



Institute of Actuaries of Australia

# Asset-liability matching in an environment of declining Government bond supply.

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## Abstract

*An increase in demand for risk-free bonds by the general insurance has coincided with a significant decline in the availability of such securities due to the fiscal environment of the Commonwealth and State governments. This investment void has been largely filled by non-government bonds which has impacted regulatory capital. This paper studies this phenomenon, its impact and considers alternative asset-liability solutions.*

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## Executive Summary

Over the last 5 years the general insurance industry has significantly increased the investment of their technical reserves in fixed income securities. This has served to enhance the asset-liability matching endeavours across the industry. The accounting, regulatory and investment environments have been conducive to this increased emphasis.

Over the same period, Federal and State Governments have been running sustained budget surpluses leading to reduction in the supply of “government” bonds. For example, the volume of outstanding Commonwealth Bonds has declined by 48% since 1997. A pronounced increase in the issue of corporate bonds by various non-government issuers has filled the supply void left by the government issuers. For example, in 1999 the UBS Composite Bond Index (the most common fixed interest performance benchmark) comprised 80% government bonds. As at June 2005, government bonds account for only 46% of this index.

The impact of this compositional shift in the supply of fixed interest securities has had a significant impact in the Investment Risk Capital Charge associated with the bond portfolios of general insurers. For example, a general insurer who has invested in the UBS Composite Bond Index Charge over the last 5 years would have seen an 80% increase in the associated Investment Risk Capital due to the changing composition of the benchmark.

The impact on regulatory capital arising as a result of the compositional shift in the supply of fixed income securities suggests that general insurers should review whether their long-standing performance benchmarks are still appropriate. Across general insurance bond portfolios there are many examples where the extra return achieved by investing in lower rated credits is insufficient to recoup the cost of the incremental APRA capital charges. This paper proposes that the investment performance benchmarks for managers of general insurance bond portfolios should allow for the impact on regulatory capital. An example of how the performance benchmarks for bond portfolios can be constructed to accommodate the impact of regulatory capital on the insurer is provided within this paper.

Lastly, this paper briefly explores the capabilities of interest rate derivatives in assisting in the pursuit of asset-liability matching. Interest rate derivatives can be used to create portfolios of ‘synthetic bonds’ as an alternative to investing in physical bonds. The benefit of synthetic bonds is that they can be tailored to exactly match the insurer’s underlying liabilities. Alternatively they can be structured to hedge specific long-dated liabilities where an absence of available securities exists.

## Influences on Asset-Liability Matching

A general insurer's approach to asset-liability management is influenced by the interaction of several factors. These include, but are not limited to, the insurer's accounting environment, the regulatory environment, the underlying investment environment, the competitive environment and the management's tolerance to risk.

### Accounting Environment

One of the primary drivers impacting the approach undertaken for asset-liability matching is the underlying accounting environment facing the insurer. Australian general insurers' report under the Australian accounting standard AASB 1023 – General Insurance Contracts. Whilst this standard replaced Financial Reporting of General Insurance Contracts (AASB 1023) in January 2005 the thrust of the two standards are consistent in that they compel insurers to measure the assets backing general insurance liabilities on a basis that is consistent with the measurement of the general insurance liabilities.

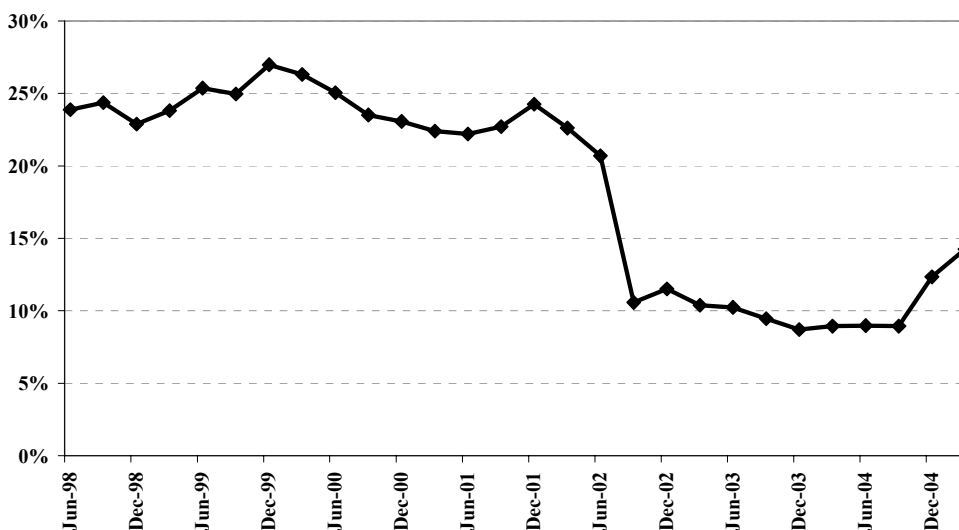
“As this Standard requires general insurance liabilities to be measured using an expected present value calculation, this Standard requires insurers to measure assets backing general insurance liabilities at fair value with changes in fair value recognised in the income statement wherever this option is available in the applicable Australian Accounting Standards” (AASB 1023, pg 8)

In a fair value accounting environment a mismatch between assets and liabilities results in volatility in the income statement.

### Investment Environment

The introduction of AASB 1023 Financial Reporting of General Insurance Activities in 1996 introduced an accounting environment that supported a matched approach to assets and liabilities. Despite this, prior to 2000 insurers were largely tolerant of volatility in the income statement as evidenced by the high investment exposure to equities across the industry (refer graph below).

**Direct Insurers Asset Allocation to Equities<sup>1</sup>**



1: Source - 1995-2002 APRA General Insurance Trends, 2002-2005 APRA Quarterly General Insurance Performance Statistics

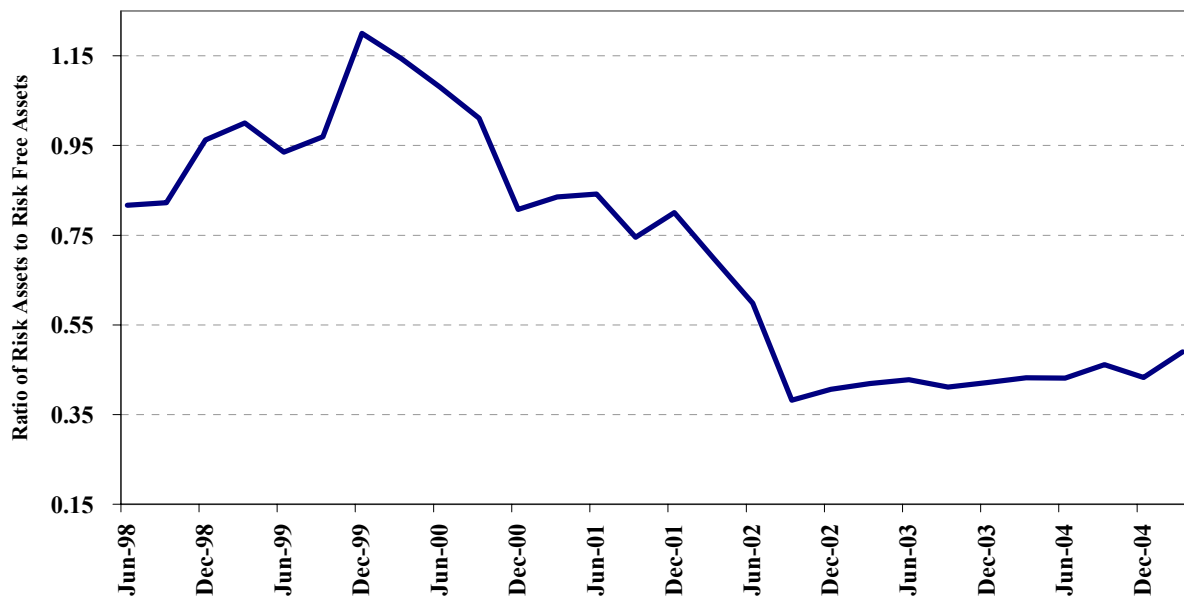
The tolerance to income statement volatility was understandable given the positive investment returns being enjoyed by sharemarket investors during the period during 1995-2000. With the benchmark All Ordinaries Index having rallied over 70% over that period the income volatility was invariably positive so acceptance of the asset-liability mismatch was tolerated. This tolerance was shaken in 2001 where the beginning of an equity market downturn was magnified by the events of September 11.

The pain being felt as asset values fell due to declining equity markets was compounded by a fall in interest rates to historical lows thereby increasing the net present value of insurer's liabilities.

The mismatch pain was further compounded in 2002 with the introduction of the APRA's Prudential Standard GPS 110 and Guidance Note GGN 110.4 – Investment Risk Capital Charge that resulted in an increase in the regulatory capital necessary to support equity investments.

The combination of these factors saw a substantial “de-risking” of general insurance investment portfolios. One measure of portfolio riskiness is to compare the allocation to risky assets (equities and property) to the allocation to risk-free assets (cash, liquids and bonds). In 1999 this ratio peaked at 1.20. That is, in 1999 the general insurance industry had \$1.20 invested in equities, property, loans and advances) for every \$1.00 invested in cash, liquids and bonds. By the end of 2004 this ratio had declined to a mere 0.43 highlighting a significant reduction in risk appetite.

### Direct Insurers' Asset Allocation<sup>1</sup> (Ratio of Risky Assets to Risk Free Assets<sup>2</sup>)



1: Source - 1995-2002 APRA General Insurance Trends, 2002-2005 APRA Qtly General Insurance Performance Statistics

2: Risk Free Assets = Cash, Liquid Assets and Interest Bearing Investments

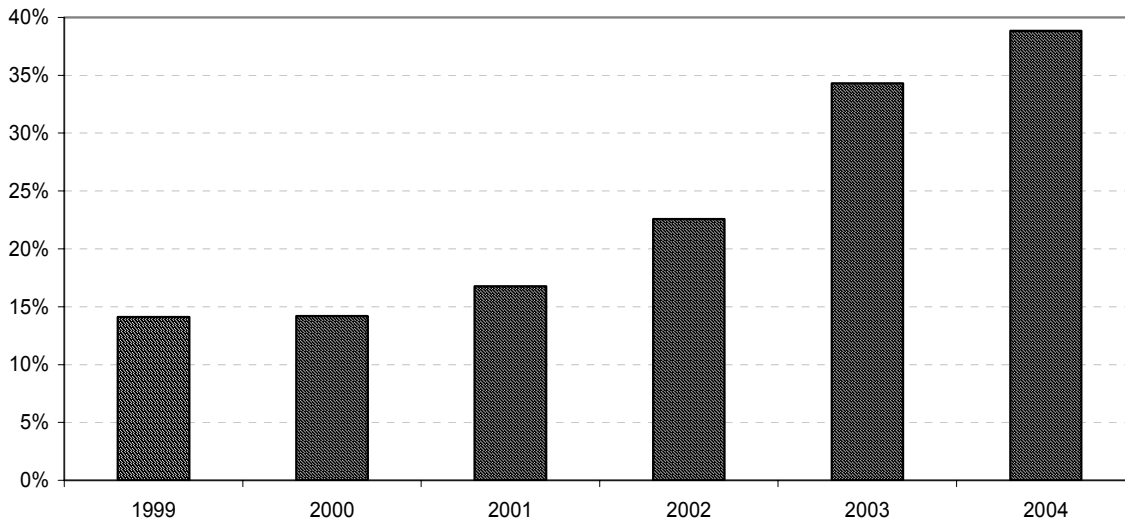
## Supply and Demand of Risk-Free Bonds

### General Insurance Appetite

The shift within the general insurance industry to a heavier reliance on investing in risk-free assets such as bonds, coincided with an emerging trend within the government sector of delivering budget surpluses. The consistent budget surpluses had a significant effect on the supply of government bonds available to general insurers as well as other investors. For example, the quantum of outstanding Commonwealth Bonds has declined by 48% in the last 7 years. Over the corresponding period the demand for bonds by the general insurance industry has increased by 270% (source: APRA General Insurance Trends and APRA Quarterly Insurance Performance Statistics).

The graph below shows demand for interest bearing securities from the general insurance industry as a percentage of the outstanding bonds issued by the Commonwealth and State Government issuers. In 1999 the general insurance industry investment appetite for risk-free bonds was equivalent to 14% of outstanding bonds, this now stands at 39%.

**General Insurers Holdings of Interest Bearing Securities as a percentage of Commonwealth and Semi-Govt Bonds on Issue**

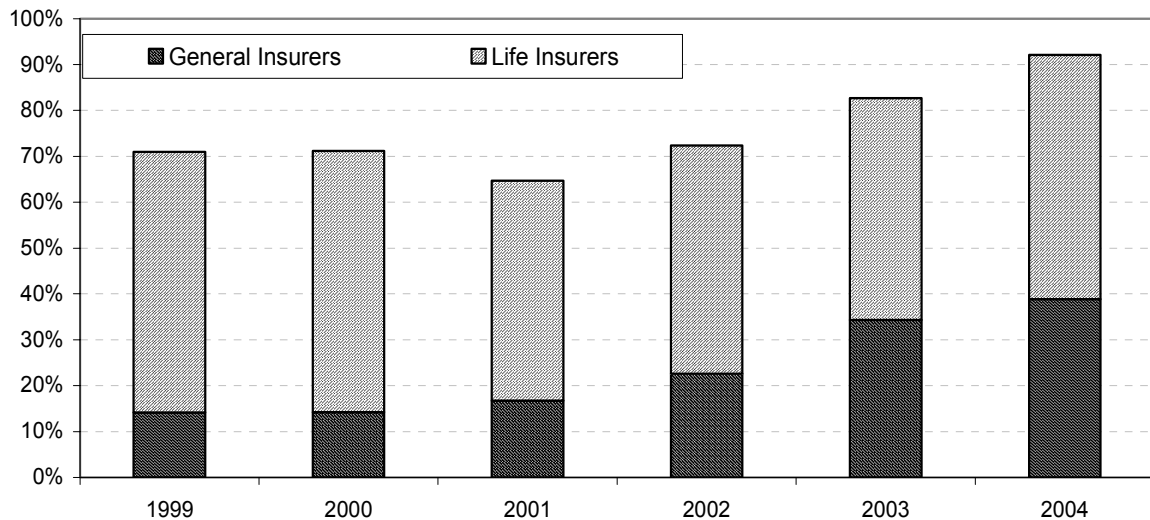


Source: APRA, Reserve Bank of Australia

### Other Sources of Demand

Other competing buyers of bonds such as the life insurance industry and the superannuation industry compound this supply/demand imbalance. For example, adding the life insurance community's appetite for interest bearing securities to the general insurance appetite results in a collective appetite equivalent to nearly 100% of the outstanding risk-free bonds (refer chart below).

### General + Life Insurers Holdings of Interest Bearing Securities as a percentage of Commonwealth and Semi-Govt Bonds on Issue



Sources: APRA, Reserve Bank of Australia, Queensland Treasury Corp, NSW Treasury Corp, Treasury Corp Victoria, Tascorp, WA Treasury Corp, SA Financing Agency.

The above charts highlight that the demand from life and general insurers for risk-free bonds for the purposes of liability management will account for nearly all the outstanding risk-free bonds available in the market place. The additional demand for fixed income assets from the superannuation industry is estimated at \$50bn. This is equivalent to a further 55% of outstanding risk-free bonds. Add to this demand the requirements of the prospective Future Fund announced in the 2005 Budget and you easily get to a scenario where the demand by investors for risk-free bonds is twice the available supply.

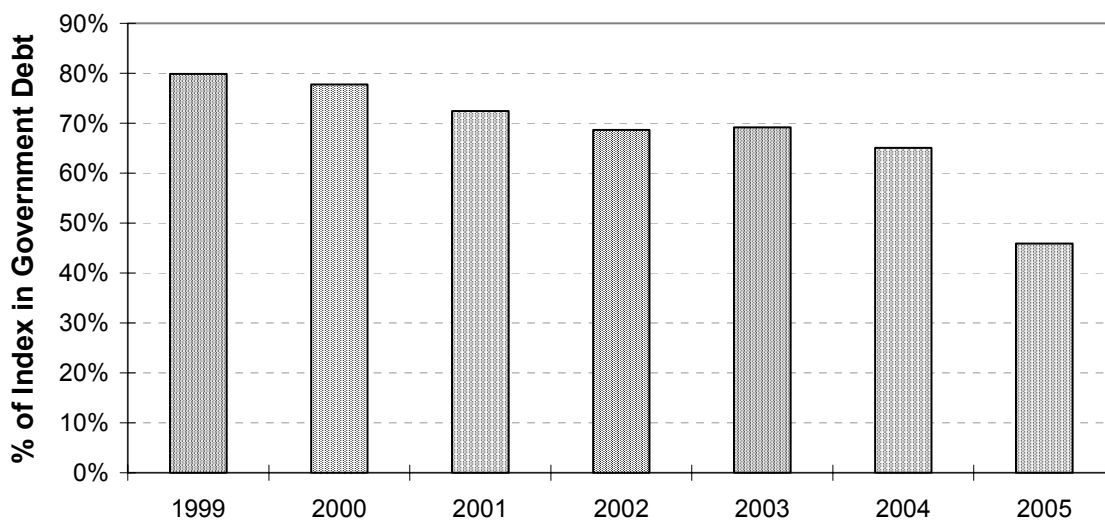
### Asset Liability Matching in an era of declining bond supply

In an environment where the prospective availability of risk-free bonds is inadequate to facilitate ALM by the insurance industry what other options are available? The most obvious solution is to invest in bonds issued by the non-government sector, i.e. corporate bonds. The pursuit of this alternative is already commonplace amongst the industry participants. The second alternative involves the use of interest rate derivatives to create “synthetic bonds”. Only a few industry participants have considered this alternative at this stage. This paper will now explore these two alternatives.

## Using Corporate Bonds for Asset Liability Matching

The gap in supply arising from the reduced issuance of government bonds has been filled by a significant increase in the issuance of bonds by the non-government sector. The best means of assessing this shift is by studying the composition of the UBS Composite Bond Index. This index is the most common performance benchmark and is used to assess the relative performance of Australian fixed income managers. The chart below highlights the impact on the composition of the performance benchmark of the greater issuance activity of the non-government sector and the reduced issuance activity of the government sector. In 1999 government bonds represented 80% of the benchmark. Today that representation stands at a mere 46%.

**Government Bonds as a % of UBS Composite Index**



Source: UBS Warburg

### Risk and Capital Implications

Whilst investing in corporate bonds would seem the obvious solution to the shortage of government bonds this investment decision has implications for an insurer's capital position. The general insurance industry operates under a regulatory capital environment imposed by APRA (Prudential Standard GPS 110). One of the key requirements of this Prudential Standard revolves around the insurer's methodology for determining its Minimum Capital Requirement (MCR). Under the Prescribed Method an insurer's MCR is determined having regard to a range of risk factors (insurance risk, investment risk and concentration risk) that may threaten the ability of the insurer to meet policyholder obligations. Guidance for determining the contribution of investment risk to the MCR determination is provided by APRA's Guidance Note 110.4 (Investment Risk Capital Charge).

#### Investment Risk Capital Charge

To calculate the Investment Risk Capital Charge under GGN 100.4, each of an insurer's assets is assigned to one of nine categories. The Investment Risk Capital Charge is determined by multiplying the balance sheet value of each asset by the appropriate Investment Capital Factor



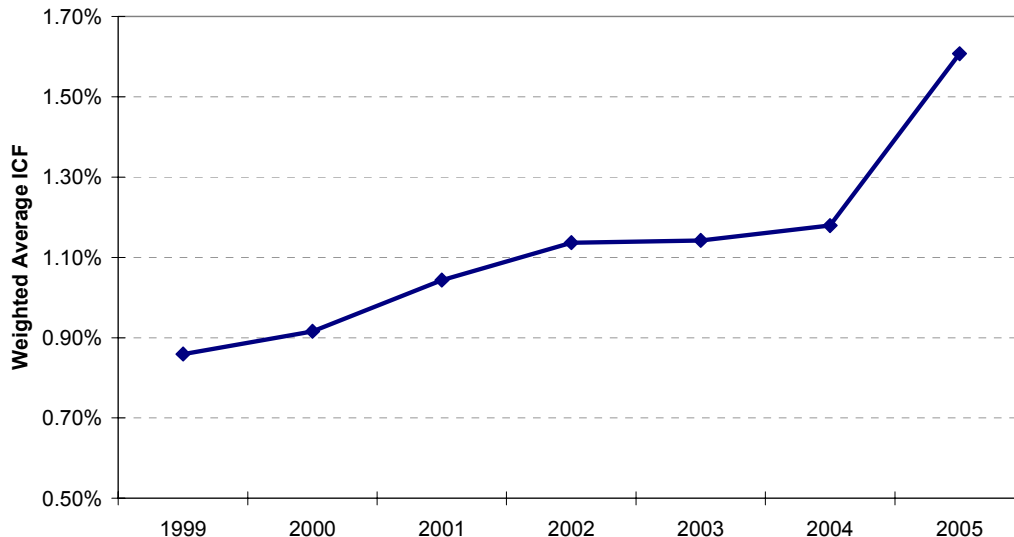
('ICF') for its category. The total Investment Risk Capital Charge for the investment portfolio is the sum of the Investment Risk Capital Charges for each individual asset. The table below shows an abridged version of Investment Capital Factors, as they would apply to a portfolio of fixed income securities.

Investment Capital Factors	
Asset	ICF
Cash	0.5%
Debt Obligations of: <ul style="list-style-type: none"> <li>The Commonwealth Government;</li> <li>An Australian State or Territory Government; or</li> <li>The national government of a foreign country rated AAA.</li> </ul>	
Any debt obligation of an issuer rated above AA- (Grade 1 or 2) that matures in less than 12 months.	1%
Any debt obligation of an issuer rated above AA- (Grade 1 or 2) that matures in 12 months or more.	2%
Any debt obligation of an issuer rated in the band A- to A+ (Grade 3).	4%
Any debt obligation of an issuer rated in the band BBB- to BBB+ (Grade 4).	6%

### Impact of compositional change on the Investment Risk Capital Charge

The structural shift in the underlying UBS Composite Index has significant capital implications for general insurers utilising this benchmark (or subsets thereof). For example, the Investment Risk Capital Charge for a bond with a credit rating of 'A' is twice that required for an asset with a credit rating of 'AA'. The graph below shows how the above compositional shift in the UBS Composite Index has impacted the Investment Risk Capital Charge for a general insurer whose fixed income manager was managing to a benchmark such as the UBS Composite Index benchmark. It highlights that an insurer's Investment Risk Capital Charge has nearly doubled over the last 6 years if they hadn't actively reviewed their performance benchmark over the period.

**Weighted Average Investment Capital Factor  
of the UBS Composite Index**



## Portfolio Benchmarking

Whilst the above graph highlights the increasing relevance of APRA's Investment Risk Capital Charges for general insurers who use the UBS Composite Index (or a subset thereof) as a performance benchmark, the picture gets even more worrisome as you delve further into the situation. That is, under certain circumstances the impact of the Investment Risk Capital Charge on non-government bonds is of sufficient magnitude as to alter the relative investment merits of particular securities. For example, it is likely that an insurer investing in lower rated bonds is not earning sufficient incremental return over and above the yield on a government bond to recoup the cost of additional capital required to support the investment.

The table overleaf attempts to highlight how the relative investment merit of securities changes after taking into account the Investment Risk Capital Charge. The table was prepared using the bonds that form part of the UBS Composite Index. The process involved the following steps:

1. The bonds in the index were sorted into portfolios by counterparty grades (as defined by GGN 110.4).
2. The weighted- average yield for these bonds was calculated to determine the incremental yield achieved by investing in this portfolio of bonds relative to a portfolio of equivalent maturity government bonds.
3. The APRA Investment Risk Capital Charge for each portfolio was calculated based on the Counterparty Grades (as specified in GGN 110.4) of the bonds within the underlying portfolios.
4. This capital charge was converted into a yield equivalent based upon the insurer's Weighted Average Cost of Capital (WACC) and a targeted Minimum Capital Requirement (MCR) multiple. This step determines what is the minimum yield required to recoup the Investment Risk Capital Charge for each portfolio using the insurer's cost of capital. (For the purposes of this calculation Westpac has assumed a 12% WACC and a target MCR multiple of 1.5 times).
5. The net yield of each portfolio (after capital costs) is then compared to that achieved by investing in a portfolio of equivalent maturity government bonds.

## Results of Analysis

Analysing the output shows that the average 3-year bond rated single A (Grade 3) delivers an incremental yield of 0.668% over and above the equivalent Commonwealth Government Bond (CGL). Per \$1m investment this equates to additional income of \$6,680. Under CGN 110.4 the minimum Investment Risk Capital Charge to support a \$1m investment in a 3-year bond with a single-A (Grade 3) rating is \$40,000. Assuming (i) the insurer is striving for a MCR multiple of 1.5 times the minimum, and (ii) has a cost of capital (WACC) of 12% implies an incremental return of \$10,800 (1.08%) is required to recoup the incremental capital costs. Thus when compared with the net return to a general insurer of investing in a Commonwealth bond, investing in the "average" 3 year single A rated bond would appear a line-ball decision. If you then consider the significantly higher risk of default of a single-A rated bond than the merit for general insurers of investing in

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lower rated corporate bonds is clearly questionable. The results of this analysis for 3 year bonds with other credit ratings is shown below:

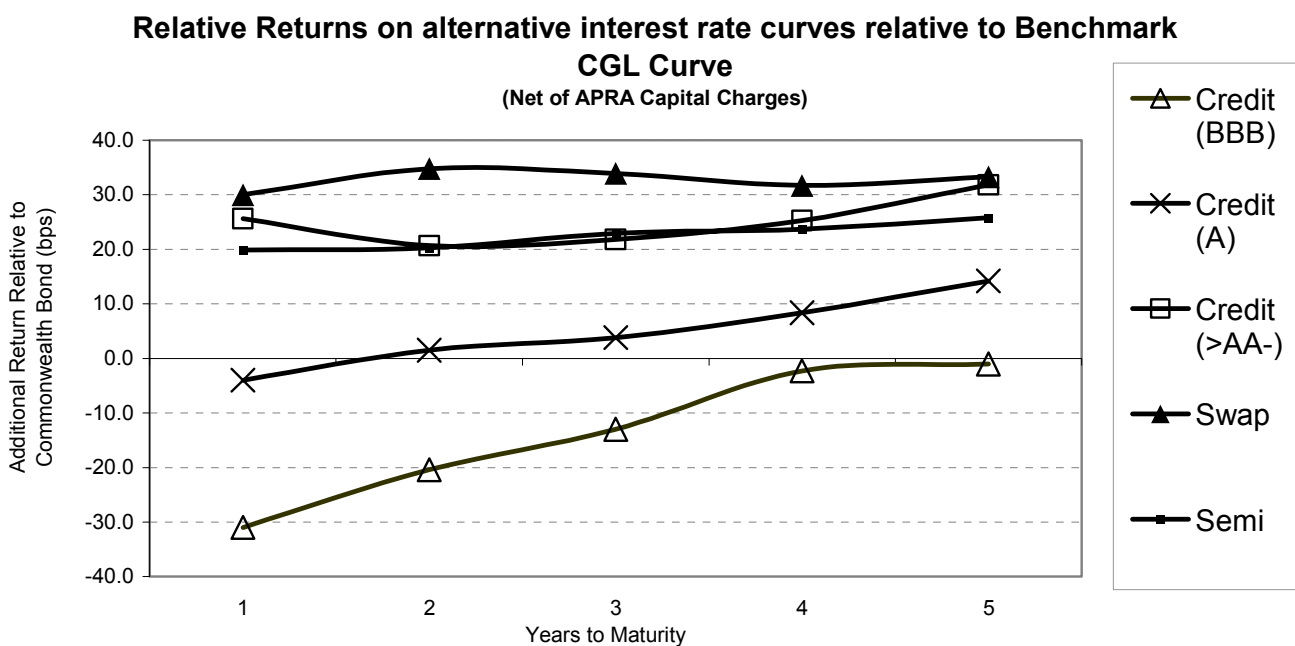
Returns after Capital Charges - 3 Year Bonds								
Yield Curve	APRA Investment Capital Factor	Minimum IRCC \$ per M	Target MCR ( x 1.5 min) \$ per M	Cost of Capital to support MCR \$ per M	Cost of Capital to support MCR (bps equiv)	Actual Incremental Return (bps)	Net Return to insurer (bps)	Returns relative to CGL Benchmark (bps)
Credit (BBB)	6.00%	\$ 60,000	\$ 90,000	\$ 10,800	108.0	86.0	-22.0	-13.0
Credit (A)	4.00%	\$ 40,000	\$ 60,000	\$ 7,200	72.0	66.8	-5.2	3.8
Credit (>AA-)	2.00%	\$ 20,000	\$ 30,000	\$ 3,600	36.0	48.8	12.8	21.8
Swap	1.00%	\$ 10,000	\$ 15,000	\$ 1,800	18.0	42.9	24.9	33.9
Semi	0.50%	\$ 5,000	\$ 7,500	\$ 900	9.0	22.9	13.9	22.9
CGL	0.50%	\$ 5,000	\$ 7,500	\$ 900	9.0	0.0	-9.0	0.0

Analysis based of yields prevailing on 11 April 2005

The above methodology is then applied across the various credit curves and the various maturities. Reviewing the results highlight that relative to investing in government bonds, single-A rated bonds (Grade 3) and BBB rated bonds (Grade 4) barely generate incremental income sufficient for an insurer to recoup the additional capital cost incurred in holding these securities yet alone provide an adequate return for the higher credit risk of such securities. That is, investing in single-A and BBB rated bonds represents an inefficient use of capital.

The results also highlight that investing in the ‘swap’ curve through interest rate derivatives generate attractive returns relative to other alternatives. The role of interest rate derivatives in general insurance portfolios is discussed on page 13.

The table below highlights the impact of regulatory capital on the returns on 3-year bonds. This analysis has been extended below to capture the net returns (after capital costs) of the various credit curves over a range of maturities relative to the benchmark Commonwealth curve.



Analysis based on yields prevailing on 11 April 2005

## **Benchmark Implications**

The above analysis has obvious implications for the benchmarking of bond portfolios for general insurers. It is common practice for the bond portfolio manager to make their investment decision without any regard to the implications of that decision on the regulatory capital of its client, the insurer. Whilst that may have not been an issue 5 years ago when only government bonds were available it especially relevant today and increasingly relevant in the future. A recommended approach to benchmarking general insurance portfolios is Appendix A.

## Synthetic Bonds

Synthetic bonds involve creating individually structured securities through the use of interest rate derivatives, specifically interest rate swaps. Creating a synthetic bond typically involves changing the cashflow characteristics of a security via an interest rate swap overlay. Interest rate swaps are an accepted instrument under APRA Guidance Note GGN 110.4.

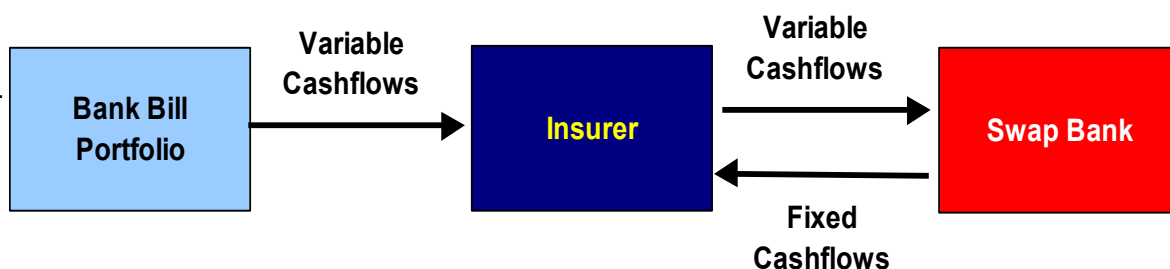
Financial institutions such as banks and government central borrowing agencies are extensive users of interest rate swaps in the area of asset-liability matching. The use of interest rate swaps to generate synthetic bond portfolios that match underlying insurance liabilities is widespread in the US and Europe and is expected to gain acceptance within the Australian general insurance industry.

The benefits of synthetic bonds include:

- Derivatives are not subject to the supply constraints evident with physical bonds.
- Derivatives are highly flexible enabling portfolios to be tailored specifically to match underlying liabilities.

### Synthetic Bond Construction

Synthetic bond construction involves using interest rate swaps to change the cashflow characteristics of a security. An interest rate swap is a derivative contract whereby two counterparties exchange cashflows on an agreed basis for a specified period. The most relevant structure for a general insurer is where an interest rate swap is overlaid on a portfolio of bank bills where the variable cashflows arising from the bank bill portfolio are exchanged for fixed cashflow over a specified period. As a result, the insurer is no longer exposed to the variable cashflows but is exposed to the fixed cashflows arising from the interest rate swap. As the cashflow is fixed for a specified term it is analogous to the fixed coupon flows being derived by a bond, hence the term a synthetic bond. The implication of this is the value of a synthetic bond will vary for a movement in interest rates in the same manner as a traditional bond. The cashflows of a synthetic bond are shown below:



The variable cashflow received (from the Bank Bill portfolio) and paid (to the Swap Bank) directly offset each other leaving a residual position where the insurer receives a fixed cashflow. In practice, the payments due under the interest rate swap are a net amount which when added to the variable cashflows from the Bank Bill Portfolio results in an aggregate amount equivalent to the fixed cashflows.

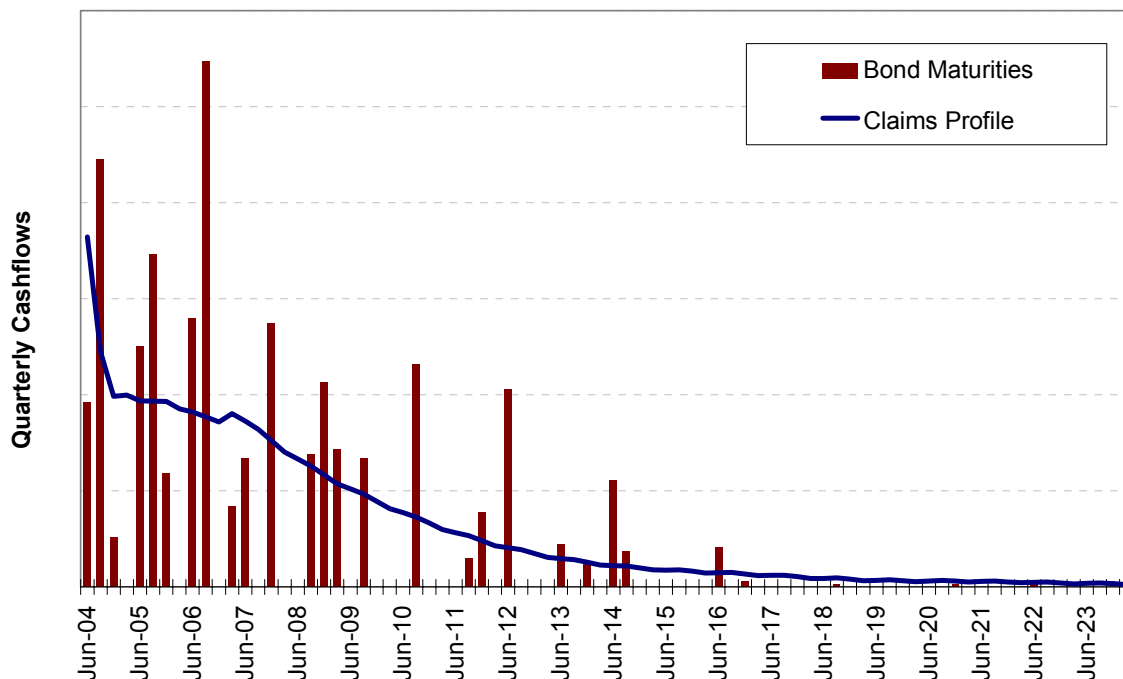
## Flexibility

One of the main attractions of interest rate swaps is that they afford tremendous flexibility in how they can be structured. For example, an interest rate swap can be tailored such that the resultant synthetic bond/s is structured so as to match the underlying liability profile. This contrasts with a portfolio of physical bonds where the maturity profile of the bond portfolio is dictated by the actual bonds available. An example of the impact of this is shown in the graphs below:

### Typical Maturity Profile using Physical Bonds

In a typical bond portfolio the general insurer attempts to match the duration of the underlying portfolio with the duration of the underlying liabilities. This matching attempt is often further segmented by matching durations for particular maturity spectrums, e.g. 0-3 year, 3-5 year, 5-10 year and 10+ years. This matching attempt will be constrained to the extent that suitable securities are available. The chart below compares the claims profile of a general insurer with the maturity profile of its underlying investment portfolio. Despite having access to all the risk-free securities there exists a number of periods where no suitable bonds are available.

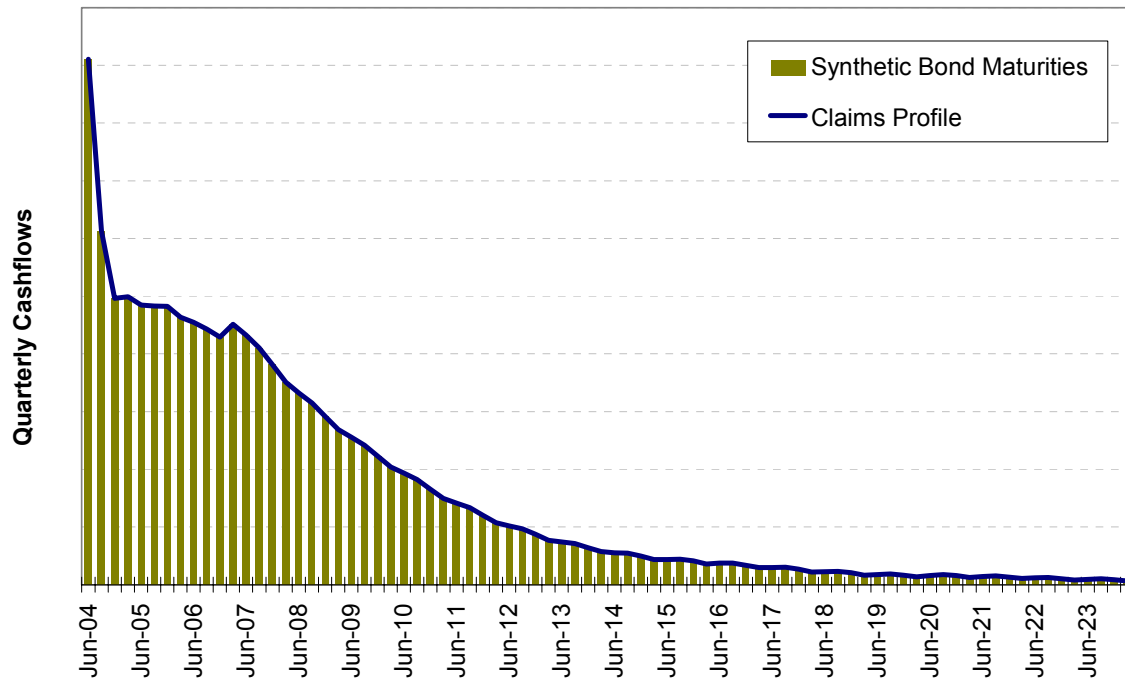
### Asset-Liability Maturity Profile



### Typical Maturity Profile using Synthetic Bonds

Under the synthetic bond alternative, the insurer can specify the maturity profile that they are trying to match and the resultant synthetic bond can be tailored accordingly. This approach eliminates the problems associated with ensuring that bonds with the suitable maturities are available. The resultant bond maturity profile as shown below is perfectly matched to the claims profile.

## Asset-Liability Maturity Profile



### Other Applications for Interest Rate Derivatives

Whilst the above represents an application of the use of interest rate swaps to generate synthetic bonds across the whole claims profile the use of interest rate derivatives can be applied selectively to address a number of specific issues

#### Hedging Long Dated Claims

As the longest available Commonwealth Bond is only 12 years in maturity hedging claims in excess of this maturity can be difficult. By comparison, interest rate swaps (synthetic bonds) can be constructed with maturities up to 30 years. Whilst, long dated exposures typically only represent a small percentage of total claims their long-dated nature make them a significant contributor to profit/loss volatility.

#### Equity Participation Strategies

The yield on a synthetic bond portfolio is in excess of an equivalent risk-free bond portfolio. This excess yield can be used to fund the purchase of equity call options. This gives the investment portfolio some upside exposure to positive movements in equity prices without compromising the asset-liability matching endeavors.

#### Inflation Derivatives

Inflation derivatives are available from some financial intermediaries. These derivatives are another form of interest rate derivative that enables the beneficiary to receive inflation-linked cashflows in exchange for fixed cashflows. These can be used by insurers to hedge against the inflation risk associated with their claims profile.

## Appendix A - Benchmarking GI Bond Portfolios

The underlying bond universe over the last 5 years has changed from a universe dominated by bonds issued by government and semi government issuers to one where non-government issuers now represent over 50% of the securities on issue. For those investors like general insurers whose capital environment is impacted by the credit-worthiness of their investments, this paradigm shift in the investment universe suggests that a corresponding shift in way investment performance benchmarks are calculated is required. That is, investment portfolio benchmarks should take into account the capital impact of the investment decision.

### Incorporating Capital Charges into an Investment Performance Benchmark

The first step toward incorporating Investment Risk Capital Charges into the Investment Performance Benchmark is to resuscitate the fixed income manager after you have advised them of the change! Incorporating capital charges in the investment benchmark is (a) not difficult, and (b) will not change the universe of securities that are suitable for a general insurer's portfolio. It will however change the relative investment merits of particular securities. Despite this, do not underestimate the push back from the fixed income manager.

In simple terms, incorporating capital charges into the investment process entails converting the Investment Risk Capital Charge into a yield equivalent. This will require an estimate to be made on the insurer's cost of capital (WACC) and the targeted MCR multiple. Having determined these variables it is simply a case of applying this cost to the portfolio (and the benchmark) based on the Investment Capital Factors specified in APRA's Capital Guidance Note 110.4. An example of this is provided below:

#### Step 1: WACC and MCR variables

Determine an estimate of the company's weighted average cost of capital and the targeted MCR ratio (i.e. what multiple of the MCR would the company normally target).

#### Step 2: Calculate the Investment Risk Capital Charge

Sort the underlying bond portfolio and the corresponding benchmark by Counterparty Grades (as defined by GGN 110.4). Apply the relevant Investment Capital Factor to the portfolios to determine the Investment Capital Risk Charge applicable to the portfolio and benchmark.

Bond Portfolio		
Asset	Market Value	Investment Capital Factor
Government Bonds	\$100,000,000	0.5%
Grade 1 or 2 Bonds	\$100,000,000	2.0%
Grade 3 Bonds	\$100,000,000	4.0%
Total	\$300,000,000	2.17%

**Portfolio Investment Risk Capital Charge**  
 $+ \$300,000,000 \times 2.17\% = \$6,510,000$

Benchmark		
Asset	Market Value	Investment Capital Factor
Government Bonds	\$40,000,000,000	0.5%
Grade 1 or 2 Bonds	\$10,000,000,000	2.0%
Grade 3 Bonds	\$15,000,000,000	4.0%
Total	\$65,000,000,000	1.54%

**Benchmark Investment Risk Capital Charge**  
 $+ \$65,000,000,000 \times 1.54\% = \$1,001,000,000$



### Step 3: Convert the Investment Risk Capital Charge to a Yield Equivalent

This step takes the minimum amount of capital required to support the bond portfolio and determines the target return on this capital based on the company's WACC. To the extent that the company targets a multiple of the Minimum Capital Requirement this is also captured. In the following example we have used a 10% WACC and a MCR multiple of 1.5 times.

Bond Portfolio	Benchmark
IRCC x WACC x MCR Multiple = IRCC Funding Cost $\$6,510,000 \times 10\% \times 1.5 = \$976,500$	IRCC x WACC x MCR Multiple = IRCC Funding Cost $\$1,001,000,000 \times 10\% \times 1.5 = \$150,150,000$
$\text{Yield Equivalent} = \frac{\text{IRCC Funding Cost}^*}{\text{Portfolio Value}} = \frac{\$976,500}{\$300,000,000}$ $= 0.33\%$	$\text{Yield Equivalent} = \frac{\text{IRCC Funding Cost}}{\text{Portfolio Value}} = \frac{\$150,150,000}{\$65,000,000,000}$ $= 0.23\%$

### Step 4: Deduct this Yield Equivalent from the Return of the Portfolio and Benchmark

Deducting the yield equivalent of the IRCC from both the portfolio and the performance benchmark enable the insurer to more accurately assess the investment performance of the fixed income manager. The above methodology can be amended to capture monthly and quarterly comparisons by applying the IRCC funding cost on a pro-rata basis.

Bond Portfolio		Benchmark	
Return from Bond Portfolio	6.50%	Return from Bond Portfolio	6.30%
IRCC (Yield equivalent)	-0.33%	IRCC (Yield equivalent)	-0.23%
	6.17%		6.07%
Net Portfolio Return		Net Portfolio Return	