



Lord Abbett Investment Brief: Commercial Mortgage-Backed Securities (CMBS)

An overview of the asset class and its investment merits.

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As an asset class, commercial mortgage-backed securities (CMBS) may be unfamiliar to many investors; nevertheless, the market is sizeable, at approximately \$1 trillion. What is more, CMBS are represented in the Bloomberg Barclays Aggregate Bond Index, a widely used barometer for bonds in the United States.

This white paper will discuss the mechanics of this asset class and familiarize investors with the characteristics of the underlying loans, the deal structure, the benefits of portfolio inclusion, and the risks involved. Successful investing in the CMBS marketplace requires expertise in commercial real estate as well as structured products—and demands the ability to determine the viability of the businesses paying the rent.

KEY TAKEAWAYS

Commercial mortgage-backed securities:

- Provide exposure to commercial real estate in lieu of direct investment in property.
- Accommodate differing risk preferences via credit enhancement intended to produce degrees of credit-risk protection.
- Offer income and portfolio diversification benefits.
- Historically, have delivered attractive excess and risk-adjusted returns.
- Require expertise in commercial real estate and structured products.

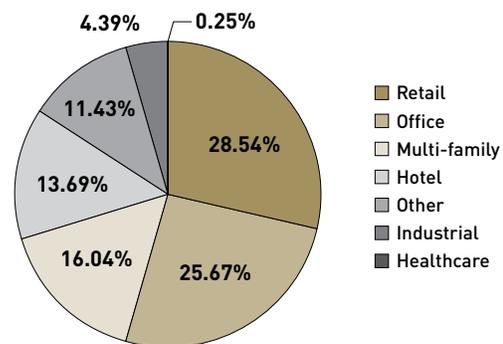
WHAT ARE CMBS?

CMBS are fixed-income securities backed by commercial real estate loans. Institutional borrowers such as real estate investment trusts (REITs), typically take out loans to finance the purchase of commercial property. A commercial lender (e.g., a commercial or investment bank) would lend the funds, and the property then would be used as collateral for the loan, much the way a home would act as collateral to a residential mortgage.

Loan proceeds are used for a variety of property types, including apartment buildings, hotels, offices, retail stores, industrial properties, and hospitals. (See Chart 1.) The loan is taken off the lender's balance

sheet and sold into a trust, where it is pooled with other commercial real estate loans. Bonds subsequently are issued from the trust. The rental income generated from the property's occupants then flows through the trust to the bond investors. Ultimately, CMBS provide an opportunity for investors to gain exposure to the commercial real estate market in a diversified manner through investment in securitized products, in lieu of a direct investment in property.

CHART 1. PROPERTY TYPE BREAKDOWN (AS OF DECEMBER 1, 2016)

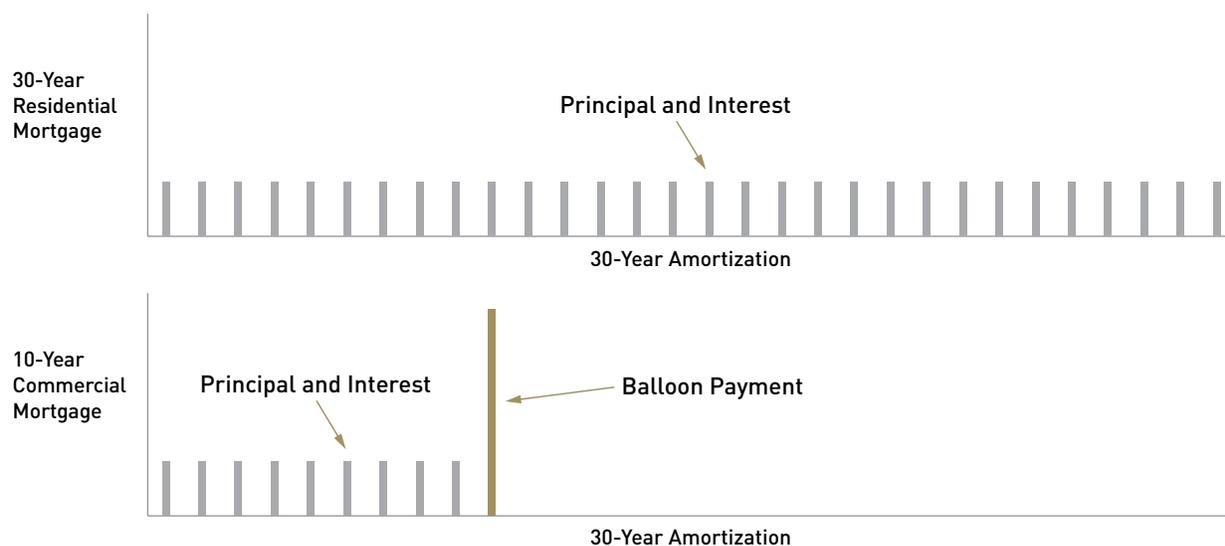


Source: Morningstar.

THE ROLE OF THE TRUST

Note that the trust's primary role is to house the assets, pass on interest and principal to investors, and appropriately allocate cash-flow shortfalls/losses in the case of credit events. Also, because the loan assets are placed in a trust, they legally are separated from both the lender as well as the borrower. If the Federal Deposit Insurance Corp. were to take the lending bank into receivership, the assets would not be at risk. In addition, the *non-recourse* characterization of the loans ultimately means that a bankruptcy filing by the borrower would not drag the loan into bankruptcy proceedings. In the event of a bankruptcy, to the extent that the valuation of the property is sound, the loan too is sound. For example, if the borrower used the loan proceeds to build a mall and the borrower went bankrupt as a result of activities unrelated to the mall, as long as the rental income stream from the stores in the mall is sufficient to continue to pay down the loan, the loan remains sound.

CHART 2. RESIDENTIAL AND COMMERCIAL REAL ESTATE LOAN PRINCIPAL AND INTEREST PAYMENTS



Source: Lord Abbett. For illustrative purposes only.

COMMERCIAL REAL ESTATE LOAN STRUCTURE

Many investors are familiar with the amortization schedule associated with a 30-year residential mortgage. In their case, the monthly payments are roughly the same, with the portion making up interest or principal varying over the course of the life of the mortgage. As the mortgage ages, the principal component of the monthly payment grows, while the interest portion shrinks.

Commercial real estate loans, unlike most residential loans, are not fully amortizing. Instead, they typically pay interest and very little principal throughout the life of the loan, until a large “balloon” payment of principal is made at maturity. (See Chart 2.) For example, the term of the mortgage may be 10 years, but scheduled principal and interest payments may be on a 30-year amortization schedule. A larger balloon payment of principal then would be made at the end of year 10, paying down the remaining principal balance. At maturity, the loan typically is refinanced, with a new loan used to pay down the balloon. The interest rate of the new loan would reflect prevailing market rates. As long as the property provides sufficient cash flow, the lender likely would be open to the borrower refinancing at the end of the loan period, rather than collecting the balloon payment and closing out the loan.

CREDIT TRANCHING

As mentioned, commercial real estate loans are sold into a trust. The trust then is broken up into tranches, with varying risk, maturity, and yield, allowing investors to identify risk/return characteristics that are suitable for their specific needs. In terms of risk variance, each tranche is characterized by a different priority of payment in a waterfall structure. As principal payments flow through to investors, it first is

paid to those invested in the most senior tranches until they are fully retired, in which case principal flows to the tranche that is next in line. This structure acts to shield investors in higher-quality, “first to be paid” tranches from losses, as defaults are first allocated to lower-quality tranches. No tranche should incur a loss until lower-quality tranches are wiped out.

Defaults on individual loans within the trust can take different forms. For example, a term default occurs when the borrower is unable to pay interest obligations, therefore defaulting before maturity. A *maturity default* (i.e., a balloon risk) occurs when the borrower is unable to refinance (refinancing risk) and roll the balloon into a new loan contract come the time of the balloon payment. In the case of a *maturity default*, lenders may be unwilling to allow for refinancing at the balloon period if debt coverage, net operating income, debt-to-yield ratios, or loan-to-value ratios have deteriorated or underwriting standards have tightened. If borrowers are unable to refinance, it’s likely that they are unable to make the lump-sum payment necessary to pay down the balloon, leading to a maturity default.

As mentioned, CMBS are issued from various tranches of a trust. These tranches can carry varying levels of *subordination* or *credit enhancement* designed to protect investors from the abovementioned defaults. For example, a tranche with 30% subordination would be protected from total losses across all pool constituents of up to 30% of the original mortgage balance, assuming no property value is recovered. Alternatively, losses wouldn’t be incurred until defaults reached 60%, assuming a 50% recovery value. Each case represents a fairly improbable scenario when considering the annual default rate peaked at 4.07% in 2010 and cumulative defaults peaked at 13.52% in 2013, according to the *National Real Estate Investor*. In fact, very

TABLE 1. EXAMPLE OF CMBS STRUCTURE

↑ Losses and Shortfalls	Bond Class (Original Ratings ¹)	Legacy CMBS ² Typical Original Subordination (%)	CMBS 2.0 ³ Typical Original Subordination (%)	↓ Payments and Recoveries
	Super Senior AAA	30	30	
	Mezzanine AAA (AM/AS)	20	20-25	
	Junior AAA (AJ)	12-14	N/A	
	AA	9-12	14-18	
	A	6-9	10-14	
	BBB	4-6	6-8	
	BB	2-4	4-5	
	B	1-2	2-3	
	Unrated CMBS	0	0	

Source: Principal Global Investors.

¹Current ratings may be significantly lower. ²Legacy CMBS defined as bonds issues prior to 2009. ³CMBS 2.0 defined as bonds issued post 2009 through 2014. The mechanics and structure of assets in any portfolio may differ materially from those outlined above. Over time, as loans in the pool default, the subordination levels may change (defaults pick up, subordination levels fall). Therefore, the table above uses hypothetical subordination levels as they would be at the time of deal structuring.

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few, if any, super senior CMBS bonds suffered any credit losses throughout the financial crisis of 2008–09.

A typical tranching structure may have a ‘AAA’ super senior tranche carrying the highest levels of subordination. There can be lower-tier tranches that also receive a ‘AAA’ rating, including the ‘AM’ (mezzanine) and ‘AJ’(junior) tranches. Although these tranches may have been rated ‘AAA,’ they carry lower levels of subordination. As with corporate bonds, ratings then would follow the traditional scale of ‘AA,’ ‘A,’ ‘BBB,’ etc. (See Table 1.) Note that with varying degrees of loss protection come varying degrees of risk and, therefore, varying levels of yield.

TIME TRANCHING

CMBS issued from the abovementioned tranches not only vary in credit risk but also can vary in maturity. Typically, the senior ‘AAA’ rated tranches are broken up further into additional bond classes, which vary in expected life. For example, a ‘AAA’ rated bond may be issued as an ‘A1,’ ‘A2,’ ‘A3,’ or ‘A4’ rated bond, with, respectively, a three-, five-, seven-, and 10-year maturity. Yields on these classes would be dependent upon both subordination levels as well as their maturity profile.

When discussing time tranching in the context of residential mortgage-backed securities (RMBS), both prepayment risk and extension risk are often considered. *Prepayment risk*, as it relates to RMBS, is the risk that loan prepayment would increase as rates fall and homeowners refinance, resulting in a quicker payback of loan principal than initially anticipated. Ultimately, this causes durations to fall at a time when investors would favor a higher duration. This forces investors to reinvest cash flows in a lower rate environment. Since most residential loans can be prepaid at any time, RMBS investors are

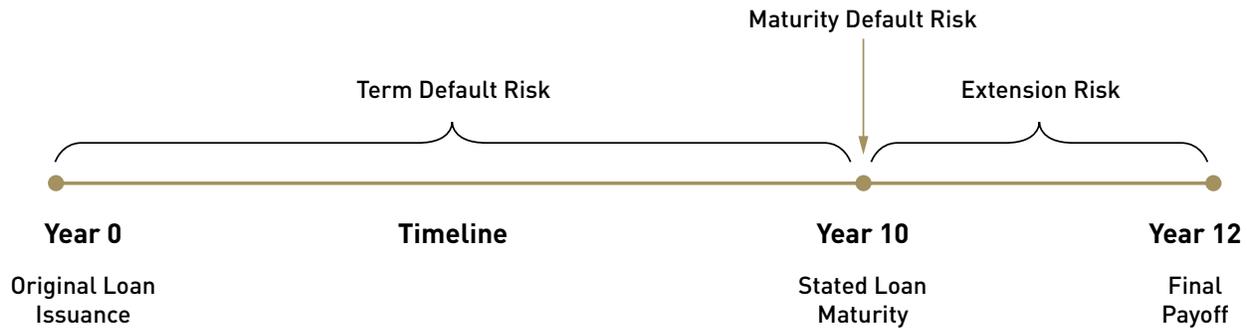
subject to the *reinvestment risk* as well as the *negative convexity* associated with prepayment risk. (Convexity is a measure of the curvature in the relationship between bond prices and bond yields that demonstrates how the duration of a bond changes as interest rates change.)

It’s important to note, however, that commercial loans *cannot* be prepaid at any time, and, thus, CMBS are characterized by a much higher level of call protection relative to RMBS. Many securitized commercial mortgages have *prepayment lockout periods*. They also may be subject to *make-whole provisions*, which obligate the borrower to make the lender whole on the foregone cash flow that would result from a prepayment. This can be done through *defeasance* (which is a substitution of collateral for a loan that has been securitized). In other words, in order to refinance, foregone mortgage cash flows must be replaced by cash flows from Treasury securities. Make-whole provisions also can take the form of *prepayment penalties* or *yield maintenance agreements* designed to recoup the loss of future cash flows.

As it relates to RMBS, *extension risk* refers to a scenario in which higher interest rates lead to decreased prepayments and, thus, slow down the receipt of principal payments relative to the speed initially anticipated. This results in longer durations at a time when rates are rising; decreases the cash available to the investor to reinvest into the higher rate environment; and is a less than ideal scenario. Just as prepayment risk, in the context discussed above, is much more removed from CMBS discussions, extension risk also is removed.

There are, however, unique situations when prepayment and extension can be associated with CMBS. For example, if distressed properties are sold sooner than expected, proceeds from the liquidation would go to

CHART 3. COMMERCIAL REAL ESTATE LOAN-DEFAULT AND EXTENSION RISK



Source: Blackrock Solutions.

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the investors in those higher-quality/“first to be paid” tranches sooner than anticipated, potentially subjecting the investor to reinvestment risk. Extension risk associated with CMBS can develop from the *maturity risk* (e.g., balloon risk, refinancing risk) discussed in the previous section. In the event that a loan cannot be refinanced and a balloon payment cannot be made, the servicer/lender may grant an extension of the date of the balloon payment. In some cases, the level of yield may drop, resulting in cash flow shortfalls to the trust.

RMBS VERSUS CMBS

As discussed above, prepayment risk and extension risk are two ways that RMBS and CMBS differ. Next, we will examine some additional distinctions that support the need for professional investment expertise in these markets.

RMBS are securitized by homogenous collateral in terms of property type; in other words, the collateral is entirely made up of single-family residences. In contrast, CMBS are securitized by a pool of loans that are not only diversified by geography but also by property type. Property types include multifamily homes, apartment buildings, hotels, offices, retail stores, industrial properties, and warehouse facilities. This variety among property types calls for a wider breadth of market knowledge.

In addition, RMBS may be backed by the cash flows from thousands of homes, while commercial loan pools may contain anywhere from 10 to 300, with the largest loans comprising a significant portion of the pool. The lower number of loans can be rationalized by the larger deal sizes. The loans should be met with rigorous research at the property level. In addition, there tends to be consistency in loan documentation across residential loans, while commercial loans require more customization. These documents should be scrutinized by investment professionals purchasing the CMBS issued from these pools.

DEAL STRUCTURE TERMINOLOGY

CMBS deals can take many forms, so it might be worthwhile to become familiar with some of the terminology used.

A *single asset* deal is just what it sounds like: the trust contains a single loan. *Single borrower* deals also exist, in which loans are made to a single borrower; however, the trust contains multiple loans. This segment of the market is referred to as the *single asset/single borrower* (SASB) segment, and generally is characterized by investment-grade loans greater than \$100 million and typically larger than \$200 million in size.

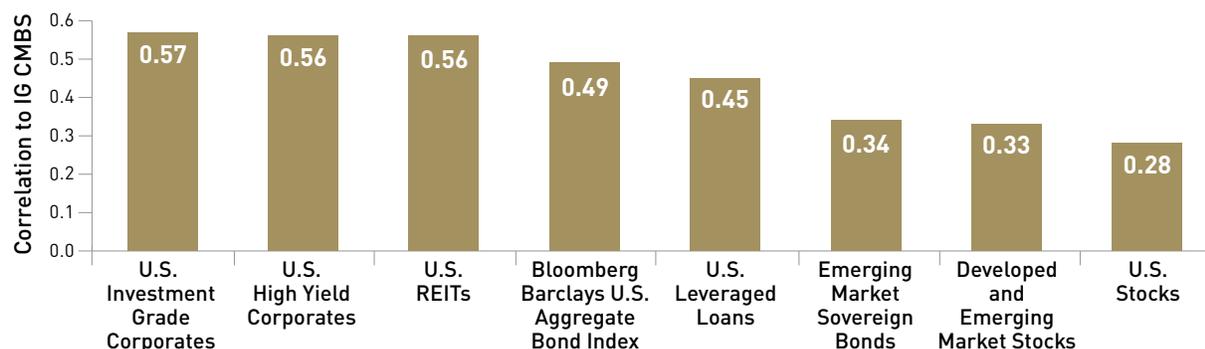
A *conduit* deal is one in which a trust contains a large number of small and mid-sized loans (\$1 million–100 million), typically with below investment-grade credit ratings. In recent years, *fusion* deals started to make up the bulk of issuance. These are deals that combine the larger loans represented in the SASB deals with the smaller loans that comprise the conduit deals. In most cases, the 10–15 largest loans make up roughly half of the total loan balance. The net result is a trade-off between the diversification obtained from the conduit deals and the superior credit quality associated with the larger SASB deals.

DIVERSIFICATION BENEFITS

Now that we have a better understanding of what exactly these instruments are, the next step would be to explore why they should be considered in portfolio allocations. One of the most important concepts in asset allocation is the concept of reducing risk via diversification. By allocating capital across asset classes with low or negative correlation, we can potentially reduce overall portfolio volatility, increase portfolio returns, or both. As Chart 4 indicates, many traditional asset classes have demonstrated relatively low correlation to investment-grade CMBS supporting the decision to include CMBS. Therefore, allocating to CMBS may reduce portfolio standard deviation, increase return, and/or generate additional cash flow.

CHART 4. CMBS OFFER RELATIVELY LOW CORRELATION TO OTHER ASSET CLASSES

Correlation data from January 1, 1997–December 31, 2016



Source: Morningstar. Investment-grade corporates as represented by the Bloomberg Barclays U.S. Corporate Bond Index. High-yield as represented by the BofA/Merrill Lynch U.S. High Yield Master II Constrained Index. Leveraged loans as represented by the Credit Suisse Leveraged Loan Index. Stocks as represented by the S&P 500® Index. REITs as represented by the MSCI U.S. REIT Index. Developed and emerging market stocks as represented by the MSCI ACWI (All Country World Index) ex-U.S. Index. Emerging market sovereign bonds as represented by the JPM Government Bond Index-Emerging Markets (GBI-EM) Global Diversified. Stocks are subject to greater risk and market volatility, while bonds are subject to greater risk of default and interest rate volatility.

Past performance is no guarantee of future results. For illustrative purposes only and does not represent any specific portfolio managed by Lord Abbett or any particular investment. Indexes are unmanaged, do not reflect the deduction of fees and expenses, and are not available for direct investment.

RELATIVE VALUE

In our view, CMBS historically have offered attractive value, rating for rating, relative to corporate bonds. (See Table 2.) For example, as of December 31, 2016, ‘AA’ rated corporates offered a spread over Treasuries of 76 basis points (bps), while comparably rated CMBS offered a spread of 134 bps. To what do we attribute this additional compensation? We believe the differential is primarily driven by the limited number of dedicated CMBS buyers and strategies relative to the larger, longer-dated corporate bond market. Second, while individuals may be able to buy corporate bonds on their own or through a financial advisor, certain CMBS deals typically are available only to qualified institutional buyers (QIB). In addition, successful investing in the CMBS marketplace requires expertise in commercial real estate and structured products as well as the ability to determine the viability of the businesses paying the rent. Such a degree of expertise and due diligence would, naturally, exclude a large amount of potential buyers. The end result is that compensation may be greater than is warranted by the risks.

ATTRACTIVE RISK-ADJUSTED RETURNS

In addition to attractive relative value, Table 3 demonstrates that CMBS have delivered attractive, risk-adjusted returns relative to many other asset classes, as measured by their Sharpe ratio over the past five years.

TABLE 2. U.S. CMBS AND U.S. CORPORATE BOND SPREADS*

In basis points (as of December 31, 2016)

	CMBS	Corporates
AAA	66	70
AA	134	76
A	205	100
BBB	411	154

Source: Bloomberg Barclays. *Spreads over U.S. Treasuries. CMBS represented by Bloomberg Barclays Investment Grade CMBS Index. Corporates represented by Bloomberg Barclays U.S. Corporate Investment Grade Index.

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TABLE 3. CMBS OFFER ATTRACTIVE RISK-ADJUSTED RETURNS

As of December 31, 2016

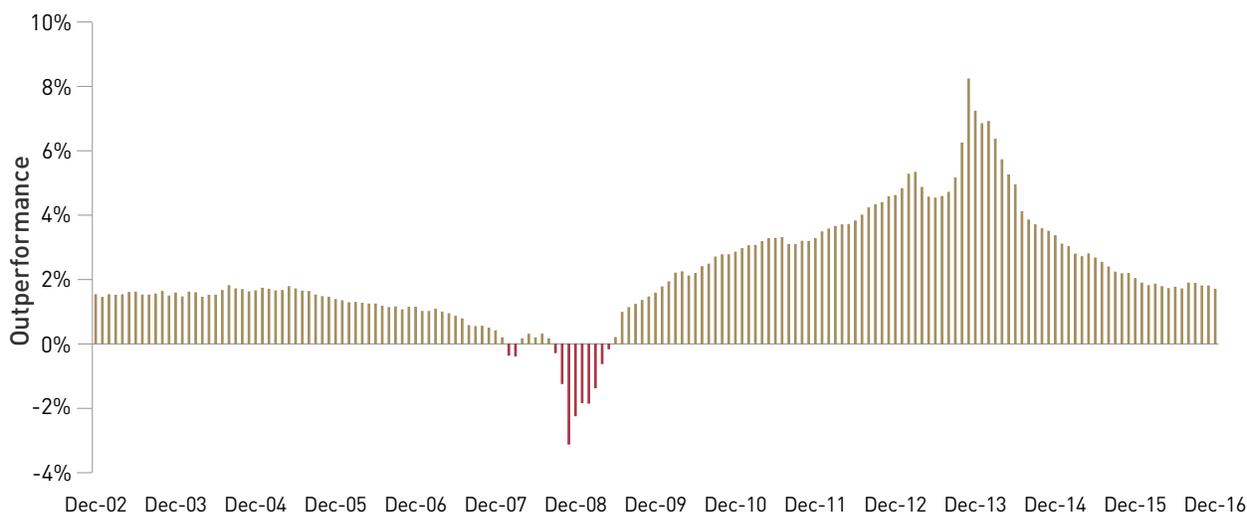
Index	5-Year Sharpe Ratio
Bloomberg Barclays Investment Grade CMBS Index	1.28
Bloomberg Barclays Aggregate Bond Index	0.73
Bloomberg Barclays U.S. Credit Index	0.90
BofA ML U.S. High Yield Master II Constrained Index	1.31
JPM EMBI Global Diversified Index	0.87
MSCI U.S. REIT Index	0.61

Source: Morningstar.

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CHART 5. SHORT-MATURITY CMBS VERSUS SHORT-MATURITY TREASURIES

Rolling Five-Year Excess Return*



Source: Bloomberg Barclays. Short-maturity CMBS as represented by the Bloomberg Barclays 1-3.5 Year CMBS Index. Treasuries as represented by the Bloomberg Barclays 1-3 Year Government Bond Index.

*Rolling Five-year Returns as of 12/31/2016.

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SHORT-TERM CMBS

Although investment-grade CMBS in general have offered a favorable relative value and return profile, short-term CMBS, in particular, can enhance a portfolio's risk-adjusted return. Short-maturity investment-grade CMBS, for example, have outperformed short-maturity government bonds in 94% of rolling five-year periods. (See Chart 5.) In addition, short-term CMBS (as measured by the Bloomberg Barclays 1-3.5 Year CMBS Index) have delivered a Sharpe ratio of 1.87 over the five-year period ended December 31, 2016, much higher than the 0.74 posted by short-term U.S. government bonds (as measured by the Bloomberg Barclays 1-3 Year Government Bond Index) over the same period.

In terms of relative value, on a rating-for-rating basis, short-maturity investment-grade CMBS offer greater excess yield over Treasury bonds. For example as Table 4 demonstrates, as of December 31, 2016, short-term 'AA' rated CMBS offered an additional 85 bps of excess yield relative to 'AA' rated corporate bonds.

CONCLUSION

CMBS, in our view, is an asset class that can play a valuable role in a fixed-income portfolio. First and foremost, CMBS provide investors with income and diversification benefits. In addition, credit and time-tranching allow investors to obtain exposure to the credit risk and maturity profile that fits their needs. What is more, CMBS historically have outperformed government bonds and have delivered attractive risk-adjusted returns relative to many other asset classes. Finally, the asset class, we believe, offers attractive relative value.

TABLE 4. SHORT-TERM U.S. CMBS AND U.S. CORPORATE BOND SPREADS

In basis points (as of December 31, 2016)

	Short CMBS	Short Corporates
AAA	57	29
AA	144	59
A	177	73
BBB	182	106

Source: Bloomberg Barclays. Short-term CMBS as represented by the Bloomberg Barclays 1-3.5 Year CMBS Index. Short corporates as represented by Bloomberg Barclays U.S. Corporate 1-3 Year Index.

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As discussed, successful investing in the CMBS marketplace requires expertise in commercial real estate as well as structured products. Furthermore, it demands the ability to determine the viability of the businesses paying the rent. Lord Abbett has been actively investing in CMBS for more than 15 years and has proven expertise in this segment of the bond market. With more than \$10 billion in CMBS assets under management (as of December 31, 2016), we continue to employ rigorous, bottom-up, fundamental credit research to exploit market inefficiencies and manage downside risk in this large and evolving market.

IMPORTANT INFORMATION

A Note about Risk: The value of investments in fixed-income securities will change as interest rates fluctuate and in response to market movements. Generally, when interest rates rise, the prices of debt securities fall, and when interest rates fall, prices generally rise. Bonds may also be subject to other types of risk, such as call, credit, liquidity, interest-rate, and general market risks. High-yield securities, sometimes called junk bonds, carry increased risks of price volatility, illiquidity, and the possibility of default in the timely payment of interest and principal. Moreover, the specific collateral used to secure a loan may decline in value or become illiquid, which would adversely affect the loan's value. Longer-term debt securities are usually more sensitive to interest-rate changes; the longer the maturity of a security, the greater the effect a change in interest rates is likely to have on its price. Lower-rated bonds may be subject to greater risk than higher-rated bonds. The value of investments in equity securities will fluctuate in response to general economic conditions and to changes in the prospects of particular companies and/or sectors in the economy. No investing strategy can overcome all market volatility or guarantee future results.

Statements concerning financial market trends are based on current market conditions, which will fluctuate. There is no guarantee that markets will perform in a similar manner under similar conditions in the future.

This article may contain assumptions that are "forward-looking statements," which are based on certain assumptions of future events. Actual events are difficult to predict and may differ from those assumed. There can be no assurance that forward-looking statements will materialize or that actual returns or results will not be materially different from those described here. Any examples provided are for informational purposes only and are not intended to be reflective of actual results. The information provided here is for general informational purposes only and should not be considered an individualized recommendation or personalized investment advice.

Treasuries are debt securities issued by the U.S. government and secured by its full faith and credit. Income from Treasury securities is exempt from state and local taxes. Although U.S. government securities are guaranteed as to payments of interest and principal, their market prices are not guaranteed and will fluctuate in response to market movements.

A **basis point** is one one-hundredth of a percentage point.

Duration is the change in the value of a fixed-income security that will result from a 1% change in market interest rates. Generally, the larger a portfolio's duration, the greater the interest-rate risk or reward for underlying bond prices.

Standard deviation is a measure of a measure of volatility. It indicates the variability of an investment's returns.

A **bond yield** is the amount of return an investor will realize on a bond. Though several types of bond yields can be calculated, nominal yield is the most common. This is calculated by dividing the amount of interest paid by the face value.

The **credit quality** of the securities in a portfolio is assigned by a nationally recognized statistical rating organization (NRSRO) such as Standard & Poor's, Moody's, or Fitch, as an indication of an issuer's creditworthiness. Ratings range from 'AAA' (highest) to 'D' (lowest). Bonds rated 'BBB' or above are considered investment grade. Credit ratings 'BB' and below are lower-rated securities. High yielding, non-investment-grade bonds involve higher risks than investment-grade bonds. Adverse conditions may affect the issuer's ability to pay interest and principal on these securities.

The **S&P 500® Index** is widely regarded as the standard for measuring large cap U.S. stock market performance and includes a representative sample of leading companies in leading industries.

The **Bloomberg Barclays U.S. Aggregate Bond 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. Total return comprises price appreciation/depreciation and income as a percentage of the original investment.

The **Bloomberg Barclays U.S. Credit Bond Index** is the U.S. Credit component of the U.S. Government/Credit index. The index includes publicly issued U.S. corporate and specified foreign debentures and secured notes that meet the specified maturity, liquidity, and quality requirements. To qualify, bonds must be SEC-registered. The index includes both corporate and non-corporate sectors. The corporate sectors are Industrial, Utility, and Finance, which include both U.S. and non-U.S. corporations. The non-corporate sectors are Sovereign, Supranational, Foreign Agency, and Foreign Local Government. All returns are market value-weighted inclusive of accrued interest.

The **Bloomberg Barclays U.S. CMBS Investment Grade Index** measures the market of conduit and fusion CMBS deals with a minimum current deal size of \$300m. The index is divided into two subcomponents: the U.S. Aggregate-eligible component, which contains bonds that are ERISA eligible under the underwriter's exemption, and the non-U.S. Aggregate-eligible component, which consists of bonds that are not ERISA eligible. The U.S. CMBS Investment Grade Index was launched on January 1, 1997. The Bloomberg Barclays U.S. CMBS 1-3.5 Year Index is a subset of the broader index.

The **Bloomberg Barclays U.S. Corporate Bond Index** measures the total return of the investment-grade, fixed-rate, taxable corporate-bond market. It includes U.S. dollar-denominated securities publicly issued by U.S. and non-U.S. industrial, utility, and financial issuers. The Bloomberg Barclays U.S. Corporate 1-3.5 Year Index is a subset of the broader index, focusing on investment grade corporate bonds with a one- to three-year maturity.

The **Credit Suisse Leveraged Loan Index** is designed to mirror the investable universe of the U.S. dollar-denominated leveraged loan market.

The **JP Morgan Government Bond Index-Emerging Markets (GBI-EM) Global Diversified** is a comprehensive global emerging markets index that consists of regularly traded, liquid fixed-rate and domestic currency government bonds.

The **MSCI U.S. REIT Index** is a free float-adjusted market capitalization index that is comprised of equity REITs. The index is based on MSCI USA Investable Market Index (IMI) its parent index which captures large, mid and small caps securities. With 154 constituents, it represents about 99% of the U.S. REIT universe and securities are classified in the Equity REITs Industry (under the Real Estate sector) according to the Global Industry Classification Standard (GICS®). It however excludes Mortgage REIT and selected Specialized REITs.

The **BofA Merrill Lynch U.S. High Yield Master II Constrained Index** tracks the performance of U.S. dollar denominated below investment grade rated corporate debt publicly issued in the US domestic market. To qualify for inclusion in the index, securities must have a below investment grade rating (based on an average of Moody's, S&P, and Fitch) and an investment grade rated country of risk (based on an average of Moody's, S&P, and Fitch foreign currency long term sovereign debt ratings). Each security must have greater than 1 year of remaining maturity, a fixed coupon schedule, and a minimum amount outstanding of \$100 million. Original issue zero coupon bonds, "global" securities (debt issued simultaneously in the eurobond and US domestic bond markets), 144a securities and pay-in-kind securities, including toggle notes, qualify for inclusion in the Index. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. DRD-eligible and defaulted securities are excluded from the Index.

The **MSCI ACWI (All Country World Index) ex-U.S. Index** is a subset of the MSCI ACWI Index. The MSCI ACWI (All Country World Index) Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. The MSCI ACWI Ex-U.S. Index with Gross Dividends approximates the maximum possible dividend reinvestment. The amount reinvested is the entire dividend distributed to individuals resident in the country of the company, but does not include tax credits. The MSCI ACWI Ex-U.S. Index with Net Dividends approximates the minimum possible dividend reinvestment. The dividend is reinvested after deduction of withholding tax, applying the rate to non-resident individuals who do not benefit from double taxation treaties. MSCI uses withholding tax rates applicable to Luxembourg holding companies, as Luxembourg applies the highest rates.

Indexes are unmanaged, do not reflect the deduction of fees or expenses, and are not available for direct investment.

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