



Enterprise
Risk Management
Symposium

March 9-10, 2020
Tampa, FL

Presented by:



An aerial photograph of a coastal city. In the foreground, there is a dense, lush green forest. Beyond the forest, a large body of blue water stretches across the middle ground. In the background, a city skyline is visible under a clear blue sky with some light clouds. The overall scene is bright and scenic.

Asset Liability (Enterprise Risk) Management

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AAM Insurance Investment Management

1) ERM Integration For Investment Managers

2) Methods & Tools

3) Key Risks

4) Investment Portfolio Optimization



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ERM Integration

- By definition an insurer owns its own ERM program
- Can't *outsource* ERM to partner firms, but can *integrate* their work into ERM program
- Investment manager's activities should both be guided by, and feed into, the insurer's ERM system



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ERM Integration

- Insurer must define key considerations:
 - Risk Culture & Governance
 - Risk Identification & Prioritization
 - Risk Tolerance / Appetite
 - Risk Reporting & Documentation Needs
- Investment manager assists with translating high-level objectives into granular processes & guidelines



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Methods & Tools

- Periodic Strategic Review
 - Regular intervals or significant business changes
 - Income vs. Total Return, Liquidity needs, RBC target, Ratings target, Peer analysis
- Investment Guideline Advisory
 - Benchmark Recommendation
- Asset Allocation Strategy
 - Capital Modeling
 - Asset Class Assumptions
 - Rebalancing



Methods & Tools

- Reporting
 - Online portal, daily holdings / trades / performance / compliance
 - Periodic in-person presentation & discussion
- Performance Tracking & Attribution
- Internal Controls
 - Systems, Audits, Separation of Duties
- ORSA/ERM Documentation Advisory



Methods & Tools

Sector	Maximum Sector Exposure
US Treasury/US Agency	No Limit
Residential Mortgage-Backed Securities	50%
Agency	50%
Non-Agency	10%
Commercial Mortgage-Backed Securities	25%
Agency	25%
Non-Agency	10%
Asset-Backed Securities	15%
Corporate Bonds	50%
Municipal Bonds	30%
Max Per State	5%
Common Stock, Equity Mutual Funds, ETFs (excluding affiliates)	15%
Cash & Short-Term	No Limit

Quality	Maximum Per Issuer
US Government	No limit
Agency Debentures	5.0%
Agency-backed RMBS/CMBS (per pool)	2.0%
AAA	2.0%
AA	1.5%
A	1.5%
BBB	1.0%
Below Investment Grade	Not permitted for purchase
Equity Mutual Funds/ETFs (per fund)	10.0%

Source: Hypothetical sample portfolio guidelines



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Methods & Tools

Attribution							
Sector	---Custom Benchmark2---		-----Portfolio-----		Sector Rotation	Security Selection	Totals
	Sector Return	Weight ¹	Sector Return	Weight ¹			
Cash	0.00%		1.71%	0.25%	-0.01%	0.00%	0.00%
U.S Treasury	3.00%	39.1%	4.45%	12.70%	0.02%	0.17%	0.19%
Agency Debentures	3.02%	1.3%	1.77%	0.38%	0.00%	0.00%	0.00%
MBS - Pass-through	1.96%	27.8%	1.74%	5.38%	0.25%	-0.01%	0.24%
MBS - CMOs	0.00%		2.35%	9.67%	-0.29%	0.22%	-0.07%
Commercial MBS	3.37%	1.2%	2.85%	16.82%	0.04%	-0.09%	-0.04%
Agency CMBS	3.14%	0.8%	1.43%	0.20%	0.00%	0.00%	0.00%
ABS	1.66%	0.5%	1.61%	9.31%	-0.12%	0.00%	-0.13%
Corporate Securities	4.48%	24.7%	3.97%	37.17%	0.19%	-0.19%	0.00%
Non-Corporate	3.16%	4.7%	4.44%	8.12%	0.00%	0.10%	0.10%
Tax Exempt Municipal	0.00%		0.00%		0.00%	0.00%	0.00%
Total		100.0%		100.0%	0.088%	0.192%	0.280%

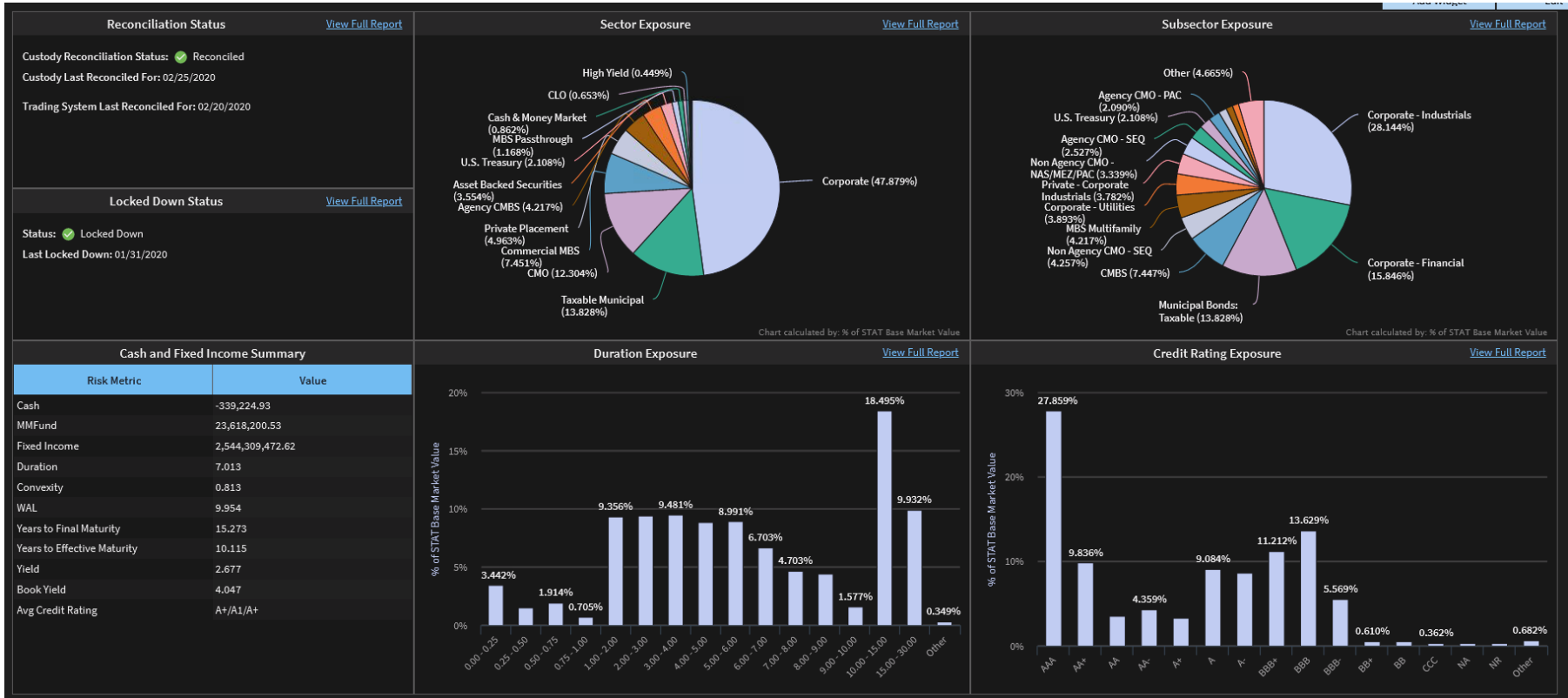
Source: Hypothetical sample portfolio data, Bloomberg Barclays



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Methods & Tools



Source: Hypothetical sample portfolio data, Clearwater



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Key Risks - Duration

P&C / Health: Target based on balance sheet, reserve duration, CFO trend, other factors

Life: Target based on duration / call risk of reserves



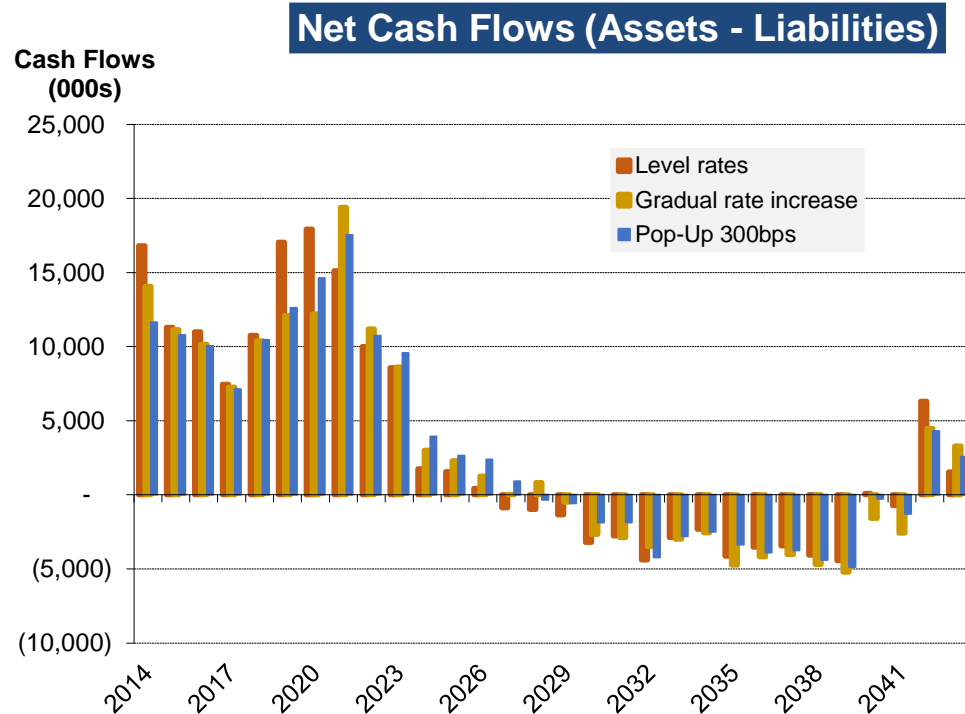
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Key Risks - Duration

Economic Capital Loss % if Rates +100 bps	Bond Duration
3.0%	2.13
4.0%	2.75
5.0%	3.37
6.0%	3.99
7.0%	4.61
8.0%	5.23
9.0%	5.84

Reserve Lines	Duration	Reserves (\$000)
Homeowners	0.777	3,069
Other Liab - Occ	2.212	189
2 Year Lines	0.701	123



Source: Hypothetical sample portfolio data



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Key Risks - Credit

P&C / Health: Target based on tolerance for total return volatility

Life: Target based on Risk-Based Capital tolerance

Both: Sector / Issuer diversification, position limits, independent credit analysis

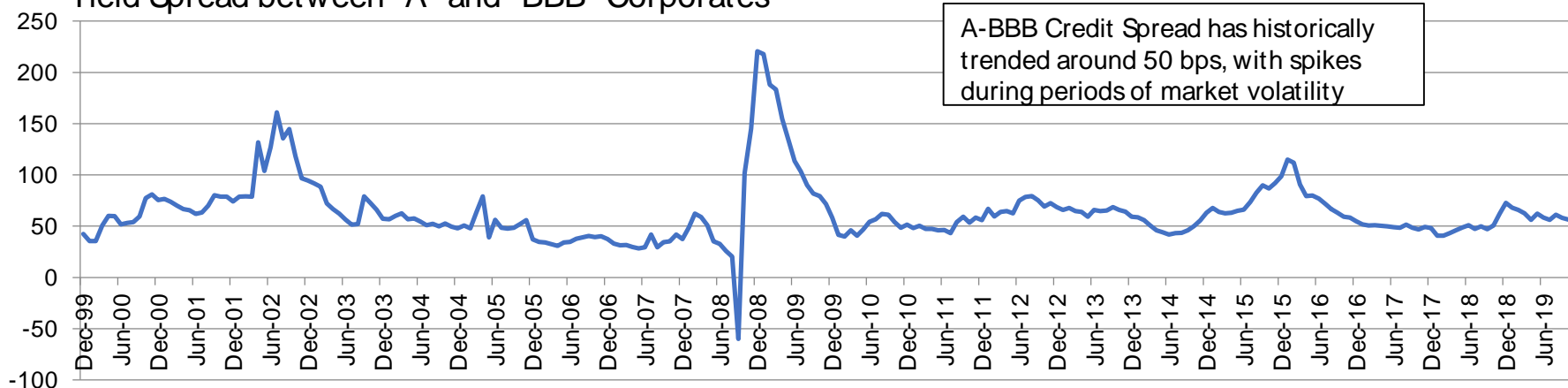


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Key Risks - Credit

Yield Spread between "A" and "BBB" Corporates



Avg 5yr Rating Migration 1970 - 2018

Initial Rating	Ending Rating									
	Aaa	Aa	A	Baa	Ba	B	Caa	Ca-C	WR	Def
Aaa	53.7%	23.3%	4.9%	0.6%	0.3%	0.0%	0.0%	0.0%	17.1%	0.1%
Aa	2.2%	46.1%	23.7%	3.9%	0.8%	0.3%	0.1%	0.0%	22.8%	0.3%
A	0.2%	7.2%	51.7%	14.5%	2.5%	0.7%	0.2%	0.0%	22.4%	0.7%
Baa	0.1%	1.0%	12.2%	49.7%	8.0%	2.5%	0.6%	0.1%	24.4%	1.4%

Source: Bloomberg Barclays, Moody's



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Key Risks - Market

P&C / Health: Target based on tolerance for surplus volatility from mark-to-market assets & RBC volatility

Life: Target based on tolerance for surplus volatility, income vs. total return needs

Both: Capital modeling



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Key Risks – RBC / Regulatory Risk

P&C / Health: Model base & stress equity impact on risk-based capital

Life: Model base & stress asset allocation impact on risk-based capital (much more bond-focused)

Both: Set guidelines at least as restrictive as state laws, keep tabs on regulatory changes



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Key Risks – RBC / Regulatory Risk

RBC Calculation Summary - P&C	
R0 - Asset Risk- Subsidiary Insurance Companies	39
R1 - Asset Risk - Fixed Income	2,044
R2 - Asset Risk - Equity	4,044
R3 - Asset Risk - Credit	1,043
R4 - Underwriting Risk - Reserves	14,256
R5 - Underwriting Risk - Net Written Premiums	11,092
Sum of R1:R5	32,479
RBC after Covariance	18,691
Authorized Control Level Risk Based Capital As Reported	9,648
Adjusted Capital As Reported	97,603
ACL RBC Ratio (%) As Reported	1,011.7%

RBC Calculation Summary - Life	
C-0 - Asset Risk- Subsidiary Insurance Companies	2,264
C-1cs - Asset Risk - Common Stock	162,760
C-1o - Asset Risk - All Other	906,171
C-2 - Insurance Risk	50,242
C-3a - Interest Rate Risk	346,111
C-3b - Health Credit Risk	0
C-3c - Market Risk	0
C-4a - Business Risk Life	57,902
C-4b - Business Risk Health	0
Sum of C0:C4 (RBC Before Covariance)	1,525,451
RBC after Covariance	1,323,981
Authorized Control Level Risk Based Capital As Reported	2,948
Adjusted Capital As Reported	54,387
ACL RBC Ratio (%) As Reported	1,844.8%

Source: S&P Global Market Intelligence



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Key Risks - Liquidity

P&C / Health: Ladder portfolio cash flows, maintain significant portion of liquid holdings, external liquidity sources (FHLB)

Life: Similar methods, consider floating rate securities to offset surrender risk (Life typically has higher capacity to bear liquidity risk in pursuit of income)



Key Risks - Operational

All companies:

- Recordkeeping & documentation
- Separation of duties
- Daily reconciliation
- Independent custodian
- Cybersecurity tools & training
- Internal control audits



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Investment Optimization

- Asset Allocation is largest single driver of investment risk / return over time
- IG Bonds are core allocation
 - Favorable RBC & accounting treatment, state limits on other assets
- “Risk Asset” allocation (size & composition) driven by capital modeling, incorporates inputs from insurer & market assumptions



Investment Optimization

P&C Considerations:

- **Tolerance for surplus downside**
- STAT vs GAAP basis for bonds
- RBC Target / Limit
- AM Best Rating / BCAR
- Income vs. Total Return preference



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Investment Optimization

Life Considerations:

- RBC much more important
- Income needed to support liabilities
- Tolerance for economic capital volatility
- Tolerance for illiquid assets



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Investment Optimization

Asset Considerations:

- Projected returns
 - Yield vs Total Return
 - Historical Avg vs. Estimated
- Volatility
- Correlations
- Fees
- Liquidity



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Investment Optimization

	Barclays Aggregate	Zazove IIG Convertibles	S&P 500	MSCI EAFE	MSCI Emerging Market	Barclays High Yield Ba/B	3mo US Treasury
Barclays Int Aggregate	98.3%	14.2%	1.5%	2.4%	1.7%	24.4%	21.5%
Barclays Aggregate		14.2%	1.7%	2.3%	1.2%	24.8%	16.7%
Zazove IIG Convertibles			83.1%	80.6%	78.6%	61.7%	-6.4%
S&P 500				80.6%	71.5%	60.8%	0.2%
MSCI EAFE					78.6%	61.1%	-4.4%
MSCI Emerging Market						61.7%	-7.3%
Barclays High Yield Ba/B							-6.4%

Period	Barclays Int Aggregate	Barclays Aggregate	Zazove IIG Convertibles	S&P 500	MSCI EAFE	MSCI Emerging Market	Barclays High Yield Ba/B	3mo US Treasury
1yr	7.03%	9.71%	9.09%	17.88%	9.91%	3.77%	8.66%	2.04%
3yr	3.45%	4.39%	6.53%	13.05%	7.85%	7.11%	5.70%	1.70%
5yr	2.66%	3.21%	6.31%	11.11%	4.49%	4.22%	5.40%	1.12%
7yr	2.45%	3.03%	7.69%	13.67%	5.98%	2.89%	5.48%	0.82%
10yr	3.09%	3.75%	7.66%	13.62%	6.42%	4.09%	7.35%	0.61%
25yr	5.05%	5.46%	9.16%	9.93%	5.80%	6.39%	7.16%	2.49%

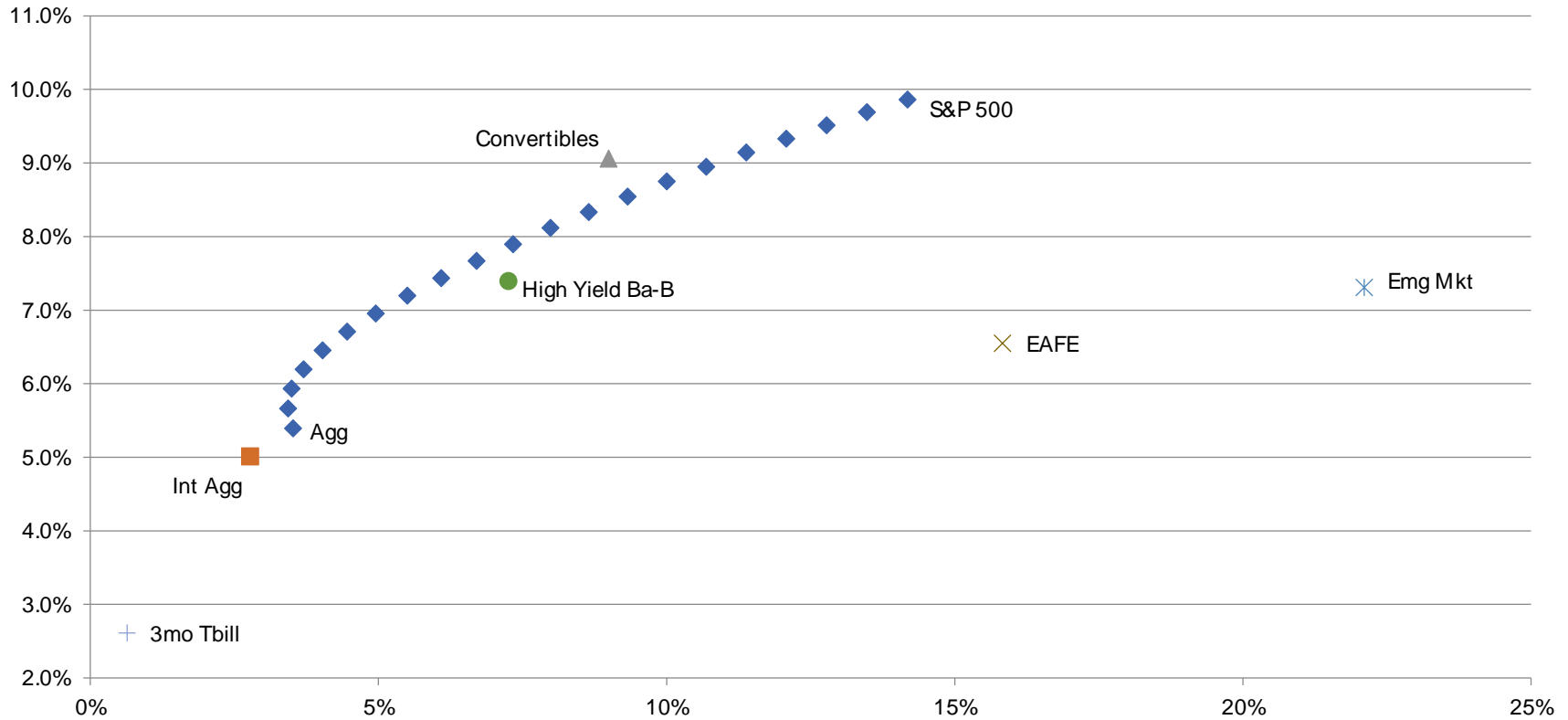
Source: Bloomberg, Zazove Associates, Bloomberg Barclays. Data through 12/31/19



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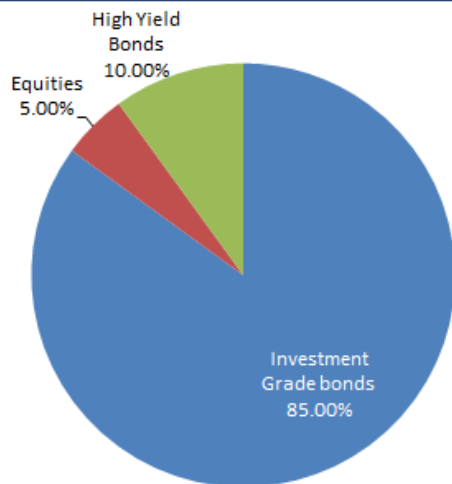


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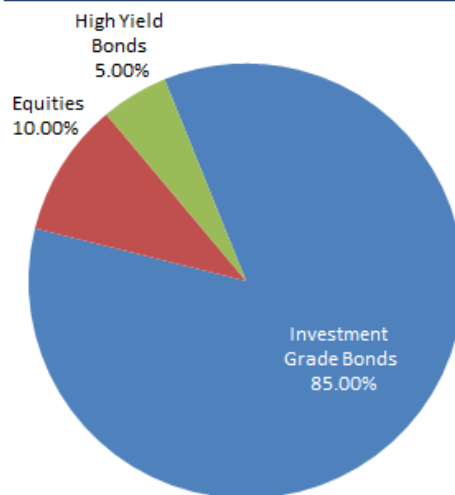
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Investment Optimization

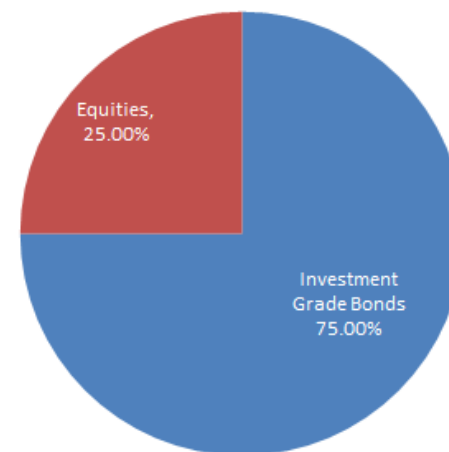
**Conservative Risk
(Current Allocation)**



Moderate Risk



**Maximum Risk
(Per State Statutes)**



Investment Portfolio Analysis	
Expected Investment Income:	\$1,400,000
Expected Total Return:	2.80%
Standard Deviation:	3.40%
*1 in 200 Stress Loss:	\$3,400,000
*Stress Loss % of Sub. Equity	8.50%

Investment Portfolio Analysis	
Expected Investment Income:	\$1,250,000
Expected Total Return:	3.05%
Standard Deviation:	3.50%
*1 in 200 Stress Loss:	\$3,300,000
*Stress Loss % of Subscriber Equity:	8.25%

Investment Portfolio Analysis	
Expected Investment Income:	\$1,100,000
Expected Total Return:	4.10%
Standard Deviation:	4.50%
*1 in 200 Stress Loss:	\$4,100,000
*Stress Loss % Subscribers Equity:	9.80%

Source: Hypothetical sample portfolio data



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Investment Optimization

- Rebalancing is crucial risk control practice
 - Implements automatic “buy low, sell high”
 - Maintains exposure within stated tolerance
 - Recommended annually, potentially with materiality threshold
- Should establish in advance how often the asset allocation is to be revisited
 - Material change in business conditions (e.g. major acquisition), or time interval
 - Shouldn't be driven by market move (“performance chasing”)



Summary

- Investment manager activities should be *integrated* into insurer ERM
- Investment risk management techniques should be informed by ERM strategy
- Asset allocation is most important investment risk decision, requires rigorous & multifaceted process



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