using values accurate to the dollar.

3. Where the appointed actuary is satisfied that the results of the analysis will not be compromised, the appointed actuary may exclude selected items or insurance funds from the detailed projections and analysis. The appointed actuary shall disclose and justify the exclusions.

4. In conducting valuation of assets and liabilities for the projections, the basis employed should be that prescribed in Insurance (Valuation and Capital) Regulations 2004. The appointed actuary may adopt a simplification or an approximation of one or more elements of the said basis if he is satisfied that the valuation of assets and liabilities will not be compromised. The appointed actuary shall disclose and justify any such simplification or approximation.

Note to Appendix A only

1. Presentation of past three years' actual experience is only required for the base scenario projection table. Years -1, -2, and -3 refer to accounting periods immediately preceding the year of preparation of the stress test report. Year 1 refer to the year of preparation of the stress test report. Years 2 to 5 refer to the accounting periods following the year of preparation of the stress test report.

Short-Term Scenarios

Prescribed Scenario Tests

2. Short-term Scenario 1:

   (a) 100% increase in mortality and morbidity experience;

   (b) 100% increase in claims for the accident year from general insurance business exposed to natural calamities;

   (c) 20% fall in value of equities and properties;

   (d) 20% fall in new business premiums; and

   (e) 10% fall in reinsurance recoverables.

3. Short-term Scenario 2:

   (a) 30% fall in value of equities and properties;

   (b) 30% fall in new business premiums;

   (c) 200% increase in termination;

   (d) Parallel -100bps yield curve shift with a parallel +100bps in the spread of corporate bonds; and

   (e) 5% depreciation of Singapore currency.

List of Short-Term Risk Factors to Take Into Account to Form Scenarios

4. Mortality/ Morbidity: adverse deviation in experience

5. Investment returns

   (a) Yield curve

      (i) Parallel yield curve shift

      (ii) No change for duration less than 5 years, parallel shift for duration more than 5 years, linear interpolation

      (iii) Parallel shift for duration less than 5 years, no change for duration more than 5 years, linear interpolation

      (iv) Change in credit spreads

   (b) Equity market

      (i) Equity crash – fall in all market, by market

(ii) Stock specific event risk - move in each individual stock, by stock

6. Expenses: increase in expenses

7. Termination rates: adverse deviation in experience

8. New business: fall in new business

9. Where material, the appointed actuary shall also include shock scenarios to company's experience in the next projection year arising from changes in:

   (a) reinsurance ceded;

   (b) reserving basis;

   (c) exercise rate of policy options;

   (d) distribution to shareholders;

   (e) taxation; and

   (f) any other relevant matters.

Medium-Term Scenarios

List of Medium-Term Risk Factors to Take Into Account to Form Scenarios

1. Mortality/ Morbidity: yearly deterioration in experience over the projection period

2. Investment returns

   (a) Yield curve:

      (i) Parallel yearly yield curve shift

      (ii) No change for duration less than 5 years, yearly parallel shift for duration more than 5 years, linear interpolation

      (iii) Yearly parallel shift for duration less than 5 years, no change for duration more than 5 years, linear interpolation

      (iv) Change in credit spreads

   (b) Equity market

      (i) Equity dividend yield fall over the projection period

      (ii) Equity total returns deteriorate over the projection period

3. Expenses: Yearly deterioration in experience over the projection period

4. Termination rates: Yearly deterioration in experience over the projection period

5. New business: Yearly fall in new business income over the projection period

6. Where material, the appointed actuary shall also include scenarios on deterioration of company's experience over the projection period arising from changes in:

   (a) bonus scales;

   (b) reinsurance ceded;

   (c) reserving basis;

   (d) exercise rate of policy options;

   (e) distribution to shareholders;

   (f) taxation; and

   (g) any other relevant matters

Format for the Stress Test Report

Introduction

1. Purpose of the report

2. Limitations and reliance

Scenarios

3. Base scenarios

    - Construction of base scenario
    - Description of assumptions

4. Short-term scenarios

    - Construction of scenario
    - Description of assumptions that deviate from base scenario assumptions

5. Medium-term scenarios

    - Construction of scenario
    - Description of assumptions that deviate from base scenario assumptions

Methodology

6. Methodology

    - Projection software used
    - Description of projection model used

Results

7. Summary of results

    - Base scenario
    - Short-term scenarios
    - Medium-term scenarios

8. Qualifications of results (if any)

Analysis of Experience

9. Comparison of actual experience vis-à-vis projection from the prior year.

10. Comment on the suitability of projection assumptions in light of experience.

<u>Appointed Actuary's Assessment and Recommendation</u>

11. General assessment on results of the projections and the implications on the financial condition of the insurer, before and after incorporating any management actions. The appointed actuary's comments should include, but not be limited to, the following areas:

    - the ability of the insurer to meet fund solvency and capital adequacy requirements; and

    - the appropriate and timely management action required to be taken in the event these requirements are not met; and

    - the key risks that threaten the financial strength of the insurer.

12. Key areas of concern identified from these stress tests.

13. Recommendations on measures to be implemented to mitigate the risks identified as key areas of concern, and the timeframe for implementing these measures.

<u>Attachments</u>

14. Detailed projections in the format presented in Appendices A and B.