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Moody's Liquidity Model for U.S. Life Insurance Companies *Model Revisions and Results: Year-end 2002 Data*

Summary Opinion

Lack of liquidity has played a central role in a number of life insurance company insolvencies over the past several decades. As a result, Moody's has come to consider liquidity as one of the most important factors influencing the ratings of life insurers. To enhance our liquidity analysis of life insurance companies, we introduced a liquidity model in June of 2003,¹ with results based on year-end 2001 statutory data.

This special comment updates the model's results for our selected universe of companies by using 2002 data. We also describe specific changes made to the liquidity model's methodology. Moody's expects to reevaluate the methodology for the model and the appropriateness of the model's assumptions on an ongoing basis in order to incorporate statutory accounting statement changes, investor and industry input, and shifts in the perceived liquidity of different asset and liability classes, as categorized by the model².

Moody's believes that the insurance industry has managed to retain ample liquidity, despite the challenging market conditions of the past several years. Our liquidity model only serves as a rough gauge of the industry's liquidity, but recent results using 2002 data appear to confirm this opinion.

1. See Moody's Global Credit Research - *Introducing Moody's New Liquidity Model for U.S. Life Insurance Companies*, dated June 2003, for a fully detailed description of the mechanics and methodology incorporated into the liquidity model.

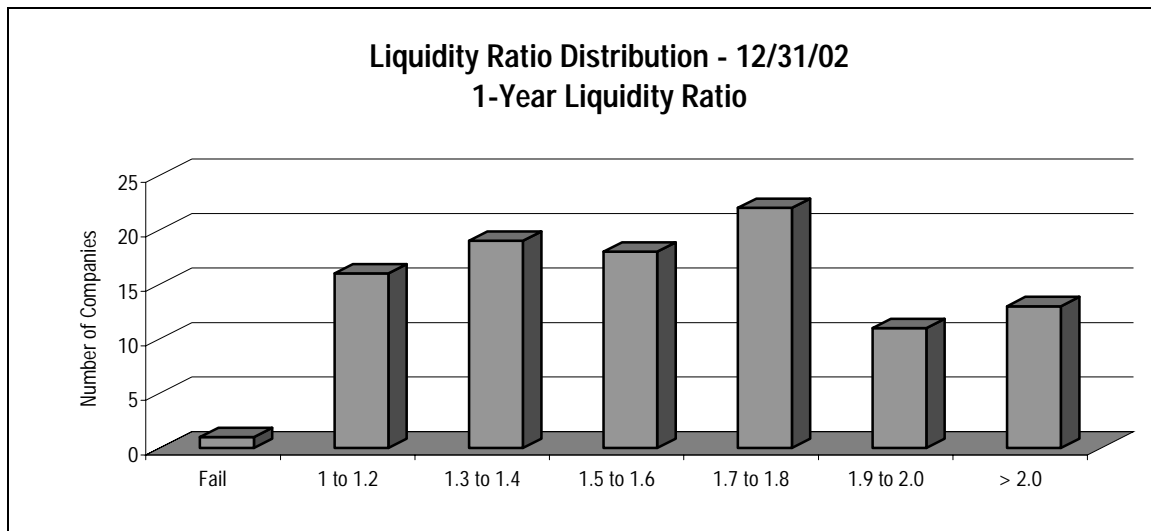
2. For example, new products introduced to the marketplace may have more or less liquidity risk relative to other insurance liabilities placed in a similar category.



Results of the 2002 Model

Overall, the industry's average one-year liquidity ratio remained constant at approximately 167%. (Please see the appendix for details.) One company failed the stage one test in 2002, down from four companies in the prior year.

The chart below shows the distribution of the 2002 liquidity ratios.



Please see Appendix II for a listing of liquidity ratios for different statutory operating entities.

Model Background

Moody's liquidity model measures the adequacy of an individual statutory entity's asset liquidity profile. This adequacy is expressed relative to the potential liquidity demands that could be placed on it in a stress scenario, given its liability mix. The model adds to Moody's base of quantitative tools used to evaluate life insurance company creditworthiness.

The model's primary purpose is to produce a standardized, objective, and conservative measure of an entity's stand-alone liquidity based on publicly available data. The model is only meant to identify, or to "red flag," individual companies with potential liquidity issues. It cannot -- and is not -- meant to replace a comprehensive analysis of liquidity that incorporates non-public information on liability and asset optionality, rating triggers, and alternative liquidity resources that may be available to the entity.

Model Revisions

As mentioned above, Moody's will periodically make revisions to the model's inputs and factors. We will publish these revisions and our rationale for making them, in order to emphasize the model's transparent nature. (Moody's recent changes to liquidity factors for assets and liabilities used in the model are shown in Appendix I.)

Changes for 2002 are detailed below.

- *Adjustment for Funds Withheld Associated with Reinsurance Contracts*

The asset portfolios of some life insurance companies include assets that are held in support of a reinsurance agreement in which liabilities are ceded to a reinsurer. Because there is no liability charge associated with the ceded liabilities, it is not appropriate to include corresponding assets. Consequently, in the revised model, Moody's excludes these corresponding assets; i.e. we remove a pro-rata portion of general account invested assets based on the ceded reserves.

- *Liquidity Demand Measurement of Putable Funding Agreements*

The designers of the original liquidity model made some broad assumptions about the liquidity demands of putable funding agreement liabilities, based mostly on the available aggregate industry data. An important enhancement included in the current version of the model incorporates issuer-specific, non-public data collected from issuers of putable funding agreements. The data collected from these issuers replicates the true liquidity demands of these types of liabilities for each respective time frame computed by the model, and thereby improves the output for this group of companies.

- *Asset Liquidity Measurement of CMOs*
We have observed significant variability in the distribution of the various classes of CMOs (i.e. PACs, TACs, VADMs, Z bonds, etc.) owned by life insurance companies. Similar to liquidity-demand measurement for putable funding agreements (above), the liquidity model first utilized assumptions derived from a compilation of the available sources of aggregate industry data on the distribution of different CMO classes owned by insurers. As a result of our observations regarding the significant variability of this distribution from company to company, Moody's has now decided to request additional non-public information. The company-specific distribution will allow us to improve asset liquidity measurement as it relates to a company's CMO investments.
- *Individual Life Insurance Reserve Adjustment*
In determining the potential liquidity demands posed by a block of individual life insurance liabilities, the first version of Moody's liquidity model was based on the assumption that the entire reserve for life policies and contracts would be the basis for the calculation. After further review and public comment, Moody's has altered the model so that its current version adjusts for AD&D and disability reserves associated with individual life contracts. These associated "non-life" reserves pose little liquidity risk for an insurance company and have therefore been excluded from the determination of potential liquidity demands.
- *Credit for Reinsurance Recoverables*
In the model incorporating 2001 year-end data, Moody's assigned a liability liquidity factor of 100% to a company's reinsurance payable liability. Moody's continues to maintain that 100% is the correct liability factor for reinsurance payables because these liabilities are typically of short duration. The 2001 model did not provide credit for a reinsurance recoverable asset. It could be argued that this is an overly conservative position. Moody's has therefore decided to give asset liquidity credit for a company's reinsurance recoverable. However, the asset credit is limited to the amount of that company's reinsurance payable.
- *Credit for Experience Rating and Other Refunds Due*
Similar to Moody's rationale for allowing an asset credit for reinsurance recoverables, Moody's has now increased a company's amount of available assets to meet liquid liabilities by giving credit for experience rating and other refunds due. The model continues to assume that provisions for refunds required go up from 8% in the 30 day time horizon to 100% in the one year time horizon. In addition, the model now reflects the assumption that experience rating refunds due (receivable) are an offset up to the amount of the company's provision for refunds payable.
- *Net Payable for Securities Added to Liabilities*
Payables and receivables related to securities bought and sold were excluded from the initial liquidity model. After further evaluation, Moody's found that many companies had a net payable related to securities purchased. These assets and liabilities are very short in duration, so the net payable position was determined to be a liquid liability. In the updated version of the model, the net of securities payable, minus securities receivable, is assigned a factor of 100% for all time horizons.

RATED ISSUER QUESTIONS AND OUR ANSWERS

Interested parties have provided numerous comments since the model's introduction last year. Some of these comments, along with Moody's responses, are as follows:

1. *The model is too conservative.*
The model is meant to be conservative, in order to identify insurance companies that could experience liquidity problems under stress scenarios. Each company that fails the test undergoes a review that incorporates other sources of liquidity, if available. To identify a company that could potentially run into liquidity problems, conservative factors were used.
2. *We have a bank line with no material adverse change clause at the holding company. Why isn't this included in the analysis?*
Alternate sources of liquidity are considered in our complete analysis of a company's liquidity. Our new model is only one part of our liquidity analysis and is only meant to measure a statutory entity's stand-alone liquidity. A bank line available to a holding company may not be available to the holding company's operating subsidiary.

3. *Why is the asset factor for commercial mortgages so low?*

The factor in the model represents the percentage of commercial mortgages that a company could sell at, or near, market value under adverse market conditions. A company may be able to sell a larger amount of its mortgages for a loss; however, a mortgage sold below market value would not be considered until the Stage 2 test. (Please see *Introducing Moody's New Liquidity Model for U.S. Life Insurance Companies*, dated June 2003, for a description of the Stage 2 test.)

Several companies have mentioned that they have the ability to securitize mortgages. Moody's believes that if a company faces a stress scenario, its ability to securitize mortgages may be more limited than originally anticipated. In addition, a company that hasn't frequently securitized mortgages in the past would not be given liquidity "credit" for being able to securitize its mortgage portfolio for the first time in a stress scenario.

4. *Our annuities that are subject to withdrawal at book value are much less susceptible to surrender than similar annuities at other companies.*

This may be a valid comment. For example, retail investors purchasing annuities through captive agents will act less efficiently than institutional investors. Such factors would be incorporated in our ultimate analysis of a company's liquidity. They would not be included in the liquidity model, however, because the model merely attempts to identify companies for further analysis. The goal is to use only quantifiable, publicly available data in the model and to incorporate non-public, company-specific data later as part of our overall liquidity analysis.

5. *What criteria did you use to determine which non-public data to include?*

Striving to maintain a balance between objective, public information input and non-public, company provided input to improve accuracy, Moody's has incorporated some additional company provided data. However, we only incorporated that data which we felt was material for the majority of the companies in the industry. Incorporating too much non-public company provided data would diminish the model's objectivity. Furthermore, we emphasize that the model is only meant to identify statutory entities for further analysis.

Moody's used the following criteria in deciding what adjustments for non-public information should be incorporated into the model:

- Materiality - The change had to be material.
- Universality - The change had to affect a large percentage of the Moody's universe of rated insurance companies.
- Measurability - The factor had to be quantifiable.

6. *Why not use more company-specific data in your analysis?*

Moody's encourages companies to share additional, non-public, company-specific data on liquidity. Such data will be incorporated into our analysis of the company's liquidity, but will not be incorporated into this particular liquidity model.

7. *What could cause a company's ratio to change significantly from year-to-year, aside from changes in assets and liabilities?*

A company's ratio can change for several reasons:

- Changes in the way the company classifies assets or liabilities
- Moody's includes (or excludes) additional non-public, company-specific data
- Moody's revisions to the model

Conclusion

Moody's will continue to evaluate its approach to liquidity, and will make adjustments to the model to ensure that it remains an up-to-date, conservative measurement tool to identify companies that may be susceptible to liquidity problems.

APPENDIX I

Liability Category	Liability	Liquidity Factor Time Frame		
		30 days	6 months	1 year
General Account Life	Ordinary Life Ins. Reserves - Participating	10%	20%	30%
	Ordinary Life Ins. Reserves - Non-Participating	15%	30%	40%
	Group Life Reserves	7%	40%	80%
Contract Claims	Policy & cont claims-life	100%	100%	100%
Dividends	Policyholders div & coupon - due and unpaid	100%	100%	100%
	Div apportioned for payment	4%	20%	35%
GA & SA Ann & Dep	With MVA	20%	40%	50%
	BV with 5% or higher	20%	40%	50%
	At MV (SA products)	0%	0%	0%
	At BV	50%	70%	80%
	Not subject	0%	0%	0%
Annuity Payments	Annuities	2%	10%	20%
	Supplementary contracts	2%	10%	20%
Reinsurance	Net Reinsurance Payable	100%	100%	100%
Experience Refunds	Net Experience rating refunds payable	8%	50%	100%
Security Pay/Rec	Net Payable for securities	100%	100%	100%
Additional Charge for Putable FA - 30 Day	With MVA - Putable	80%	60%	50%
	BV with 5% or higher - Putable	80%	60%	50%
	At MV (SA products) - Putable	0%	0%	0%
	At BV - Putable	50%	30%	20%
	Not subject - Putable	100%	100%	100%
Additional Charge for Putable FA - 1-6 months	With MVA - Putable	0%	60%	50%
	BV with 5% or higher - Putable	0%	60%	50%
	At MV (SA products) - Putable	0%	0%	0%
	At BV - Putable	0%	30%	20%
	Not subject - Putable	0%	100%	100%
Additional Charge for Putable FA - 6-12 months	With MVA - Putable	0%	0%	50%
	BV with 5% or higher - Putable	0%	0%	50%
	At MV (SA products) - Putable	0%	0%	0%
	At BV - Putable	0%	0%	20%
	Not subject - Putable	0%	0%	100%
Additional Charge for GIC and non-putable FA maturing within 12 months	With MVA - Maturing	7%	30%	50%
	BV with 5% or higher - Maturing	7%	30%	50%
	At MV (SA Products) - Maturing	0%	0%	0%
	At BV - Maturing	4%	15%	20%
	Not subject - Maturing	8%	50%	100%
	A&H Payments	8%	50%	100%

APPENDIX I Investment Category *	Description (pgs 2, 43-48 statutory statement)	Assumed distribution for CMOs	Liquidity Factor Time Frame		
			30 days	6 months	1 year
Cash			100.0%	100.0%	100.0%
ST Investments			100.0%	100.0%	100.0%
Investment Grade Bonds Maturing w/in one year (excluding ST investments)			100.0%	100.0%	100.0%
US Gov't Securities public (US gov't) private (US gov't)	Issuer Obligations of US Gov't		95.0% 0.0%	98.0% 30.0%	100.0% 50.0%
Agency Pass-Through Public - pass-through Private - pass-through	US Gov't single class MBS/ABS and single class MBS/ABB Special Revenue & Special Assessment Obligations		90.0% 0.0%	98.0% 30.0%	100.0% 50.0%
CMO Public Enter:	Defined Multi-class residential MBS		59.3%	75.5%	80.0%
% VADM, PAC, TAC - public		35%	75.0%	90.0%	95.0%
% Sequentials - public		55%	60.0%	80.0%	85.0%
% Z Tranches - public		5%	0.0%	0.0%	0.0%
% Other - public		5%	0.0%	0.0%	0.0%
Private 144a Enter:			54.8%	71.0%	75.5%
% VADM, PAC, TAC - private 144a		35%	70.0%	85.0%	90.0%
% Sequentials - private 144a		55%	55.0%	75.0%	80.0%
% Z Tranches - private 144a		5%	0.0%	0.0%	0.0%
% Other - private 144a		5%	0.0%	0.0%	0.0%
Private: non-144a Enter:			0.0%	26.0%	39.5%
% VADM, PAC, TAC - private non-144a		35%	0.0%	35.0%	50.0%
% Sequentials - private non-144a		55%	0.0%	25.0%	40.0%
% Z Tranches - private non-144a		5%	0.0%	0.0%	0.0%
% Other - private non-144a		5%	0.0%	0.0%	0.0%
Loan-Backed Bonds (excluding agency passthrough) Public (loan-backed) Private: 144a (loan-backed) Private: non-144a (loan-backed)	Single class MBS/ABS excluding Agency passthrough		70.0% 65.0% 0.0%	85.0% 80.0% 45.0%	90.0% 85.0% 55.0%
Other Multi-Class Commercial MBS/ABS Public (OMCC MBS/ABS) Private: 144a (OMCC MBS/ABS) Private: non-144a (OMCC MBS/ABS)			60.0% 55.0% 0.0%	75.0% 70.0% 35.0%	80.0% 75.0% 45.0%
Other Multi-Class Residential MBS Public (OMCR MBS) Private: 144a (OMCR MBS) Private: non-144a (OMCR MBS)			35.0% 32.5% 0.0%	42.5% 40.0% 22.5%	45.0% 42.5% 27.5%

APPENDIX I Investment Category *	Description (pgs 2, 43-48 statutory statement)	Assumed distribution for CMOs	Liquidity Factor Time Frame		
			30 days	6 months	1 year
Defined Multi-Class Commercial MBS/ABS Public (DMCC MBS/ABS) Private: 144a (DMCC MBS/ABS) Private: non-144a (DMCC MBS/ABS)			75.0%	90.0%	95.0%
Investment Grade Public Bonds:	Issuer obligations excluding those of US gov't		60.0%	75.0%	80.0%
NAIC 1 Private Placements--Corporates Private: 144a (NAIC 1) Private: non-144a (NAIC 1)			55.0%	70.0%	75.0%
NAIC 2 Private Placements--Corporates Private: 144a (NAIC 2) Private: non-144a (NAIC 2)			45.0%	60.0%	65.0%
Credit Tenant Loan Public (CTL) Private: 144a (CTL) Private: non-144a (CTL)			60.0%	75.0%	80.0%
Affiliated Preferred Stock Unaffiliated Preferred Stock			45.0%	60.0%	65.0%
Unaffiliated Common Stock - Public Unaffiliated Common Stock - Private Other Common Stock			0.0%	25.0%	35.0%
Mortgage Loans on Real Estate - First Liens Mortgage Loans on Real Estate - Other			0.0%	0.0%	0.0%
Real Estate - Occupied by Company Real Estate - Acquired in Satisfaction of Debt Investment Real Estate			0.0%	5.0%	10.0%
Other Invested Assets Policy Loans Receivables Aggregate Write-ins Affiliated Bond Below Investment Grade Bonds			0.0%	0.0%	0.0%
			0.0%	10.0%	20.0%

* *Other adjustments*
Sec lending, Reverse Repos and dollar rolls are assumed paid off
Deposits and pledged collateral are excluded from investments
Assets backing funds withheld are removed

Appendix II

Company	Rating	1 Year		6 month		30 Day	
		Stage 1 Test	Stage 2 Test	Stage 1 Test	Stage 2 Test	Stage 1 Test	Stage 2 Test
Canada Life Ins Co of America	Aa3	3.0		3.0		3.0	
Sun Life Assurance Co of Canada (US)	Aa2	3.0		3.0		3.0	
Western & Southern Life Ins Co	Aa2	3.0		3.0		3.0	
Teachers Ins & Ann Assoc of America	Aaa	3.0		3.0		3.0	
American Family Life Asr Co Columbus	Aa2	3.0		3.0		3.0	
SunAmerica Life Ins Co	Aaa	3.0		3.0		3.0	
Penn Mutual Life Insurance Co	Aa3	2.5		3.0		3.0	
SAFECO Life Insurance Company	A2	2.4		2.6		3.0	
First UNUM Life Insurance Co	A3	2.3		2.8		2.9	
Continental Assurance Co	Baa1	2.1		2.5		3.0	
Ameritas Life Insurance Corp	A1	2.1		2.4		3.0	
UNUM Life Insurance Co of America	A3	2.1		2.5		2.7	
John Alden Life Insurance Co	A3	2.1		2.4		2.7	
AIG Life Insurance Company	Aaa	2.0		2.3		2.9	
Fidelity & Guaranty Life Insurance Co	A2	2.0		2.3		3.0	
Guardian Life Ins Co of America	Aa2	2.0		2.6		3.0	
Paul Revere Life Insurance Co	A3	2.0		3.0		3.0	
Mutual of Omaha Insurance Co	Aa3	2.0		1.9		1.5	
General American Life Insurance Co	Aa2	2.0		2.5		3.0	
Provident Life & Accident Ins Co	A3	2.0		2.8		3.0	
John Hancock Life Insurance Co	Aa3	1.9		2.4		2.9	
Great-West Life & Annuity Ins Co	Aa3	1.9		2.3		3.0	
Jackson National Life Insurance Co	A1	1.9		2.1		2.8	
Liberty National Life Insurance Co	A1	1.9		2.3		3.0	
State Farm Life Insurance Co	Aa1	1.8		2.2		2.8	
Manufacturers Life Insurance Co USA	Aa2	1.8		2.4		3.0	
Travelers Insurance Co	Aa1	1.8		2.2		3.0	
Principal Life Insurance Co	Aa3	1.8		2.3		3.0	
Northwestern Mutual Life Ins Co	Aaa	1.8		2.3		3.0	
Phoenix Life Insurance Co	A3	1.8		2.4		3.0	
ING Life Ins & Annuity Co	Aa3	1.8		2.0		2.5	
Pacific Life Insurance Co	Aa3	1.8		2.1		2.9	
United Insurance Co of America	Aa3	1.8		2.2		3.0	
Pan-American Life Insurance Co	A3	1.8		2.1		2.9	
Prudential Insurance Co of America	A1	1.8		2.1		2.4	
Hartford Life Insurance Co	Aa3	1.7		2.0		2.9	
Nationwide Life Insurance Co	Aa3	1.7		1.9		2.2	
North American Co Life & Hlth Ins	A2	1.7		2.0		2.9	
American Internatl Life Asr Co NY	Aaa	1.7		1.9		2.2	
Massachusetts Mutual Life Ins Co	Aa1	1.7		2.4		3.0	
American General Life & Acc Ins Co	Aa1	1.7		2.0		2.6	
Standard Insurance Co	A1	1.7		2.1		3.0	
New York Life Insurance Co	Aa1	1.7		2.2		3.0	
Colonial Life & Accident Ins Co	A3	1.7		2.0		2.3	
USAA Life Insurance Company	Aa1	1.7		1.9		2.4	
MONY Life Insurance Co	A2	1.7		2.0		2.4	
Allianz Life Ins Co of North America	A2	1.6		1.9		2.9	
Farmers New World Life Insurance Co	A2	1.6		1.8		2.3	
Bankers Life & Casualty Company	Ba3	1.6		1.9		2.5	
Midland National Life Insurance Co	A2	1.6		1.9		2.8	
American General Life Ins Co	Aa1	1.6		1.8		2.2	
National Life Insurance Company	A3	1.6		1.9		2.4	
Health Care Service Corp	A3	1.6		1.7		1.7	
Amerus Life Insurance Company	A3	1.6		1.8		2.9	

Appendix II

Company	Rating	1 Year		6 month		30 Day	
		Stage 1 Test	Stage 2 Test	Stage 1 Test	Stage 2 Test	Stage 1 Test	Stage 2 Test
Fortis Benefits Insurance Company	A2	1.5		2.0		2.7	
Reliance Standard Life Insurance Co	Baa1	1.5		1.7		2.0	
Columbus Life Insurance Co	Aa2	1.5		1.7		2.0	
Protective Life Insurance Co	Aa3	1.5		1.8		3.0	
Jefferson Pilot Financial Ins Co	Aa2	1.5		1.7		2.0	
Combined Ins Co of America	Baa1	1.5		1.8		2.2	
Great American Life Ins Company	A3	1.5		1.7		2.4	
Southland Life Insurance Co	Aa3	1.5		1.8		2.6	
Minnesota Life Insurance Co	Aa2	1.5		1.7		1.8	
Transamerica Life Ins & Annuity Co	Aa3	1.5		1.7		2.3	
Transamerica Life Ins Co	Aa3	1.4		1.7		2.4	
New York Life Ins & Annuity Corp	Aa1	1.4		1.6		2.1	
Security Benefit Life Insurance Co	A2	1.4		1.6		2.1	
Allstate Life Insurance Co	Aa2	1.4		1.6		2.0	
Metropolitan Life Ins Co	Aa2	1.4		1.6		2.3	
Keyport Life Insurance Co	Aa2	1.4		1.6		2.1	
Conseco Annuity Assurance Co	Ba3	1.4		1.5		2.1	
Conseco Life Insurance Co	Ba3	1.4		1.6		2.2	
CM Life Insurance Company	Aa1	1.3		1.6		2.3	
Jefferson-Pilot Life Insurance Co	Aa2	1.3		1.5		1.9	
American United Life Ins Co	A2	1.3		1.4		1.6	
Kemper Investors Life Ins Co	A3	1.3		1.5		1.8	
AIG Annuity Ins Co	Aa1	1.3		1.4		1.8	
Transamerica Financial Life Insurance Company	Aa3	1.3		1.5		1.9	
United of Omaha Life Insurance Co	Aa3	1.3		1.4		1.4	
Transamerica Occidental Life Ins Co	Aa3	1.3		1.7		2.5	
General Electric Capital Asr Co	Aa3	1.3		1.4		1.6	
USG Annuity & Life Company	Aa3	1.3		1.4		2.0	
Equitable Life Asr Soc of the US	Aa3	1.3		1.4		1.7	
Security Life of Denver Ins Co	Aa3	1.2		1.5		3.0	
Hartford Life & Annuity Ins Co	Aa3	1.2		1.4		1.7	
Lincoln National Life Ins Co	Aa3	1.2		1.3		1.5	
Ohio National Life Insurance Co	A1	1.2		1.4		1.7	
North American Co Life & Hlth Ins of NY	A3	1.2		1.3		1.4	
AIG SunAmerica Life Assurance Co	Aaa	1.2		1.3		1.5	
GE Life & Annuity Assurance Co	Aa3	1.2		1.2		1.5	
Connecticut General Life Ins Co	A3	1.2		1.3		1.5	
Blue Cross & Blue Shield of Florida	A3	1.2		1.5		1.8	
Ids Life Insurance Company	Aa3	1.2		1.3		1.5	
Reliastar Life Insurance Company	Aa3	1.1		1.2		1.4	
Variable Annuity Life Ins Co	Aa1	1.1		1.2		1.6	
Equitable Life Insurance Co of Iowa	Aa3	1.1		1.3		1.8	
Monumental Life Ins Co	Aa3	1.1		1.3		2.0	
Peoples Benefit Life Insurance Co	Aa3	1.1		1.5		2.4	
Allmerica Financial Life & Annuity	Ba1	1.1		1.2		1.5	
Life Investors Ins Co of America	Aa3	Fail	0.4	1.0		1.2	
Average		1.7		1.9		2.4	
Median		1.6		1.9		2.4	

Related Research

Special Comment

[General American: A Case Study In Liquidity Risk, October 1999, #48277](#)

Industry Outlook

[U.S. Life Insurance Industry Outlook, December 2003, # 80468](#)

Rating Methodology

[Moody's Rating Methodology for U.S. Life Insurance Companies, December 2003, #80364](#)

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