A Proposal From US Life Insurers To Establish Jurisdictional Factors For Commercial Mortgages

Importance

- Commercial Mortgages Are A Material Asset Class For US Life Insurers
  - For US Life Insurers, Mortgages Make Up 10.3% Of Invested Assets* vs. 5.1% For Non-US Life Insurers
- Commercial Mortgages Are A Preferred Asset Class, With Strong Yields And A Favorable Loss History
- US Commercial Mortgages Are Often Long Duration Assets And Can Be Tailored To Liabilities.
- Commercial Mortgages Provide Diversification And Risk Reduction For Portfolios Concentrated In Public Fixed Income Securities.

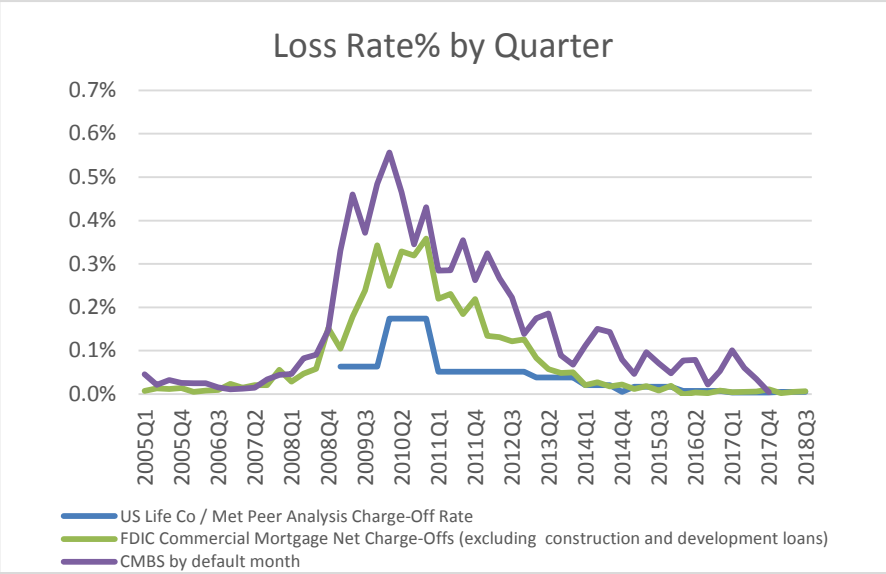
*Source: Public Filings

Current ICS Approach

- 2017 Testing Used Factors Based On Basel III Derived From Bank Experience
  - *U.S. Bank Loss Experience is Considerably Worse than U.S. Insurance Company Experience*

*Source: MetLife Analysis of Peer Public Filings

Bank and Life Company Experience



2009-2017 Average Charge-Offs
- 43 bps – US Banks
- 19 bps – US Life Insurers*
- 81 bps – CMBS

US Life Co Losses Average 44% of Bank Losses

US Life Insurer Data Includes $259B Of Loans As Of 2017, Or 70% Of The ACLI / US Industry Population

	Basel III Based Inputs		
	1	2	3
	Stress LGD	Long-run average 1-year PD	Long-run average 10-year cumulative PD
CM1	TBD%	TBD%	TBD%
CM2	TBD%	TBD%	TBD%
CM3	TBD%	TBD%	TBD%
CM4	TBD%	TBD%	TBD%
CM5	TBD%	TBD%	TBD%

x 44% =

	Scaled Inputs		
	1	2	3
	Stress LGD	Long-run average 1-year PD	Long-run average 10-year cumulative PD
CM1	TBD%	TBD%	TBD%
CM2	TBD%	TBD%	TBD%
CM3	TBD%	TBD%	TBD%
CM4	TBD%	TBD%	TBD%
CM5	TBD%	TBD%	TBD%

When Run Through Vasicek Model Gives

	Capital Charge
CM1	TBD%
CM2	TBD%
CM3	TBD%
CM4	TBD%
CM5	TBD%

*Source: MetLife Analysis of Peer Public Filings. See Appendix For Company List

Life Insurance vs Bank Mortgages

Typical Life Insurance Lending

- Lower LTV and Proceeds
- Credit Spreads: Lower
- Relationship Based: No
- Source of Repayment: Property Income
- Recourse: No
- Term: 5-15 Years
- Typically Fixed Rate
- Modifications: Less Common
- Loan Structures: More Common
- Markets: Major Markets
- Prepayment: Limited With Fees

Typical Bank Lending

- Higher LTV and Proceeds
- Credit Spreads: Higher
- Relationship Based: Yes
- Source of Repayment: Customer Cash Flow
- Recourse: Personal Liability
- Term: 1-5 Years
- Typically Floating Rate
- Modifications: More Common
- Loan Structures: Less Common
- Markets: Major and Minor Markets
- Prepayment: Flexible

Charges Based On Vasicek Model Using US Industry Historical Experience

- Industry Experience From 10 Years of Loan Performance Data.
  - Default and Loss Data Covering Recent 10 Year Period By CM Category
  - History Limited To Two Large Companies With Better Than Industry Average Performance – 2017 Combined Balance of $103B vs. US Industry Holdings* Of $373B, or 28% Share
  - Charges Calculated In The Vasicek Model at 99.5% CI

CM Classification	Capital Charge
CM1	0.57%
CM2	1.33%
CM3	2.30%
CM4	3.07%
CM5	3.63%

Charges Based On Vasicek Model Using Validated US Industry Model

- Capital Factors Estimated Using Moody's CMM Model. CMM Was Used To Calibrate NAIC RBC and AVR Charges For U.S. Life Insurers
  - Backed By The Largest Dataset of US Commercial Mortgage Performance including proprietary Moody's loan performance information in addition to data from the ACLI (life insurance companies), FDIC (banks) and Trepp (CMBS), in addition to data from various industry studies
- Modeling Based On 2013 NAIC Factor Development Process Using the CMM Model
  - Synthetic Portfolios Modeled Over Historical Periods
    - Historical economic, property income and property values
  - 10 Annual Cohorts Modeled Over 10 Year Periods From 2000-2020
  - Property Type Mix Based On Life Company Holdings
  - Typical Mix Of Maturities
  - NAIC amortization terms and discounting

Continued

- CMM Model Outputs Used To Create Vasicek Model Inputs:

	IAIS requested data		
	1	2	3
	Stress LGD (CCAR Severe Adverse)	Long-run average 1-year PD	Long-run average 10-year cumulative PD
CM1	20.6%	0.52%	5.2%
CM2	23.4%	0.97%	9.7%
CM3	22.5%	2.14%	21.4%
CM4	27.1%	3.08%	30.8%
CM5	29.3%	3.91%	39.1%

- Vasicek Model Output:

CM Classification	Capital Charge
CM1	3.1%
CM2	4.7%
CM3	5.9%
CM4	TBD%
CM5	TBD%

2016 Testing Factors Based On Adjusted NAIC Charges

- 2016 Testing Charges were derived from US NAIC Risk Based Capital Charges and adjusted from the 92% CI used for US RBC to the 99.5% CI Used for ICS.

CM Classification	2016 CIS Stress Factors
CM1	2.8%
CM2	5.5%
CM3	9.4%
CM4	15.8%
CM5	23.5%

Summary of Various Approaches

CM Classification	Current ICS Stress Factors	2016 CIS Stress Factors	ICS Stress Factors - Scaled Input	CMM Derived Factors	US Industry History Derived Factors
CM1	4.8%	2.8%	TBD	3.1%	0.57%
CM2	6.0%	5.5%	TBD	4.7%	1.33%
CM3	7.8%	9.4%	TBD	5.9%	2.30%
CM4	15.8%	15.8%	TBD	TBD	3.07%
CM5	23.5%	23.5%	TBD	TBD	3.63%

Next Steps

- Explore “scaling” of Vasicek Model Inputs to Reflect Relative U.S. Bank and US Life Insurance Company Experience

Appendix:
US Life Company Loss Data Sources

Dataset represents $259B of commercial mortgage holdings as of 2017.
ACLI loan population was $373B as of 2017.

- MetLife: Public financials from 2009
- Prudential: Public financials from 2009
- Hartford: Public financials from 2009
- Genworth: Public financials from 2009
- AIG: Public financials from 2009
- Allstate: Public financials from 2009
- Lincoln: Public financials from 2009
- Ameriprise: Public financials from 2009
- Unum: Public financials from 2009
- Protective Life: Public financials from 2009
- Brighthouse: Public financials from 2017, In MetLife sums 2009-2016
- Voya: Public Financials from 2013
- Mass Mutual: Statutory Filings from 2012
- New York Life: GAAP basis from 2012
- TIAA: Statutory Filings from 2015