



Broward County School Board

Investment Policy Recommendations & Analysis

Presented By:

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Recommendations

- 1 The School District's existing policy is missing two of the necessary sections under Section 218.415, Florida Statutes and the GFOA investment policy best practices, and most of the sections recommended per the APT US & C.
- 2 Add the following sections required under Section 218.415, Florida Statutes:
 - Risk and Diversification
 - Master Repurchase Agreement
- 3 Updated the following sections required under the APT US & C:
 - Glossary of Terms – industry standard terms
 - Investment Pool/Fund Questionnaire - to aid in the selection of Funds
- 4 PFM recommends the School District increase its diversification with expanded credit allocation limits and the addition of supranationals to prudently increase expected earnings within the confines of the school districts liquidity requirements.
- 5 Broaden the credit limits for Corporate notes to allow for investment in a larger universe of investment grade credit.
- 6 Update language around the maturity requirements for investment of core funds to clarify a max maturity of 5.5 year from the date of settlement.
- 7 Bring allocation limits to SBA and comparable Florida Intergovernmental Pools in line with each other.



Investment Policy Review Framework

Florida
Statutes



Association of
Public Treasurers of
US and Canada



GFOA
Best Practices





Section 218.415 Florida Statutes Requirements

- Scope
- Investment Objectives
- Performance Measurement
- Prudence and Ethical Standards
- Listing of Authorized Investments
- Maturity and Liquidity Requirements
- Portfolio Composition
- ❑ Risk and Diversification
 - Authorized Investment Institutions and Dealers
 - Third-Party Custodial Agreements
- ❑ Master Repurchase Agreement
 - Bid Requirement
 - Internal Controls
 - Continuing Education
 - Reporting

The School District's Investment Policy is missing two of the required sections per Section 218.415, Florida Statutes



APT US & C*

Investment Policy Requirements

- Policy/Purpose
- Scope
- Prudence
- Objective (Safety, Liquidity, Yield)
- Delegation of Authority
- Ethics and Conflict of Interest
- Authorized Financial Dealers and Institutions
- Authorized & Suitable Investments
- ❑ **Investment Pools/Mutual Fund Questionnaire**
- Collateralization
- Safekeeping and Custody
- Diversification
- Maximum Maturities
- Internal Control
- Performance Standards
- Reporting
- ❑ **Investment Policy Adoption**
- ❑ **Glossary**

The School District's Investment Policy needs an update to three required sections necessary to be certified by the APT US & C



GFOA Investment Policy Best Practices

- Scope and investment objectives
- Roles, responsibilities, and standards of care
- Suitable and authorized investments
- Investment diversification
- Safekeeping, custody, and internal controls
- Authorized financial institutions, depositories, and broker/dealers
- Risk and performance standards
- Reporting and disclosure standards

The School District's Investment Policy contains all of the GFOA's best practice recommendations



School District Investment Policy Comparison

Sector	Broward County Current (2007)	Broward County Proposed (2019)	Sarasota County (2018)	Brevard County (2012)*	Marion County (2018)	Lake County (2017)	Osceola County (2014)*	Palm Beach County (2017)	Pasco County (2013)	Seminole County (2009)*	Volusia County (2015)*
SBA Florida PRIME	100%	50%	75%	0%	25%	50%	50%	25%	25%	50%	25%
U.S. Treasuries	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Federal Agencies	80%	75%	80%	80%	80%	75%	75%	100%	80%	80%	75%
Certificates of Deposit	25%	50%	50%	25%	50%	50%	50%	25%	25%	25%	25%
Commercial Paper	35%	50%	35%	35%	50%	35%	25%	50%	35%	35%	35%
Corporate Bonds	25%	50%	25%	20%	50%	35%	25%	15%	15%	0%	25%
Municipal Obligations	20%	25%	25%	20%	25%	25%	25%	20%	20%	20%	25%
Agency Mortgage Backed Security	20%	25%	25%	20%	25%	25%	25%	20%	0%	0%	25%
Local Government Investment Pools	25%	75%	50%	25%	75%	75%	50%	50%	50%	25%	25%
Supranationals	0%	25%	10%	0%	25%	0%	0%	0%	0%	0%	0%
Asset-Backed Securities	10%	25%	10%	0%	25%	0%	0%	0%	0%	0%	0%

*School district considering changes to highlighted sectors.

Representative sample of investment policy permitted investments. Each school District investment policy contains detailed requirements including additional permitted investments, maturity specifications and minimum ratings levels.



Detailed Analysis

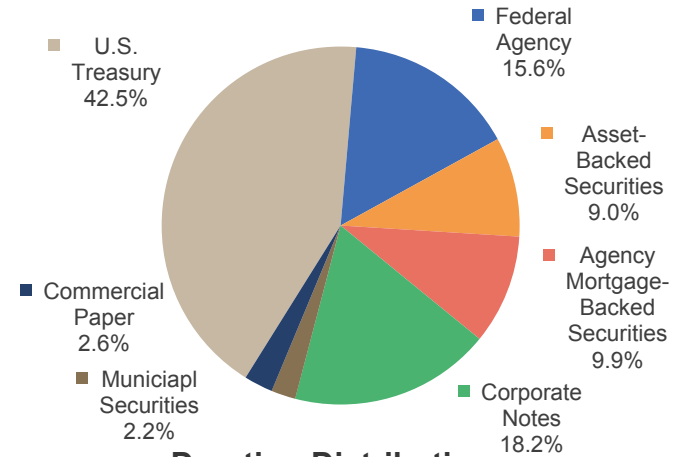


Portfolio Snapshot: Operating Portfolio

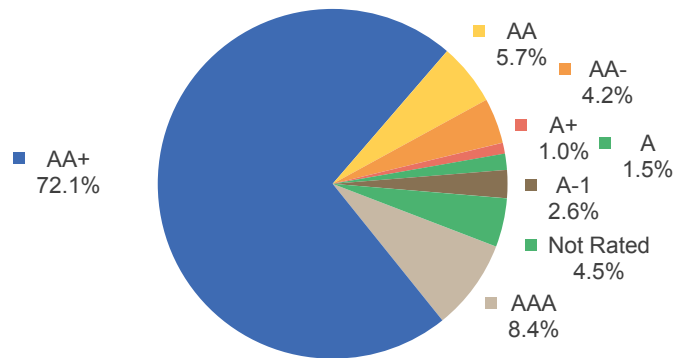
Portfolio Statistics

Market Value	\$67,825,472
Effective Duration	1.80 years
Yield at Cost	2.33%
Yield at Market	2.38%

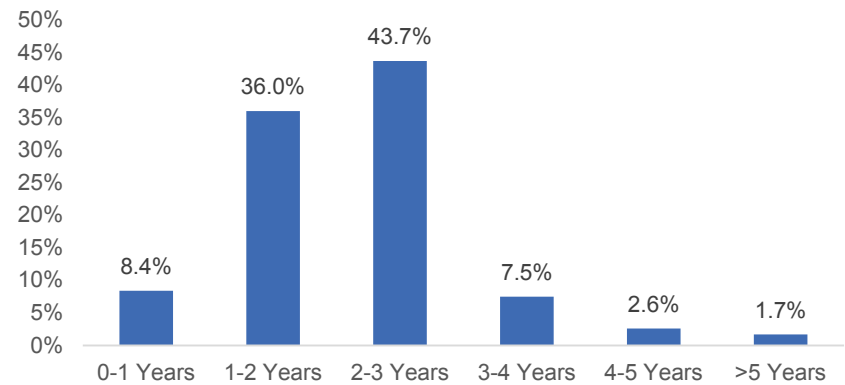
Sector Allocation



Credit Quality



Duration Distribution



Sector allocation excludes cash balances. Credit quality uses S&P rating, or Moody's equivalent if not rated by S&P. Please see important disclosures. Holdings as 3/31/19.



Long-Term Sector Performance and Correlations

Sector	Annualized Return	Standard Deviation	Sharpe Ratio	Duration (yrs) as of March 31, 2019
Treasury	1.46%	1.28%	0.80	2.56
Agency	1.58%	1.09%	1.06	1.91
Corporate AAA-A	3.92%	4.19%	0.83	2.52
MBS	2.72%	1.89%	1.21	3.49
Municipal	1.91%	1.22%	1.21	2.42
ABS	2.24%	2.24%	0.81	1.35

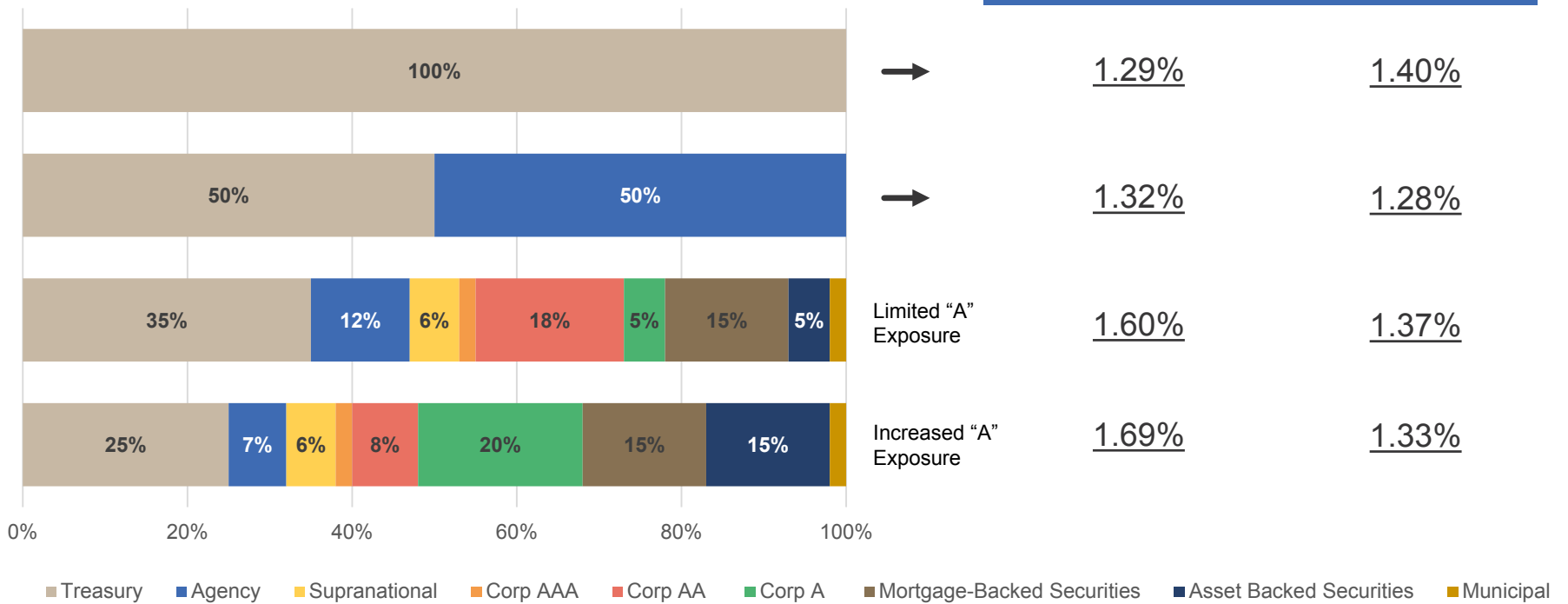
Correlation Matrix						
	Treasury	Agency	Corp AAA-A	MBS	Municipal	ABS
Treasury	1.00	0.88	0.22	0.77	0.71	0.21
Agency		1.00	0.64	0.91	0.92	0.65
Corp AAA-A			1.00	0.70	0.77	0.98
MBS				1.00	0.87	0.66
Municipal					1.00	0.77
ABS						1.00

Return represents the annualized 10 year return for each sector index and Std. Dev represents the average Std. Dev from each sector index, from March, 2009 – March, 2019. Durations as of 3/31/2019 for each sector index. The annualized 3-month T-bill yield equaling 0.43% was used to calculate the Sharpe ratios. Source: Bloomberg



Risk/Return of Various Investment Strategies

Example 1-5 Year Portfolio Sector Allocation



Yields as of March 31, 2019. Example portfolio yields are based on the ICE BofAML 1-5 Year indices for all sectors except for the mortgage-backed and asset-backed securities which use the ICE of BofAML 0-5 Indices. Source: Bloomberg.



A Rated Representative Issuer List

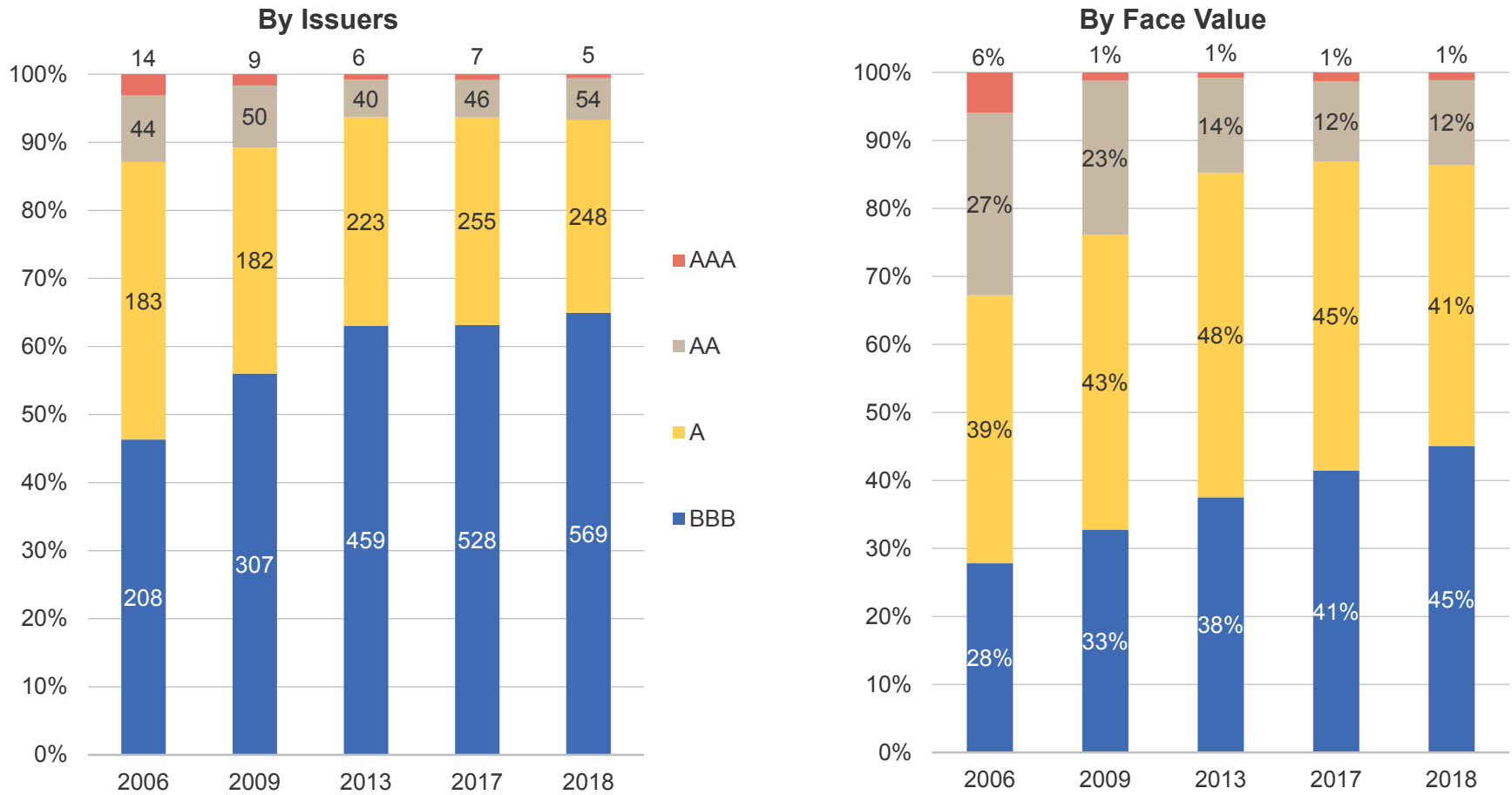
Top 10 Issuers	# of Issues	Amount Outstanding (millions)	% of Corp Index	Moody's	S&P	Fitch
J.P. Morgan Chase	22	\$50,900	1.99%	A2	A-	AA-
Bank of America	21	\$43,569	1.69%	A2	A-	A+
Goldman Sachs	17	\$38,350	1.50%	A3	BBB+	A
Morgan Stanley	13	\$31,082	1.22%	A3	BBB+	A
Wells Fargo	12	\$30,100	1.16%	A2	A-	A+
Citigroup	15	\$27,582	1.07%	A3	BBB+	A
HSBC	10	\$20,900	0.82%	A2	A	AA-
Oracle	8	\$16,494	0.63%	A1	AA-	A
Daimler Finance	17	\$15,575	0.60%	A2	A	A-
BNY Mellon	14	\$13,900	0.54%	A1	A	AA-

Representative list for informational purposes only; not an investment recommendation.
 Source: BofA Merrill Lynch 1-5 Year U.S. Corporate Index, as of January 2019 universe.



Corporate Ratings Landscape Continues to Evolve

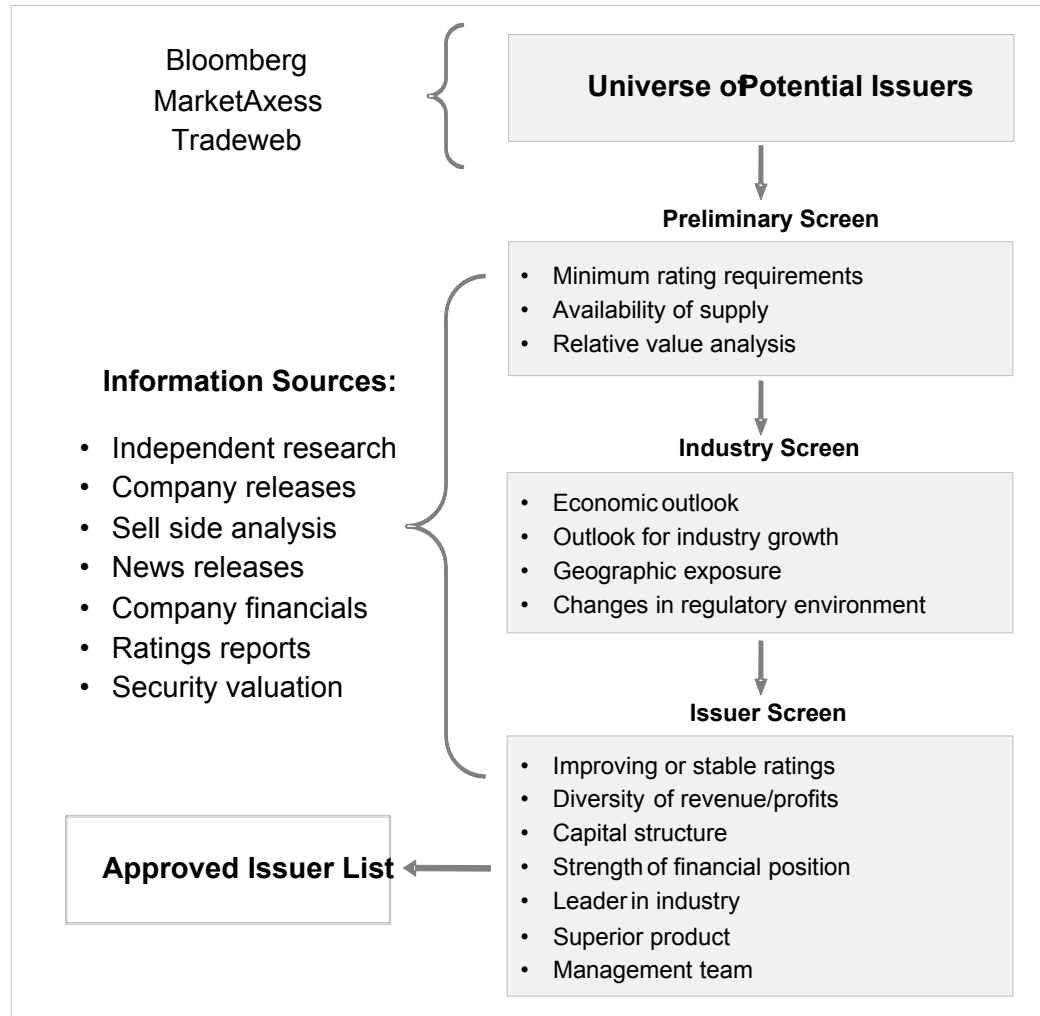
Composition of Merrill Lynch 1-5 Year Corporate Index



Source: BofA Merrill Lynch Indices composite ratings.



Credit Analysis and Monitoring Process





Credit Analysis and Monitoring Process

ML 1-5 Year Corporate Universe (as of May 9, 2019)

Rating	% of Issuers
AAA	1.1%
AA	11.8%
A	41.4%
BBB	45.6%

Exclude BBB-rated credits

Assess/screen sovereign & currency risk

Detailed credit review process

Approved Issuer List
175 Approved Issuers



Letter Rating Migration Rates

2018 One-Year Letter Rating Migration Rates										
From\To:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca-C	Default	WR
Aaa	92.5%	3.8%	-	-	-	-	-	-	-	3.8%
Aa	-	93.8%	3.5%	-	-	-	-	-	-	2.7%
A	-	3.3%	89.4%	3.7%	0.1%	-	-	-	-	3.5%
Baa	-	-	3.4%	90.9%	1.3%	-	0.1%	-	-	4.4%
Ba	-	-	-	6.6%	79.0%	5.2%	0.3%	-	-	8.8%
B	-	-	-	-	5.3%	77.7%	4.3%	0.1%	0.5%	12.2%
Caa	-	-	-	-	0.2%	4.8%	74.3%	1.6%	3.0%	16.2%
Ca-C	-	-	-	-	-	-	15.3%	41.2%	29.4%	14.1%

Average One-Year Letter Rating Migration Rates, 1970-2018										
From\To:	Aaa	Aa	A	Baa	Ba	B	Caa	Ca-C	Default	WR
Aaa	87.8%	7.9%	0.6%	0.1%	0.0%	-	-	-	-	3.7%
Aa	0.8%	85.2%	8.5%	0.4%	0.1%	0.0%	0.0%	-	0.0%	4.9%
A	0.1%	2.5%	86.9%	5.3%	0.5%	0.1%	0.0%	-	0.1%	4.7%
Baa	0.0%	0.1%	4.1%	85.9%	3.7%	0.7%	0.2%	0.0%	0.2%	5.2%
Ba	0.0%	0.0%	0.4%	6.2%	76.5%	7.0%	0.7%	0.1%	0.9%	8.1%
B	0.0%	0.0%	0.1%	0.4%	4.8%	73.6%	6.5%	0.5%	3.1%	10.8%
Caa	-	0.0%	0.0%	0.1%	0.3%	6.5%	68.2%	2.8%	7.5%	14.6%
Ca-C	-	-	0.0%	-	0.6%	2.2%	9.9%	38.8%	26.9%	21.5%

Legend:



Upgrades

Downgrades to Non-Investment Grade



Downgrades to Investment Grade

Defaults

Source: Moody's Annual Default Study: Corporate Default and Recovery Rates, 1920-2018



Diversification by Industry

Composition of the Corporate Universe				
	Financial	Industrial	Utilities	Total
AAA	0.2%	0.9%	0.0%	1.1%
AA	7.1%	5.2%	0.2%	12.5%
A	22.3%	17.1%	2.0%	41.4%
BBB	8.6%	33.6%	2.8%	45.0%
Total	38.2%	56.8%	4.9%	100%

Source: BofA Merrill Lynch 1-5 Year U.S. Corporate Index by face value, as of January 2019 universe.



Annual Issuer-Weighted Corporate Default Rates, 1983-2018

- Since 1983, corporate obligations rated A or better have experienced a very low default rate

Moody's Rating	Highest Annual Default Rate	Lowest Annual Default Rate	Average Annual Default Rate
Aaa	0.00%	0.00%	0.00%
Aa1	0.00%	0.00%	0.00%
Aa2	0.00%	0.00%	0.00%
Aa3	1.49%	0.00%	0.09%
A1	1.05%	0.00%	0.05%
A2	0.41%	0.00%	0.02%
A3	0.69%	0.00%	0.04%

Source: Moody's Default Report, February 2019.



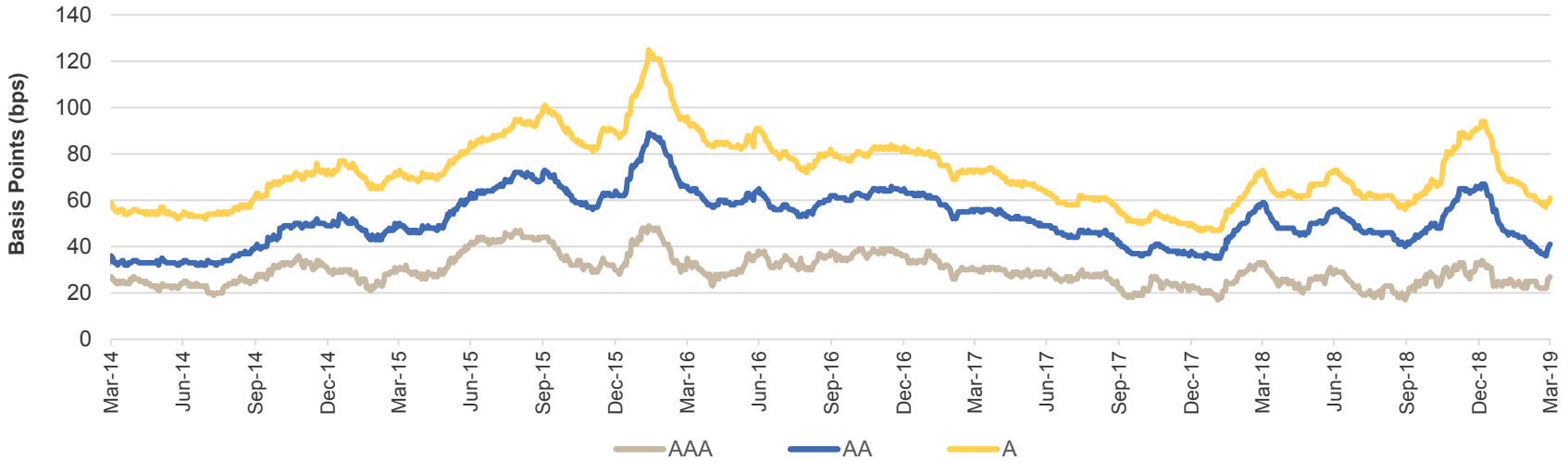
Corporate Sector Considerations: Historical Performance

- While spreads in the corporate sector are dependent on market conditions, investors are compensated in the form of additional yield based on perceived credit quality
- This additional yield provides additional return, and helps to support portfolio growth

Annualized Performance

	YTD	1 Year	3 Year	5 Year	10 Year
AAA	1.71%	3.91%	1.44%	1.80%	2.94%
AA	1.98%	4.14%	1.83%	2.00%	3.28%
A	2.37%	4.34%	2.14%	2.20%	4.22%

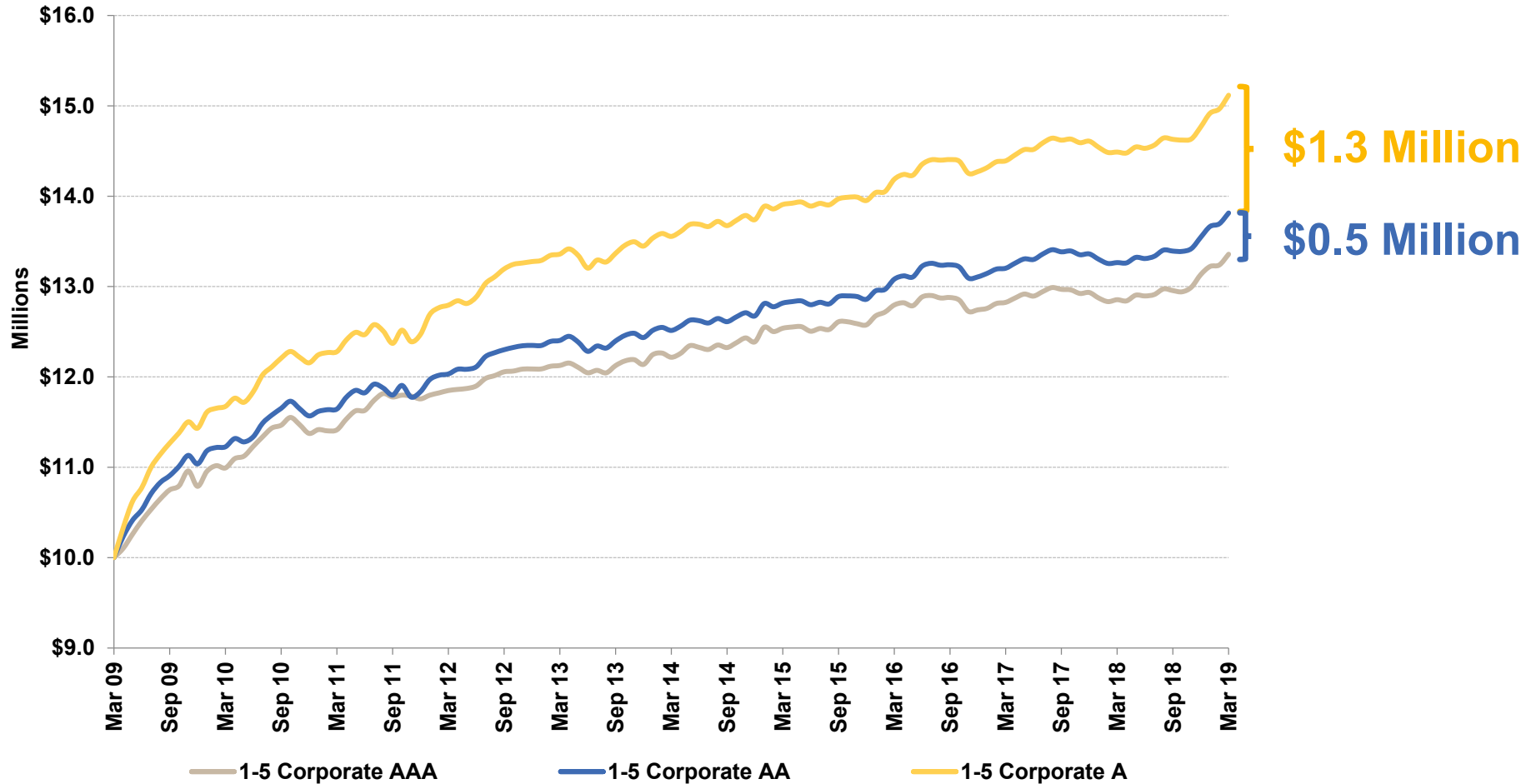
US Investment Grade Corporate OAS Spread



Performance for AAA, AA, and A derived from ICE BofAML 1-5 Year Indices as of 3/31/2019. Source: Bloomberg



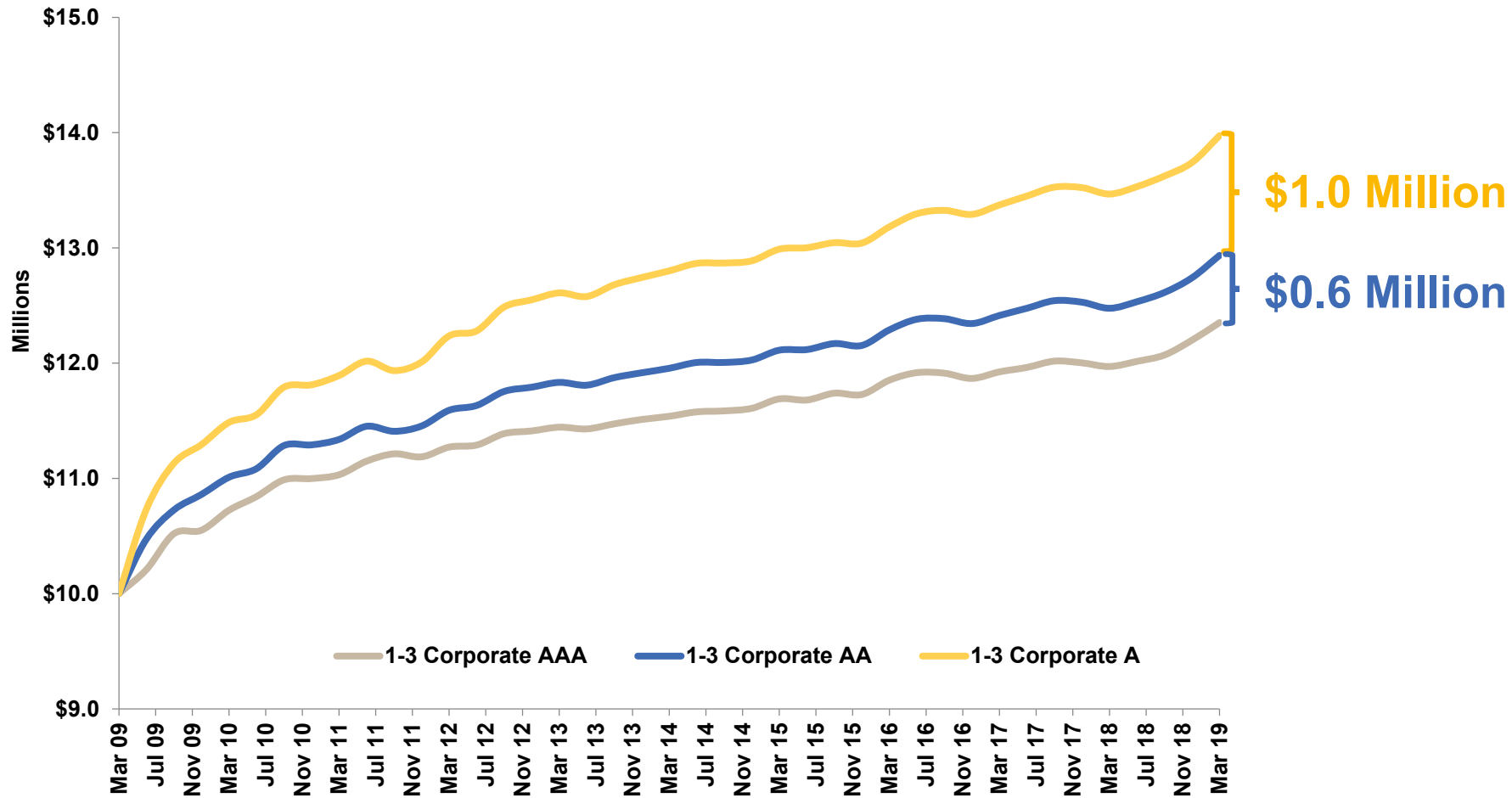
Growth of \$10 million in AAA, AA, & A Corporate Indexes



Performance for AAA, AA, and A derived from ICE BofAML 1-5 Year Indices as of 3/31/2019. Source: Bloomberg



Growth of \$10 million in AAA, AA, & A Corporate Indexes



Performance for AAA, AA, and A derived from ICE BofAML 1-3 Year Indices as of 3/31/2019. Source: Bloomberg



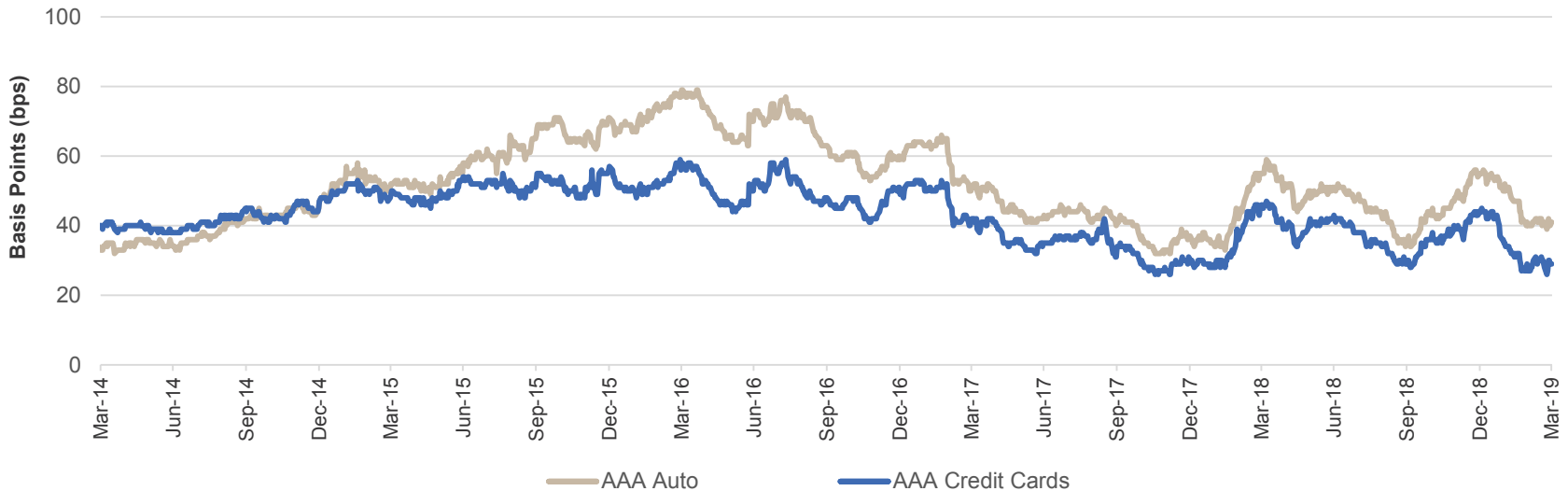
ABS Sector Considerations: Historical Performance

- Prime quality asset-backed securities provide important diversification to a fixed-income portfolio
- The sector is considered a high quality alternative to corporate obligations; often time offering comparable yield spreads for higher rated securities
- PFM only recommends AAA-rated, prime, ABS

Annualized Performance

	YTD	1 Year	3 Year	5 Year	10 Year
AAA Auto	1.12%	3.06%	1.82%	1.49%	1.99%
AAA Credit Cards	1.26%	3.32%	1.64%	1.76%	3.25%
1-5 Year US Treasury	1.22%	3.14%	0.97%	1.29%	1.46%

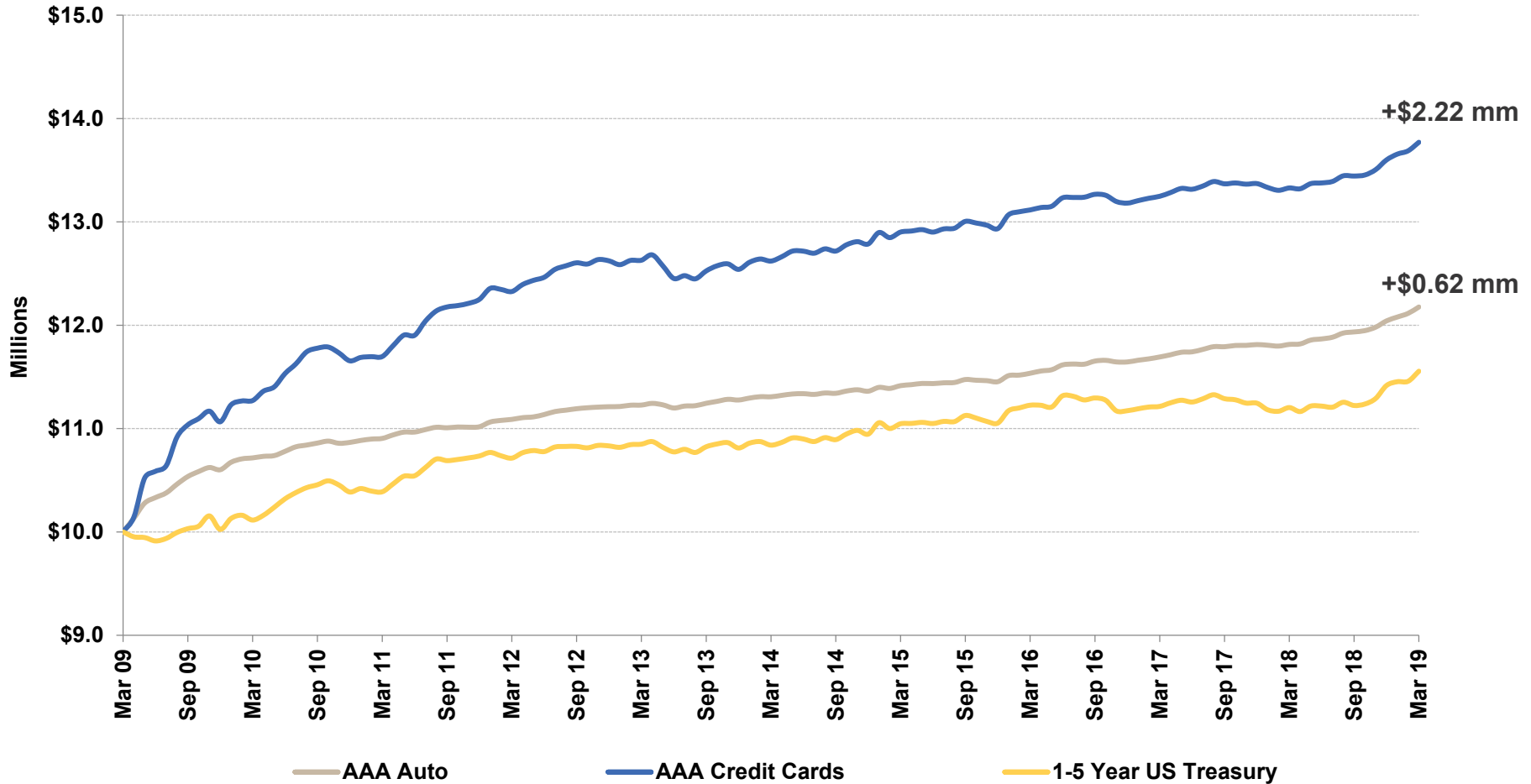
Yield Spread (OAS) on Asset Backed Securities



Performance for AAA Auto, AAA Credit Cards, & 1-5 Year US Treasury from ICE BofAML 1-5 Year Indices as of 3/31/2019. Source: Bloomberg.



Growth of \$10 million in ABS vs Treasuries

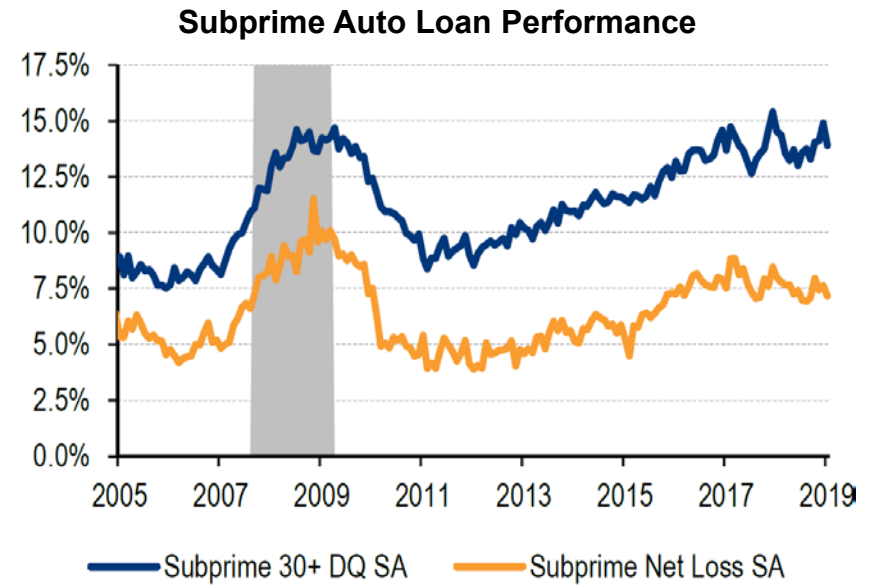
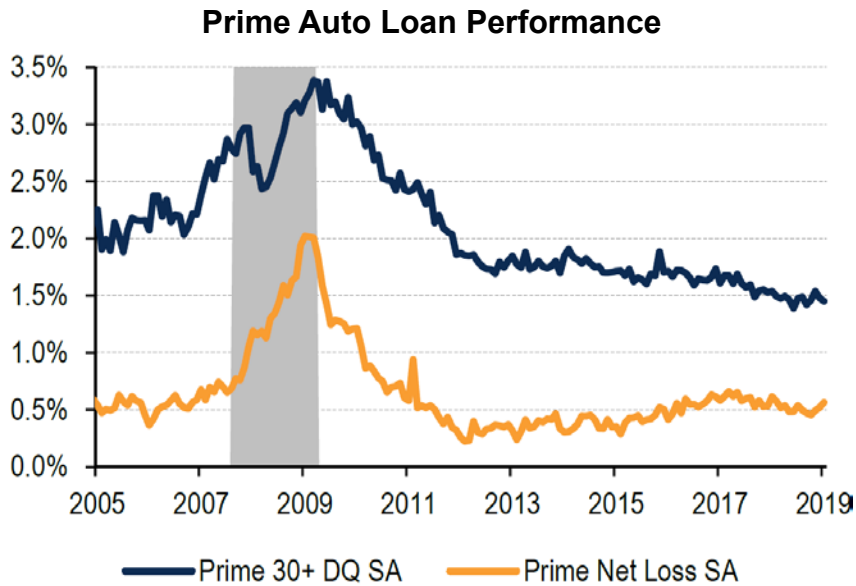


Performance for AAA Auto, AAA Credit Cards, & 1-5 Year US Treasury from ICE BofAML 1-5 Year Indices as of 3/31/2019. Source: Bloomberg.



ABS Sector Considerations: Collateral Performance

- There is an important distinction to be made between the credit quality and performance of “prime” vs “subprime” ABS and expectations for the performance of the associated collateral
- In addition to analyzing the securities credit enhancements prior to purchase, ongoing monitoring is an important aspect of the credit review process

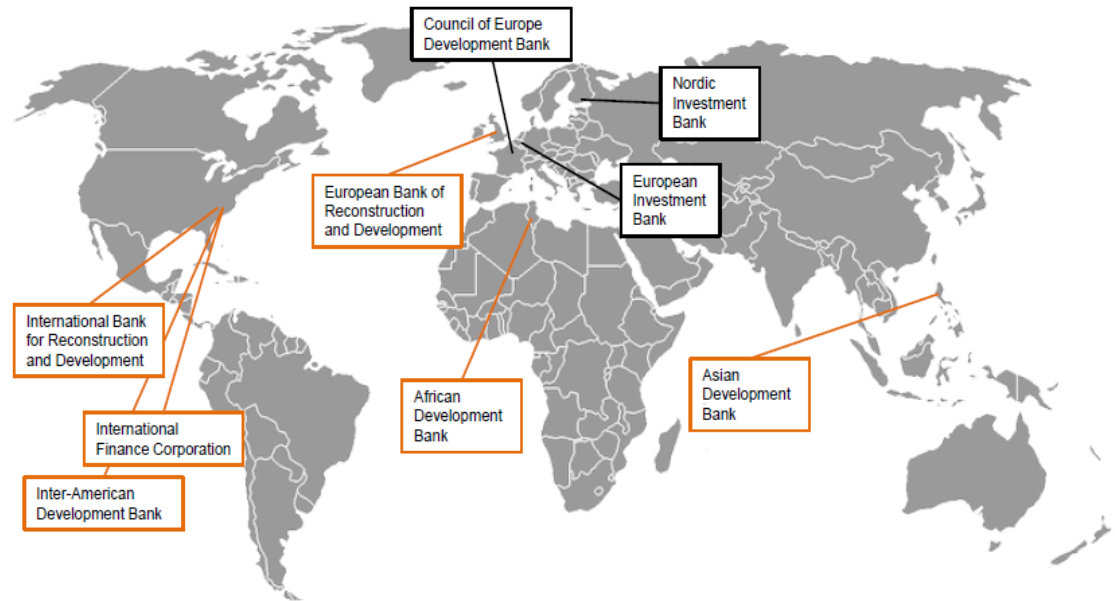


Source: BofA Merrill Lynch



Supranationals

- Multilateral organization of governments for which the United States is a participant, shareholder, and/or voting member
- International financial institutions generally established by agreements among nations with member nations contributing capital and participating in management
- Tend to have excellent credit quality due to multi-national ownership and commitment, long and successful operating histories, and significant capital from a diverse capital base
- Includes Inter-American Development Bank, International Bank for Reconstruction & Development, African Development Bank, Asian Development Bank, International Finance Corporation



Sources: World Bank, Standard & Poor's, BofA Merrill Lynch



Source: World Bank.



AAA Supranationals with U.S. as Largest Shareholder

SUPRANATIONAL	% U.S. SHAREHOLDING	U.S. SHAREHOLDER POSITION	LOCATION OF HEADQUARTERS	YEAR ESTABLISHED
International Bank for Reconstruction and Development (World Bank)	16%	1 st	Washington, DC, USA	1944
International Finance Corporation (IFC)	24%	1 st	Washington, DC, USA	1956
Inter-American Development Bank (IADB)	30%	1 st	Washington, DC, USA	1959
African Development Bank (AFDB)	7%	2 nd	Abidjan, Ivory Coast	1963
Asian Development Bank (ADB)	16%	1 st (co-largest with Japan)	Manila, Philippines	1966
European Bank for Reconstruction and Development (EBRD)	10%	1 st	London, UK	1991

Source: World Bank.



Instrumentalities Are Enacted by Congress

- Instrumentalities were created by an Act of Congress and are exempt from any payment concerns due to the debt ceiling
 - Instrumentality issuers whose membership includes the U.S. are SEC *exempt* by the federal statutes that authorize U.S. membership and participation
- Instrumentalities' lending agreements give them “preferred creditor” status, meaning that if a borrowing nation gets into financial difficulty, they must be repaid before anyone else

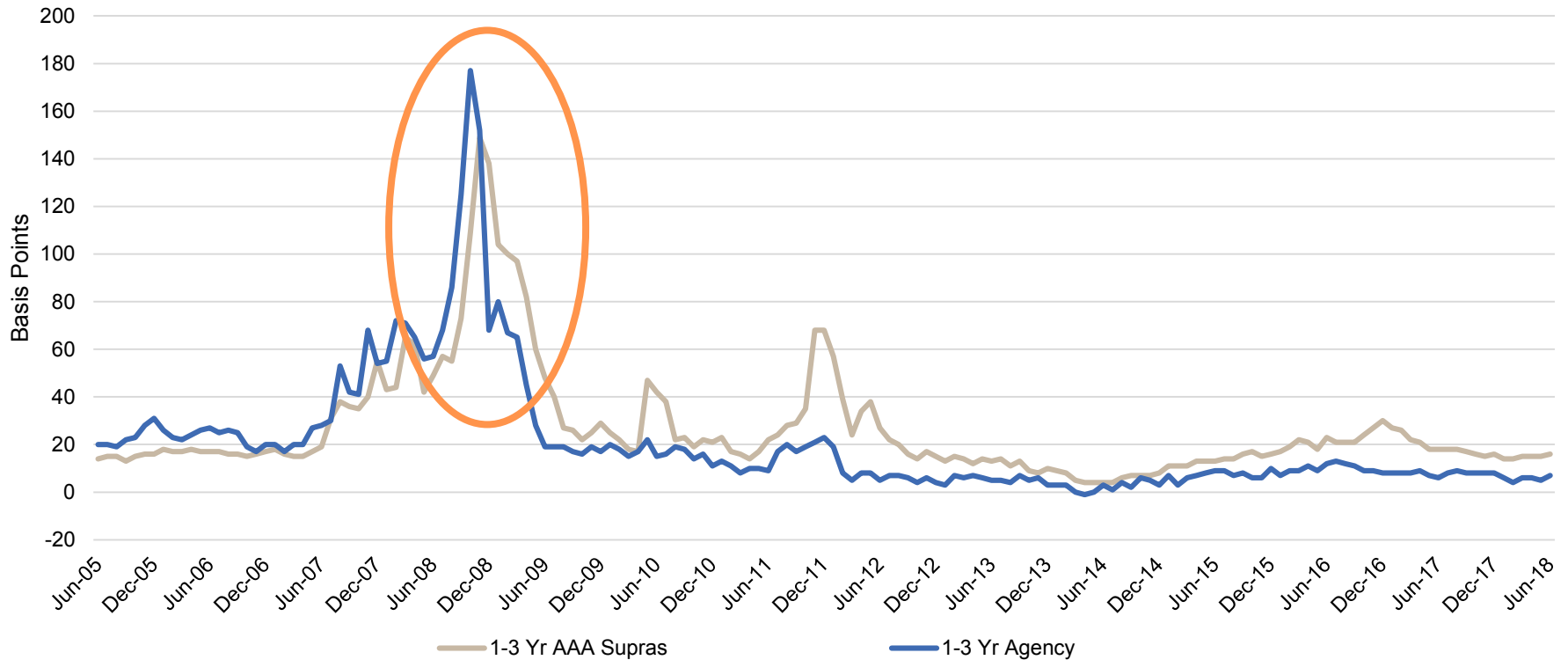
Instrumentalities	Acts of Congress
IBRD	Bretton Woods Act 22 USC 286 et. Seq.
IFC	International Finance Corporation Act 22 USC 282 et. Seq.
IDB	Inter-American Development Act 22 USC 283 et. seq.
AfBD	African Development Bank Act 22 USC 290i et. Seq.
ADB	Asian Development Bank Act 22 USC 285

Under the provisions of Section 15(a) of the Bretton Woods Agreements Act, as amended, notes are exempted securities within the meaning of Section 3(a)(2) of the U.S. Securities Act of 1933, as amended, and Section 3(a)(12) of the U.S. Securities Exchange Act of 1934.



Supranational and Federal Agency Yields Have Historically Tracked Closely

OAS Comparison: Agencies vs. Supranationals



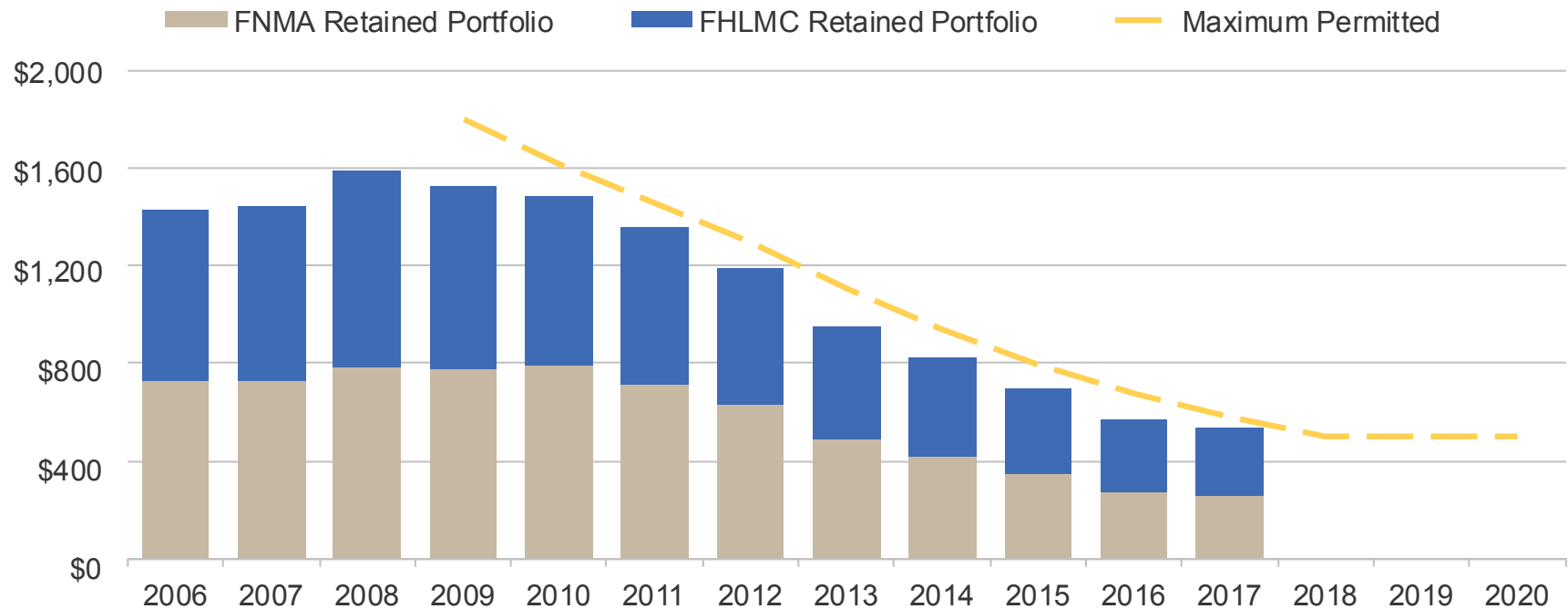
Source: Bloomberg, Merrill Lynch. Represents the historical Option Adjusted Spread of the 1-3yr Agency Bullet Index (G1PB), 1-3 Year AAA US Supranational Index (GS1S), AAA This material is for general information purposes only, is not intended to provide specific recommendations, and is subject to changes in the market environment.



Fannie and Freddie's Shrinking Balance Sheets

Fannie Mae and Freddie Mac Retained Portfolios

(billions)



Source: Fannie Mae and Freddie Mac, as of June 2017.



PFM's Credit Process



PFM's Credit Committee *(as of January 29, 2019)*

- ◆ Formal meetings every month, and as necessary based on market events
- ◆ **Function and Responsibilities**
 - Manage credit risk
 - Formal monthly meetings
 - Intra-month meetings as needed
 - Review macro events
 - Review written credit reports, supporting material
 - Monitor credit rating actions
- ◆ **Approved Credit List**
 - Primary credit risk management tool
 - Both short-term and long-term views
 - Portfolio managers and traders restricted by approved list
 - Restrictions integrated into trading and compliance systems
 - Limits based on internal credit assessment melded with client needs and policies
- ◆ Keeps written minutes of meetings

Credit Committee	Role at PFM
Robert Cheddar, CFA* Committee Chair	Chief Credit Officer / Head Portfolio Manager
Marty Margolis*	Chief Investment Officer
Ken Schiebel, CFA*	Co-head of Portfolio Strategies Group
Kyle Jones*	Co-head of Portfolio Strategies Group
James Sims, CFA	Sr. Portfolio Manager
Michael Varano*	Head Portfolio Manager, LGIPs
Joseph Creason, CFA	Sr. Portfolio Manager
Michael Downs, CFA	Portfolio Manager
Brain Raubenstine	Sr. Portfolio Manager
Jeffrey Rowe, CFA*	Sr. Portfolio Manager
Kerri Staub	Sr. Portfolio Manager
Leo Karwejna (ex-officio)*	Chief Compliance Officer

*Denotes Managing Director



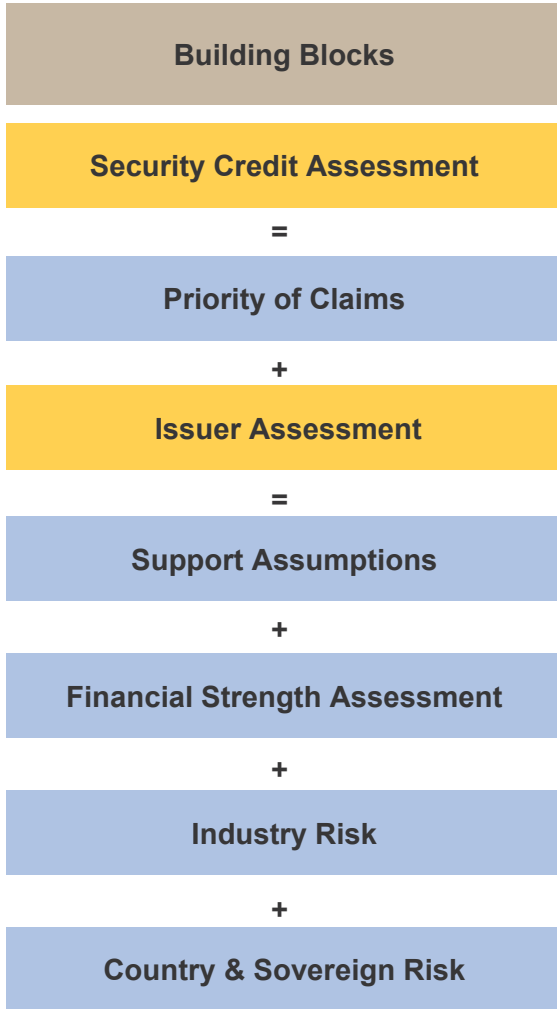
Credit Review Philosophy

- Utilize credit in seeking to generate above benchmark returns with minimum volatility
- Integrated into broader investment process
- Research conducted “on the desk” by portfolio managers and traders
- Emphasize emerging industry and macro trends
- Build in a “margin of safety”

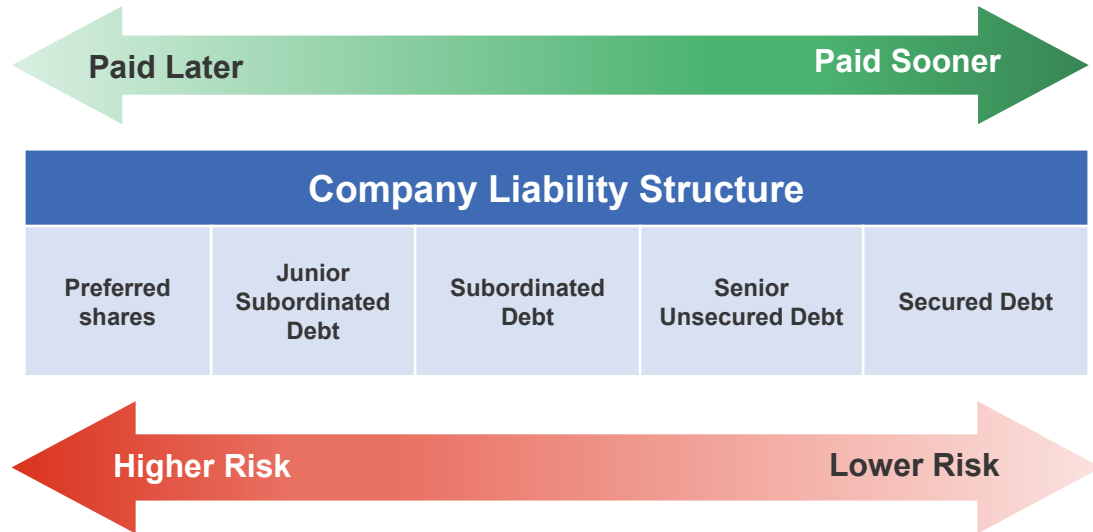
Issuer Analysis	Macro / Industry Analysis
<ul style="list-style-type: none">✓ Balance sheet: ratios and analysis✓ Earnings: actual and projections✓ Asset quality and impairments✓ Debt and liquidity levels✓ Corporate governance✓ Prices of bonds, equity, and credit default swaps✓ Supply and trading volume✓ Analysts' recommendations	<ul style="list-style-type: none">✓ Macro-economic conditions✓ Industry trends✓ Competitive environment✓ Business cycle✓ Regulatory environment✓ Rating agency actions✓ Sovereign credit developments✓ Geopolitical risks



Credit Assessment Process: How We Assess Credit Risk



- Analysis of both the issuer **and** the security is integral to our credit process
- Risk/return characteristics are related to an issuer's creditworthiness as well as an investor's rights and priority of claim at the security level.
- Each issuer is analyzed to identify the full investment opportunities set



Disclosure

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