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SPECIALISTS IN HIGH YIELD AND LEVERAGED CREDIT INVESTMENTS

APRIL 2017
VOLUME 4 • ISSUE 2

Is there a “Right Time” to Buy High Yield?

The following paper provides some insight as to the difficulty of applying a tactical or short term, mindset to high yield allocations and why, in our view, a strategic, or long term, allocation to the asset class is optimal.



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Executive Summary

The following paper provides some insight as to the difficulty of applying a tactical or short term mindset to high yield allocations and why, in our view, a strategic, or long term, allocation to the asset class is optimal. Of course, it would be disingenuous of us to deny the fact that high yield investors should expect higher returns when spreads are wide and the market is “cheap”. However, reaping a better reward for something you paid less to own is a characteristic that is shared by all investments. What we find is that the number of opportunities observed historically for a tactical investor to participate in the high yield market and achieve an outcome, on average, that exceeds the performance generated at tighter starting option adjusted spreads (“OAS”) are limited. In addition, we also find that an incremental increase in spread levels does not always translate into an increase in average return, which should give investors pause as to the effectiveness of a tactical allocation.

In this paper, we will attempt to establish a strong case for high yield as a strategic asset allocation. In support of this contention, we have observed that over the long term, substantially all of the high yield market’s return has been generated by coupon income rather than price appreciation. In addition, based on the most frequently observed starting spread levels for the high yield market (i.e., OAS between 300-700 bps), or what we would characterize as “normal market conditions”, spread levels in and of themselves are not a strong predictor of future performance. Therefore, we conclude that extending one’s holding period in the asset class by maintaining a strategic allocation to high yield over the long term enables short-term dislocations in bond prices to smooth themselves out, while also allowing the coupon income received to compound over time.

Within the paper, we also touch on high yield’s relationship to equity markets, and we find that high yield and equity markets have produced similar total returns over the last 19 years. However, there is a stark difference in the risk-adjusted performance produced by the two asset classes, owed primarily to high yield’s lower volatility. Therefore, even though the correlation between the two asset classes is relatively high, the two markets provide very distinct risk and reward profiles for investors. Conversely, high yield’s correlation to more traditional “core” fixed income markets is relatively low. As such, adding high yield as a strategic allocation to an investment portfolio offers an investor the opportunity to increase one’s yield, while adding an incremental layer of diversification.

For many investors, there is a “right time” to invest in high yield, but what we will demonstrate in this paper is that high yield, similar to most other markets, is difficult for even a sophisticated investor to effectively time. In addition, many investors continue to exclude high yield from their strategic asset allocations for, among other reasons, its perceived likeness to equities. However, given that the high yield market has produced attractive performance historically, we find this disinclination somewhat counter-intuitive. We would point out to potential investors the characteristics of the high yield market that make it an ideal candidate for a strategic fixed income allocation, namely the low correlation to more traditional fixed income markets, its reliance on coupon income to drive performance over the long term, and its lower volatility relative to equity markets. Finally, based on the data, investing for longer periods of time increases the likelihood of achieving the desired return outcome, as well as minimizes the variability of such results. Accordingly, we believe that the high yield market is better suited as a component of a strategic asset allocation in a well-diversified portfolio rather than as a tactical investment opportunity.

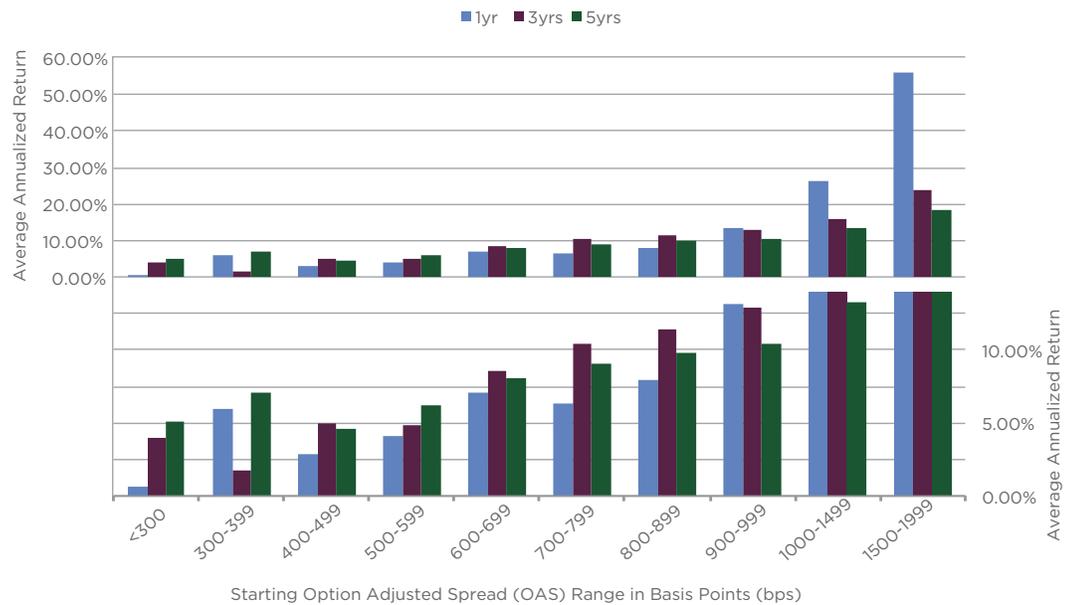
...higher starting spread levels have not always resulted in superior performance.

High Yield: Based on the averages, starting spreads are not a good predictor of returns

A tactical high yield investor might argue that the best use of their capital is to only invest in high yield when spreads are wide, and to do so for only a limited holding period until such spreads tighten. We disagree with both points, though we will naturally acknowledge that high yield investors should expect higher returns when spreads are wide and the market is “cheap”. With that said, we set out to determine if the optimal allocation to high yield is tactical or strategic in nature, and the pages that follow include our findings and conclusions.

For the analysis included in this section, we define a tactical investment as having a holding period of one year.¹ Even this holding period may be too lengthy for some tactical investors that may see the window of opportunity as being much shorter than one year. However, for the purposes of our exercise, it allows for easier comparisons across time periods.

Exhibit 1 – Average Annualized Returns by Spread Range



*Exhibit 1 is a panel chart displaying the average annualized return for the high yield market based on the starting option adjusted spread (“OAS” or “spread”) range measured in basis points over various time periods. The data presented in both the top and bottom panels are the same, but given the outliers that result at extremely high spread levels, i.e., OAS >1000 basis points (“bps”), the bottom panel of the graph rescales the data by capping the right hand side vertical axis at 15% to make visual comparisons a little easier. Average annualized returns presented were calculated using BofA Merrill Lynch data for the period January 1, 1998 to December 31, 2016. Past performance is no guarantee of future results
Source: BofA Merrill Lynch

Focusing on the one year returns, the chart shows that wider starting OAS levels have resulted, on average, in a higher total return. At face value, this observation may seem to support the idea that an opportunistic investment in high yield is a good tactical trade rather than a more strategic allocation. However, from the bottom panel of Exhibit 1, we can also see that there have been several instances where the relationship breaks down, and higher starting spread levels have not always resulted in superior performance.

¹ Information on the data used in this analysis is included in the Appendix.

...under normal market conditions, starting spread levels themselves are not a strong predictor of future performance...

For example, the average one year return for the high yield market when the starting OAS was between 300-399 bps (5.97%) exceeded that of the high yield market when spreads ranged between 400-499 bps and 500-599 bps (2.89% and 4.08%, respectively). In addition, the average one year return when starting OAS ranged from 700-799 bps (6.39%) exceeded the average return of the high yield market when the starting spread was between 300-399 bps (5.97%) by 0.42%. This performance differential is less than one might have assumed given the difference in starting spread levels (i.e., relative “cheapness” of the market) and the return that one would expect to receive when paying less for an investment.

It is clear from the data that when spreads exceed 700 bps, all high yield investors should expect strong performance, on average, over all periods reported. That is not to say that there have not been examples over the past 19 years of less than desirable outcomes at those starting spread levels, but more often than not, the result has been positive. Unfortunately for tactical investors, periods of such elevated spreads occurred only about 25% of the time during the past 19 years, limiting the number of occasions for these investors to take advantage of such opportunities. For comparison, about 70% of the starting OAS during the period reviewed were between 300-700 bps.

In summary, the number of opportunities observed historically for tactical investors to participate in the high yield market and achieve an outcome, on average, that exceeded the performance generated at tighter starting OAS has been limited. In addition, the observation that an incremental increase in spread levels does not always translate into an increase in average return should give investors pause as to the effectiveness of a tactical allocation to high yield. In the next section, we review some of the characteristics that make high yield more suited as a strategic allocation in a well-diversified portfolio.

High Yield: Longer investment horizons improve the distribution of returns

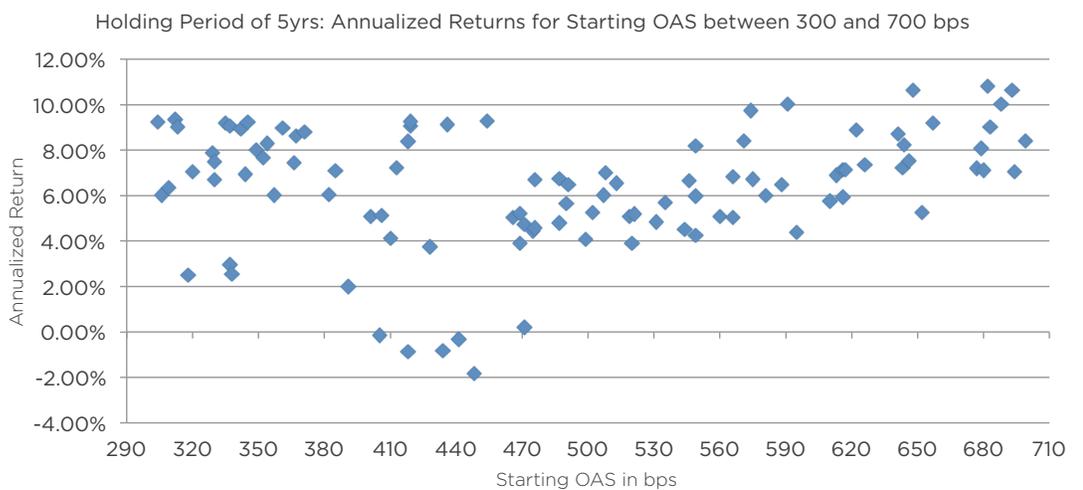
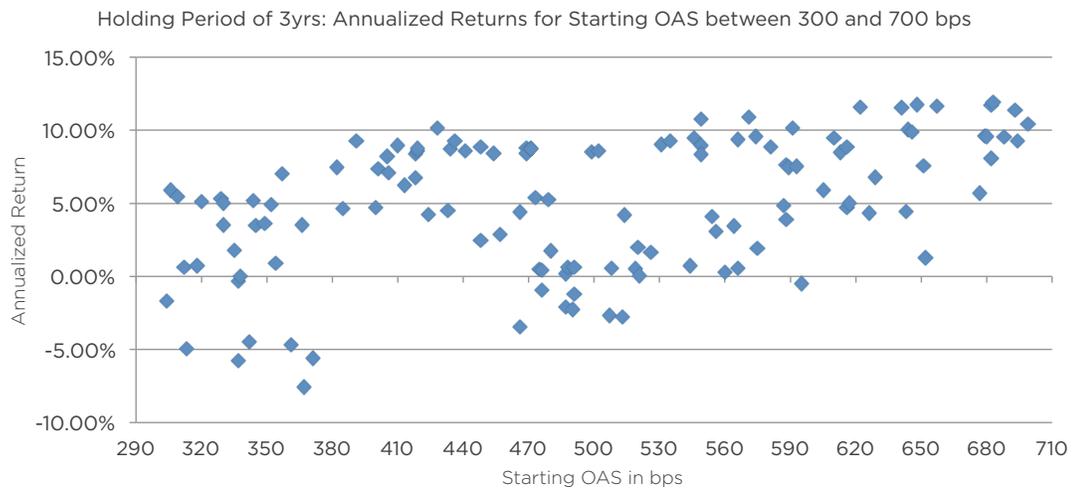
A last takeaway from the data presented in Exhibit 1 is that, on average, extending one’s holding period has historically resulted in better outcomes, especially for starting spreads that have ranged from 300 to 700 bps, which are the levels that high yield spreads have been most regularly observed and what we define for the purposes of this paper as “normal market conditions”. This point makes sense when one considers that, over the long term, substantially all of the high yield market’s return has been generated by coupon income.² Therefore, we believe that extending one’s holding period enables short-term dislocations in bond prices to smooth themselves out, while also allowing the coupon income received to compound over time.

This conclusion can be further supported by reviewing the data in Exhibit 2 below. These charts show the performance of the high yield market, over a three and five year holding period, using the most frequently observed starting spread levels (i.e., OAS between 300-700 bps) for the month end dates. One can see from the data that there is a great deal of variability among the outcomes at these spread levels, which suggests two things to us. First, under normal market conditions, starting spread levels themselves have not been a strong predictor of future performance, which one can infer from the lack of any real pattern in the data in the charts. Second, extending one’s holding period increased the likelihood of a good result for a high yield investor, as the longer

² See performance table included in the Appendix.

holding period allowed the investor to extract the benefit of the coupon income provided by the asset class minimizing price fluctuations. We believe that these points make it difficult to argue against a strategic allocation to high yield. In addition, such an allocation to high yield may allow investors to more readily take advantage of any opportunities presented as a result of spread widening, while at the same time potentially earning attractive coupon income.

Exhibit 2 – High Yield Market Annualized Performance and Starting Spread Pairs for the period 1/1/1998 – 12/31/2016



Past performance is no guarantee of future results

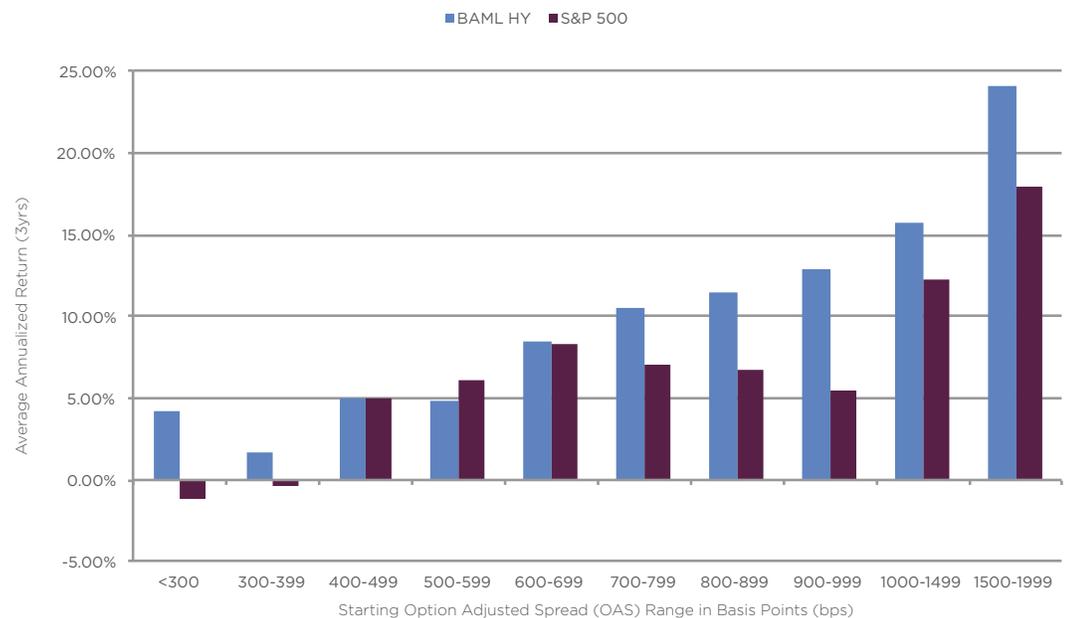
Source: BofA Merrill Lynch

High Yield: Do its returns resemble Equity too much for it to be considered an allocation to Fixed Income?

The data above seems to suggest that high yield appropriately deserves a place in an investor's overall strategic asset allocation. However, a common argument that we hear against such a decision is that high yield bears too much of a resemblance to equity. High yield has been described as a hybrid asset class; i.e., it displays the characteristics of both equities and fixed income. High yield does display a higher correlation to equities, and opponents of high yield would say that an investor could obtain a similar diversification benefit with higher potential returns by adding to an existing equity allocation, rather than by allocating to high yield. As a long-term investor in the high yield market, we unsurprisingly do not share these beliefs. Therefore, we compared the absolute and risk-adjusted performance of the high yield market to that of several equity markets to see what evidence we could uncover to support or dispel this notion.³

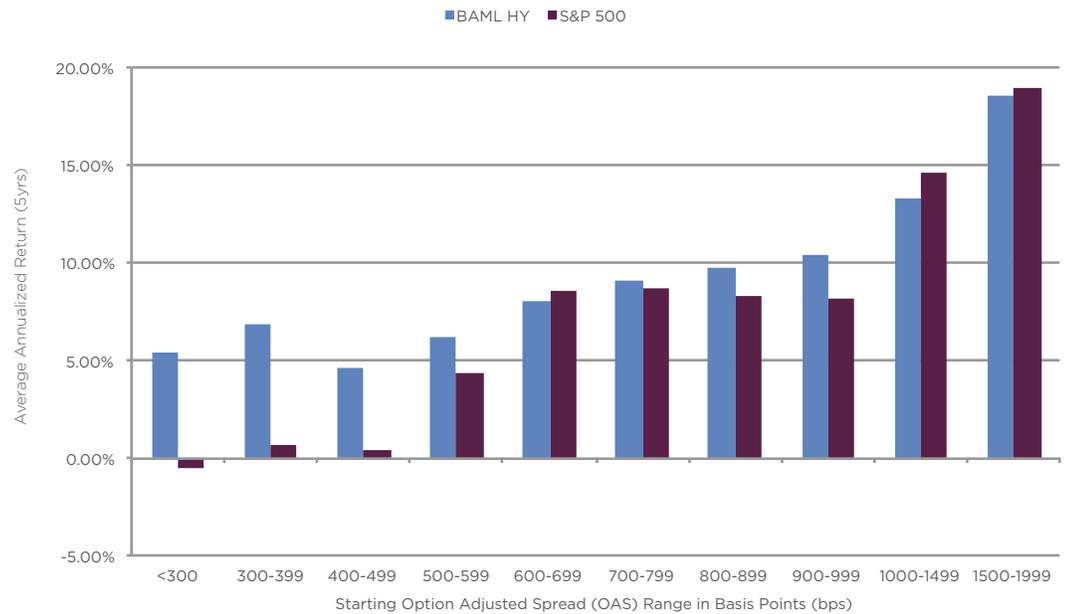
Exhibit 3 shows that on average, for any starting OAS range, high yield performed in-line or exceeded the performance of the S&P 500 equity market included for comparison. Perhaps these return figures lend support to the concept that high yield behaves like equity and provides a risk and reward profile that is too similar to equities to warrant separate consideration. However, when these returns are paired with their respective volatility, as further set forth in Exhibit 4 below, the picture changes.

Exhibit 3 – Performance Comparison: Average Annualized Returns for the period 1/1/1998 – 12/31/2016



³ Performance for the equity index was calculated using the process described in the Appendix. The equity market index used in this analysis is not meant to represent an exhaustive list of opportunities, and is presented for comparative purposes only. We conducted a similar analysis as the one presented in this section against other equity market indices; such indices represent several developed and emerging equity markets outside of the U.S., and we observed similar results as those described herein.

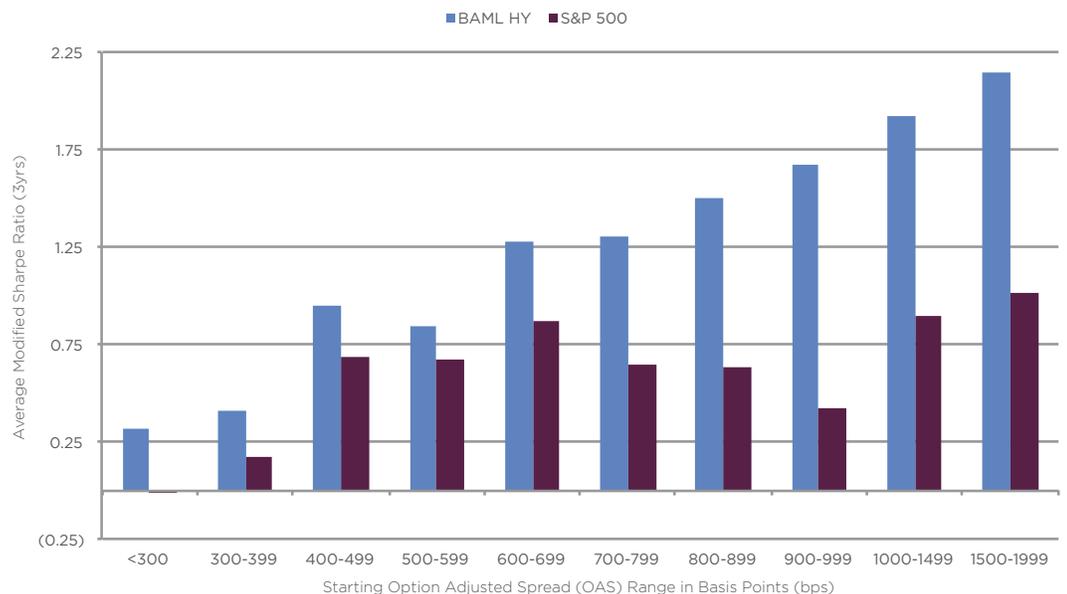
...the risk and reward profile generated by high yield is very different when compared to that of the equity market...



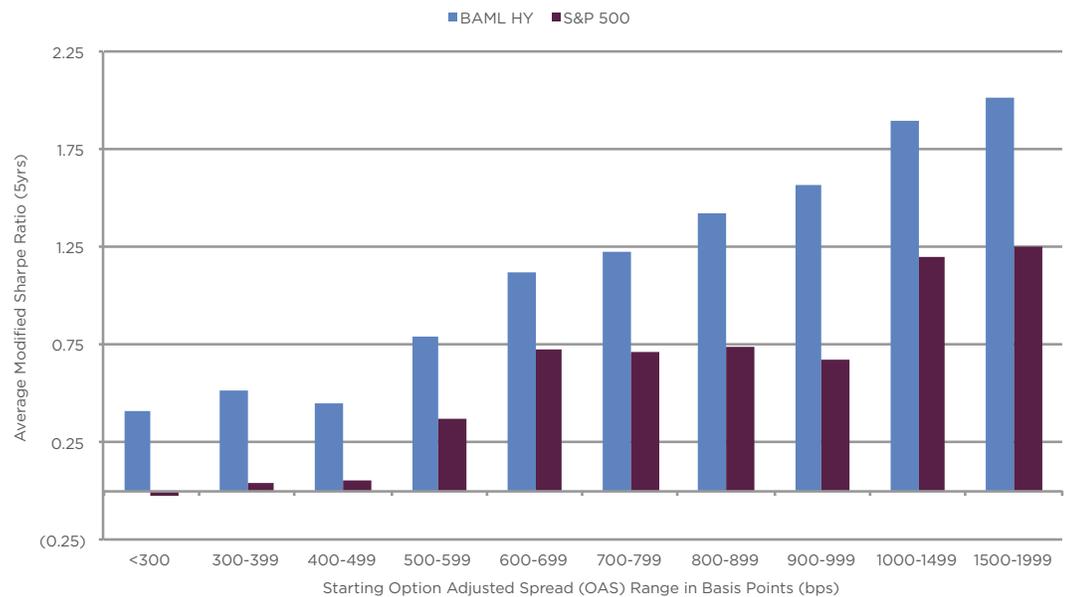
Past performance is no guarantee of future results
 Source: BofA Merrill Lynch, S&P 500

In order to incorporate the volatility (i.e., risk as measured by standard deviation), we present the Modified Sharpe Ratio⁴ for each index in Exhibit 4 below. One can see from examining the chart that the risk and reward profile generated by high yield is very different when compared to that of the equity market presented. As the data in Exhibit 3 showed, the returns between the two are relatively comparable; however, given the differences in volatility as set forth in Exhibit 4, the risk-adjusted performance of the high yield market stands out.

Exhibit 4 - Modified Sharpe Ratios for the period 1/1/1998 - 12/31/2016



⁴ The Modified Sharpe Ratio is calculated by dividing the annualized return of the index by its standard deviation and is used as a way to compare the risk/reward efficiency of the two asset classes. Monthly returns were used to calculate both annualized returns and standard deviations. The calculation presented modifies the traditional Sharpe Ratio by eliminating the step that reduces the risky asset return by the return of the risk-free asset. We believe that this approach is appropriate because we are not necessarily concerned with the absolute level of the Modified Sharpe Ratios, but rather the relationship among such ratios for the indices presented.



Past performance is no guarantee of future results

Source: BofA Merrill Lynch, S&P 500

In our view, the relationship between the performance of high yield and that of equities makes sense. As economic activity improves or stabilizes, typically so do corporate financials, resulting in an increase in equity values together with a reduced likelihood of defaults, thereby providing a solid fundamental footing for high yield. Consequently, both asset classes should follow similar paths in generating performance. However, volatility in high yield bond prices is typically muted relative to equity prices. For example, increases in the price of high yield bonds are often capped, or restricted from appreciating endlessly, because of an event like an impending maturity, upcoming call date, or refinancing. Furthermore, only in the more extreme downside scenario (i.e., default or bankruptcy), will the price of a high yield bond fall to zero, and even in those scenarios, high yield will typically recover more than the corresponding equity.

For example, the 25 year average recovery rate on high yield bonds, according to Moody's Analytics, is approximately 40%. While past performance is not necessarily indicative of future returns, the historic data suggests that such recovery value may serve as a floor, at least on average, as to how low the price of defaulted high yield bonds should go. On the other hand, equity prices are often subject to investor euphoria that pushes values well beyond what many participants deem to be reasonable. Subsequently, corrections in equity prices can be severe, often leaving investors in anguish. Therefore, equity values typically exhibit more price volatility than high yield bonds. This is not to say that high yield cannot move to extremes, but rather that high yield bonds in the aggregate do not typically move to the same extremes or with the same frequency as equity markets. Lastly, even though equity price increases are not bound by any limit theoretically, we have never observed a period where equity prices rose indefinitely. The highest annualized return observed for the equities over any five calendar year period, between 1998 and 2016, was 17.91%.⁵

⁵ See performance table included in the Appendix.

...the relatively low correlation that high yield displays with the “core” of the fixed income market should provide investors with comfort rather than angst.

Exhibit 5 – Correlation Matrices

Correlation with BAML HY* - Periods ending December 31, 2016

| | 19 Years | 15 years | 10 years | 5 years |
|----------|----------|----------|----------|---------|
| S&P 500* | 0.63 | 0.69 | 0.73 | 0.66 |

Correlation with Bloomberg Barclays U.S. Aggregate* - Periods ending December 31, 2016

| | 19 Years | 15 years | 10 years | 5 years |
|----------|----------|----------|----------|---------|
| BAML HY* | 0.18 | 0.21 | 0.25 | 0.30 |
| S&P 500* | (0.09) | (0.08) | 0.02 | (0.11) |

*Definitions for each of these indices are included in the Appendix.

Source: Bloomberg

Earlier we touched on the conception (or perhaps misconception) that the high yield market is too highly correlated to equities, and therefore that it does not make sense for an investor to allocate to an asset class that offers a lower potential return for a similar diversification benefit. It is true that high yield has displayed a relatively high correlation to equities, as one can glean from the first table included in Exhibit 5 above. That being said, we have seen from the data presented previously in this paper that during the period reviewed, high yield offered comparable returns, on average, to equity markets. (Of course, there is no guarantee that such results will repeat in the future).

In addition, the idea that the fixed income component of a portfolio acts as a safety net, and thus should prioritize avoiding capital losses, puts high yield, which is perceived as an inherently risky segment of the debt market, out in the cold in the mind of many investors. However, as revealed by the return data over the last 19 years that has been included in the Appendix, capital losses that have been incurred over rolling five year periods generally have not been significant (and even in extended down markets, such losses for the most part were more than offset by the associated coupon income). Furthermore, the relatively low correlation that high yield displays with the “core” of the fixed income market should provide investors with comfort rather than angst. High yield typically provides a yield several hundred basis points higher than that delivered by “core” fixed income markets, thereby offering an opportunity for investors to increase the yield of their overall fixed income portfolio, while also adding some level of diversification.

Furthermore, one can also see from Exhibit 5 that high yield’s correlation to equity has increased during the past ten years. Be that as it may, the relationship is far from perfect, indicating that a diversification benefit is still present. Similarly, high yield’s correlation to more traditional “core” fixed income markets has also increased during the past ten years. We believe that the increase in correlation among these markets is reflective of the influence that accommodative monetary policy globally has had on investment returns for many asset classes, potentially dulling some of the unique traits of each market’s return stream. However, in the event that global monetary policy tightens, we could observe a decline in the correlations among asset classes, which would enhance the current diversification benefit already provided by a strategic allocation to high yield.

Conclusion

For many investors, there is seemingly a “right time” to invest in high yield. However, what we have tried to demonstrate in this paper is that, similar to most other markets, high yield is difficult to properly time. In addition, many investors continue to exclude high yield from their strategic asset allocations altogether. Given that the high yield market has produced attractive performance historically, both in absolute and risk-adjusted terms, we believe that this sentiment is misguided and perhaps a legacy of a stigma against investing in the below investment grade (“junk bond”) market. We would further point out to potential investors the characteristics of the high yield market that make it an ideal candidate for inclusion as a strategic component of a fixed income asset allocation, namely the low correlation to more traditional fixed income markets, the reliance on coupon income to drive performance over the long-term, and the lower historic volatility relative to equity markets. Finally, based on the data, investing with a longer time horizon increases the likelihood of achieving the desired outcome, while also minimizing the variability of such results. For these reasons, DDJ believes the high yield market is better suited as a component of a strategic asset allocation in a well-diversified portfolio rather than as a tactical investment opportunity.

Appendix

Table 1 – Coupon Income Drives High Yield (BAML HY) Performance (%)

| Period | Price Return | Income Return | Total Return | S&P 500 |
|---|--------------|---------------|--------------|---------|
| 1998-2002 | -8.05 | 8.57 | 0.52 | -0.59 |
| 1999-2003 | -3.98 | 9.00 | 5.02 | -0.57 |
| 2000-2004 | -2.33 | 9.00 | 6.67 | -2.30 |
| 2001-2005 | -0.48 | 8.87 | 8.39 | 0.54 |
| 2002-2006 | 1.15 | 8.71 | 9.86 | 6.18 |
| 2003-2007 | 2.21 | 8.54 | 10.76 | 12.82 |
| 2004-2008 | -8.74 | 7.88 | -0.86 | -2.18 |
| 2005-2009 | -2.35 | 8.70 | 6.35 | 0.42 |
| 2006-2010 | -0.17 | 8.98 | 8.81 | 2.30 |
| 2007-2011 | -1.54 | 8.87 | 7.33 | -0.24 |
| 2008-2012 | 0.96 | 9.04 | 10.00 | 1.65 |
| 2009-2013 | 9.49 | 9.16 | 18.65 | 17.91 |
| 2010-2014 | 0.98 | 7.90 | 8.88 | 15.42 |
| 2011-2015 | -2.50 | 7.34 | 4.84 | 12.54 |
| 2012-2016 | 0.09 | 7.26 | 7.35 | 14.62 |
| January 1, 1998 to December 31, 2016 | -1.70 | 8.35 | 6.65 | 6.46 |

-All periodic performance shown is annualized and covers each of the five year periods listed, with the exception of the last row which covers the entire period analyzed.

Past performance is no guarantee of future results

Source: Bloomberg

About the Data

The period covered includes data from December 31, 1997 through December 31, 2016, or 19 years. We calculated the annualized performance for the high yield market, based on the returns of the BAML HY Index, at each month end date over several subsequent periods for each month end spread observed. From here, we used a simple average of the returns produced in each spread range, over each period, to generate the information displayed in Exhibit 1. As an example, during the period analyzed, when the starting OAS was <300 bps, the average annualized return over the following one year period was 0.58%, and over the 5 year period it was 5.12%.

Performance for each market included in this paper was approximated using the following indices, please note one cannot invest directly in an index:

BAML HY - The BofA Merrill Lynch U.S. High Yield Index, which tracks the performance of U.S. dollar denominated below investment grade corporate debt publically issued in the U.S. domestic market.

S&P 500 - The Standard and Poor's 500 Index, which is a U.S. market-cap-weighted index designed to capture the performance of 500 large-cap U.S. equities.

Bloomberg Barclays U.S. Aggregate - The Bloomberg Barclays U.S. Aggregate Index represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities.

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Diversification does not guarantee investment loss.

Past performance is no guarantee of future returns.

Investing involves risk, including potential loss of principal.

Definitions

BPS: Stands for basis points. A basis point is one one-hundredth of one percent (0.0001).

Correlation: A statistical measure of how an index moves in relation to another index or model portfolio. A correlation ranges from -1 to 1. A correlation of 1 means the two indexes have moved in lockstep with each other. A correlation of -1 means the two indexes have moved in exactly the opposite direction.

Coupon: The stated interest rate paid on a bond. Coupon payments for high yield bonds are typically made semi-annually.

High Yield Bond: A high yield bond is a debt security issued by a corporate entity where the debt has lower than investment grade ratings. It is a major component – along with leveraged loans – of the leveraged credit market.

Investment Grade: Investment grade are those securities rated Baa3/BBB-/BBB- or above by Moody's, S&P, and/or Fitch, respectively.

Junk Bond: A junk bond refers to high-yield or noninvestment-grade bonds.

Monetary Policy: Monetary policy is the actions of a central bank, currency board or other regulatory committee that determine the size and rate of growth of the money supply, which in turn affects interest rates. Monetary policy is maintained through actions such as modifying the interest rate, buying or selling government bonds, and changing the amount of money banks are required to keep in the vault (bank reserves).

Option Adjusted Spread: A measurement of the spread of a fixed-income security rate and the risk-free rate of return, which is adjusted to take into account an embedded option. Typically, an analyst would use the Treasury securities yield for the risk-free rate. The spread is added to the fixed-income security price to make the risk-free bond price the same as the bond.

Recovery Rate: The recovery rate is the extent to which principal and accrued interest on a debt instrument that is in default can be recovered, expressed as a percentage of the instrument's face value.

Spread: The yield of a bond minus the yield of the government bond that matches the maturity (or appropriate call date) of the bond.

Yield: The yield is the income return on an investment, such as the interest or dividends received from holding a particular security.

DDJ000155 4/30/2018

Is there a Right Time to Buy High Yield?

ABOUT DDJ CAPITAL MANAGEMENT

DDJ Capital Management's goal is to consistently produce attractive long-term investment returns, while minimizing downside risk for our investors, which include:

- > Corporate pension accounts and public retirement plans
- > Endowments and foundations
- > Insurance companies
- > Other institutional clients

The underpinning of DDJ — a disciplined investment philosophy, coupled with a commitment to exhaustive credit research — has remained constant since our founding in 1996. Our highly skilled team is steadfast and focused on executing our strategy to identify strong risk-adjusted investment opportunities in the leveraged credit markets.

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