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October 25, 2004

*Via Fed Ex*

Ms. Ana Smith-Daley  
Texas Department of Insurance  
333 Guadalupe, Mail Code 106-1A  
Austin, TX 78714

**RECEIVED**  
OCT 26 2004  
Filings Intake Section  
Texas Department of Insurance

Dear Ms. Smith-Daley:

Enclosed are workpapers corresponding to the eight requests from Birney Birnbaum in his e-mail of 10/22/04.

Sincerely,

Tim D. Lee, F.S.A.

TDL/ma

Enclosure

Milliman work-papers regarding Data Call

Conclusion -  
TDI Narrative to be Included in Data Call

In past Credit Data Calls, carriers were asked to provide statewide experience data on experience forms CI-EX-L (Rev. 1992) and CI-EX-DIS (Rev. 1992). These two forms include a line for Earned Premiums at Presumptive Rate (EPPR). Forms CI-EP-L (Rev. 1992) and CI-EP-DIS (Rev. 1992) are used to convert actual earned premiums to the amount of premiums which would have been earned had all business been written at the presumptive rate in effect at the end of the reporting year. To do this conversion, a conversion ratio is calculated by dividing the presumptive premium rate by the actual premium rate.

Beginning in the year 2000, the final presumptive rate is calculated by multiplying a rate for a specific Plan of Benefits (e.g., Single Premium Reducing Term) from the table of presumptive rates times a discount factor. The discount factor is calculated using a formula that varies by term of insurance.

The introduction of the discount factor presents a dilemma of whether to request carriers to report EPPR before application of the discount factor or after application of the discount factor. Either scenario will require carriers to make adjustments to the past method of calculating and reporting EPPR. For example, reporting EPPR after application of the discount factor requires carriers to adjust all policies issued prior to the effective date of the change in presumptive rates, to reflect the appropriate discount factor. Requiring EPPR to be reported before application of the discount factor requires carriers to "back out" the discount factor from policies written after the effective date of the change in presumptive rates. Since it is important for all carriers to report EPPR on a consistent basis, and after obtaining input from several carriers in the credit market, TDI has determined that the best approach is to request carriers to report EPPR before application of the discount factor.

Appendix A contains detailed examples showing how carriers should convert actual earned premiums to earned premium at presumptive rates before application of the discount factor. Examples 1, 2 and 3 of Appendix A demonstrate how carriers can make the conversion using a seriatim valuation approach. If this approach is not possible, carriers may elect to make the conversion using an average term approach. This approach is demonstrated in Examples 4 and 5 of Appendix A. If a carrier utilizes the average term approach, it is preferable that the average term represents a weighted average based on original premium or face amount, as opposed to a straight average based on the number of certificates.

When returning the experience data<sup>a</sup> to TDI, please indicate in your cover letter which approach (seriatim or average term) was utilized.

✓ JMW  
9/26/02



Jan.Gibson@tdi.state.tx.us

09/09/02 10:26 AM

To: Tim Lee@MRUS

cc: Larry Baber@MRUS, Ana.Smith.Daley@tdi.state.tx.us @ INTERNET,  
Jackie.Robinson@tdi.state.tx.us @ INTERNET,  
Jan.Gibson@tdi.state.tx.us @ INTERNET

Subject: credit call

Attached are drafts of instructions and examples for calculating earned premium at presumptive rate. Please mark up as you see fit. I will have Tammie work on the format of the examples after we have finalized them.

I may need to add some language after example 4 explaining that additional adjustments (similar to example 3) need to be made if a rate deviation was filed.

Let me know what you think. Thank you for your help.  
Jan

# Appendix A

Examples 1, 2 and 3 assume that the carrier is able to use a seriatim approach to convert actual earned premium to earned premium at presumptive rate. If this type of approach is not possible, carriers will need to estimate the average term of the policies within each specific plan of benefits before making the conversion. Example 4 addresses this type of situation.

*in the aggregate*  
*the aggregate approach to converting.*

The following assumptions are applicable to examples 1, 2 and 3:

- Type of policy: Single Premium Reducing Term
- Term: ~~24 months~~ *m = 36 months*
- Actual Earned Premium: \$100

## Example 1

The policy is issued in July 2000. There is no rate deviation.

$$\text{Discount Factor} = 1/(1+(.045 \times n)/24) = 1/(1+(.045 \times 24)/24) = .95694$$

$$2000 \text{ Earned Premium at Presumptive Rate before discount} = \text{~~100~~}$$

$$\text{Actual Earned Premium for 2000/Discount Factor} =$$

$$100/.95694 = 104.50$$

## Example 2

Policy is issued in 1999.

$$\text{Actual rate charged} = .36$$

$$\text{Presumptive rate in effect December 31, 2000, before discount} = .30$$

$$2000 \text{ Earned Premium at Presumptive Rate before discount} =$$

$$\text{Actual Earned Premium for 2000} \times (\text{Presumptive Rate in effect December 31, 2000, before discount} / \text{Actual Rate Charged}) =$$

$$100 \times .3/.36 = 83.33$$

## Example 3

Policy issued October, 2001, with 30% automatic upward rate deviation (as allowed by HB 2159).

$$\text{Discount Factor} = 1/(1+(.045 \times n)/24) = 1/(1+(.045 \times 24)/24) = .95694$$

$$\text{Actual rate charged} = .30 \times 1.30 = .39 \times .95694 = .37321$$

$$\text{Presumptive rate in effect December 31, 2001, before discount} = .30$$

$$2001 \text{ Earned Premium at Presumptive Rate before discount} =$$

$$\text{Actual Earned Premium} \times \text{Presumptive rate in effect December 31, 2001, before discount} / (\text{Discount factor} \times \text{Actual Rate charged}) =$$

$$100 \times .3 / (.95694 \times .39) = 80.38$$

## Example 4

All Single Premium Reducing Term policies issued after the effective date of the change in presumptive rates. There is no rate deviation.

$$\text{Average term} = 48 \text{ months}$$

$$\text{Aggregate Actual Earned Premium for all Single Premium Reducing Term} = 100 \times 1,000$$

[Insert (A)]

*Assumption*

*Draft*

*Term policies*

Discount Factor based on average term of 48 months =  $1/(1+(.045 \times 48)/24) =$   
 $1/(1+(.045 \times 48)/24) = .91743$   
 2000 Earned Premium at Presumptive Rate before discount =  $\$$   
 Aggregate Actual Earned Premium / Discount Factor =  $\frac{1000}{.91743} = 1090$   
 for Avg term

The following assumptions are applicable to examples 4 and 5 when a variation valuation approach is not possible:

- Type of policy: Single Premium Reserving Term
- In force: 10 policies
- Average term for all policies: 48 months
- Actual Earned Premium:  $\$$ 100 per policy

(A)

#### Example 4

All <sup>ten</sup> policies are issued prior to the April 1, 2000, effective date of the change in presumptive rates.

Aggregate Actual Earned Premium for all ten policies =  $\$$ 1000

Actual rate charged =  $\$$ .40

Presumptive rate in effect December 31, 2000, before discount =  $\$$ .30

2000 Earned Premium at Presumptive Rate before discount =

Actual Earned Premium for 2000  $\times$  (Presumptive Rate in effect December 31, 2000, before discount  $\div$  Actual Rate Charged) =

$\$1000 \times \frac{.30}{.40} = \$750$

In past Credit Data Calls, carriers were asked to provide statewide experience data on experience forms CI-EX-L (Rev. 1992) and CI-EX-DIS (Rev. 1992). These two forms include a line for Earned Premiums at Presumptive Rate (EPPR). Forms CI-EP-L (Rev. 1992) and CI-EP-DIS (Rev. 1992) are used to convert actual earned premiums to the amount of premiums which would have been earned had all business been written at the presumptive rate in effect at the end of the reporting year. To do this conversion, a conversion ratio is calculated by dividing the presumptive premium rate by the actual premium rate.

Beginning in the year 2000, <sup>April 1</sup> the final presumptive rate is <sup>Texas regulations require that</sup> calculated by multiplying a rate for a specific Plan of Benefits (e.g., Single Premium Reducing Term) from the table of presumptive rates times <sup>an interest?</sup> a discount factor. The discount factor is calculated using a formula that varies by term of insurance.

The introduction of the discount factor presents a dilemma of whether to require carriers to report EPPR before application of the discount factor or after application of the discount factor. Either scenario will require carriers to make adjustments to the past method of calculating and reporting EPPR. For example, reporting EPPR after application of the discount factor requires carriers to adjust all policies issued prior to the effective date of the change in presumptive rates, to reflect the appropriate discount factor. Requiring EPPR to be reported before application of the discount factor requires carriers to "back out" the discount factor from policies written after the effective date of the change in presumptive rates. ¶ After obtaining input from several carriers in the credit market, TDI has determined that the best approach is to ~~will~~ require carriers to report EPPR before application of the discount factor.

Appendix A contains detailed examples showing how carriers should convert actual earned premiums to earned premium at presumptive rates before application of the discount factor.

TEXAS DEPARTMENT OF INSURANCE

DATA CALL EDIT CHECKS

EDIT #20 - For life exhibits, if "Earned Premiums at presumptive rate" is greater than 0 and the "Plan of Benefits" is equal to 01, 02, 03, 04, then "Earned Premiums at presumptive rate" divided by "Mean Insurance in force" should be between 0.0061 and 0.0106.

PLAN	Presumptive Rates				Ratio*	Current Edit Check		Proposed Edit Check based on Ratio	
	10/1/80 - 9/30/81	10/1/91 - 7/29/92	7/30/92 - 3/31/00	4/1/00 - present		Low	High	Low	High
01 SLD	0.500	0.400	0.360	0.300	0.83333	0.0061	0.0106	0.0051	0.0088
02 SLL	0.960	0.768	0.691	0.576	0.83357	0.0061	0.0106	0.0051	0.0088
03 & 04 MDS	0.800	0.640	0.576	0.480	0.83333	0.0061	0.0106	0.0051	0.0088

EDIT #21 - For life exhibits, if "Earned Premiums at presumptive rate" is greater than 0 and the "Plan of Benefits" is equal to 05, 06, 07, 08, then "Earned Premiums at presumptive rate" divided by "Mean Insurance in force" should be between 0.0094 and 0.0158.

PLAN	Presumptive Rates				Ratio*	Current Edit Check		Proposed Edit Check	
	10/1/80 - 9/30/91	10/1/91 - 7/29/92	7/30/92 - 3/31/00	4/1/00 - present		Low	High	Low	High
05 SLD	0.750	0.600	0.540	0.450	0.83333	0.0094	0.0158	0.0078	0.0132
05 SLL	1.440	1.152	1.037	0.864	0.83317	0.0094	0.0158	0.0078	0.0132
07 & 08 MDS	1.200	0.960	0.864	0.720	0.83333	0.0094	0.0158	0.0078	0.0132

\* 4/1/00 - present Presumptive Rate divided by 7/30/92 - 3/31/00 Presumptive Rate



## Data Call Questions

The following questions pertain to the data call instructions and edits:

1. Do we need to add any additional edits to incorporate the discount factor? *N2*
2. Do we need to add any additional edits to incorporate the automatic deviations that were used at the end of 2001? *N2* For example, the instructions for forms CI-EP-L and CI-EP-DIS describe how to calculate a conversion factor. Do we need an edit that indicates whether an automatic deviation was filed and if so, that the conversion factor is within the 30% range? *for enforcement by TD1*
3. What would prompt <sup>really 7.</sup> large negative numbers for aggregate Earned Premium and incurred claims? For example, on the summary experience report, the total earned premium and incurred claims for all classes of business were negative for a few plans of benefits. *→*
4. <sup>5.14</sup> Experience Edit number 20. Explain the potential use of this edit. We cannot figure out where the current range of .0061 to .0106 came from. What is the new appropriate range?
5. <sup>5.14</sup> Experience Edit number 21. Explain the potential use of this edit. We cannot figure out where the current range of .0061 to .0106 came from. What is the new appropriate range? *.0094 .0155*
6. Experience Edit number 27. Explain the use of this edit. Why is this edit only used for life exhibits?
7. Expense Edit number 31. (check reference lines to the annual statement.) One company indicated that the numbers on the data call didn't match the corresponding numbers on the annual statement CIEE because the annual statement includes general expenses for ordinary life, credit life and group life insurance. Is this correct? Please explain. *TD1 should cross check Edit report  
To NAIC ~~and~~ A.S.*

The following questions pertain to responses received from companies regarding the errors generated through the data call process:

1. This question pertains to the following response received by a company regarding differences in amounts reported on the CIEE and the Texas specific data call: "There was a difference of approximately 15% in the incurred compensation entered on the data call and that on the CIEE. The CIEE defines this figure to include experience refunds as well as front-end reimbursement. The CDC form does not include experience refunds in this figure." Is this correct? Please explain.

*We think CIEE would correct  
and CDC should change to  
be consistent.*

2. This question pertains to the credit life mean insurance in force. The CIEE calls for joint coverage to be included at two times the face, or outstanding balance, amount to reflect the joint coverage. The CDC does not call for this view of the coverage. Is this correct? Please explain.

*CDC seems correct - blame is on  
we don't know how CIEE  
uses the #*

3. This question pertains to the credit data call summary error report and the differences between values contained on the CIEE and CDC summary. The response received states that the differences are due to the fact that credit call data includes non-contributory life, which was not included in the NAIC experience exhibit. Is this correct? Please explain.

4. This question pertains to the following response received by a company:

"The reason why no commission is shown as earned when there is net written premium is due to the fact that the business is a single premium business as opposed to a monthly premium business. The reason why the beginning premium reserve for 1999 shows \$3,710, while the 1998 ending premium reserve shows \$0 is due to the fact that reserves are reported net of reinsurance." Is this correct? Please explain.

*OK  
Want to  
do analysis  
before reinsurance*

5. This question pertains to the following response received by a company:

"The CIEE breaks out compensation into two categories: commissions and service fees and other incurred compensation. Part 1B of the CIEE asks for "total incurred compensation" which includes other incurred compensation. The Texas Credit Data Call asks only for commissions and services fees." Is this correct? Please explain.

*Change CDC to include all comp. fees*

6. What are the implications for using different methodologies for determining reserves? For example, a comment regarding the difference between the two numbers stated that the reason for the difference was that the Earned Premium Reserve on the CIEE form uses the state stat method whereas the Earned Premium on the credit call uses the Rule of 78. Do we need to clarify which methodology should be used? Please explain.

*state stat method  
CDC doesn't refer to specific*

The following questions pertain to the instructions for preparing the data call forms found in Division 7 of subchapter FF.

1. General expenses – Are current expense breakouts still valid?

2. Are expense examples still valid? *Seem to*

Milliman work-papers regarding reasonableness and data problems for TDI to address



"Jan Gibson"  
<Jan.Gibson@tdi.state.tx.us>

04/30/2004 03:52 PM

To: <tim.lee@milliman.com>  
cc: "Ana Smith-Daley" <Ana.Smith-Daley@tdi.state.tx.us>, "Jan Gibson" <Jan.Gibson@tdi.state.tx.us>, "Rebecca Mitchell" <Rebecca.Mitchell@tdi.state.tx.us>  
Subject: Credit Call

Tim,

As promised, here is the credit call data. The access file contains the raw data. The excel file contains the summary report - see tabs labeled "SectI - Life Rpt (PLANS 1-8)" and "SectII-Dis Rpt (PLANS 9-26)". I've also included a word document containing an explanation of some of the anomalies I noted from year to year.

Please look over the summary and let me know if something jumps out at you which doesn't seem quite right - hopefully that won't happen!

Thanks for your help.

Jan 812 305 7317



99-02 Experience Annual Report\_jan april 26 ( explanation of anomalies.doc 2000 - 2002 raw data tables.m

Government Risk Excludes -

Plan of Benefits	Class of Business	Experience Component	Year	Explanation
1 + 5	F	Mean Insurance in Force	2002	Mean Insurance in Force increased from 338K in 2001 to 4.78M in 2002. This Increase is due to Central States entering the market for this COB in 2002 - reported 4M MIF in 2002.
4	A	Mean Insurance in Force	2001-2002	MIF decreased from 50M in 2001 to 1.29M in 2002 - due specifically to Standard Guarantee - confirmed that these numbers are correct.
4 + 8	B	Mean Insurance in Force	2000-2002	Changed from 2.3M in 2000 to 81K in 2001 to 21M in 2002 - due to Central National - went from 2.3M to 81K then to ~1M. Sharon Hooley confirmed that these numbers were correct. The remainder of the increase in 2002 is due to 4 new companies entering this COB.
4 + 8	F	Mean Insurance in Force	2001-2002	MIF decreased from 49M in 2001 to 3.4M in 2002 due to USAA. Company stated that business was bought by another carrier - they have had no new business since 99. In addition, this was primarily loan coverage with duration of 1 to 1 1/2 years. USAA said that the difference was reasonable.
5	F	Mean Insurance in Force	2002	MIF increased from 131K in 2001 to 4.6M in 2002. Due to Central States entering the market - reported 4.5M MIF in 2002.
7	A	Earned Premium at Presumptive	2000-2002	Decreased from 12.5M in 2000 to 2.3M in 2001 - due to American Bankers - stated that some COB were incorrectly documented in previous years. In addition, they lost a significant amount of premium between 2000 and 2002. This same relationship in does not exist in actual earned premium because EPP is calculated before discount. - 7
7	E	Earned Premium at Presumptive	2000-2002	Decreased from 12.5M in 2000 to 2.3M in 2001 - due to American Bankers - stated that some COB were incorrectly documented in previous years. In addition, they lost a significant amount of premium between 2000 and 2002. This same relationship in does not exist in actual earned premium because EPP is calculated before discount.
16	B	Commissions and Service Fees	2002	Decreased from 347K in 2001 to 7.2M in 2002 - due to Balboa. Balboa stated that these are "contingent commissions" and the decrease is reasonable and due to an increased loss ratio. (But not a reversal of prior yrs?)

7.

7.

Texas Department of Insurance - Life/Health Division

Credit Life Insurance Experience

Plan of Benefits: (7) Outstanding Balance Revolving Account (Open End) - Joint Lives

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>TOTAL</u>
<u>Mean Insurance in Force</u>				
A	1,450,015,834	268,705,480	219,510,675	1,938,231,989
B	108,569,768	44,416,912	36,529,985	189,516,665
C	601,058,343	535,383,973	637,577,972	1,774,020,288
D	0	0	0	0
E	8,941,873	543,546,796	422,477,276	974,965,945
F	0	0	0	0
<b>TOTAL</b>	<b>2,168,585,818</b>	<b>1,392,053,161</b>	<b>1,316,095,908</b>	<b>4,876,734,887</b>

<u>Incurred Claims</u>				
A	2,818,883	2,730,941	2,262,900	7,812,724
B	167,952	261,184	201,810	630,946
C	2,363,722	3,121,436	3,453,388	8,938,546
D	0	0	0	0
E	3,020,731	1,967,834	2,110,447	7,099,012
F	28,935	9,178	2,906	41,019
<b>TOTAL</b>	<b>8,400,223</b>	<b>8,090,573</b>	<b>8,031,451</b>	<b>24,522,247</b>

<u>Actual Earned Premiums</u>				
A	2,664,444	2,432,305	1,999,916	7,096,665
B	210,798	388,547	315,408	914,753
C	5,404,101	5,740,602	6,191,847	17,336,550
D	0	0	0	0
E	6,257,884	4,690,667	3,648,771	14,597,322
F	0	0	0	0
<b>TOTAL</b>	<b>14,537,227</b>	<b>13,252,121</b>	<b>12,155,942</b>	<b>39,945,290</b>

Loss Ratio (Incurred Claims / Actual Earned Premium)

A	1,0580	1,1228	1,1315	1,1009
B	0,7967	0,6722	0,6398	0,6897
C	0,4374	0,5437	0,5577	0,5156
D	0,0000	0,0000	0,0000	0,0000
E	0,4827	0,4195	0,5784	0,4863
F	0,0000	0,0000	0,0000	0,0000
TOTAL	0,5778	0,6105	0,6607	0,6139

Earned Premiums at Presumptive Rate

A	4,949K	2,332,786	1,899,632	16,765,317
B	3,071K	388,547	315,537	1,643,116
C	12,532,899	5,204,797	5,682,528	15,953,236
D	939,032	0	0	0
E	5,065,911	4,690,734	3,648,771	43,945,233
F	0	0	0	0
TOTAL	54,143,570	12,616,864	11,546,468	78,306,902

Loss Ratio (Incurred Claims / Earned Premium at Presumptive Rate)

A	0,2249	1,1707	1,1912	0,4660
B	0,1789	0,6722	0,6396	0,3840
C	0,4666	0,5997	0,6077	0,5603
D	0,0000	0,0000	0,0000	0,0000
E	0,0848	0,4195	0,5784	0,1615
F	0,0000	0,0000	0,0000	0,0000
TOTAL	0,1551	0,6413	0,6956	0,3132

Commissions and Services Fees Incurred

A	894,791	947,630	757,981	2,820,601
B	20,599	22,595	4,116	47,310
C	1,249,765	1,229,511	1,415,919	5,029,045
D	0	0	0	0
E	584,989	341,367	316,843	1,247,166
F	0	0	0	0
TOTAL	2,750,144	2,541,103	2,494,859	7,786,106

# TEXAS CREDIT DISABILITY GIE

97-99  
00-02  
Weighted  
75:25

1994 - 2002

	1994 - 1996	Percent Change	1997 - 1999	Percent Change	2000 - 2002	Total 1994 - 2002
Combined SP & OB In Force						
Texas	6,473,597	-20.44%	5,375,099	-25.29%	4,290,139	16,138,835
Nationwide	68,249,718	-31.34%	51,963,080	-35.07%	38,471,732	158,684,530
% Texas/Nationwide	9.49%	8.30%	10.34%	7.24%	11.15%	10.17%
Estimate of Texas GIE						
Nationwide GIE	952,310,120	19.95%	1,189,572,515	-51.00%	787,786,426	2,929,669,061
Estimated Texas GIE	90,328,167	26.59%	123,050,251	-40.07%	87,849,262	297,958,759
Texas PEP Premium	475,995,381	18.24%	582,174,707	-2.30%	569,097,220	1,627,267,308
% Texas GIE/PEP Premium	18.98%	10.22%	21.14%	-36.92%	15.44%	18.31%

$19.71 / 15.211 = 1.2769$   
 $1.2769 \times 18.2 = 23.24$   
 Multiple of 00-02

$21.14\% \times 75\% = 15.855\%$   
 $15.44\% \times 25\% = 3.86\%$   
 +  
 $15.855\% + 3.86\% = 19.71\%$



Milliman work-papers regarding expenses

P/C LDB

8/11/04

REGIE for A+H.

Need to adjust A+H expense assumption just as we did before?  
A.

'00-'02 = 15.44% of PEP

was 21% in '97-'99

LDB will be 2% for '94-'97

Conclusion! Do same 75%/25% weighted Avg.

change Ex. 17 - and ex 22.



7/31/04  
11:00

P/C LDB

Project Name  
164 417 1577

WBSA - GIE

	94-96	97-99	00-02	
GIE / PEP	19.75%	21.6%	14.3%	Σ 18.4%

↑ consistent for all yrs

TX PEP went up 1.5%

TX # pols cont 11.5M 99A

Considerations:

- 6 yrs of experience at ≈ 20%
- '99-'00 20% ↓ 14% ; not gradual
- '00-'02 latest data
- '00-'02 data seemingly described better by TD1 - several months.
- Since unit #s/pol and prem/pol are increasing over time, we'd expect GIE vs \$/unit at 7.5% prem to decline gradually.
- '00-'02 is IT data call where ass must calc. PEP under 130% variance rule; ~~ass~~ ass said they could do it, but extra complexity creates more opportunity for bad data.

Recommend: Cut half way from 8¢ to 4.5¢ / 100/yr, say 6.5¢ and re-visit next credit call.

Milliman work-papers regarding net investment income

NIER (as % of invested assets) 8/2/04

	Maturity	Yield
<u>NII</u>		
WSJ 8/2/04	2 yrs Aug '08	Yield = 2.68%
U.S. Govt Bonds	3 yrs (Aug/July '07)	Yield = 3.1%
	4 yrs (Aug '08)	Yield = 3.45%

Any terms seem to be 42 mos overall. But we can't invest for avg - need to have a spread of maturities.

3.50 ~~3.55~~ % Before tax  
Conclusion: Use 3% NIER for D1 Discounting Formula

If we use this in the CRM we need to convert to a % of premium.  
Fayy's modeling in his 941 memo seems reasonable.

Life ins =  $1.15 \times i \Rightarrow 1.15 \times 3 = 3.45 \approx 3.5\%$  of prem.  
 Dis ins =  $1.50 \times i \Rightarrow 1.50 \times 3 = 4.5\%$  of prem.

	Maturity	Yield
Target	4/07	3.39%
Lehman Bros	4/08	4.025%
HP	7/07	3.506%
Daimler Chrysler	1/08	4.20%
American	1/08	4.185%
Goldman Sachs	1/09	4.315%

2009 no market yield curve is not very steep. Don't expect a big jump in rates

So, some opportunity to improve yield by investing in Corp. Bonds, but not a lot.  
3.50% seems reasonable for mix of U.S. + Corp bond investment.

Profit Formula

	<u>Life + A + H</u>	<del>MAH</del>
Before tax ROE	15.0%	
- NII on Equity	3.5%	
Needed ROE from Operations	<u>11.5%</u>	
÷ Prem / Surplus incl. stream (Equity)	÷ 2.0	
Needed <del>ROI</del> <sup>Profit</sup> from Operations, as a % of Prem.	<u>5.75%</u>	
Yield from <sup>2.5%</sup> NII on Invested Assets Backing % reserves, as a % of premium	<del>1.40%</del> 1.40%	already allowed for in the discounting formula
Needed profit margin, as % of prem.	<u>1.55%</u> <del>4.35%</del>	→ Component Rate Method

Milliman work-papers regarding the discount factor

### Profit Margin 50% of Prem.

8/11/04

Effect of NII on Reserve and Prem. Deduction on ROE

$$1 - .25 - .0275 = .7225$$

$$1 - .375 = .625$$

If Prem = \$300  
 \$199.50 (IC+GIE)  
 66.5

83.25  
~~17.25~~ comm. tax  
 46.57  
 5.75% = 17.25

Reserve (Invested Assets)  
 Prem

40% ⇒ NII = 3.5% × \$300 × 40% = 420

$$\frac{21.45}{300}$$

profit = 7.15%  
 × 2.0 Prem Equity Ratio  
 14.3  
 + 3.5  
 17.8% ROE

if no deduction of prem, and no deduction in % of profit  
 prem. profit target for NII in reserves

After Discount  
 ROI discount factor  $\frac{1}{(1 + \frac{.045}{2})}$

× ~~5.978~~ 5.978 = 293 Prem.

× 5.75%

target 16.85

$$\frac{+ 4.10 NII}{20.97}$$

IC+GIE  
 199.50  
 for charge

\$81.30  
 comm. tax (27.75%)

Actual Profit = 293  
 - 199.50  
 - 81.31  
 12.19  
 w/o NII

$$\frac{12.19}{293} = 4.16\%$$

+ NII 4.10  
 16.29  
 5.93  
 = 5.56%  
 × 2.0  
 11.12%

NII in Equity + 3.50  
 14.62%  
 ROE  
 close to 15%



8/11/01

What if we made NIER consistent w/ TD1 discount rate: both = 4.5%

After Discount

Prem = \$ 293

IC + CIE = 199.50

← we assume will not vary w/ premium discount

Comm + Tax = 81.31

27.75% of prem

Profit w/o NII = 12.19

4.16% < Target 5.75%

+ NII = 5.27

4.5% x 293 x 40% = 5.27

17.46

17.46 / 293 = 5.96%

x 2

11.92

+ 4.5

16.42% > 15%

but close, again.

This suggests that ~~the~~ under these assumptions, the discount factor needs to be slightly higher than the assumed NIER. But numbers are also sensitive to Reserve Prem rates and Prem: Equity Ratio assumptions.

Conclusion: Because of TD1 discounting premium, we need the NII or "Reserve", in addition to profit margin as % of prem, to get back up to Target ROE. Do not deduct expected NII or Reserve from Target Profit Margin as % of prem.



"Larry Baber"  
<lbb41@earthlink.net>

To "Tim Lee" <tim.lee@milliman.com>

cc

08/06/2004 08:55 AM

bcc

Please respond to  
lbb41@earthlink.net

Subject Discount factor analysis

Tim, attached is my analysis of the discount factors where I have developed discount factors assuming the annual premium was paid every year of the term and discounted back to time zero. I then divided the discounted premiums by the single premium for the term to arrive at a discount factor. These discount factors were compared to the TDI discount factors where I found them to be approximately the same except off by one year.

This leads me to believe it is correct to omit the investment income component entirely from the formula and use the TDI discount factor for all terms.

Call if you would like to discuss further

Baber

Larry Baber  
lbb41@earthlink.net



Discount Factor Analysis.xls

## DISCOUNT FACTOR ANALYSIS

<u>Time</u>	<u>Year</u>	<u>Annual Premium</u>	<u>Discount Factor to Time 0</u>	<u>Discounted Premium</u>	<u>Sum of Discounted Premiums</u>	<u>Resulting Discount Factor*</u>	<u>Term in months</u>
0	1	\$ 0.30	1.000000	\$ 0.30000	\$ 0.30000	1.000000	12
1	2	\$ 0.30	0.956938	\$ 0.28708	\$ 0.58708	0.978469	24
2	3	\$ 0.30	0.917431	\$ 0.27523	\$ 0.86231	0.958123	36
3	4	\$ 0.30	0.881057	\$ 0.26432	\$ 1.12663	0.938857	48
4	5	\$ 0.30	0.847458	\$ 0.25424	\$ 1.38087	0.920577	60

\* Resulting Discount Factor is the Sum of the Discounted Premiums divided by n times the Annual Premium

Example: For a three year term

Sum of Discounted Premiums = \$0.86231

n = 3

Annual Premium = \$0.30

Resulting Discount Factor =  $\frac{\$0.86231}{(3) \times \$0.30}$  0.958123

			CurrentTDI	
	<u>Premium</u>	<u>Discounted Premium</u>	<u>Discount Factor</u>	<u>Discount Factor</u>
\$	0.30	\$0.30000	1.000000	0.977995
\$	0.60	\$0.58708	0.978469	0.956938
\$	0.90	\$0.86231	0.958123	0.936768
\$	1.20	\$1.12663	0.938857	0.917431
\$	1.50	\$1.38087	0.920577	0.898876

The discount method I used produces factors that are very close to the TDI factors only one year off. In other words, my 2-year factor is approximately the same as the TDI 1-year factor, my 3-year compares to the TDI 2-year, etc.

Milliman work-papers regarding premium to equity

1470150

8/4/04

# Profit Margin Component -

## Prem/Surplus Ratio:

MDI used 2.0 in 2000  
Fogg 9/1 paper suggests about 3.0 (seems high)

RBC/ACL we used in VTA report was

$$\begin{aligned}
 &.041 \times \text{Prem} \\
 &+ .007 \times \text{Res.} \\
 &+ .00245 \times \text{Face} \quad \frac{3}{100}
 \end{aligned}$$

RBC model  
CAL

Credit DS : 25% of 1st 50% prem  
 15% of over 50%  
 + 5% claim reserve = 5% of prem. } 20-30% of prem  
 x 2 for Target Surplus  
 10-60% of prem

Credit Lf : 3% of reserves low risk  
 4% of reserves over risk  
 7% of prem. = 7-10% of prem?  
 x 2 for Target Surplus  
 14-20% of prem.

Credit Lf + A+H prem is about 50/50 part Ex 10 + 1X

So  $\frac{20+60}{2} = 40\%$  of prem. avg as Target Surplus  
 $\Rightarrow$  Prem/Surplus Ratio = 2.5

MDI used 2.0 in 2000. That seems reasonable.  
 (OPIC recommended 2.0)  
 2.0 will allow for some additional required surplus due to Statutory surplus strain.

Milliman work-papers regarding return on equity

ROE +  
Effective Tax Rate -

last time TD1 used 30%

OPIC (Arthur Schwartz) used 25% based on FY-02 data

Company	96 Results	ROE
Service L+c	FIT 1500 / 3503	= 43%
Nationshome	2021 / 8362	= 24%
AFLIC - Caribbean Amer	1502 / 5770	= 26%
Voyagers	532 / 1682	= 32%
Bahian Amer	2560 / 8711	= 29%
CVNA	-2475 / 10145	= N/A

35% Top

Maybe just select a pre-tax ROE of 15.0%

$$= \frac{10.5}{(1-30\%)} = \frac{12.0\% \text{ After Tax}}{(1-20\%)} = \frac{11.5}{(1-23\%)} = \frac{11.0}{(1-26\%)}$$

NIER on invested assets

= 3.5% (see other worksheet)  
higher than T-Bonds, but they can invest in Corp Bonds, too, yielding more

Reserves (Invested Assets in Operations) as % of Premium

Life Ins:

Company	Prem	Prem
96 CVNA L+H	810M	866M
AFLIC	533M	228M

Assume Reserves (Invested Assets from Operations) = ~~1/2~~



ROE

(Z.S)

Brad Smith  
(Dallas)  
08/04/2004 08:58 AM

To: Tim Lee/HOUS/M&R@MRUS  
cc  
bcc  
Subject: Re: Market ROEs

See below.  
Tim Lee

Tim Lee  
(Houston)  
08/04/04 08:47 AM

To: Brad Smith/DALI/M&R@MRUS  
cc  
Subject: Re: Market ROEs

Thanks. I assume when you say 12% "unleveraged", you mean without debt (paying cash) or surplus strain? Yes. Is that 12% after tax? Yes.

Tim Lee, FSA  
Milliman USA  
Houston, TX  
(713) 658-8451  
fax (713) 658-9656  
Brad Smith

Brad Smith  
(Dallas)  
08/03/2004 05:28 PM

To: Tim Lee/HOUS/M&R@MRUS  
cc  
Subject: Re: Market ROEs

I think many companies target a 15% (leveraged) ROE and typically accept a 12% unleveraged ROE in pricing and acquisition of blocks of business. Call if you would like to discuss further.  
Tim Lee

Tim Lee  
(Houston)  
08/03/2004 09:24 AM

To: Brad Smith/DALI/M&R@MRUS  
cc  
Subject: Market ROEs

Brad, we are working on a presumptive rate project for Credit insurance for the Texas Dept. of Ins. In developing an assumption for a reasonable percentage of premium profit margin, the industry has used an approach in the past that builds off of an assumed after-tax ROE for the insurance industry. Do you have a sense for what current target after-tax ( or pre-tax) ROEs are in the insurance industry? I don't know that Credit would be any different from Ordinary Life, Health, or P&C.