

Find Alpha with the Next-Generation CreditEdge Bond Model

Today's presenters



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Presenter

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Agenda

1. CreditEdge data sets and applications
2. Bond model v2.0 highlights
3. Investment strategy performance
4. Take-away
5. Appendix

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CreditEdge data sets and applications

CreditEdge provides a range of data and tools to find alpha and manage credit risk with early warning



- » Forward looking credit risk measures for **60,000+ public entities** and **290,000+ bonds globally**
- » Daily data back to 1999 with underlying factors like **volatility** and **company fundamentals**
- » Bond-level data including terms and conditions, pricing, OAS and modeled spreads, **duration-matched EDF**, and LGD
- » Bond aggregated data to **benchmark portfolio** performance
- » Data on **7,000+ industry groups**, plus **stressed market scenarios**, and AI-powered **Credit Sentiment Score**

CreditEdge proprietary Fair Value Spread and Alpha Factor measures help asset managers select underpriced bonds

Fair Value Spread \equiv **(EDF x LGD) + MRP +/- issuer size factor**

Alpha Factor \equiv **Option Adjusted Spread (OAS) / FVS**

VZ FRN US3MLIB + 1.10 05/15/2025 USD [Add To Portfolio](#) [PDF Report](#) [Settings](#) [Download](#)

Bond ISSUER: VERIZON COMMUNICATIONS, INC. CUSIP: 92343VEP5 ISIN: US92343VEP58

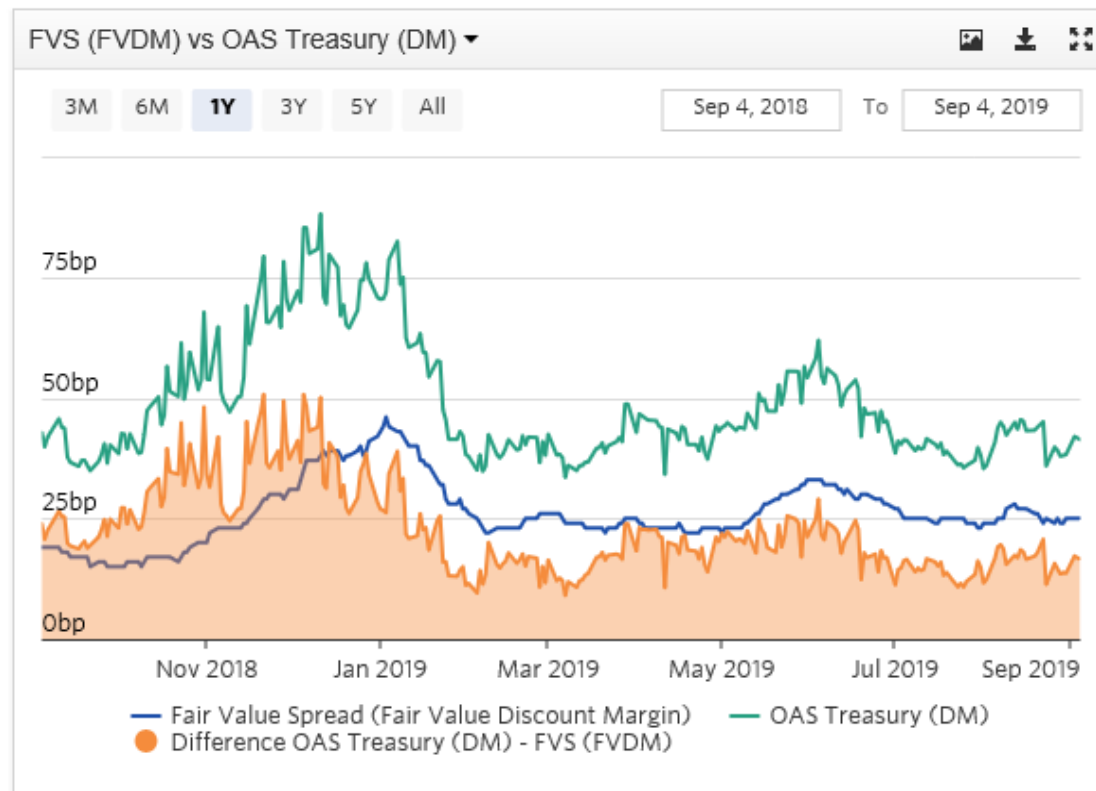
[Overview](#) [What-if](#)

101.98 As of Oct 02, 2020	0.40 1 Year Change	0.92% As of Oct 05, 2020	-2.02% 1 Year Change	Baa1 As of Oct 05, 2020	43bp As of Oct 05, 2020	68bp As of Oct 05, 2020	1.58 As of Oct 05, 2020
Price	Change	Yield to Maturity	Change	Moody's SRA Rating	FVS (FVDM)	OAS Treasury (DM)	Alpha Factor

CreditEdge proprietary Deterioration Probability metric can be used to help avoid losses from fallen angel downgrades

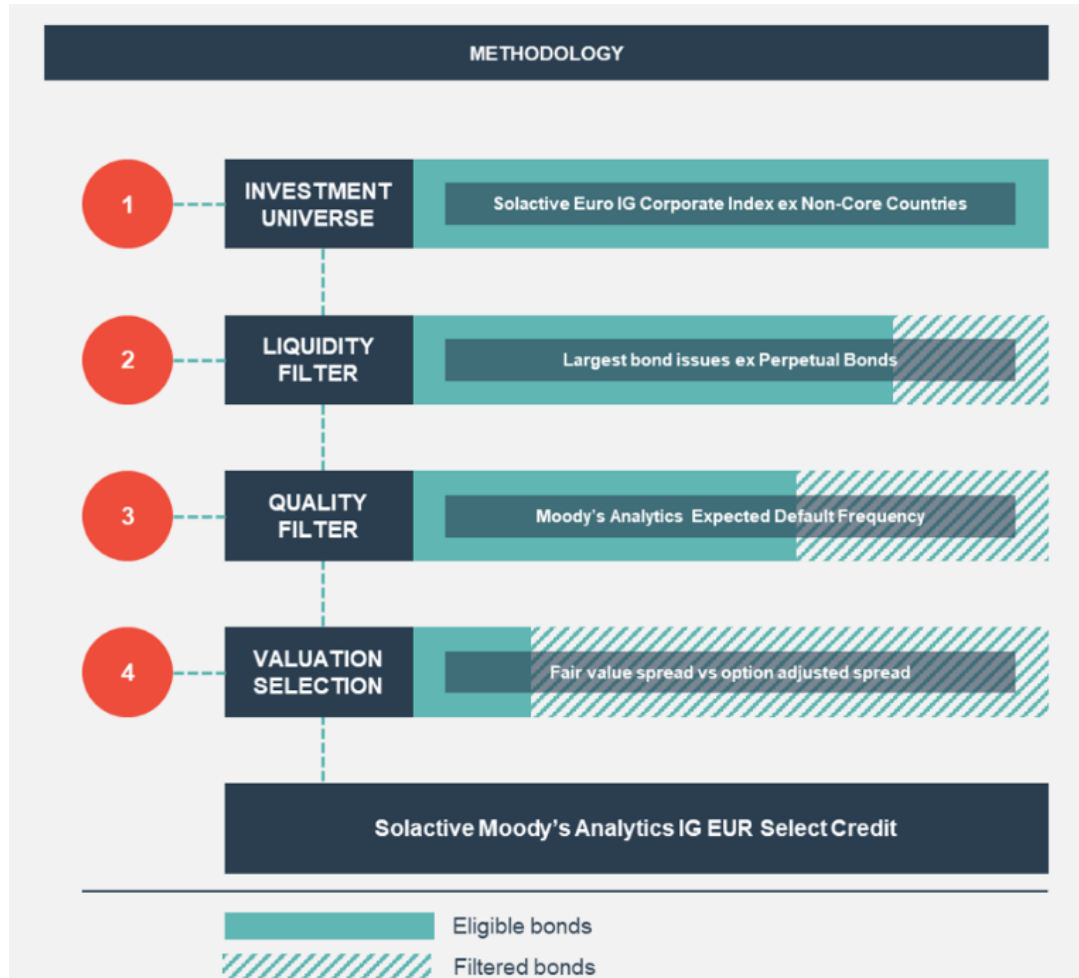


European asset manager client using CreditEdge for risk control and to inform factor-based investment strategies



- » Use Fair Value Spread and Alpha Factor for **relative value** bond analysis
- » Assess the Deterioration Probability metric to **comply with issuer ratings** mandate
- » Utilize EDF metrics to **develop factor strategies** in fixed income and equity

1st EDF-based ETF: Ossiam Solactive Moody's Analytics IG EUR Select Credit ETF (MOOC)



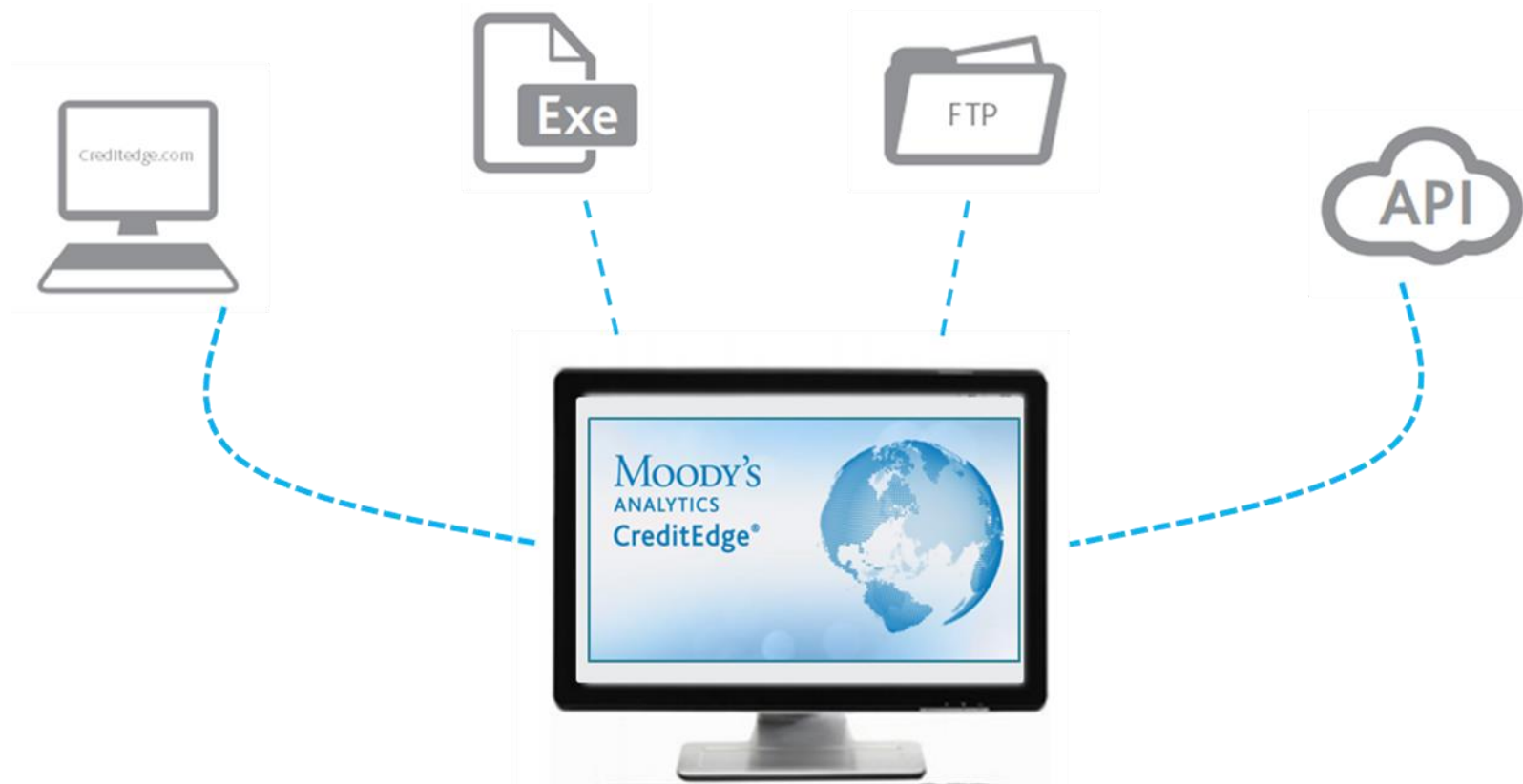
» CreditEdge **EDF** and **Fair Value Spread** act as filters to uncover corporate bonds with low credit risk



Innovation Award – Bond Markets

Source: www.ossiam.com

CreditEdge is a platform suite that comprises four delivery methods to satisfy any user



» **Coming soon to Moody's Analytics DataHub**, a centralized data feed to utilize pre-built and customized data sets

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Bond model v2.0 highlights

Highlights of the Bond Model v2.0

Summary of Improvement



5x bond coverage vs. v1.0

Significant coverage expansion for Europe, North America, and Asia



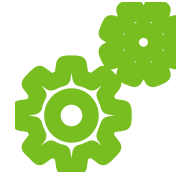
Improved, dynamic issue-to-issuer mapping

More bonds correctly mapped to the public issuers to obtain EDFs



Lower pricing error

Achieved improved mark-to-market pricing compared to v1.0



More granular estimation of Sharpe ratios and LGD

Estimation accounts for regional differences and capital structure differences



Robust relative value investment strategy performance

Model-based alpha factor outperforms benchmark index in all major markets

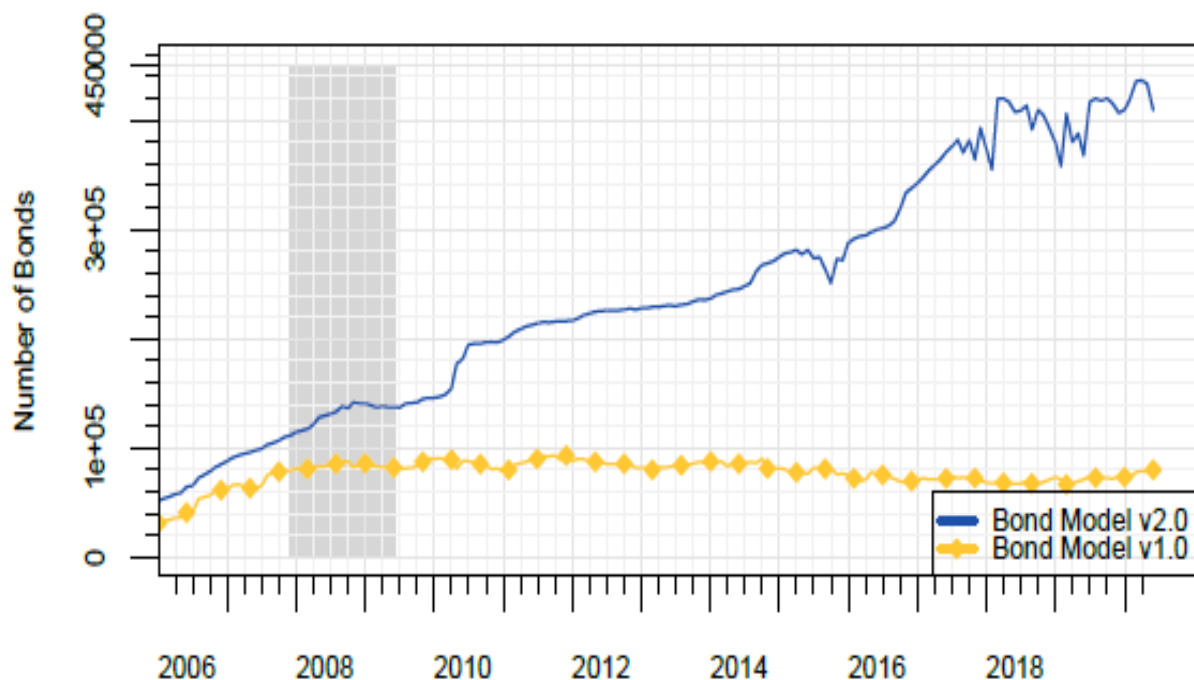


Sunsetting of the LIBOR benchmark

Transitioned from LIBOR to treasury curves for development of benchmark zero-EDF curves

Improved Data Coverage

Data Coverage: v2.0 vs. v1.0

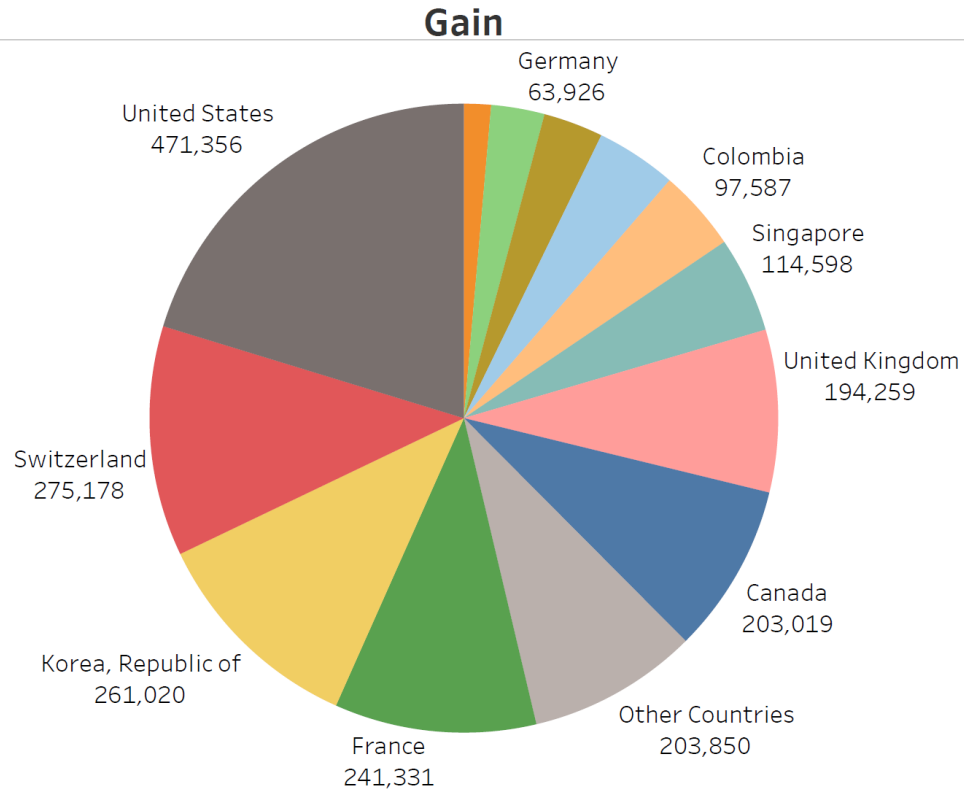


Data Coverage Improvement

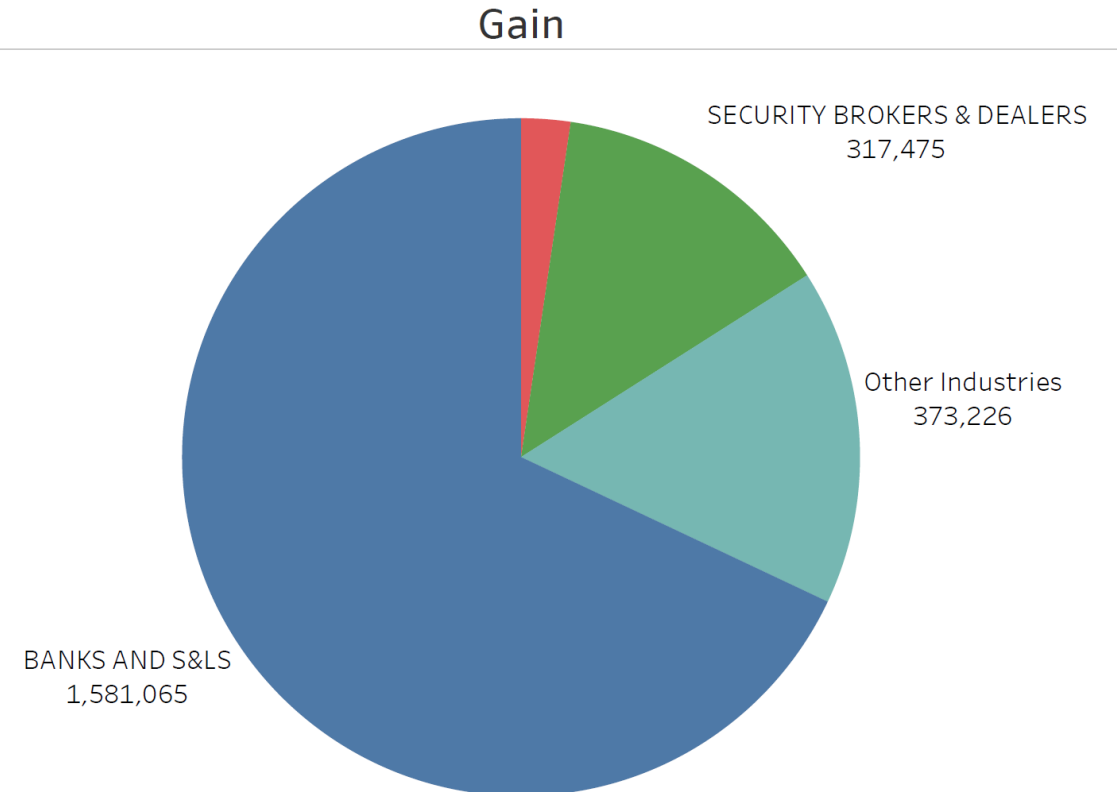
- » Improved bond issue to issuer mapping
- » New approximation for bonds' duration when missing
- » Improved bond issue coverage

Breakdown of Bond Coverage Gain

Distinct Bond Coverage Gain/Loss via History, by Country



Distinct Bond Coverage Gain/Loss via History, by Industry



Improved Model Estimation and Performance

The New Model

- » *More granular Market Sharpe ratio estimation:* MSRs are estimated separately for investment grade and high yield for each region
- » *More granular LGD estimation:* LGDs are estimated for each region-sector, and seniority: senior unsecured, senior secured, and subordinated bonds
- » *No dependency on the LIBOR curves:* Zero EDF curves are generated using the treasury yield curves

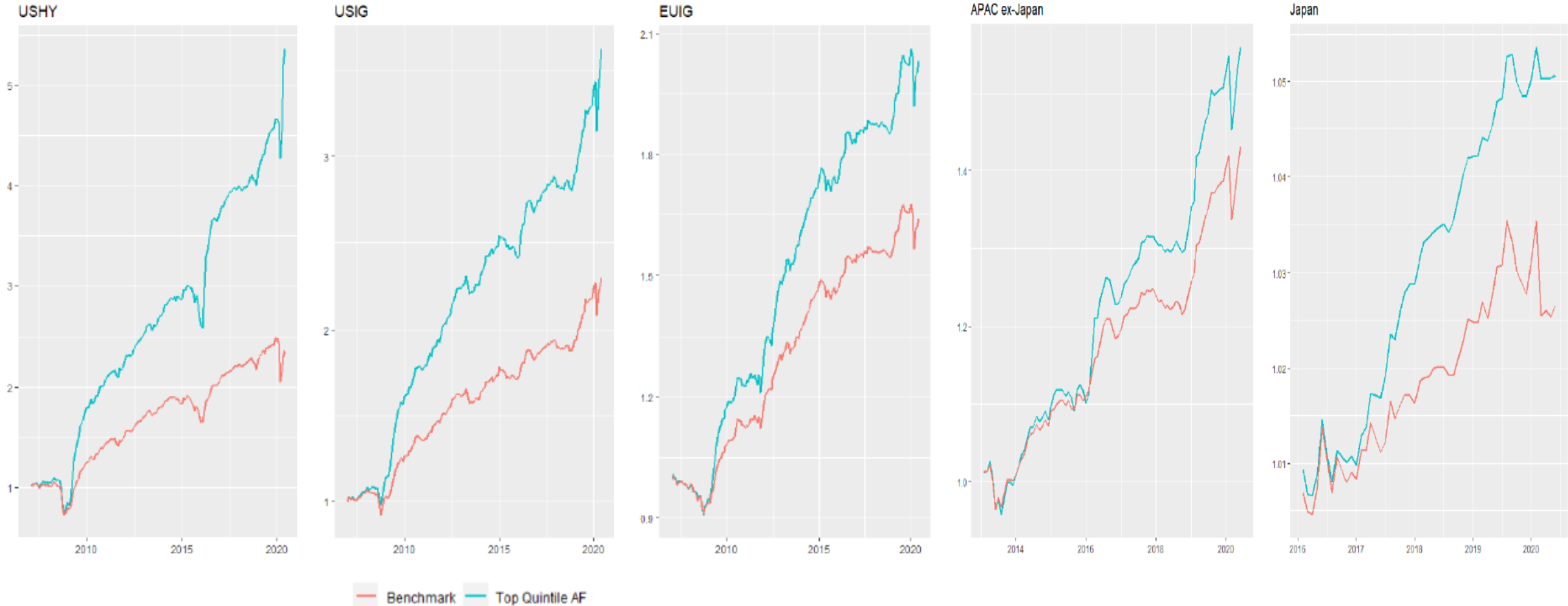
Performance Improvement

- » *Mark-to-market pricing, portfolio management, and investment strategy development:*
 - › The correlation between OAS and FVS of v2.0 is consistently higher than that of v1.0
 - › Cross-sectional difference between OAS and FVS of v2.0 is consistently lower than that of v1.0
 - › Alpha factors generated by v2.0 produce superior risk-adjusted returns compared to market indices

3

Investment strategy
performance

Performance Comparison between Top Quintile Alpha Factor and Benchmark Portfolios



Performance Statistics for Top Quintile Alpha Factor Portfolios

	USIG	USHY	EUIG	APAC ex-Japan	Japan
Mean	9.92%	13.55%	5.46%	6.59%	1.08%
Std Dev	6.70%	13.57%	4.64%	4.59%	1.02%
IR vs. zero-return benchmark	1.48	1.00	1.18	1.33	1.06
T-test: Strategy vs. Index Mean Rets (p-val)	0.00000	0.00000	0.00000	0.0147	0.00000
N. Obs	160	160	160	88	52

Yearly Performance Statistics for Top Quintile Alpha Factor Portfolios

Year	USIG		USHY		EUIG		APAC ex-Japan		Japan	
	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index
2007	5.9%	4.8%	4.1%	1.2%	-2.8%	-2.7%	-	-	-	-
2008	3.1%	-2.4%	-17.2%	-21.0%	-3.5%	-4.1%	-	-	-	-
2009	37.2%	19.7%	79.3%	46.0%	22.3%	14.4%	-	-	-	-
2010	12.2%	9.3%	15.0%	14.2%	5.0%	4.8%	-	-	-	-
2011	11.0%	9.2%	8.7%	6.3%	1.9%	1.8%	-	-	-	-
2012	12.8%	9.1%	12.4%	11.9%	17.5%	13.0%	-	-	-	-
2013	0.9%	-1.6%	7.7%	6.4%	5.8%	3.0%	0.6%	0.2%	-	-
2014	9.5%	8.2%	4.7%	1.1%	8.9%	8.4%	7.9%	6.9%	-	-
2015	-1.8%	-1.0%	-9.4%	-10.6%	0.7%	-0.5%	2.6%	3.0%	-	-
2016	11.0%	7.1%	37.8%	23.7%	6.2%	5.7%	9.4%	7.4%	1.0%	0.9%
2017	6.6%	5.8%	6.0%	6.3%	2.1%	1.3%	6.1%	5.0%	1.7%	0.8%
2018	-1.8%	-2.3%	0.7%	-1.8%	-0.9%	-0.7%	0.6%	-0.8%	1.4%	0.8%
2019	15.5%	13.6%	15.3%	13.4%	8.5%	6.7%	13.6%	11.3%	0.5%	0.3%
2020	10.2%	5.9%	15.6%	-3.5%	0.7%	-0.6%	7.6%	3.4%	0.1%	-0.1%

Mean Characteristics for Top Quintile Alpha Factor Portfolio and Index

	USIG		USHY		EUIG		APAC ex-Japan		Japan	
	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index
LGD	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3
OAS	220	162	673	586	204	133	258	225	60	36
Duration	6.9	7.2	4.8	4.9	5.1	5.0	5.7	5.6	5.7	5.5
Rating	Baa1	A3	B1	B1	A3	A3	Baa1	Baa1	A2	A2

Mean Sector Weights for the Top Quintile Alpha Factor Portfolio and Index

Sector	USIG		USHY		EUIG		APAC ex-Japan		Japan	
	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index	Top20 AF	Index
Utilities - Low Risk	29%	17%	18%	5%	20%	9%	13%	6%	13%	12%
Cable TV & Printing/Publishing	15%	7%	19%	14%	8%	10%	12%	6%	17%	8%
Banks & S&Ls	12%	11%	1%	1%	24%	24%	15%	26%	1%	37%
Finance Co & Broker/Dealers	12%	13%	5%	5%	11%	8%	3%	4%	3%	7%
Consumer Goods & Durables	9%	13%	11%	13%	12%	14%	3%	6%	18%	13%
Materials/Extraction	8%	12%	18%	26%	6%	11%	24%	17%	3%	1%
Transportation	1%	3%	1%	2%	1%	3%	2%	2%	0%	1%
Equipment	1%	4%	2%	2%	2%	2%	0%	0%	3%	4%
REITS/Finance - High Risk	7%	7%	5%	6%	4%	6%	2%	12%	1%	4%
General Sector	4%	5%	10%	16%	8%	8%	23%	18%	31%	10%
Aerospace & Measuring Equipment	0%	2%	1%	1%	0%	1%	0%	0%	0%	0%
High Tech	1%	3%	1%	3%	0%	1%	3%	2%	2%	2%
Medical	2%	5%	7%	5%	3%	3%	0%	0%	8%	2%

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Take-away

The new bond model provides portfolio managers with more robust data and metrics for relative value analysis

Coverage Expansion

Calculating spreads for bonds without pricing information increases the coverage by 5x



Mark to Model

Produce modeled spreads that consistently align well with the market observed spreads

Issuer Mapping

Utilize the EDF more accurately for bond valuation with improved historical mapping between the bond and public parent of the issuer

Relative Value Performance

Market Sharpe Ratio and Sector LGD calibrated regionally and on 7 major currencies

- » Trading strategies built on the new bond model perform well in US and non-US markets

5

Appendix

New Zero-EDF Curves

Zero-EDF Curves Generated using Treasury Yield Curves

Removing dependency on LIBOR

- » Treasury yield curves interpolation and extrapolation.
- » Zero-EDF on treasury yields and tenors regression.

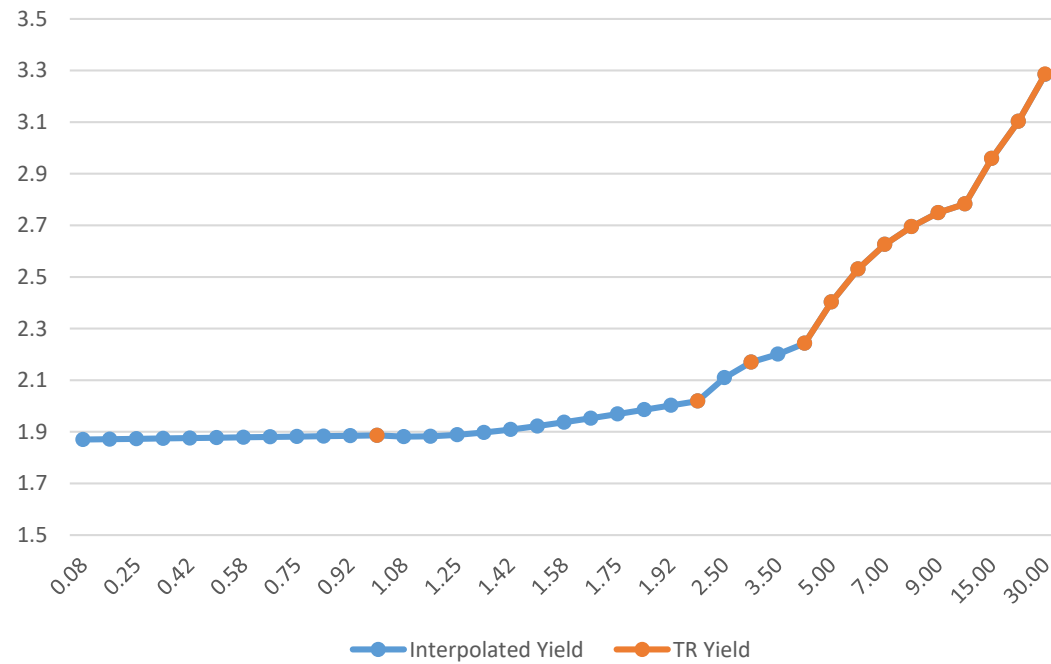
$$\text{Zero EDF rate} \sim \alpha + \beta_1 * \text{Treasury Yield} + \beta_2 * \text{Duration} + \varepsilon$$

- › Adjusted R2~95%;
- › *Zero EDF rate=LIBOR Swap rate -10 bps* replaced with regression models.

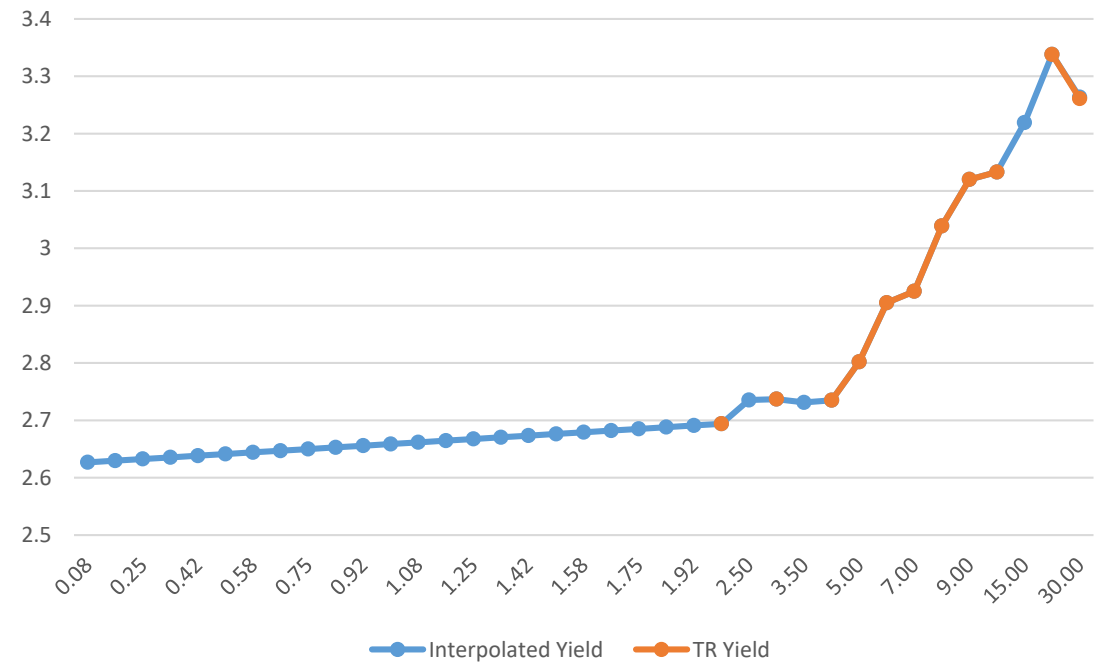
Extrapolation

Examples

AUD Yield Curve Inter/Extra-polation 2018-05-11

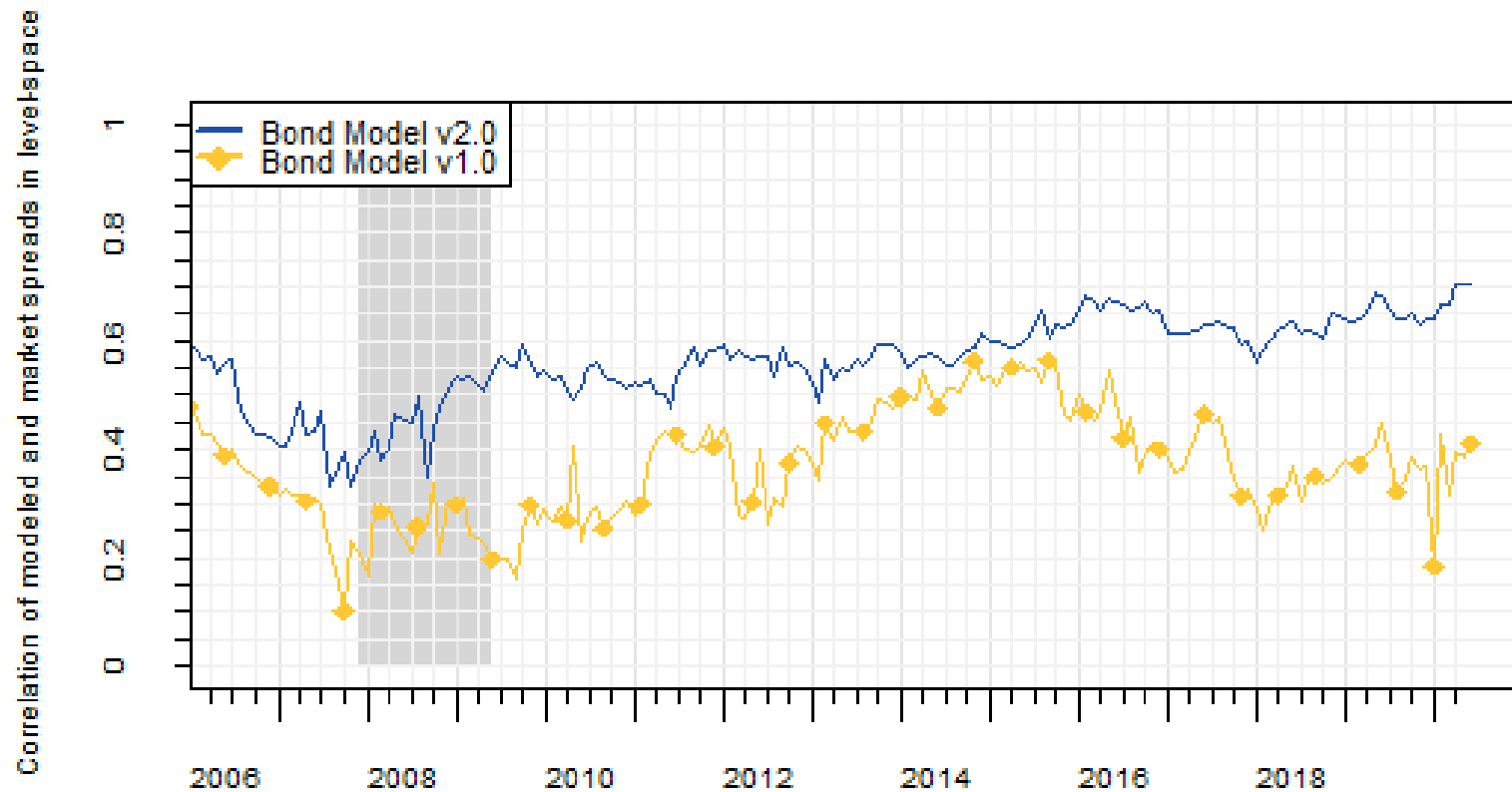


CHF Yield Curve Inter/Extra-polation 2008-07-11



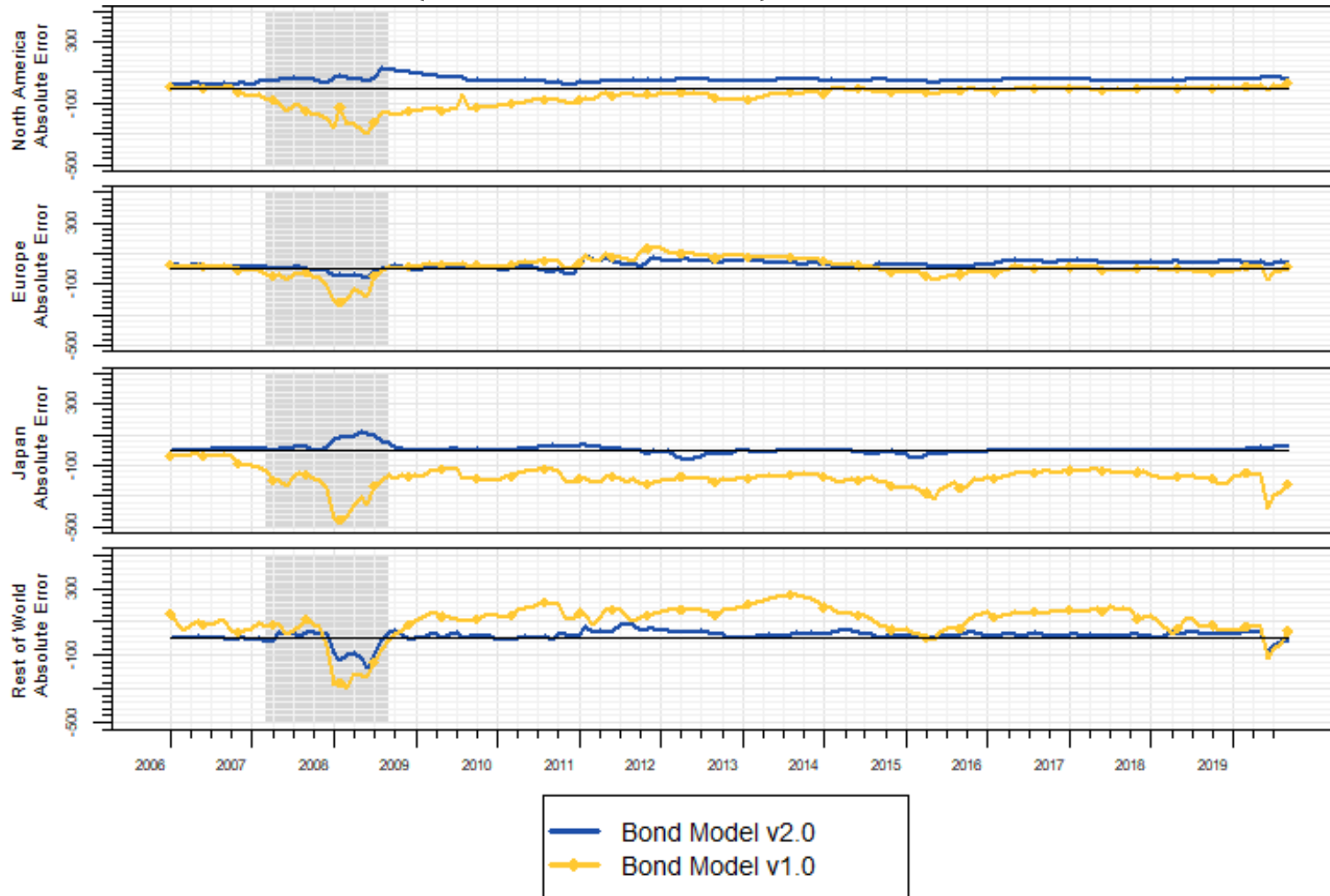
Improved Mark-to-Market Pricing

Correlation: FVS and OAS in level-space



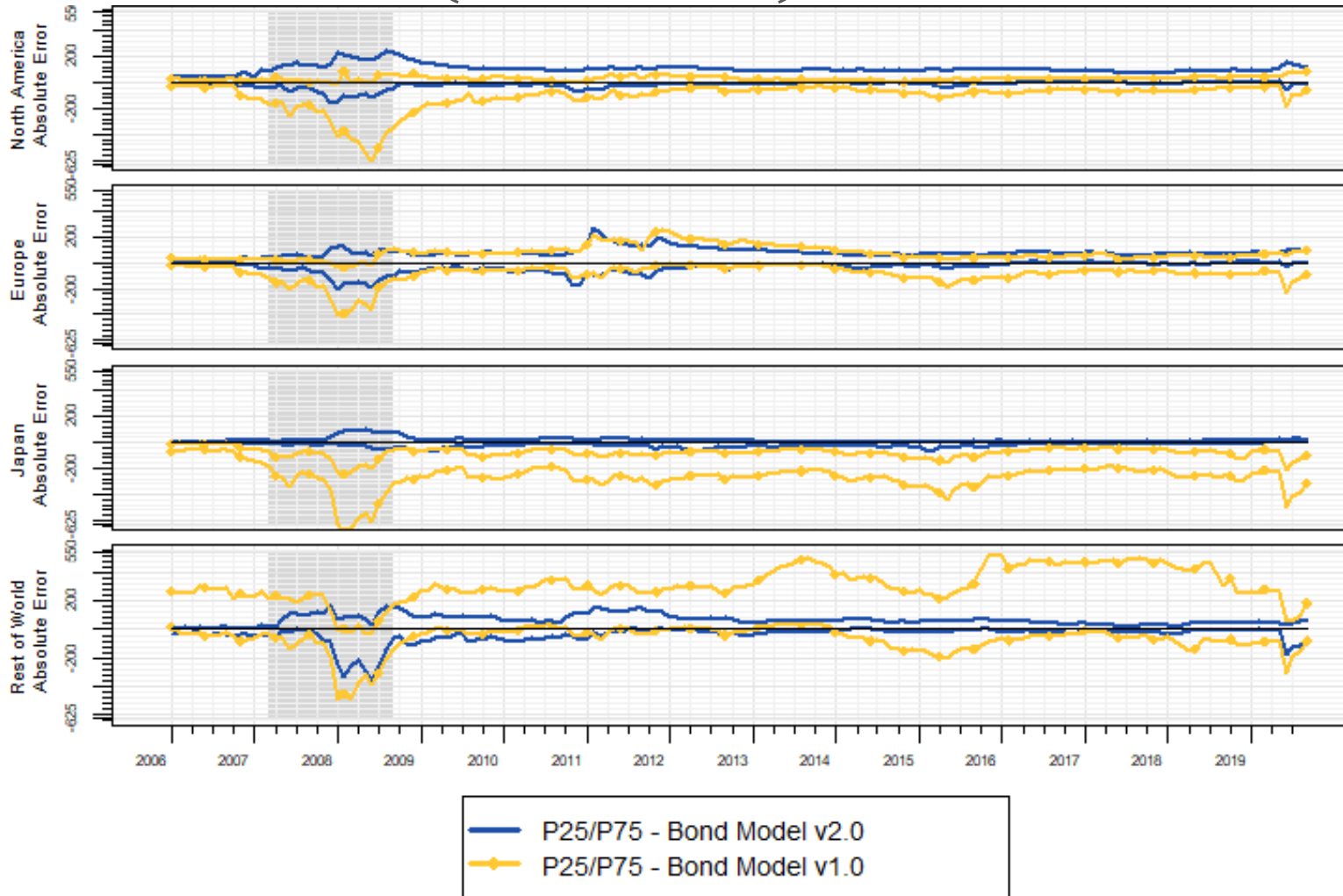
Improved Mark-to-Market Pricing

Average Absolute Error: ($OAS - FVS$)



Improved Mark-to-Market Pricing

Absolute Error Quartiles: ($OAS - FVS$)



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