
Milliman Academy Workshop: New Financial Regulations for Insurance and Takaful Companies in UAE

Investment Risk and Asset Valuation Considerations

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- Key elements of the regulation focus on reducing risk in the asset portfolio

- Risk management
 - Investment committee
 - Asset portfolio construction
 - Scenario and stress testing

- Asset valuation

Investment committee

- Developing a sound investment policy and ensuring that it is implemented efficiently and effectively
- Investment policy
 - Asset allocation guidelines and return objectives
 - Key risks and risk tolerances
 - Strategies for risk mitigation
- Implementation
 - Actual policy execution performed by teams outside of the committee
 - Implementation monitored through regular review by committee

Diversification and concentration limits

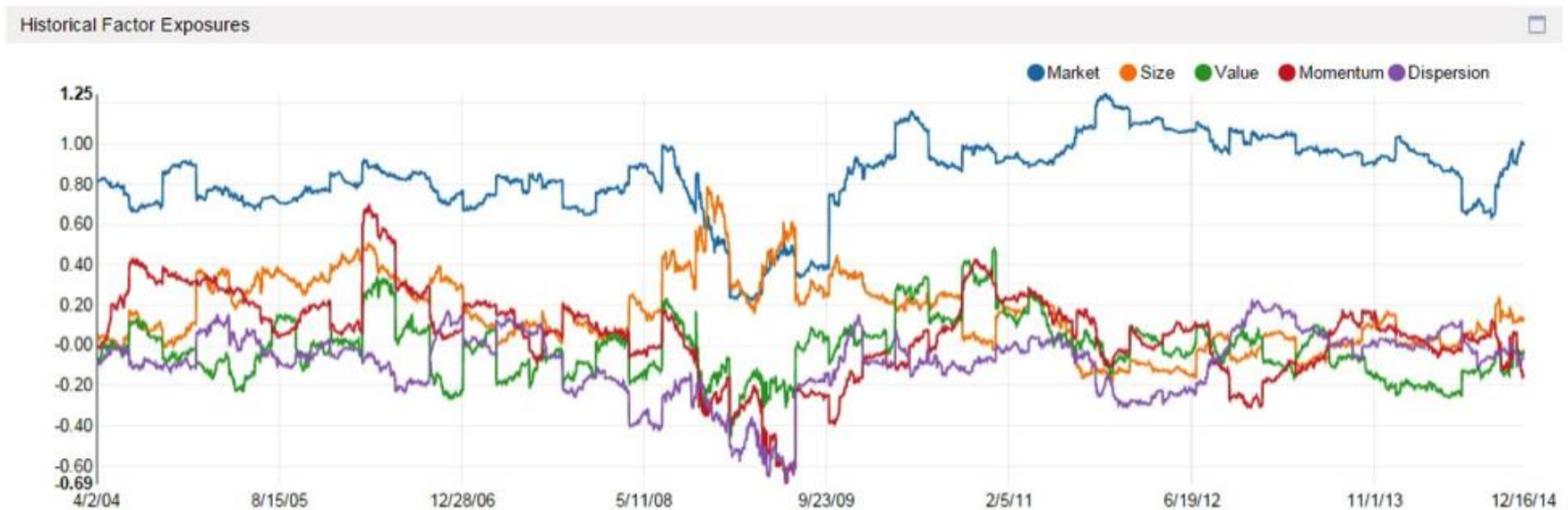
| Type of Invested Asset | Maximum Limit for aggregate exposure in a particular asset class | Sub-limit for exposure to a single counter-party |
|--|--|--|
| Real Estate | 30% | No Sub Limit |
| Equity instruments in listed and not listed companies within UAE. | 30% | 10% |
| Equity instruments issued by companies listed and not listed outside UAE. | 20% | 10% |
| Government securities/instruments issued by the UAE and/or by one of the Emirates in the UAE. | 100% | 25% |
| Government securities/instruments issued by (A) rated countries. | 80% | 25% |
| Cash and deposits with Banks in the UAE (e.g. current account, demand deposits, term deposits, notice deposits, certificates of deposit, etc.) | Minimum 5% | 50% |
| Loans secured by life policies (excluding unit-linked funds' related policies) issued by the Company. | 30% | No Sub Limit |
| Derivatives or complex financial instruments to be used for hedging purposes only. | 1% | No Sub Limit |
| Secured loans, deposits with non-banks, debentures, bonds & other debt instruments which are rated strong or very strong by reputed and independent rating agency. | 30% | 20% |
| Other Invested Assets | 10% | No Sub Limit |

- Diversification and concentration
- Credit risk
- Liquidity risk
- Market risk (market values)

*These form the basis of risk budgeting or risk scoring
to assess the company's risk appetite*

Asset portfolio exposures

- Main exposures by region, industry, issuer, credit, etc.
- Baseline exposures versus stressed exposures
- Need to consider exposures to other factors (inflation, momentum, growth, etc.)



Credit risk exposure

- Stress testing counterparty exposure

- Changes in credit ratings
 - Credit transition matrices applied to fixed asset holdings
 - Resulting exposures and credit spreads used to determine changes in market value

- Default modeling
 - Look at rating category and issue year
 - Incorporate expected recovery

| Initial Rating | Rating at Year-End | | | | | | | | |
|----------------|--------------------|-------|-------|-------|-------|-------|-------|-------|---------|
| | Aaa | Aa | A | Baa | Ba | B | Caa | Ca-C | Default |
| Aaa | 99.16 | 0.82 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Aa | 0.09 | 99.12 | 0.77 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| A | 0.00 | 0.26 | 99.18 | 0.51 | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 |
| Baa | 0.00 | 0.01 | 0.44 | 99.05 | 0.41 | 0.06 | 0.02 | 0.00 | 0.01 |
| Ba | 0.00 | 0.00 | 0.02 | 0.59 | 98.46 | 0.79 | 0.03 | 0.01 | 0.09 |
| B | 0.00 | 0.00 | 0.01 | 0.02 | 0.53 | 98.32 | 0.70 | 0.07 | 0.36 |
| Caa | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 1.01 | 96.79 | 0.67 | 1.48 |
| Ca-C | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.28 | 1.53 | 93.23 | 4.92 |
| Default | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |

Liquidity risk exposure

- Stress testing asset and liability cash flows
- Typically project asset and liability cash flows
 - Monthly or quarterly projection over 1 to 3 years
 - Test exposure through stochastic scenarios to examine tail risks

| Stochastic Cash Flow Report | | | | | | | | | | | | | |
|-----------------------------|----------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| Date | Feb 28, 2015 | | | | | | | | | | | | |
| | Mar 2015 | Apr 2015 | May 2015 | Jun 2015 | Jul 2015 | Aug 2015 | Sep 2015 | Oct 2015 | Nov 2015 | Dec 2015 | Jan 2016 | Feb 2016 | Total |
| 90th Percentile | | | | | | | | | | | | | |
| Liabilities | 7,142 | (9,999) | 61,275 | 49,761 | 43,518 | 52,699 | 51,423 | 86,633 | 85,912 | 66,036 | 46,499 | 77,331 | 618,230 |
| Assets | 4,198 | 31,583 | 8,379 | 1,560 | 3,160 | 1,302 | 1,255 | 24,647 | 10,388 | 5,690 | 2,803 | 19,777 | 114,742 |
| | (2,944) | 41,582 | (52,896) | (48,201) | (40,358) | (51,397) | (50,169) | (61,986) | (75,524) | (60,346) | (43,696) | (57,554) | (503,488) |
| 95th Percentile | | | | | | | | | | | | | |
| Liabilities | 1,631 | (9,999) | 60,672 | 88,067 | 93,092 | 58,752 | 57,723 | 43,807 | 74,792 | 56,813 | 46,122 | 50,671 | 622,144 |
| Assets | 1,443 | 13,964 | 8,078 | 19,153 | 24,787 | 3,027 | 4,405 | 3,235 | 4,828 | 1,079 | 2,615 | 6,447 | 93,059 |
| | (188) | 23,963 | (52,594) | (68,914) | (68,305) | (55,726) | (53,318) | (40,573) | (69,964) | (55,734) | (43,507) | (44,225) | (529,085) |
| 99th Percentile | | | | | | | | | | | | | |
| Liabilities | 2,897 | (9,999) | 67,478 | 87,793 | 60,398 | 82,476 | 58,332 | 96,343 | 92,286 | 57,213 | 40,893 | 76,682 | 712,792 |
| Assets | 2,076 | 24,792 | 11,481 | 19,016 | 8,440 | 14,888 | 4,709 | 29,502 | 13,575 | 1,279 | 4,338 | 19,452 | 153,549 |
| | (822) | 34,791 | (55,997) | (68,777) | (51,958) | (67,588) | (53,623) | (66,840) | (78,711) | (55,934) | (36,554) | (57,230) | (559,243) |

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Market risk exposure

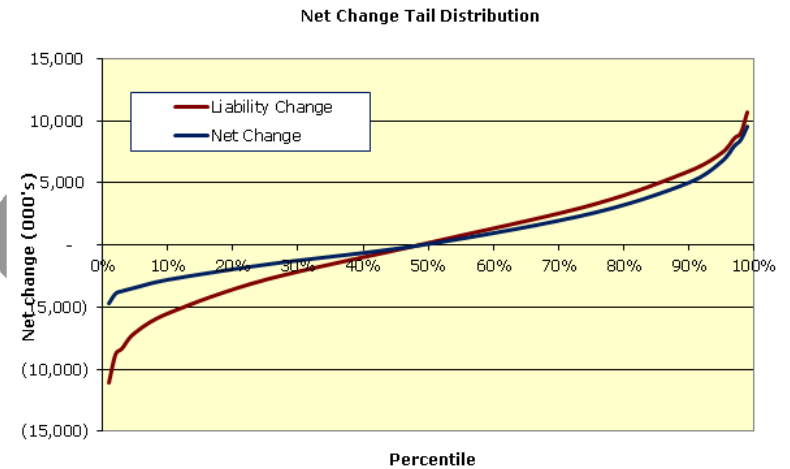
- Changes in asset values due to stressed market conditions
 - Equity market
 - Interest rates
 - Real estate
- Evaluated using stochastic scenarios and stress tests
- Stochastic scenarios derived using real world economic scenario generators incorporating both equity and interest rate movements
- Real estate stresses based on real estate indices for more developed markets adjusted for characteristics of the local market

Risk exposure report

Value-at-Risk Projections

| | Percentile scenarios | | Stress scenarios | |
|--------------------------|----------------------|-----------------|------------------|------------------|
| | 5 Percentile | 1 Percentile | Backtest 1 | Backtest 2 |
| Index changes | | | | |
| SPX | -2.40% | -4.12% | -53.50% | -56.10% |
| EWZ | -2.97% | -5.43% | -53.50% | -56.10% |
| TPX | -3.70% | -4.61% | -53.50% | -56.10% |
| HSCEI | -7.09% | -10.95% | -53.50% | -56.10% |
| TWY | -2.55% | -3.26% | -53.50% | -56.10% |
| KOSPI2 | -2.85% | -4.56% | -53.50% | -56.10% |
| NIFTY | -3.49% | -4.97% | -53.50% | -56.10% |
| SX5E | -3.02% | -4.95% | -53.50% | -56.10% |
| UKX | -2.98% | -4.29% | -53.50% | -56.10% |
| EEM | -4.37% | -6.29% | -53.50% | -56.10% |
| Asset changes | | | | |
| Fund 1 | (1,835) | (3,396) | (93,371) | (102,781) |
| Fund 2 | (1,833) | (3,028) | (93,265) | (91,636) |
| | (3,668) | (6,424) | (186,636) | (194,416) |
| Liability changes | | | | |
| North America | (4,124) | (7,454) | (5,795) | (6,076) |
| Europe | (2,073) | (2,406) | (198,751) | (208,839) |
| Other | (856) | (1,216) | - | - |
| | (7,054) | (11,077) | (204,546) | (214,915) |
| Net Change | (3,386) | (4,652) | (17,910) | (20,499) |

Tail distribution



- Mark-to-market
 - More prudent side of bid/offer

- Mark-to-model
 - Subject to all model development best practices (assumptions, design, testing, etc.)
 - Validation by the actuary

- Real estate
 - Independent valuations by real estate firms (Admissible Assets)
 - Discounted cash flow (Solvency Margin)

Regular report to regulator

- Market exposures and concentration of the asset portfolio
- Exposures to key risks (base and stress testing)
 - Credit risk
 - Liquidity risk
 - Market value risk
- Methodology used for calculating the base market values and stressed market values
- Methodology and calculations to be approved by the actuary

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