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Capturing the Credit Risk Premium

THE CARLYLE GROUP

GLOBAL ALTERNATIVE ASSET MANAGEMENT

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Capturing the Credit Risk Premium

By Mark Jenkins and Jason M. Thomas

- Since 1998, credit spreads on corporate loans and bonds have exceeded default losses by roughly 3 percentage points per year, on average.
- This excess return, or "credit risk premium," on loans and bonds varies to an extent that cannot be explained by fundamentals. Some periods offer better investment opportunities than others.
- Investors with a global platform and reliable funding sources can scale exposure to credit risk in ways that could increase unlevered returns on loans and bonds and improve overall portfolio performance.

Is now a good time to invest? For years, academics believed this question could not be answered definitively. According to the "efficient market" paradigm, asset prices follow a "random walk," exhibiting no persistent deviations from "fundamental value." While such claims may have always seemed dubious to investment practitioners, the weight of evidence accumulated over the past thirty years has forced academics to change their tune as well. Today, no one really disputes that expected returns vary through time across asset classes and market segments.[1] The current debate centers on explaining *why* returns tend to be higher in some periods rather than others, with risk perceptions, psychological biases, liquidity conditions, and investor budget constraints all cited as explanations.

At its core, the variation in expected returns reflects changes in the price investors get paid to bear risk. Shifts in the price of risk are especially apparent in credit markets, where speculative grade interest rates vary far more than can explained by "fundamentals." This excess variation in interest rates allows investors to scale their exposure to credit risk opportunistically and potentially earn higher returns than could be achieved through fixed portfolio allocations to the asset class.

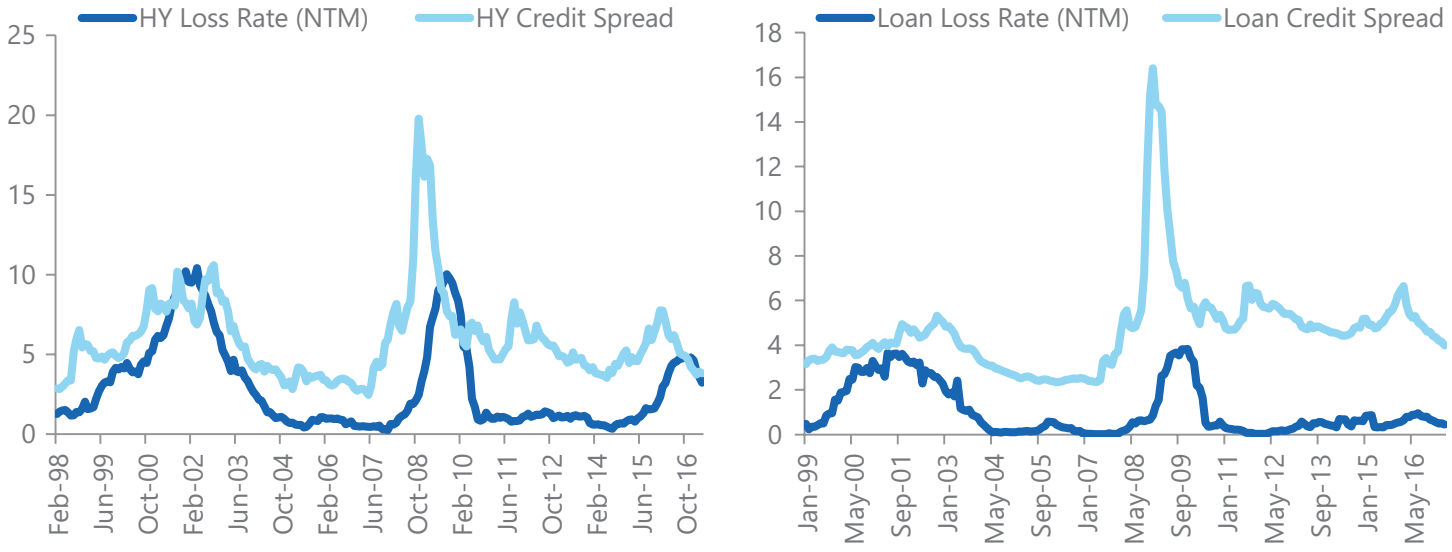
Credit Spreads and Credit Losses

The difference between the interest rate on a given loan or bond and the yield on an equivalent "risk-free" security is generally referred to as the "credit spread." Credit spreads compensate investors for bearing the risk of default. Since 1998, credit spreads have exceeded realized default losses by about 3 percentage points per year, on average, with the gap somewhat larger for speculative grade loans than for high yield bonds (Figure 1).[2]

Over this period, loans have provided a spread of 470 basis points over LIBOR, on average, while bond yields have exceeded those of equivalent duration Treasury notes by 600 basis points. The lower average interest rate on loans has been more than offset by lower default losses. Given their seniority in the capital structure, loans tend to recover nearly 30 percentage points more of face value than bonds in the event of default. (Historically, recoveries on second lien loans tend to be close to those of bonds.)[3]

FIGURE 1

Credit Spreads and Credit Losses for Bonds (Left) and Loans (Right)[4]



1 Cochrane, J. (2011), "Discount Rates," Journal of Finance, Vol. 66, No. 4.
2 Carlyle Analysis of S&P LCD (loans) and BAML Global Index System (bonds) data. June 2017. There is also likely a liquidity risk premium embedded in these spreads.
3 S&P Global Loss Stats, LCD, June 2017.
4 Carlyle; S&P LCD (Loans) and BAML GIS Database (Bonds), June 2017.

Origins of the Credit Risk Premium

While spreads tend to exceed credit losses by 3 percentage points, on average, loss rates fluctuate significantly across portfolios and holding periods. Credit investors naturally demand some premium to compensate for this variability, and the greater the uncertainty about potential default losses, the wider spreads tend to be. Moreover, since defaults cluster in "bad times," spreads must also provide a return premium to account for the likelihood that most losses will occur when the economy is weak, the prices of other assets are depressed, and liquidity is most highly valued.[5]

Institutional structures also tend to amplify the credit cycle. Most loans and bonds are held by intermediaries—banks, asset managers, special purpose vehicles, insurers, etc.—that fund their positions in capital markets.[6] The ability of these intermediaries to buy loans and bonds, or extend credit directly to borrowers, depends on their own capital positions and the ease with which they can raise money.

When an unforeseen shock causes the market value of existing loans or bonds to decline, credit investors suffer mark-to-market losses that erode their capital positions. In the case of open-end mutual funds or hedge funds, these losses may also trigger redemptions that force fund managers to sell loans and bonds, which further depresses their price.[7] Commonality across credit investors' portfolios can create circumstances where the "natural buyers" of loans and bonds tend to be forced sellers at the same time.[8] In these cases, credit conditions tighten and spreads have to widen further to induce other pools of capital to step into the market and provide liquidity.

As a result of these institutional frictions, credit spreads are not always proportional to risk. In periods of macro, sectoral, or issuer-specific stress, investors with "deep pockets," or a stable, closed-end source of funding, can earn excess returns simply by meeting the liquidity demands of other market participants.[9] While the Global Financial Crisis was the clearest manifestation of this phenomenon, the 2011 U.S. credit rating downgrade, 2010-2012 European debt crisis, and 2014-16 oil price collapse all led to contractions in credit availability and high excess returns for investors willing—and, more importantly, able—to hold risky loans and bonds.

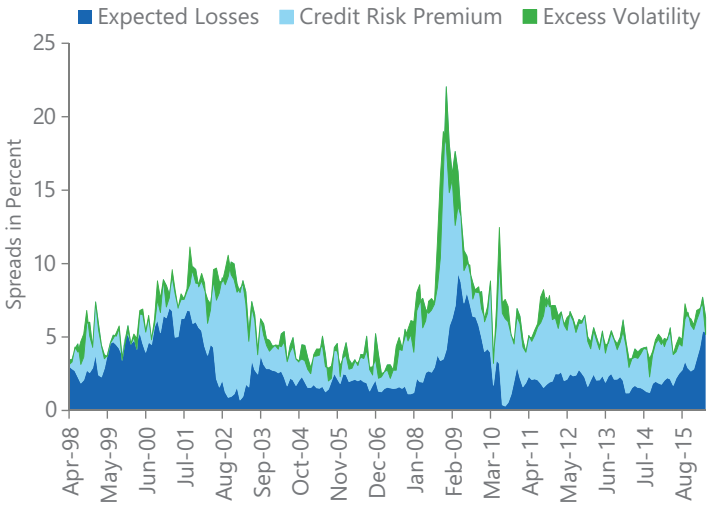
As we demonstrate in the next section, opportunistic investments made in response to shifts in the credit risk premium have substantially outperformed fixed allocations to credit over the past 20 years. Dynamic capital deployment strategies have allowed investors to earn abnormally high returns when the risk premium is particularly wide and avoid losses when the typical loan or bond offers little compensation for default risk. As explained below, these results do not benefit from hindsight; the credit risk premium can be observed in real-time.

Estimating the Credit Risk Premium in Historical Data

To measure the credit risk premium through time, we first calculate an average credit spread across all outstanding speculative grade bonds and loans for each month between 1998 and 2016.[10] We then decompose this average spread into three constituent parts: (1) an estimate for default losses over the next twelve months based on credit and funding liquidity data available *at that point in time*; (2) "excess volatility," or the uncertainty associated with the default forecast derived from prior errors; and (3) the credit risk premium, or the spread that remains after deducting for expected losses and uncertainty (Figure 2). We calibrate our estimate to default losses to match the average loss rate and cyclicality of realized data. While the credit risk premium accounts for roughly half of spreads, on average, its share changes significantly; at times, spreads barely cover expected losses and provide little-to-no margin for forecast error; in other periods, most of the spread is pure excess return necessary to draw other capital into the market.

FIGURE 2

Decomposition of Credit Spreads, 1998-2016[11]



The credit risk premium averages 3% per year, but this average is inflated by the extremely large values observed in certain months. As shown in Figure 3, the probability distribution of the credit risk premium is right-skewed with a fat tail. The credit risk premium falls below 3% in roughly 60% of months between 1998 and 2016, with 2.3% the most frequently observed value. At the same time, risk premiums in excess of 10% are observed 15x more frequently than one would expect based on a normal distribution. This means that credit investors have been able to lend at interest rates in excess of 15% with a surprising degree of regularity over the past 20 years given that overall loan rates averaged just 7% during this period.

5 Chen, Collin-Dufresne, and Goldstein, (2008), "On the Relation Between the Credit Spread Puzzle and the Equity Premium Puzzle," *Review of Financial Studies*.
6 Brunnermeier, M. (2009), "Deciphering the Liquidity and Credit Crunch, 2007-2009," *Journal of Economic Perspectives*.
7 Brunnermeier and Pedersen (2008), "Market Liquidity and Funding Liquidity," *Review of Financial Studies*.
8 Adrian, T. and Brunnermeier, M. (2016), "CoVaR," American Economic Review.
9 Pastor, L. and Stambaugh, R. (2003), "Liquidity Risk and Expected Stock Returns," *Journal of Political Economy*.
10 Data for loans from S&P LCD; bonds data from BAML Global Index System, June 2017.
11 Carlyle Analysis, BAM GIS, S&P LCD

FIGURE 3

Empirical Probability Distribution of the Credit Risk Premium[12]

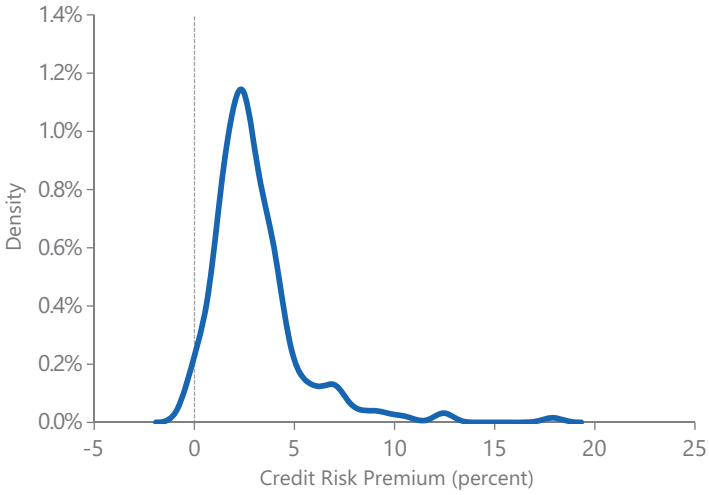


Table 1 sorts the credit risk premium into quintiles and reports the average next twelve months (NTM) excess returns (measured relative to the return on the equivalent duration Treasury security). The average (unlevered) excess return on speculative grade loans and bonds increases proportionally with the credit risk premium, from -3.8% in the bottom quintile to 13.8% in the top. The predictability of the future returns reflects the risk premium's strong mean reversion property: high expected returns draw capital to the credit market, which causes spreads to tighten and raises the market value of the loan or bonds. Similarly, low credit risk premiums draw marginal corporate *borrowers* into the market, which increases default risk and depresses returns.

Low risk premiums tends to be observed in booming credit markets characterized by ample liquidity and "reach for yield" behavior on the part of investors.[15] In these markets, investors are willing to fund marginal corporate credits at modest incremental spreads, the credit quality of the typical issuer declines, and the deterioration in credit quality leads to higher defaults and lower future returns on loans and bonds.[16] Poor credit performance sensitizes investors to risk, which causes credit spreads and the risk premium to revert to healthier levels.

Capturing the Premium through Opportunistic Investments

To demonstrate how the credit risk premium can serve as a state variable for loan origination and credit investment decisions, we conduct an asset pricing test where a hypothetical investor decides whether or not to invest in a value-weighted credit market portfolio each month based on the credit risk premium (CRP) observed at that point in time. As reported in Table 2, the credit risk premium has proven to be a reliable predictor of future returns on loans and bonds; the larger the credit risk premium used as a threshold for the investment decision, the higher the subsequent NTM returns on loans and bonds have tended to be. (These returns assume that the loans or bonds are held for 12 months, with the decision to reinvest or sell made on the basis of the CRP observed at the end of the initial holding period).

TABLE 1

Credit Risk Premium Sorted by Quintile and the Next 12 Months' Excess Returns[13]

Quintile	Credit Risk Premium	Average NTM BB Return	Average NTM B Return	Average NTM CCC Return	Average NTM Market Return
Bottom	1.41	-0.94	-4.84	-8.15	-3.75
Second	2.20	2.12	1.15	2.74	1.66
Middle	2.99	3.21	2.23	0.90	2.41
Fourth	4.11	2.89	2.53	4.79	3.24
Top	19.27	10.29	11.08	27.68	13.79

TABLE 2

Credit Risk Premium and Average NTM Credit Market Returns, 1998-June 2017[14]

	Overall	CRP> 3% (Average)	CRP>3.6% (0.25 SD)	CRP>4.2% (0.5 SD)	CRP>5.4% (1 SD)	CRP>7.7% (2 SD)
% Months Invested	100.0%	37.8%	26.7%	18.0%	11.1%	4.1%
Annual Average Returns						
HY Bonds	7.51	12.22	15.15	20.80	27.17	44.30
BB Credits	7.55	10.11	12.39	16.70	21.05	32.70
B Credits	6.47	10.54	12.83	17.38	22.88	37.10
CCC Credits	9.62	20.49	26.30	37.40	51.05	85.76
Loans	5.21	7.13	8.53	11.95	16.07	29.78

12 Carlyle; BAML GIS Index System
13 Carlyle Analysis of BAML, GIS Database, June 2017.
14 Carlyle Analysis of BAML, GIS Database, June 2017.

15 Becker. B. and Ivanshina, I. (2015), "Reaching for Yield in the Bond Market," *Journal of Finance*.
16 Greenwood, R. and Hanson, S. (2013), "Issuer Quality and Corporate Bond Returns, *Review of Financial Studies*.

While high-yield bonds returned 7.5%, on average between April 1998 and April 2017, a strategy that invested in bonds only when the CRP exceeded 3% (its long-run average) would have achieved an unlevered return of 12.2%. The same strategy would have increased average (unlevered) returns on loans from 5.2% to 7.1%. When investments were made only when the risk premium exceeded 5.4% (one standard deviation above the average), unlevered returns averaged 27.2% for bonds and 16.1% for loans. Interestingly, spreads, or credit rating, do not predict returns, as B-rated credits have tended to earn lower returns than BB-rated credits, on average (6.5% versus 7.6% over the entire period).

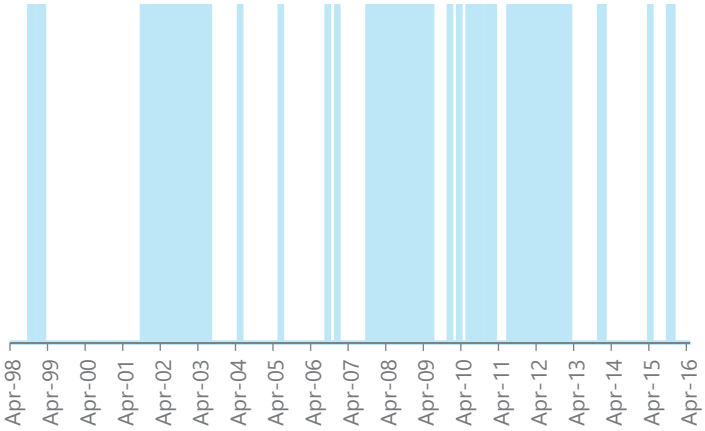
One could argue that an investor earns higher returns deploying capital when the credit risk premium is high simply because she is assuming more risk. However, as shown in Table 3, this investment strategy earns higher risk-adjusted returns as well. The Sharpe Ratio, or excess return per unit of volatility, increases with the credit risk premium. Investments made when the credit risk premium exceeds 3%, have earned 50% higher risk-adjusted returns, on average, and the observed outperformance increases for both loans and bonds when a larger CRP is used as the investment threshold. In short, the size of the credit risk premium, as estimated based on data available in prior periods, has proven able to reliably predict the best months in which to invest in loans and bonds.

Conditioning credit market investments on the credit risk premium increases returns when capital is deployed partly by reducing the frequency with which investors are exposed to the asset class. Investors who buy loans and bonds only when the risk premium exceeds 3% would have invested in just 37% of months between 1998 and 2016, and as shown in Figure 4, these investments tend to cluster in time.

To measure opportunistic credit's marginal contribution to portfolio returns, one has to make assumptions about where the money would be invested the remaining 63% of the time.

FIGURE 4

Months Where CRP Exceeds 3% (Shaded Areas)[19]



We assume that the opportunistic credit investments would be funded through the sales of stocks, or the sale of a portfolio of stocks and high-grade sovereign bonds. The return on these portfolios (between 6.3% and 7.8% per year) captures institutional investors' opportunity cost of capital, or the average returns that would be foregone by pursuing an opportunistic credit strategy. Based on the assumption that the investor would otherwise hold a 60/40 portfolio of stocks and Treasury bonds, opportunistic credit allocations would have increased portfolio returns by between 1% and 2.51% per year since 1998 (Table 4). If one assumes that the opportunistic credit investments were funded by selling stocks, the outperformance ranges between 0.41% and 1.34% per year.

TABLE 3

Risk-Adjusted Returns, 1998-June 2007[17]

	Overall	CRP> 3% (Average)	CRP>3.6% (0.25 SD)	CRP>4.2% (0.5 SD)	CRP>5.4% (1 SD)	CRP>7.7% (2 SD)
Volatility (Loans)	9.41	14.08	15.48	16.53	18.50	18.57
Volatility (Bonds)	13.11	18.15	19.92	20.66	22.15	16.36
Treasury Return	4.04	3.05	3.46	3.26	2.41	1.05
Excess Return (Bonds)	3.46	9.17	11.69	17.55	24.76	43.25
Sharpe Ratio (Bonds)	0.26	0.51	0.59	0.85	1.12	2.64
LIBOR Average	2.27	1.32	0.88	0.73	0.78	0.69
Excess Return (Loans)	2.94	5.80	7.65	11.23	15.29	29.10
Sharpe Ratio (Loans)	0.31	0.41	0.49	0.68	0.83	1.57

TABLE 4

Credit's Contribution to Total Portfolio Returns, 1998-June 2017[18]

	Overall	CRP> 3% (Average)	CRP>3.6% (0.25 SD)	CRP>4.2% (0.5 SD)	CRP>5.4% (1 SD)	CRP>7.7% (2 SD)
Bond Returns vs Russell 3000	-0.26	1.84	5.02	6.02	5.01	9.84
Portfolio Return (60/40)	6.28	8.78	8.79	8.49	7.89	7.31
Portfolio Return (Stocks)	7.76	8.46	9.11	8.85	8.32	8.17

17 Carlyle Analysis of BAML, GIS Database, June 2017.
18 Carlyle Analysis of BAML, GIS Database, June 2017.
19 Carlyle; BAML GIS Index System

It is important to note that the results of this asset pricing test assume that the hypothetical investor has the ability to measure the credit risk premium in real-time and deploy capital swiftly in response. Efforts to replicate these results in the real world would require a global platform of investment professionals able to screen individual credits and take advantage of opportunities as they arise. Investors without the requisite capabilities may prove unable to assemble the portfolios necessary to scale exposure at the critical moments.

Conclusion

Credit market data powerfully dispel efficient markets theory. Speculative grade interest rates vary to an extent that cannot be explained by fundamentals. As a result, some periods offer better investment opportunities than others. Investors with a global platform and reliable funding sources can scale exposure to credit risk in ways that could increase unlevered returns on loans and bonds and improve overall portfolio performance.

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Prior to joining Carlyle, Mr. Jenkins was a Senior Managing Director at CPPIB and responsible for leading CPPIB's Global Private Investment Group with approximately CAD$56 billion of AUM. He was Chair of the Credit Investment Committee, Chair of the Private Investments Committee and also managed the portfolio value creation group. While at CPPIB, Mr. Jenkins founded CPPIB Credit Investments, which is a multi-strategy platform making direct principal credit investments. He also led CPPIB's acquisition and oversight of Antares Capital and the subsequent expansion in middle-market lending. Prior to CPPIB he was Managing Director, Co-Head of Leveraged Finance Origination and Execution for Barclays Capital in New York. Before Barclays, Mr. Jenkins worked for 11 years at Goldman Sachs & Co. in senior positions within the Fixed Income and Financing Groups in New York.

Mr. Jenkins earned a Bachelor of Commerce degree from Queen's University. He served on the boards of Wilton Re, Teine Energy, Antares Capital and Merchant Capital Solutions..

Jason M. Thomas is a Managing Director and the Director of Research at The Carlyle Group, focusing on economic and statistical analysis of the Carlyle portfolio, asset prices, and broader trends in the global economy. He is based in Washington, D.C.

Mr. Thomas serves as the economic adviser to the firm's corporate private equity and real estate investment committees. His research helps to identify new investment opportunities, advance strategic initiatives and corporate development, and support Carlyle investors.

Previous to joining Carlyle, Mr. Thomas was Vice President, Research at the Private Equity Council. Prior to that, he served on the White House staff as Special Assistant to the President and Director for Policy Development at the National Economic Council. In this capacity, he served as the primary adviser to the President for public finance.

Mr. Thomas received a B.A. from Claremont McKenna College and an M.S. and Ph.D. in finance from George Washington University where he studied as a Bank of America Foundation, Leo and Lillian Goodwin Foundation, and School of Business Fellow.

He has earned the Chartered Financial Analyst (CFA) designation and is a financial risk manager (FRM) certified by the Global Association of Risk Professionals.

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