High Yield Spread Model, Refined

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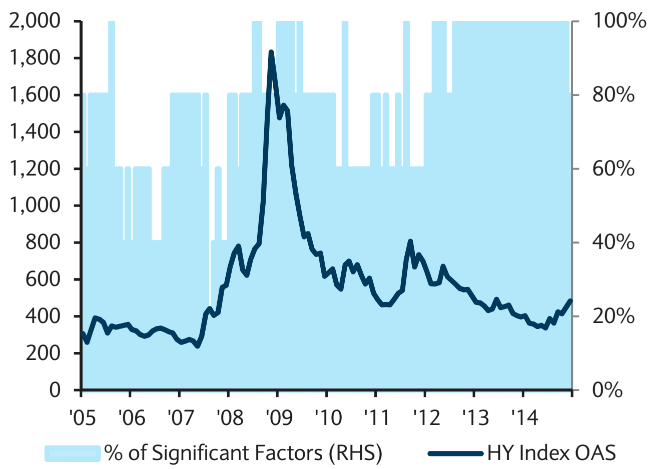
We present an updated OAS model that decomposes the compensation received for various risks in the high yield cash market. It provides a perspective of how much spread investors have required for different risk factors across various market environments over the past decade. It is also an effective quantitative tool for selecting individual bonds that could outperform the market. We recognize that high yield has been increasingly idiosyncratic of late, but still feel that this model is helpful in highlighting opportunities that investors might otherwise miss.

We build on our previous work on cash spread models in the U.S. (*A Model for Outperformance*) and Europe (*Modelling high yield bond spreads*) to construct a five-factor model for high yield bond spreads. It serves multiple purposes, providing a historical view of shifts in market risk premia for several priced factors and a bond-by-bond screening tool that can be used to identify attractive opportunities. The difference between actual and model-predicted "fair value" spreads is strongly predictive of future bond performance at multiple investment horizons, which allows us to systematically generate trade recommendations (Figures 10-13).

The Ingredients of OAS

The spread on high yield bonds compensates investors for four broad areas of risk: credit quality, liquidity, the term of the investment, and potential call. We identified five factors to capture these risks and estimated their relationship with OAS using cross-sectional multivariate regressions at discrete points in time (see the Appendix for model specification details). The study spans 10 years of monthly data, or 120 sets of constituents of the Barclays U.S. High Yield Index (January 2005-December 2014). Bonds trading with an OAS above 1,500bp are excluded from the analysis, as spread becomes a less meaningful measure in deeply distressed situations. The factors in our model capture a decent share of the cross-sectional variation in spreads, with a median monthly adjusted R^2 of 45% (Figures 1 and 2).

FIGURE 1
Statistical Significance of Model Factors: 2005-14



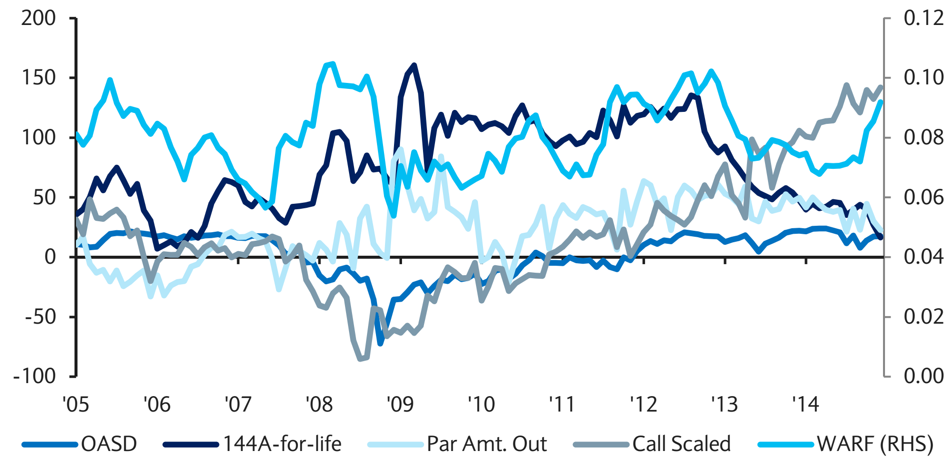
Note: Significance measured at the 95% level.
Source: Barclays Research

FIGURE 2
Model Adjusted R^2: 2005-14

Note: 120 regressions run on each month in 2005-14 yielded the R^2 values.
Source: Barclays Research

FIGURE 3

Historical Spread Compensation by Factor (bp)



Note: Intercept omitted. Sample consists of end-of-month universes of U.S. high yield, excluding bonds with OAS greater than 1,500bp. Source: Barclays Research

Model Factors

Credit Rating: To quantify credit risk, we convert the index ratings of individual issues to their respective Weighted Average Rating Factors (WARF). WARF is a quantitative measure designed by Moody's to effectively capture the nonlinear relationship between ratings notches and default risk. Said differently, a one-notch downgrade implies an increasingly large increment in default risk as you walk down the ratings spectrum, and WARF captures that acceleration in default risk.

Given that WARF increases as credit quality decreases, it makes sense that this factor's coefficient is positive versus OAS in all sample periods (Figure 3). The consistency of the coefficient throughout the decade is noteworthy and reflects the obvious importance of credit quality in determining bond spreads. For example, the current coefficient on the WARF factor (0.094) indicates that a bond rated B+ (WARF of 2,220) trades an average 43bp wider than a BB- (WARF of 1,766) bond, assuming all other characteristics are identical. Interestingly, the current average spread difference between BB- and B+ bonds in the index is exactly 43bp.

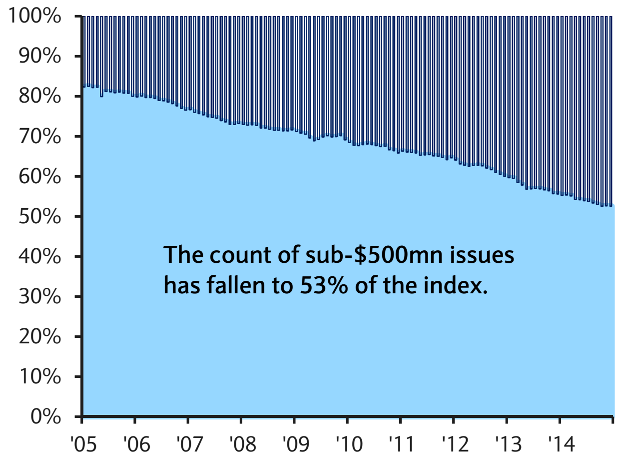
Issue Size: Smaller issues are expected to trade at a discount due to their lower liquidity. We incorporate this idea using a binary variable with a $500mn cut-off value between "small" and "large" deals. The choice of a binary variable, rather than just using size directly, reflects the diminishing marginal effect of issue size on liquidity. For instance, the liquidity gap between $400mn and $900mn issues is likely greater than that between $1bn and $1.5bn issues.

The coefficient on issue size is typically positive, as expected, and has averaged 36bp since 2010. The variable was statistically significant at the 95% confidence level in about two-thirds of the sample months, with the insignificant values clustered in the early months of the sample (2005-06). This corresponds with a period in our sample when small issues were more prevalent (Figure 4) and liquidity was at its highest, and it is therefore no surprise that issue size was not a priced factor at that time.

144A-for-Life: Our second proxy for liquidity is a 144A-for-life binary variable. Although the popularity of unregistered bonds has grown steadily during our sample period (Figure 5), the spread premium for this risk has fluctuated and dropped steeply in recent months to its current level of 18bp. The increased post-trade transparency of 144As has certainly contributed to the decline, as 144A trade data became available through TRACE on June 30, 2014. However, the

FIGURE 4

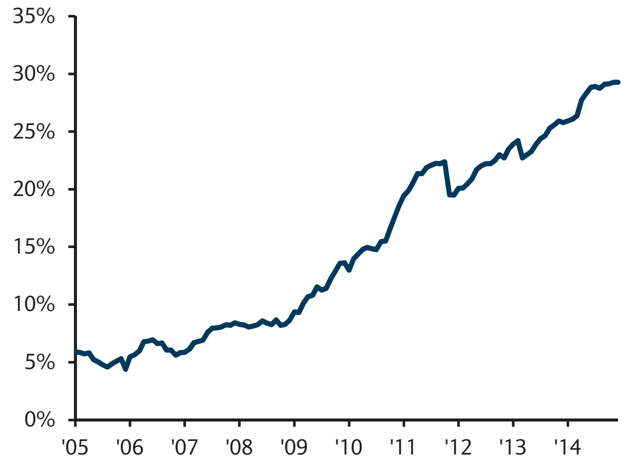
Sub-$500mn Issuer Count Percentage of High Yield Index



Note: Includes all bonds in the U.S. HY Index. Source: Barclays Research

FIGURE 5

144A-For-Life Component of High Yield Index (%)



Source: Barclays Research

steep decline in the coefficient began several years ago, and the portion of the change attributable to the placement type's increased popularity and transparency is difficult to quantify.

Spread Duration (OASD): Credit curves are typically upward sloping, reflecting the fact that the survival rate of all companies declines over time. We capture this effect using spread duration (OASD) as a factor in the model. This is a slight change from our previous model, which used OAD to capture curve shape, because OASD is the more appropriate way to capture spread curve steepness, while OAD effectively captures yield curve steepness. The average compensation for a one-year increase in spread duration is currently 20bp. The OASD risk premium has been positive for most of the past decade, as expected, with a median value of 11bp across the monthly samples. The exception occurred during the steep, market-wide sell-off during the financial crisis, when spread curves inverted and the OASD factor coefficient turned negative.

Callability: Our final explanatory variable accounts for the risk premium that investors should receive for taking on the negative convexity intrinsic in callable bonds. The risk of experiencing negative convexity increases as the non-call period shortens, so the factor we chose to capture this risk is not a simple binary variable for callable/non-callable. Instead, the variable is scaled such that it ramps linearly from 0 to 1 as it goes from three years to first call to fully callable. As seen in Figure 3, the premium for callability dipped into negative territory during the crisis. Indeed, an issuer having the option to refinance more cheaply may have been seen in a more positive light at that time, given the state of the primary markets. The spread compensation for callability has increased steadily since 2011, as issuer call options have gone deeper in the money and investors have experienced periods of duration extension inherent in negatively convex bonds. The premium for a bond that is currently callable above an otherwise equivalent bullet bond is now a hefty 140bp. Please see the appendix for a brief discussion of this risk factor.

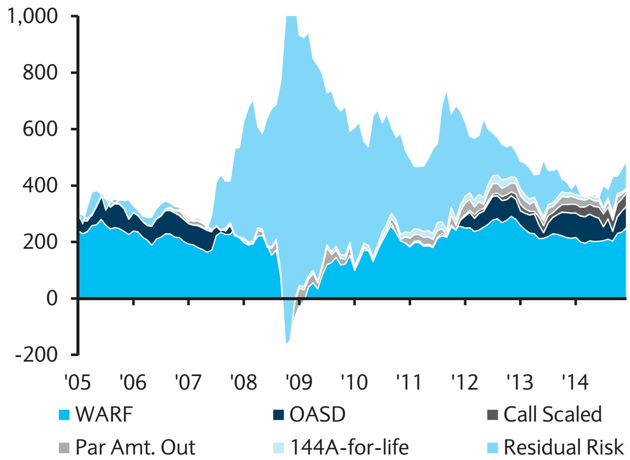
Market Spread Composition

Along with the historical evolution of individual risk factors, it is helpful to examine market risks in aggregate. We do so by calculating the average value of each our five factors across all bonds in the high yield universe every month and multiplying those by the risk premia estimated in our regressions. This allows us to calculate each factor's contribution[1] to the

[1] A 2010 Quantitative Portfolio Strategy report, *Credit Spread Decomposition: Decomposing Bond-Level Credit OAS into Default and Liquidity Component*, first referred to such a breakdown of model variables as contributions.

FIGURE 6

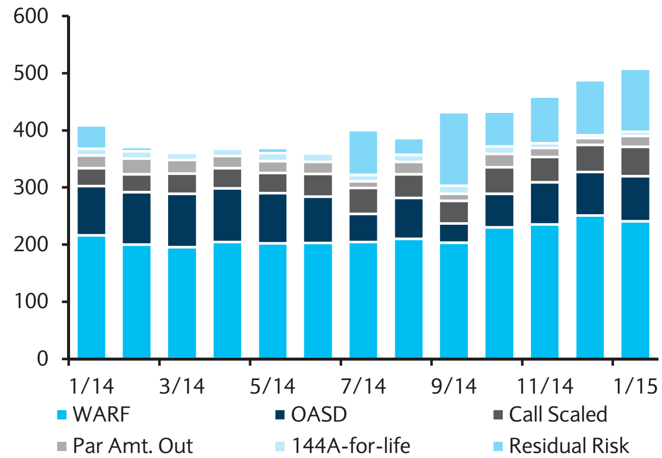
Risk Factor Composition of Market Average OAS: 2005-14



Source: The decomposition assumes an equal-weighted portfolio of bonds in the sample. Source: Barclays Research

FIGURE 7

Risk Factor Composition of Market Average OAS: 2014-15



Source: Barclays Research

average index OAS, which the linear regression is estimating every month, and leads to a visual representation of compensation received over time across the entire market.

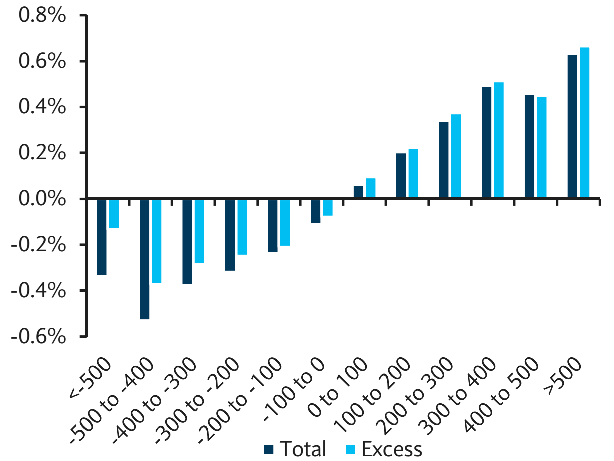
As Figures 6 and 7 illustrate, credit risk (as captured by WARF) typically accounts for the bulk of spread compensation. Indeed, credit risk accounted for an average of 49% of the market spread across the 120 months in the sample. This is a sensible result, in our view, as the inherent credit and default risks reflected in ratings are usually most important for determining trading levels. Periods of market distress represent the exception. In such times, the residual risk not captured by the model forms the majority of the index OAS. This residual risk, which is the intercept value of the regressions, picks up all of the other types of market risk not accounted for in the model, including the tremendous uncertainty that comes with primary markets freezing. In such scenarios, detailed credit analysis loses some significance, and all issuers are at greater risk.

Model Performance

The model's value lies in its ability to identify undervalued bonds that then go on to outperform the index in subsequent months. Figures 8 and 9 show the median relative returns of individual bonds depending on the initial difference between their actual OAS and the model-implied OAS. Median total and excess returns are shown for all of the bonds in the 10-year span, which forms a robust sample set of nearly 200,000 data points. As seen in the charts, bonds that the model determines are undervalued tend to outperform the broad high yield market over the short term (one month) and medium term (one year). For instance, bonds that are 200-300bp undervalued according to the model generate a median 3.83% of relative excess returns in the next year.

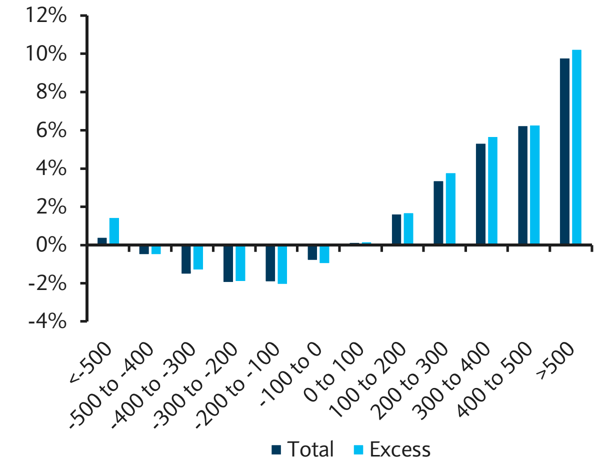
The outperformance of bonds deemed cheap by the model (and vice versa for those deemed rich) relative to the market is not isolated in the tails of the distribution, but is a relatively steady function of how cheap/rich the bond is according to the model. This suggests the model has predictive power for bonds trading near their "fair" values and is not just picking up mean reversion at the overvalued and undervalued extremes. Similarly, the persistent underperformance of overvalued bonds provides a way to analyze selling opportunities and avoid potential new positions.

FIGURE 8
Next Month's Median Relative Return by Spread Residual



Note: Returns are calculated versus the U.S. High Yield Index in the same period.
Source: Barclays Research

FIGURE 9
Next Year's Median Relative Return by Spread Residual



Note: Returns are calculated versus the U.S. High Yield Index in the same period.
Source: Barclays Research

Trade Recommendations

To help capitalize on the model's strong historical performance, we apply the model to the current constituents of the index. The results provide model-predicted spreads for all of the bonds in the index, and the residuals allow us to gauge the most attractive relative value opportunities. Unsurprisingly, given the scale of the energy sell-off, the majority of the long recommendations are credits in that sector. Meanwhile, the overvalued bonds come from a diverse set of sectors – 14 total – that include media and entertainment, gaming, and consumer cyclical. The top 20 undervalued and overvalued bonds, according to the model, are presented in Figures 10 and 11, respectively.

Admittedly, the credit ratings that play an influential role in our quantitative model may be lagging the rapid changes that have recently occurred in the energy sector. To assuage such concerns and provide a broader view of undervalued opportunities in today's market, we present two more tables with a fundamental overlay on our quantitative screen (Figures 12 and 13). In these tables, we show the bonds that are considered cheapest by the model and are also rated Overweight or Market Weight by an analyst. Similarly, the final table presents the bonds considered richest by the model that are also rated Underweight or Market Weight.

FIGURE 10

Top 20 Undervalued Bonds

Ticker	Issuer	Par ($mn)	Cpn (%)	Mat.	Price ($)	YTW (%)	OAD	Rating	Placement	OAS (bp)	Model OAS (bp)	Excess Spread (bp)
KEG	Key Energy	675	6.750	Mar-21	63.50	16.48	4.6	B2	Registered	1447	519	928
ENQLN	Enquest	650	7.000	Apr-22	59.00	17.11	5.1	B3	144A-for-life	1493	567	925
CHAPAR	Chaparral Energy	550	7.625	Nov-22	61.50	16.61	5.3	B3	Registered	1443	554	890
TSIACQ	Aston Escrow	440	9.500	Aug-21	73.25	16.31	4.4	B3	144A-for-life	1427	579	848
BAS	Basic Energy	300	7.750	Oct-22	66.00	15.45	5.3	B2	Registered	1335	498	837
PACD	Pacific Drilling	500	7.250	Dec-17	83.25	14.70	2.5	B2	144A-for-life	1339	507	832
SSE	Seventy Seven Operating	648	6.625	Nov-19	73.00	14.68	4.0	B1	Registered	1295	471	824
BBEP	Breitburn Energy	850	7.875	Apr-22	66.50	15.83	5.0	B3	Registered	1375	560	815
ARP	Atlas Energy	375	7.750	Jan-21	66.25	16.98	4.6	CAA1	Registered	1494	712	782
CSMAU	Consolidated Minerals	400	8.000	May-20	74.00	15.36	4.1	B3	144A-for-life	1353	585	768
ARP	Atlas Energy	250	9.250	Aug-21	71.50	16.55	4.5	CAA1	Registered	1449	683	767
BBEP	Breitburn Energy	302	8.625	Oct-20	73.00	16.02	4.3	B3	Registered	1409	643	766
NUVOTV	SITV	240	10.375	Jul-19	86.50	14.63	3.5	B3	144A-for-life	1300	567	733
PKD	Parker Drilling	225	7.500	Aug-20	75.75	13.97	4.4	B1	Registered	1218	488	730
CFGSP	CFG Investment	288	9.750	Jul-19	85.50	14.23	3.7	B2	144A-for-life	1262	540	722
BTU	Peabody Energy	1,516	6.000	Nov-18	83.00	11.69	3.3	BA3	Registered	1032	314	718
TALPRO	Talos Production	300	9.750	Feb-18	84.50	16.45	2.5	CAA1	144A-for-life	1494	778	717
SQRTW	SquareTwo Financial	290	11.625	Apr-17	95.00	14.38	1.9	B3	Registered	1329	628	702
VTG	Offshore Group Investment	730	7.125	Apr-23	66.13	14.28	5.6	B3	Registered	1221	522	699
SELA	Seitel	250	9.500	Apr-19	84.50	14.55	3.4	B3	Registered	1296	602	694

Note: Bid-side levels as of 2/4/15 close. Source: Barclays Research

FIGURE 11

Top 20 Overvalued Bonds

Ticker	Issuer	Par ($mn)	Cpn (%)	Mat.	Price ($)	YTW (%)	OAD	Rating	Placement	OAS (bp)	Model OAS (bp)	Excess Spread (bp)
IDC	Interactive Data	350	5.875	Apr-19	100.00	5.87	2.9	CAA2	144A-for-life	447	941	-495
BZH	Beazer	173	8.125	Jun-16	105.75	3.75	1.3	CAA2	Registered	345	760	-415
IHRT	Clear Channel	300	7.250	Oct-27	79.50	10.16	7.7	CA	Registered	806	1220	-414
DMND	Diamond Foods	230	7.000	Mar-19	102.25	6.19	3.0	CAA2	144A-for-life	500	900	-400
BMET	Biomet	800	6.500	Oct-20	105.50	2.91	1.1	CAA1	Registered	264	660	-397
HDSUPP	HD Supply	1,275	7.500	Jul-20	106.13	5.64	3.0	CAA2	Registered	425	814	-390
LBIMED	LBI Media	220	10.000	Apr-19	104.50	7.72	1.7	CAA3	144A-for-life	675	1065	-389
AFFGRP	Affinia	250	7.750	May-21	103.75	6.71	3.9	CAA2	Registered	515	894	-379
IHRT	Clear Channel	250	5.500	Dec-16	96.00	7.85	1.8	CA	Registered	722	1100	-378
MOTOR	CCM Merger	275	9.125	May-19	108.00	5.92	2.0	CAA2	144A-for-life	505	875	-370
USFOOD	US Foods	1,324	8.500	Jun-19	105.25	5.67	1.2	CAA2	Registered	492	856	-364
INTEL	Intelsat Luxembourg	500	6.750	Jun-18	101.50	6.04	2.5	CAA2	Registered	506	869	-363
PTICN	JLL/Delta Patheon	450	7.500	Feb-22	101.50	7.14	4.8	CAA2	144A-for-life	539	896	-357
SGRHSE	Sugarhouse HSP Gaming	240	6.375	Jun-21	94.50	7.48	4.8	CAA2	144A-for-life	582	927	-345
RLGY	Realogy	450	4.500	Apr-19	100.25	4.43	3.8	CAA1	144A-for-life	325	665	-341
PBH	Prestige Brands	400	5.375	Dec-21	97.50	5.82	5.1	CAA1	144A-for-life	409	744	-335
RLGY	Realogy	300	5.250	Dec-21	98.75	5.47	5.3	CAA1	144A-for-life	377	702	-325
COMPOL	CPG Merger Sub	315	8.000	Oct-21	102.00	7.48	4.4	CAA2	144A-for-life	580	903	-323
RAD	Rite Aid	810	6.750	Jun-21	106.25	5.13	3.4	CAA1	Registered	353	675	-322
NMG	Neiman Marcus	960	8.000	Oct-21	103.88	7.01	4.2	CAA2	144A-for-life	538	855	-318

Note: Bid-side levels as of February 4, 2015, close. Source: Barclays Research

FIGURE 12

Top 20 Undervalued Bonds with Fundamental Rating Overlay

Ticker	Issuer	Par ($mn)	Cpn (%)	Mat.	Price ($)	YTW (%)	OAD	Rating	Placement	OAS (bp)	Model OAS (bp)	Excess Spread (bp)	Analyst Rating
CHAPAR	Chaparral Energy	550	7.625	Nov-22	61.50	16.61	5.3	B3	Registered	1443	554	890	MW
HKUS	Halcon	400	9.250	Feb-22	69.00	16.96	4.6	CAA2	Registered	1483	850	633	MW
HKUS	Halcon	1,350	8.875	May-21	70.44	16.63	4.5	CAA2	Registered	1459	842	618	MW
AVYA	Avaya	1,384	10.500	Mar-21	83.25	14.77	4.2	CAA1	144A-for-life	1290	677	614	MW
AOI	Alliance One	731	9.875	Jul-21	81.50	14.37	4.7	CAA1	Registered	1249	651	598	OW
FMGAU	FMG Resources	1,500	8.250	Nov-19	90.75	10.79	3.8	BA2	144A-for-life	930	408	522	MW
DCP	DynCorp	455	10.375	Jul-17	90.00	15.50	2.2	CAA2	Registered	1424	917	507	MW
BTU	Peabody Energy	650	7.375	Nov-16	98.50	8.31	1.6	BA3	Registered	771	279	492	MW
HXN	Hexion U.S. Finance	1,145	8.875	Feb-18	85.50	15.08	2.7	CAA2	Registered	1368	887	481	OW
FMCN	First Quantum	1,120	7.000	Feb-21	86.75	9.98	4.7	B1	144A-for-life	833	400	433	OW
FMCN	First Quantum	1,120	6.750	Feb-20	89.00	9.56	4.1	B1	144A-for-life	805	434	371	OW
FMCN	First Quantum	350	7.250	Oct-19	88.50	10.40	3.9	B1	144A-for-life	894	532	362	OW
FMCN	First Quantum	850	7.250	May-22	87.00	9.78	5.5	B1	144A-for-life	801	449	352	OW
CDE	Coeur Mining	450	7.875	Feb-21	86.25	11.08	4.8	B3	Registered	939	593	346	MW
BONT	Bon-Ton Stores	350	8.000	Jun-21	80.50	12.53	4.9	CAA1	Registered	1075	746	329	MW
ATW	Atwood Oceanics	650	6.500	Feb-20	90.44	8.92	4.2	BA3	Registered	744	426	319	MW
AMD	Advanced Micro Devices	598	6.75	Mar-19	96.13	7.88	3.5	B2	Registered	663	407	256	MW
JCG	J Crew	500	7.75	May-19	82.50	13.27	3.5	CAA2	144A-for-life	1174	922	252	OW
EPENEG	EP Energy	2,000	9.375	May-20	101.50	8.82	3.5	B2	Registered	733	490	244	MW
MEGCN	MEG Energy	1,000	7.000	Mar-24	91.50	8.34	6.3	B1	144A-for-life	641	431	210	MW

Note: Bid-side levels as of 2/4/15 close. Source: Barclays Research

FIGURE 13

Top 20 Overvalued Bonds with Fundamental Rating Overlay

Ticker	Issuer	Par ($mn)	Cpn (%)	Mat.	Price ($)	YTW (%)	OA D	Rating	Placement	OAS (bp)	Model OAS (bp)	Excess Spread (bp)	Analyst Rating
BZH	Beazer	173	8.125	Jun-16	105.75	3.75	1.3	CAA2	Registered	345	760	-415	UW
HDSUPP	HD Supply	1,275	7.500	Jul-20	106.13	5.64	3.0	CAA2	Registered	425	814	-390	UW
HDSUPP	HD Supply	675	11.000	Apr-20	114.00	3.47	1.1	CAA1	Registered	325	636	-311	MW
BMET	Biomet	1,825	6.500	Aug-20	106.75	2.49	0.7	B3	Registered	230	540	-310	MW
BZH	Beazer	235	9.125	May-19	103.75	6.84	1.6	CAA2	Registered	601	906	-305	UW
HDSUPP	HD Supply	1,000	11.500	Jul-20	115.00	5.39	1.7	CAA2	Registered	486	788	-302	UW
RAD	Rite Aid	295	7.700	Feb-27	112.00	6.26	8.1	CAA1	Registered	431	733	-302	MW
SVU	Supervalu	278	8.000	May-16	107.25	2.04	1.2	B3	Registered	181	473	-292	MW
RMK	Aramark	1,000	5.750	Mar-20	103.88	4.40	2.3	B3	Registered	302	590	-288	MW
PF	Pinnacle Foods	350	4.875	May-21	99.00	5.06	4.6	B3	Registered	337	624	-287	MW
FDC	First Data	1,609	11.750	Aug-21	115.50	5.75	1.5	CAA2	Registered	532	804	-272	MW
SWY	Safeway	269	5.000	Aug-19	99.73	5.07	4.0	CAA1	Registered	381	652	-271	MW
IDC	Interactive Data	350	8.250	Dec-17	101.00	7.02	1.0	CAA2	144A-for-life	648	911	-264	MW
EMS	Envision Healthcare	750	5.125	Jul-22	101.75	4.75	5.1	B3	144A-for-life	294	556	-262	MW
RYI	Ryerson	201	11.250	Oct-18	105.50	8.90	2.3	CAA3	Registered	786	1037	-251	UW
BERY	Berry Plastics	800	9.750	Jan-21	111.13	2.85	0.9	B3	Registered	273	523	-250	UW
FDC	First Data	2,000	8.250	Jan-21	107.00	4.89	1.7	CAA1	144A-for-life	429	678	-248	MW
BZH	Beazer	200	7.500	Sep-21	96.50	8.19	4.8	CAA2	Registered	648	895	-247	UW
MTW	Manitowoc	300	5.875	Oct-22	108.25	3.68	3.8	B2	Registered	223	467	-244	MW
RAD	Rite Aid	902	9.250	Mar-20	109.75	4.27	1.3	CAA1	Registered	399	643	-243	MW

Note: Bid-side levels as of February 4, 2015, close. Source: Barclays Research

Appendix

Model Specification and Robustness

The full specification is shown below, for bond *i* in month *t*.

$$OAS_{it} = \alpha_t + \beta_1(WARF_{it}) + \beta_2(IssueSize_{it}) + \beta_3(144A_{it}) + \beta_4(OASD_{it}) + \beta_5(Callscale_{it}) + \varepsilon_{it}$$

- **Issue Size:** Binary variable that equals 1 if issue size is below $500mn, 0 otherwise
- **144A:** Binary variable that equals 1 if issue is 144A-for-life, 0 otherwise
- **Callscale:** Variable equals max { 0, 1 - ⅓*(years to next call) }

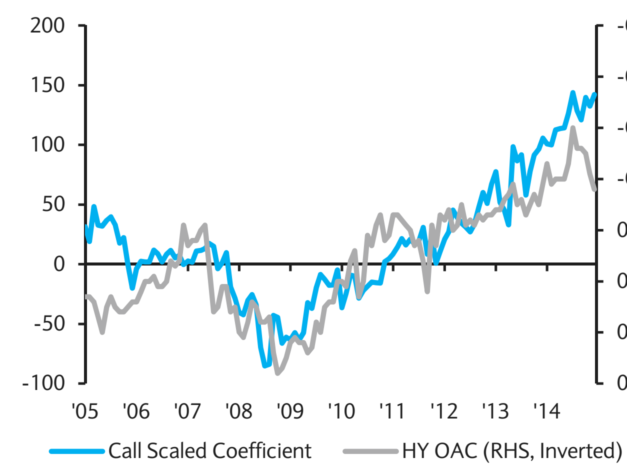
Robust standard errors were calculated to account for heteroskedasticity and were used throughout the analysis to calculate variable significance.

To confirm the efficacy of our model specification, we ran goodness-of-fit tests on our sample. The predictor variables do not suffer from multicollinearity, which we aimed to avoid through our selection of factors that account for different sources of market risk. The variance inflation factor (VIF), a common test of multicollinearity that involves regressing each factor on the rest of the independent variables and then calculating each new model fit, was below two for all but a few instances across the 600 variable-month combinations. For reference, a VIF of 10 or more is generally considered to be a level that warrants concern about a model's specification.

The Question of Convexity

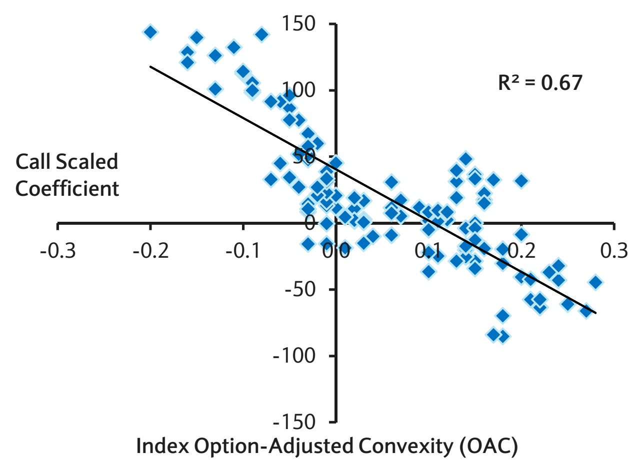
Callability and the related risk of negative convexity were the most difficult to incorporate into our model. That said, with a significant share of the high yield market becoming call constrained in recent years, we saw this risk as important enough to investigate further. The magnitude of the risk inherent in being short a call option is directly intertwined with spread levels, making it especially difficult to pin down. Indeed, in high-price markets, extension risk is an important consideration for investors (see *The Price of Extension Risk* and *Extension School* for details), but it is less important in low-price markets, and an issuer call can even be perceived as a positive by investors in deeply distressed markets. Another way to see this is by looking at the relationship between the coefficient on our callability variable and the index-wide option-adjusted convexity (OAC), which is strong (Figure 14). In high-price markets (negative average OAC), the premium required by investors for callable bonds

FIGURE 14
Callable Factor Coefficient and High Yield Index Convexity



Source: Barclays Research

FIGURE 15
Convexity Explains a Large Amount of the Call Coefficient



Note: 120 monthly data points. Source: Barclays Research is high and positive. In very low-price markets (very positive average OAC), the market is actually willing to forego some spread to own issuers with call options (Figure 15).

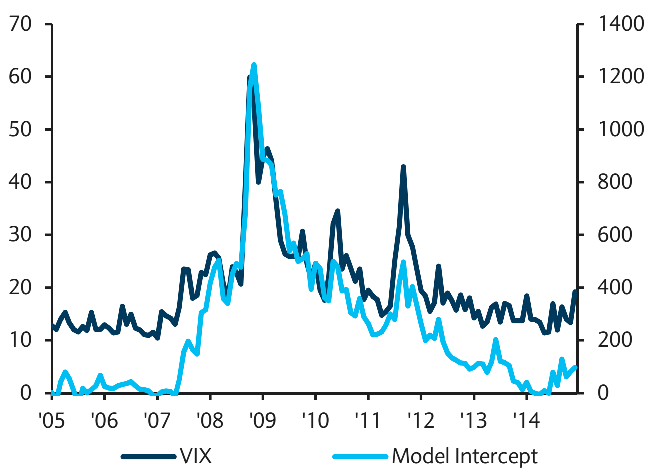
Another issue with capturing callability is that bonds with high extension risk trade on price much more so than spread, and small fluctuations around the call price can change the OAS drastically, especially in the days leading up to the call date. This incongruity between a price-driven risk factor and our spread decomposition model makes it difficult to identify an extension risk variable that has a strong enough relationship with OAS.

Crisis Concerns

As seen in Figure 2, the model fit deteriorated significantly during the financial crisis. This is partly attributable to the structure of the model, which is meant to provide fair value spreads for nearly all of the bonds in the index at any given time. It is a reflection of how quickly risk aversion can flare up, sending the entire market much wider despite only small apparent increases in traditional risk factors. One simple way to observe the importance of market-wide aversion is to compare a gauge of general market sentiment, such as the VIX, with the evolution of the model fit. Below, we chart the VIX and the model intercept, which naturally picks up the large amount of excess spread that is independent of our variables during risk-off periods (Figure 16). The two series track other closely, and this is confirmed by a good linear fit of the model intercept on VIX (Figure 17). This correlation reflects the potential benefit of adding macroeconomic state variables to a variation of this spread model.

FIGURE 16

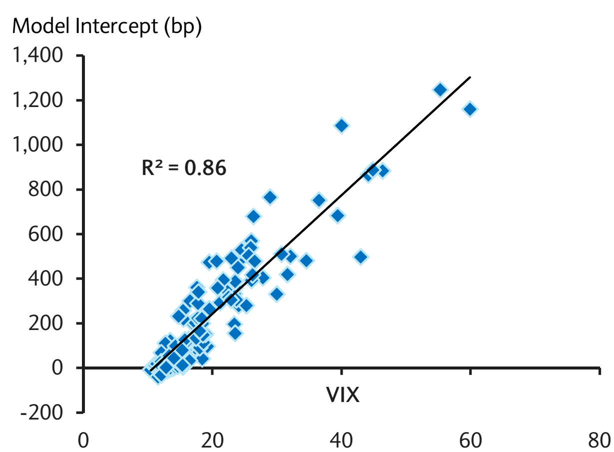
VIX and Model Intercept Track Each Other Closely



Source: Bloomberg, Barclays Research

FIGURE 17

VIX Levels Explain a Large Amount of Excess Model Spread



Note: 120 monthly data points. Source: Bloomberg, Barclays Research

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For sectors rated against the Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials or the Barclays EM Asia USD High Yield Corporate Credit Index, the analyst expects the six-month total return of the sector to be in line with the six-month total return of the relevant index.

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For sectors rated against the Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials or the Barclays EM Asia USD High Yield Corporate Credit Index, the analyst expects the six-month total return of the sector to be less than the six-month total return of the relevant index.

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Market Weight (MW): The analyst expects the six-month total return of the debt security subject to this rating to be in line with the six-month expected total return of the relevant sector.
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Market Weight (MW): The analyst expects the six-month total returns of the issuer's rand-denominated fixed rate notes or floating rate notes (as applicable) to be in line with the six-month expected total returns the South African Credit Fixed Market Index (CFIX95) or the South African Credit Floating Market Index (CFL020), respectively..
Underweight (UW): The analyst expects the six-month total returns of the issuer's rand-denominated fixed rate notes or floating rate notes (as applicable) to be below the six-month expected total returns the South African Credit Fixed Market Index (CFIX95) or the South African Credit Floating Market Index (CFL020), respectively..

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