

July 19, 2007

Michael Hawkins

## Commentary – Life Insurance Company Valuation, Canada

# Review of Actuaries Valuing Assets

© 2007 Hawkins Consulting Corporation

The actuary of a life insurance company performs an implicit revalue of the substantive portion of the assets of the insurer as part of the valuation of policy liabilities. The actuarial valuation of assets is very significant to the GAAP financial statements. The basis of this actuarial valuation of assets is not publicly disclosed.

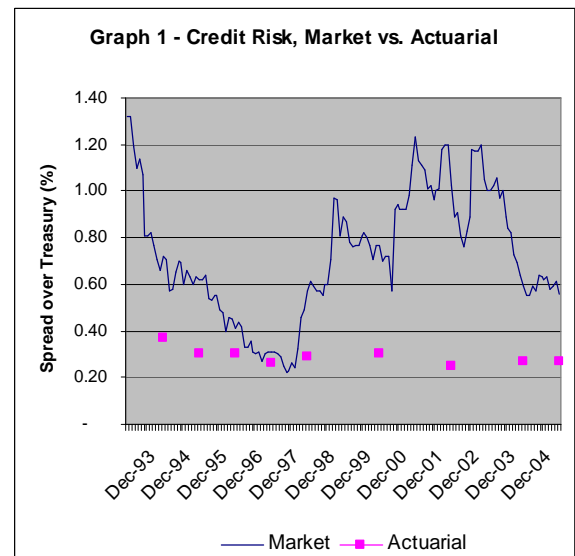
Public life insurance companies do disclose the asset default provision implicit in the valuation of policy liabilities. These numbers are presented as conservatism, as amounts set aside. These “provisions” are in fact the amount that the policy liability would have been further reduced if the life insurance company hadn’t made any ‘hair-cut’ for asset default. These “provisions” are not useful information on their own and can be viewed as misinformation by unduly implying conservatism that is not present.

My commentary “Actuarial Valuation of Assets” dated August 21, 2003 provides a complete analysis of this subject. This commentary examines and compares the asset default provision implicit in the policy liability valuation that is disclosed by public life insurance companies. This commentary examines the period subsequent to 2003 and thus excludes the activities and events that were commented on in the prior commentary.

### Assumption Driven

The actuarial valuation of assets is assumption driven rather than market driven. Assumptions tend to have significantly greater stability relative to market consensus.

Graph 1 is updated from the prior commentary. It compares market consensus spread from corporate bonds to actuarial practice. Market consensus spread is developed from comparing yields on Government of Canada 5 to 10 year marketable bonds to yields of Scotia Capital mid-term corporate (source Bank of Canada). The actuarial spread is based on mean actuarial practice for A-rated corporate bonds from Canadian Institute of Actuaries surveys of practice. Recognizing that the market consensus shown will have duration bias, it is still a convincing demonstration that actuarial practice is detached from the market.



**Examination and Comparison of the Provision**

The asset default provisions of public life insurance companies are compared in Table 1. The provision as a percent of policy liabilities is illustrated in Graph 2. There is striking differences in relative size and direction by insurer.

The provision for asset default implicit in the valuation of policy liabilities as a percentage of the policy liabilities is dependent on:

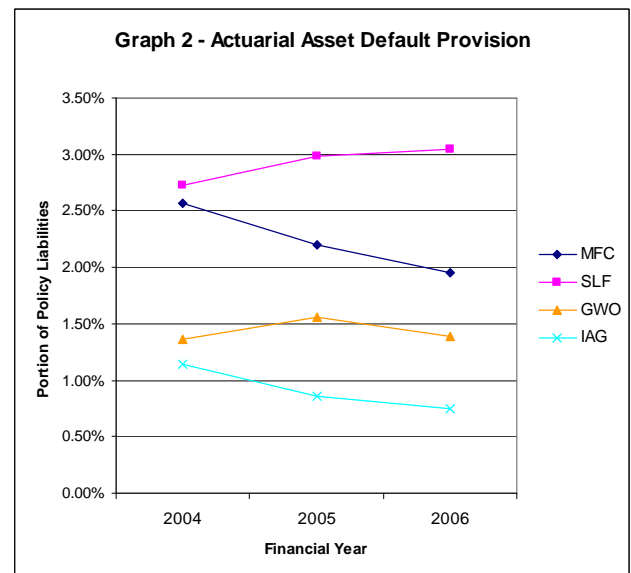
- a) Assumptions of the actuary for a given asset (position within the range of practice).
- b) Credit quality of the assets (lower quality gives higher provision).
- c) Duration of the assets (longer duration gives higher provision).
- d) Type of business (some business such as indexed accounts have little or no provision).

All of items a) through d) can change from period to period. However, where item a) changes, non-recurring earnings effects can result. Where the actuary changes position within the range of practice, the provision for asset default implicit in the valuation of policy liabilities will be decreased or increased which will directly affect earnings. Unfortunately such changes can be purely discretionary, for example, the actuary could decide to move to a more aggressive position within the range of actuarial practice without any extraneous factors driving the decision. In this example, this would result in non-recurring earnings by the amount of the resulting decrease in the provision.

The range of actuarial practice is quite broad. The A-rated corporate bond reviewed in Graph 1 had a mean spread of 0.27% for 2004 whereas the range of practice from the CIA survey had the 20<sup>th</sup> percentile at 0.15% and the 80<sup>th</sup> percentile at 0.35%. That is, for the same A-rated corporate bond, an actuary at the 80<sup>th</sup> percentile of surveyed practice would have a provision that is 233% as large as an actuary at the 20<sup>th</sup> percentile. There is an enormous amount of latitude within the range of actuarial practice. Movement by an actuary within the range of actuarial practice can have a very material affect on the provision and on earnings.

There is insufficient information disclosed to determine the cause of an increase or decrease in the provision of any particular insurer: it could be organic or caused by extraneous factors or could be actuarial discretion.

Table 1 – Asset Default Provisions			
	2004	2005	2006
Policy Liabilities (\$ millions)			
MFC	137,410	132,049	130,819
SLF	79,200	80,871	84,635
GWO	70,095	75,286	93,851
IAG	8,494	9,057	9,807
Asset Default Provision (\$ millions)			
MFC	3,531	2,906	2,547
SLF	2,160	2,413	2,578
GWO	959	1,178	1,300
IAG	98	78	73
Provision as Percent of Policy Liabilities			
MFC	2.57%	2.20%	1.95%
SLF	2.73%	2.98%	3.05%
GWO	1.37%	1.56%	1.39%
IAG	1.15%	0.86%	0.75%



The changes in the asset default provision implicit in the valuation of the policy liabilities in amount and as a percent of policy liabilities is shown in Table 2. For example, Industrial Alliance's provision decreased \$20 million from 2004 to 2005; this decrease represented a 25% reduction in the provision as a percent of policy liabilities (from 1.15% to 0.86%). Both Manulife and Industrial Alliance have had dramatic reductions over the period examined (note for Manulife that these reductions are in addition to the substantial reductions in 2003 that were noted in the prior commentary) whereas Sun Life has gone in the opposite direction and Great-West Lifeco has had offsetting movements; these patterns are consistent with the presentations in Table 1 and Graph 2.

Earnings can also be used as a basis to measure the significance of the changes in the provision for asset default implicit in the valuation of policy liabilities. Table 3 compares the change in the provision to net income. For example, for 2005 the decrease in Manulife's provision was 19.0% of its net income (net income would have been lower without the decrease in the provision) whereas the increase in Sun Life's provision in the same year was 13.5% of its net income (net income would have been higher without the increase in the provision).

## Cause of Changes

There are many things that could cause change in the provision for asset default implicit in the valuation of policy liabilities. However, there is insufficient information available to determine the cause of any particular change.

### Actuary's Assumptions

Changes in assumptions are not disclosed but, as discussed above, are allowed to change dramatically for various reasons (including mere discretion) and such changes can have very material consequences.

### Credit Quality of the Assets

There is some useful information in this regard in the notes to the financial statements. For example, the changes in Manulife's asset mix and credit quality are displayed in Table 4 (note second part of Table 4 includes all assets while only assets backing policy liabilities are relevant to the provision for asset default). The mix and other aspects are stable and while there is some evidence of credit improvement over the period (BBB and lower went from 37% to 29% of the bond portfolio and residential mortgages went from 22% to 29% of the mortgage portfolio), though it cannot be determined whether there is, or to what extent, credit improvement related to assets backing policy liabilities.

	2004-2005	2005-2006	2004-2006
Amount (\$ millions)			
MFC	-625	-359	-984
SLF	+253	+165	+418
GWO	+219	+122	+341
IAG	-20	-5	-24
Percent of Policy Liabilities			
MFC	-14%	-12%	-24%
SLF	+9%	+2%	+12%
GWO	+14%	-11%	+1%
IAG	-25%	-13%	-35%

	2005	2006
MFC	19.0%	9.0%
SLF	-13.5%	-7.7%
GWO	-12.3%	-5.8%
IAG	14.7%	2.0%

	2004	2005	2006
<b>Assets Backing Policy Liabilities</b>			
Bonds	63%	63%	63%
Mortgages	17%	17%	16%
Stocks	4%	4%	5%
Real estate	3%	3%	4%
Other	13%	13%	12%
<b>All Assets</b>			
Mortgages			
Residential	22%	25%	29%
Office	21%	19%	17%
Retail	23%	25%	24%
Industrial	14%	13%	13%
Other	20%	19%	18%
Bond Maturity			
1 year or less	4%	4%	4%
After 1 year through 5 years	21%	20%	22%
After 5 years through 10 years	26%	27%	24%
After 10 years	38%	37%	38%
MBS / ABS	11%	12%	12%
Bond Issuer			
Canadian government & agency	11%	10%	10%
U.S. government & agency	9%	10%	10%
Other government & agency	5%	6%	7%
Corporate	64%	62%	62%
MBS / ABS	11%	12%	12%
Bond Ratings			
"A" and higher	63%	68%	71%
"BBB"	31%	26%	25%
lower than "BBB"	6%	6%	4%

Similarly, the changes in Sun Life's asset mix and credit quality are displayed in Table 5 (note second part of table includes all assets while only assets backing policy liabilities are relevant to the provision for asset default). There was a substantial lowering of credit quality from 2004 to 2005 (less government bonds, lower credit quality bonds, shift from residential to non-residential mortgages) and continuation of this trend from 2005 to 2006. This change in credit quality appears consistent with the increasing provision for asset default but, again, this is for all assets and it cannot be determined whether this translates to assets backing policy liabilities (though with 92% of bonds and 98% of mortgages backing policy liabilities, this is likely the case).

### Duration of the Assets

Great-West Lifeco provided supplementary information on its asset default provision; it has provided its average asset default spread assumption; using this spread and the asset default provision as a percent of policy liabilities, an implied duration can be calculated (see Table 5); this information shows a lengthening duration and changes in the spread assumption, but it cannot be determined what is the cause of the change in the spread assumption. It was noted that Great-West Lifeco's provision as a percent of policy liabilities increased 1% from 2004 to 2006 (see Table 1, it went from 1.37% to 1.39%). Using this supplementary information, it is observed that the provision as a percent of policy liabilities would have increased 15% (from 1.37% to 1.57%) due to the change in duration, all else equal, but this effect was largely offset by the decrease in the average spread (which decreased from 0.17% to 0.15%).

No analysis on type of business was performed.

### **How to Compare**

To compare balance sheet strength of one insurer versus another, it would be of interest to compare for various assets the placement of each insurer within the range of actuarial practice (more or less aggressive). Further, it would be of interest to compare the asset default spread assumptions of a particular insurer to the corresponding market spreads (what is the implied spread over treasuries used in the valuation of policy liabilities).

Comparing at the absolute size of the asset default provision implicit in the valuation of policy liabilities is not useful without considering the credit quality of the assets, the duration of the assets and the type of business.

The quality of earnings of various insurers can be compared by looking at changes in their asset default provisions and determining whether there were organic or extraneous reasons for the changes or merely the exercise of actuarial discretion. □

	2004	2005	2006
<b>Assets Backing Policy Liabilities</b>			
Bonds	67%	66%	65%
Mortgages	15%	16%	16%
Stocks	3%	4%	4%
Real estate	3%	3%	3%
Other	11%	11%	11%
<b>All Assets</b>			
Mortgages			
Residential	28%	25%	19%
Non-residential	72%	75%	81%
Bond Maturity			
Due in 1 year or less	6%	4%	5%
Due in years 2-5	20%	20%	20%
Due in years 6-10	23%	26%	27%
Due after 10 years	38%	37%	37%
ABS	14%	13%	12%
Bond Issuer			
Canadian federal government	9%	5%	5%
Canadian provincial & municipal	9%	8%	8%
U.S. treasury and agencies	2%	2%	2%
Other foreign governments	4%	3%	4%
Corporate	63%	68%	70%
ABS	14%	13%	12%
Bond Ratings			
AAA	26%	22%	19%
AA	14%	15%	17%
A	30%	32%	32%
BBB	27%	28%	29%
BB and lower	3%	3%	3%

**Table 6 – GWO Asset Default Provisions**

2004	2005	2006
Provision as Percent of Policy Liabilities		
1.4%	1.6%	1.4%
Provision as Spread		
0.17%	0.18%	0.15%
Implied Duration of Policy Liabilities		
8.0	8.7	9.2