

December 2021

invesco.com



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The appeal of maintaining an allocation to real estate in a portfolio is well-documented. With its generally low correlation to other asset classes, strong relative performance, characteristically stable income, and role as an inflation hedge, real estate offers a compelling case for investment throughout market cycles and particularly in an inflationary environment.

While historically equity was the most common way investors sought to access the real estate asset class, debt has grown to play an equally important role. Real estate debt provides a differentiated exposure to many of the positive attributes also available to real estate equity investors via a more risk-averse position in the capital stack. The private real estate debt market is large and established with a long track record of performance, and the emergence of high-quality debt funds has provided a broad cross section of investors with greater opportunity to access the sector.

Additionally, while some investors see real estate debt as a way to gain exposure to real estate in a downside mitigated strategy with low correlation to real estate equity returns, others view real estate debt as a higher-yielding fixed income investment that has a complementary and accretive return profile relative to their broader fixed income portfolios. This trend has been accentuated in the recent “lower for longer” interest rate environment.

Figure 1: The role of real estate debt in investor portfolios

Real estate debt can offer attractive returns while minimizing risk

Benefits to investors

Predictable income	<ul style="list-style-type: none"> • Debt positions focus on securing a fixed rate of return through repayment terms, fees and interest. • Predictable frequency of periodic cash flows. • Yield premium relative to fixed income alternatives
Security in the capital stack	<ul style="list-style-type: none"> • For loans underwritten with conservative loan-to-value ratios, the debt position is relatively more insulated against capital value movements on the underlying property. • Different positions in the capital stack have greater repayment and/or recourse priority.
Diversification	<ul style="list-style-type: none"> • Allocating capital across a large pool of loans mitigates single-asset risk exposure. • Debt positions have low-to-moderate correlations with other asset classes and with direct/equity real estate returns. • Accretive return profile relative to broader fixed income assets.
Inflation hedge	<ul style="list-style-type: none"> • Real estate has historically proven a good inflation hedge. • Floating rate debt adjusts in a rising rate environment, maintaining attractive relative income returns.

Source: Invesco Real Estate as of November 2021

In this paper, consider the size of the US real estate debt opportunity, the evolution of the role of alternative lenders (most notably debt funds) in the market, the performance of real estate debt during the COVID disruption, and how adding real estate debt to investors' existing portfolios could be beneficial in the period ahead.

Real estate debt yields vs. traditional fixed income

One of the first questions insurance CIOs ask themselves when considering a portfolio reallocation is “what is the relative pickup from making this change?” In today’s low interest rate environment, insurers find it as challenging as ever to find opportunities to enhance portfolio yield. Real estate debt represents one compelling opportunity to do just that. Considering U.S. investment grade corporate bond spreads vs. swaps are currently about 110 basis points, taxable muni spreads are about 90 basis points, and higher-risk fixed income such as high yield corporates and emerging market external debt both have spreads of roughly 300 bps -- private real estate debt offers meaningfully higher spreads of 500 - 600 bps. For European insurers seeking local market private real estate debt exposure, spreads of 150 bps are also attractive relative to traditional fixed income where local spreads are similar to those in the U.S. Even a small allocation to this asset class can materially improve an insurer’s portfolio yield, and as we will discuss, this does not mean taking on meaningfully higher risk.

Regulatory Capital implications

Having established that real estate debt may add meaningful yield enhancement, the natural follow-up question is “what will this do to my portfolio’s risk profile?” Here we focus on risk-based capital (RBC) to represent an insurer’s risk constraint. Here again it is instructive to compare RBC requirements of real estate debt to traditional fixed income. A life insurer in the U.S. needs to set aside 1.3% (pre-tax) in RBC for NAIC 2 (BBB-rated) bonds and 4.6% for NAIC 3 (BB-rated) bonds. Contrast this with real estate debt RBC charges of 1.75% and 3.0% for Commercial Mortgage 2 and 3 exposures, respectively. Life insurers can maintain or even reduce their RBC requirements by allocating to real estate debt while increasing expected returns as discussed in the prior section. Importantly, this RBC treatment may be achieved even for investments in commingled funds provided the fund’s loan holdings adhere to loan-to-value and debt service coverage ratios corresponding to those RBC designations.

For European insurers we focus on the Solvency Capital Requirement (SCR) to represent a common risk constraint. Here again it is instructive to compare capital requirements of real estate debt to traditional fixed income. A life insurer in EMEA could use the unrated debt category to classify RE Debt, in which case capital intensity for credit risk would be slightly higher than for BBB Corporate bonds -- though the RE Debt income level is significantly higher. The users of Solvency II Internal Models and Internal Ratings could also achieve better capital treatment via the integration of the collateral as a risk mitigation technique.

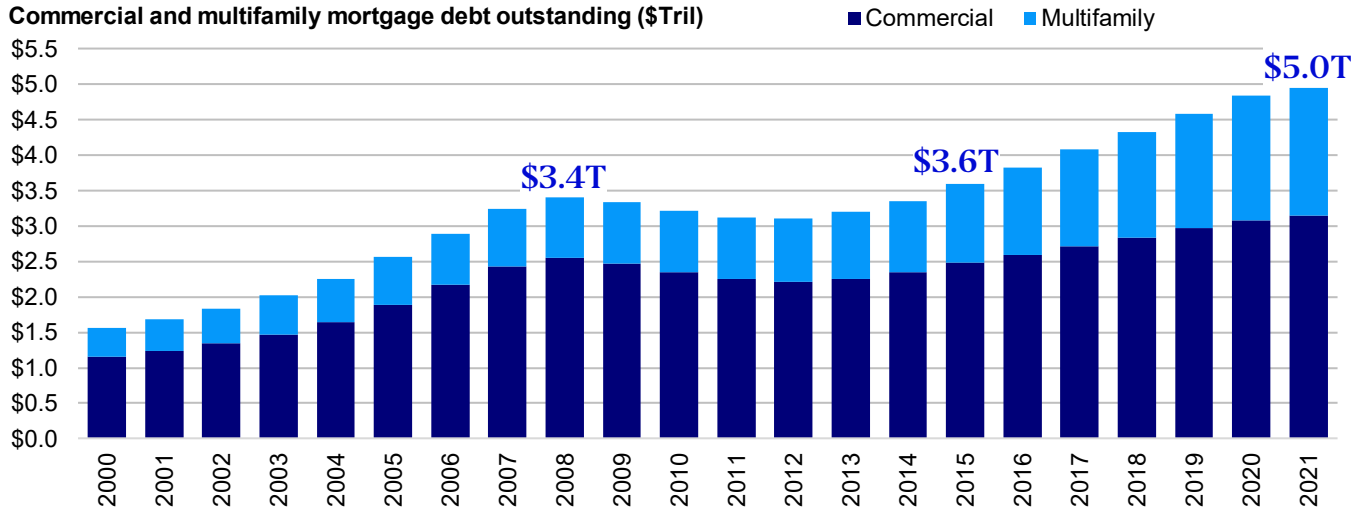
Hence, Life insurers in Europe also can maintain or even reduce their capital requirements by allocating to real estate debt while increasing expected returns as discussed in the prior section.

What is the size of the private real estate debt market?

According to the Federal Reserve Board of Governors, the size of the nonfarm, non-single family residence mortgage market stood at US\$5.0 trillion as of Q2 2021 and has grown by 34% over the past five years (Figure 2). For comparison, the size of the US corporate bond market is approximately \$10 trillion and the estimated value of directly held institutional real estate in the country is roughly US\$3.7 trillion.¹

Figure 2: US commercial and multifamily mortgage debt

Mortgage debt outstanding has grown by 35% over the past five years



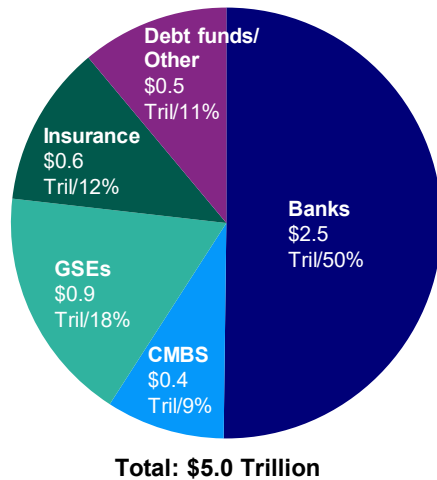
Mortgage debt outstanding data as fourth quarter expect 2021 data which is as of second quarter. Source: Invesco Real Estate based on data from Federal Reserve Board as of November 2021

Banks have long been the largest holders of real estate debt, consistently holding about 50% of all mortgage debt outstanding (Figure 3). Other significant holders of mortgage debt include insurance companies, the public securitized market (commercial mortgage-backed securities), and government sponsored enterprises (multifamily loans originated by Fannie Mae and Freddie Mac). Mortgage debt holders that have a smaller share of the market include pension funds and finance companies, with debt funds steadily increasing market share.

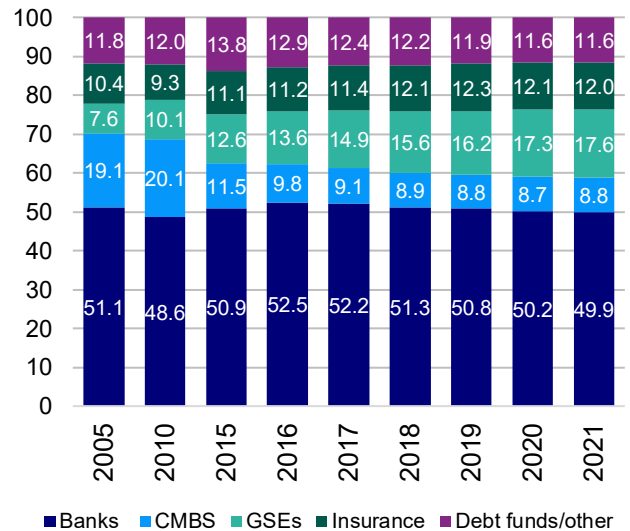
Figure 3: US commercial and multifamily mortgage debt holders

Banks have long been the largest holders of real estate debt

Commercial and multifamily mortgage debt outstanding by lender type: Q2 2021 (%)



Share of mortgage debt outstanding by lender type (%)



Mortgage debt outstanding data as fourth quarter expect 2021 data which is as of second quarter. Source: Invesco Real Estate based on data from Federal Reserve Board as of November 2021. GSEs are government-sponsored enterprises.

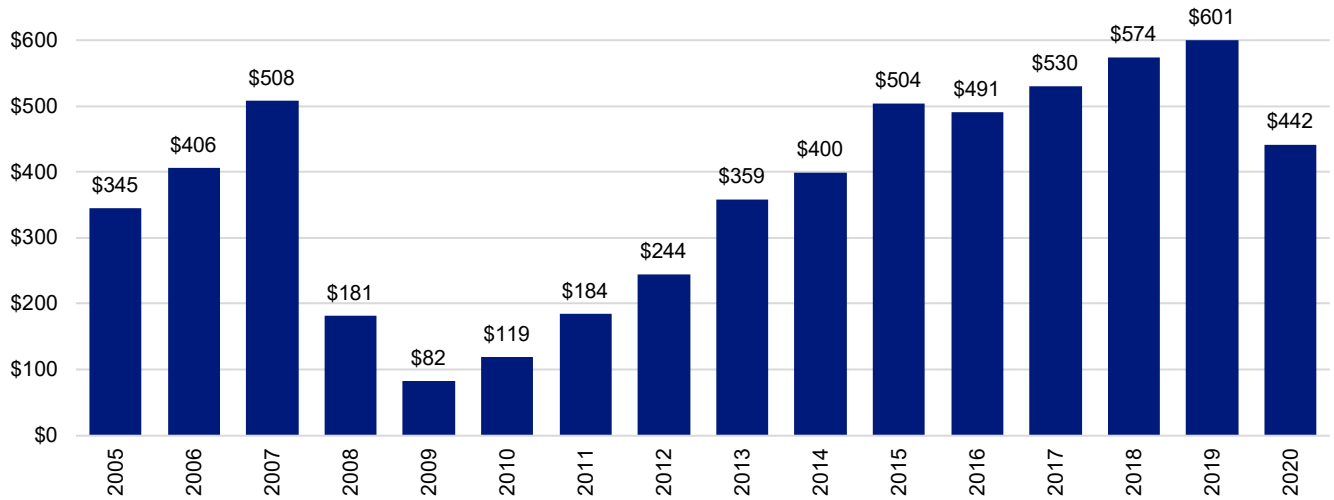
¹The size of the US corporate bond market is based on 2Q-2021 data from sifma/Federal Reserve. The estimated size of the directly held real estate market in the US is based on data from MSCI's "Real Estate Market Size: 2020/21" and corresponds to estimates as of year-end 2020.

As shown in Figure 4, commercial and multifamily annual origination volume has grown consistently over the past decade, surpassing \$600 billion in 2019, before moderating to \$442 billion in 2020 as the impact of the COVID pandemic slowed activity. Given the rapid recovery in real estate transaction volume in 2021, the COVID-driven moderation in mortgage originations is expected to be short lived. In the five years prior to COVID, annual origination volume grew at an average pace of 9% per year, underling the expanding scale of opportunity provided by the US real estate debt market.

Figure 4: Commercial and multifamily mortgage originations by year

Annual origination volume exceeded \$600 billion in 2019, a new record

Total annual originations (as a lender), 2010-2020 (\$Bil)



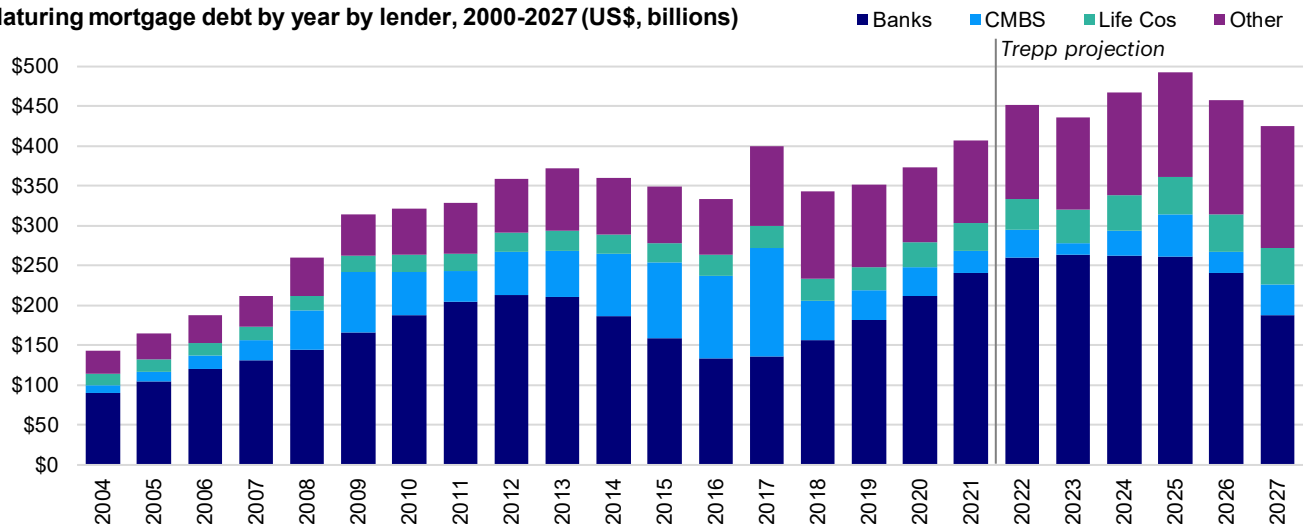
Source: Invesco Real Estate based on data from Mortgage Bankers Association as November 2021

With more than US\$2.3 trillion in existing commercial and multifamily real estate loans maturing over the next five years (Figure 5), the US real estate debt market appears poised to continue to gain greater momentum in the period ahead, indicating a growing market opportunity for commercial real estate lenders in the US.

Figure 5: Commercial & multifamily mortgage maturities by year

Maturities in 2022-26 suggest refinancing needs will be plentiful

Maturing mortgage debt by year by lender, 2000-2027 (US\$, billions)



Source: Invesco Real Estate based on data from Trepp as November 2021

How has the private real estate debt market evolved?

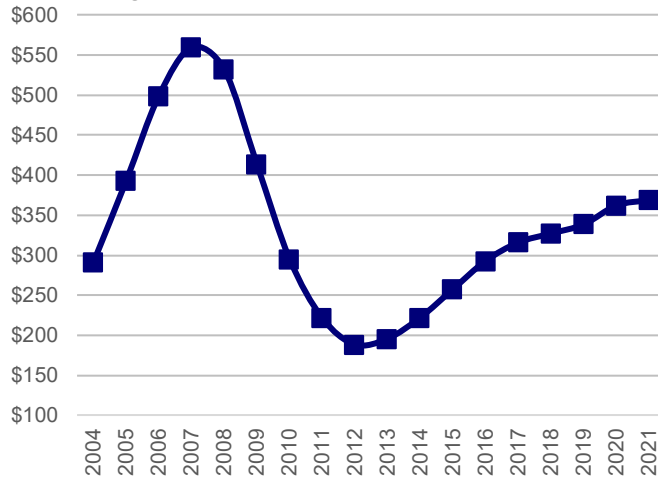
In the run-up to the Global Financial Crisis, pre-2007, leverage levels rose and underwriting standards weakened as banks and other lending institutions increased the number of high-risk construction loans and loans originated for commercial mortgage backed securities (CMBS) issuance in their commercial real estate portfolios. At the same time, these lenders focused on riskier adjustable and subprime mortgages in their residential portfolios. The combination of lax underwriting, high leverage ratios, rising interest rates and a slowing economy resulted in a significant spike in delinquencies and foreclosures as borrowers found property values falling below the debt owed on the property.

The severity of the recession, and banks' contribution to it, prompted sweeping reforms of the financial services industry via the Dodd-Frank Wall Street Reform and Consumer Protection Act (more commonly known as Dodd-Frank). One provision arising from Dodd-Frank was the Volcker Rule, which, among other things, constrained banks' abilities to use securitization as a part of real estate finance. Other rules required banks to increase reserves held against riskier real estate loans, such as construction financing. New loan originations initially fell, particularly for construction lending and CMBS securitization, creating a sizable financing gap that other sources of capital have sought to fill (Figure 6).

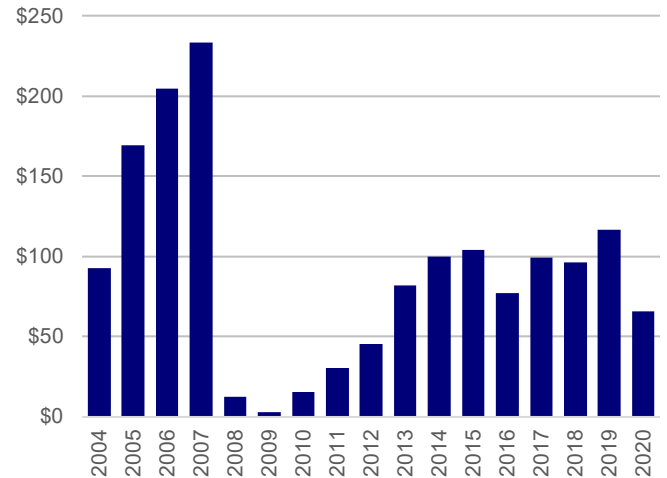
Figure 6: Construction financing and CMBS issuance

Increased post-GFC regulation resulted in a pullback in funding

Bank construction and land development loans outstanding (\$Bil)



Commercial mortgage back securities issuance (\$Bil)



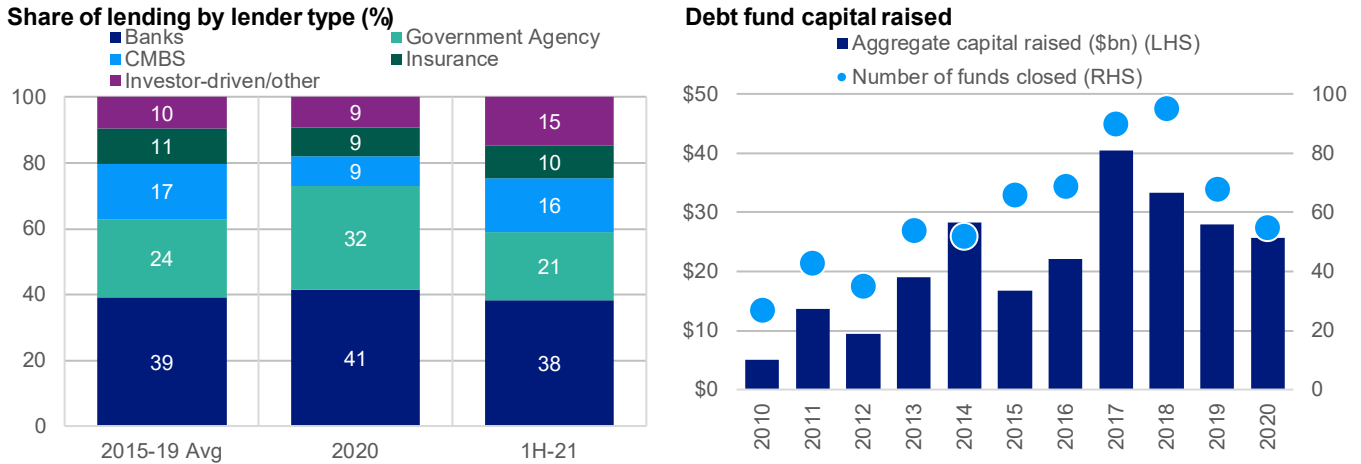
Data as of fourth quarter except for 2021 which is as of second quarter.

Source: Invesco Real Estate using data from Moody's Analytics and Credit Suisse as of November 2021

Alternative lenders, debt funds and insurance accounts have gained market share as a result of these managers' ability to be more nimble than conventional lenders. Without wholesale reductions in credit standards, these lenders have captured share from established insurance companies, banks, GSEs and CMBS lenders by offering quicker response times, bespoke structures and a client-oriented approach.

Against this backdrop, private real estate debt funds have gained prominence. Whereas leading up to the GFC private debt funds were raising less than US\$10 billion on average annually, debt funds have raised approximately US\$150 billion in the last five years and have accounted for about a 10% share of total lending volume over the same period (Figure 7). Most recently, debt funds have represented 15% of the market in 1H-2021, largely gaining share from the GSEs.

Figure 7: Debt fund growth and market share
Debt funds have raised \$150 billion in the past five years



Market share data from RCA, based on reports of transactions of properties and portfolios \$2.5 million and greater
Source: Invesco Real Estate based on data from Prequin and Real Capital Analytics as of November 2021

What are the benefits of real estate debt to investors?

So, why is it that institutional investors have increased their allocations to private real estate debt strategies in recent years? Outside of the evident size of the market opportunity discussed above, we detail four key factors below: capital preservation potential, historically stable and predictable income returns, inflation hedging qualities, and diversification benefits.

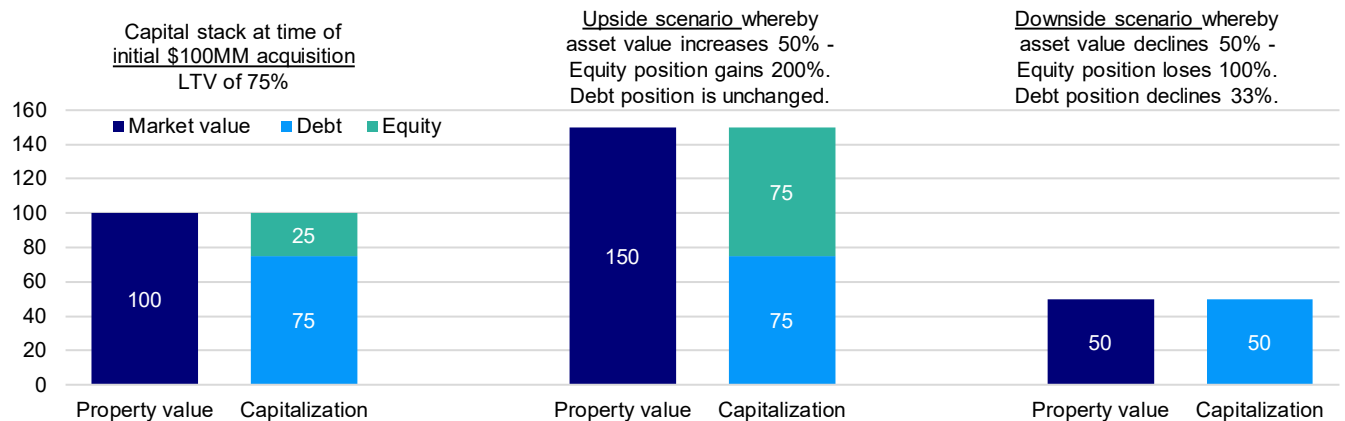
1. Capital preservation potential

Investor appetite for real estate debt stems from a desire to mitigate risk while still achieving a steady return. Debt’s position in the capital stack can offer greater downside mitigation than equity, which can potentially improve portfolio risk-adjusted returns. A hypothetical deal is used to illustrate how this works in practice.

The example in Figure 8 demonstrates the relative insulation of the debt position when compared to an equity position on a hypothetical US\$100 million investment leveraged to 75% loan-to-value (LTV). Were the asset to appreciate 50%, the equity position would achieve a gain of 200%, while the debt position remains unchanged. This is because the equity is in the “first-dollar” position and is impacted first, while the loan is considered to be in the “last-dollar” position.

Figure 8: First-dollar versus last-dollar risk
Debt does not participate in the upside, but can be insulated from downside

Hypothetical example of debt and equity positions in value increase and decrease scenarios



Source: Invesco Real Estate based on data from SMU Cox School of Business as of November 2021

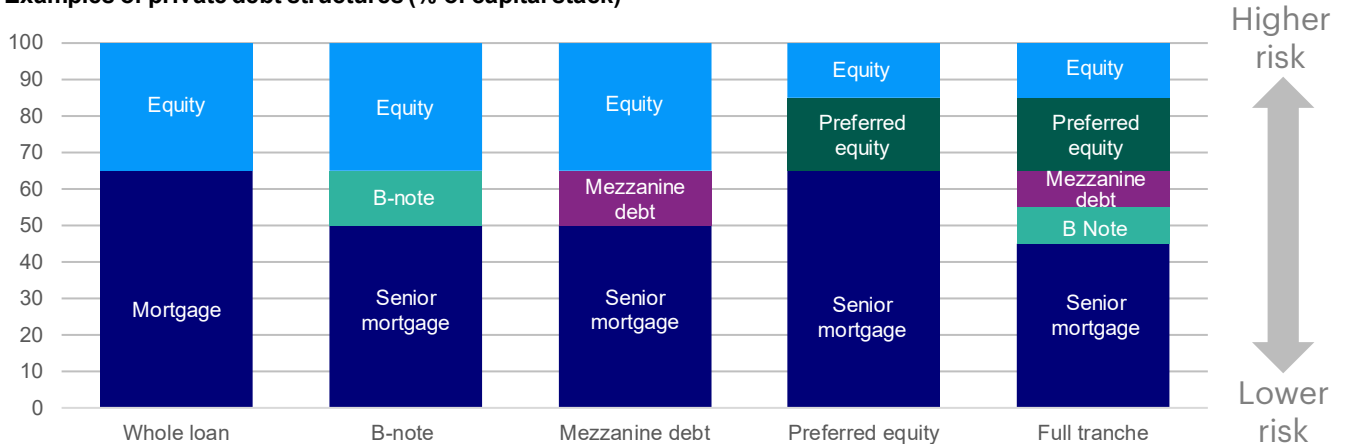
Meanwhile, in a downside scenario (whereby the asset is depreciated 50%), the equity component of the capital stack is reduced to zero, while the debt position declines just 33%. Why? As equity is the first-dollar, it is the first to absorb the gains as well as the losses. This suggests that taking the debt position can offer greater downside mitigation, although at the expense of not participating in the potential upside.

While this is a simplified example where there is only one debt piece, different debt tranches exist that allow investors to move further out on the risk spectrum with the expectation of higher returns to compensate for the added level of risk (Figure 9).

Figure 9: Categories and seniority of private debt tranches

Different tranches offer a wide range of risk/return profiles

Examples of private debt structures (% of capital stack)



Source: Invesco Real Estate as of November 2021

2. Historically stable and predictable income returns

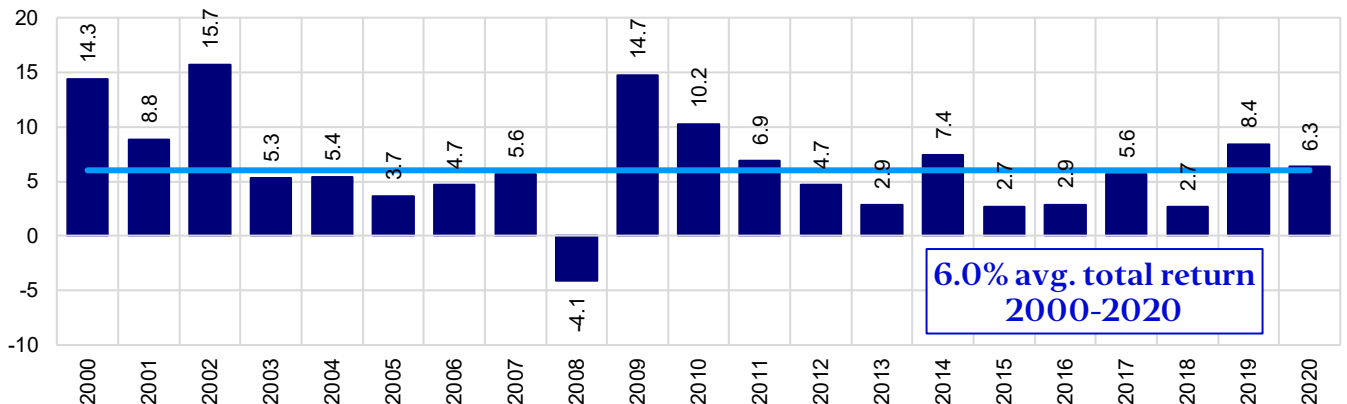
Further enhancing the case for debt is the predictability of cash flow from the note. Loans made to borrowers of real estate debt are used to acquire, refinance, renovate or develop specific properties. These properties serve as collateral for the loan in the event of default, but also provide a steady stream of income from operations that is then used to pay back the principal and interest. As such, essentially all the return achieved from real estate debt is in the form of income, making it a competitive alternative to traditional fixed-income instruments.

Furthermore, private real estate debt in the US has historically delivered average total returns of 6.0% per year over the last 20 years (2001 to 2020), having recorded negative annual returns just once during that period, in 2008 during the GFC (Figure 10). Illustrating the durability of the sector during the highly disrupted COVID period, real estate debt delivered a total return of 6.3% in 2020.

Figure 10: Private real estate debt return performance

Private real estate debt has exhibited a resilient return profile this cycle

Annual total returns, Giliberto-Levy Commercial Mortgage Index (%)



Source: Invesco Real Estate based on data from the Giliberto-Levy Commercial Mortgage Index as of November 2021. **Past performance is not a guarantee of future results.**

The relatively stable return profile for commercial real estate (CRE) private debt compares favorably on a risk-return basis to other asset classes (Figure 11). Real estate has historically provided a notable return spread versus bonds with a similar risk profile. Over the past 20 years (ending 2Q-2021), CRE private debt has generated an annualized return of 5.8%, with an annual standard deviation of 4.3%, resulting a Sharpe Ratio of 1.02, slightly higher than CRE private equity (0.95) and US bonds (0.93), but notably higher than REITs, non-agency CMBS and US equities. (The Sharpe Ratio is a measure of risk-adjusted return; a higher Sharpe Ratio indicates a relatively more attractive risk-adjusted return).

Figure 11: Risk-adjusted returns by asset class

Private CRE debt has historically stable and attractive risk-adjusted returns

	CRE Private Debt	CRE Private Equity	REITs	Non-Agency CMBS	US Bonds	Global Bonds	US Equities	Global Equities
Total return	5.8%	8.2%	10.5%	5.3%	4.6%	4.7%	8.6%	7.3%
Std. deviation	4.3%	8.3%	22.2%	8.9%	3.5%	5.4%	17.6%	20.5%
Sharpe ratio	1.02	0.95	0.51	0.50	0.93	0.65	0.45	0.36

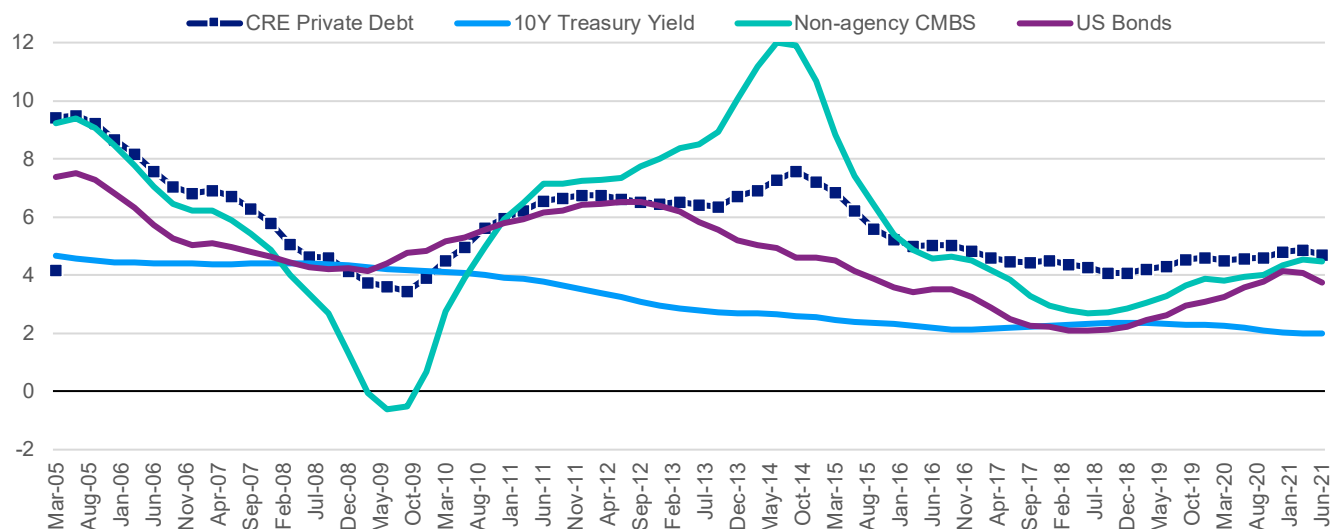
Trailing 20-years of data: As of Q2 2021. Annual Sharpe Ratio is based on quarterly data and is calculated as the average excess return over the risk-free rate divided by the annual standard deviation of returns. The benchmark risk-free rate used is the 3-month Treasury.
 Source: Invesco Real Estate using data from the Gilberto-Levy Commercial Mortgage Index (CRE Private Debt); NCREIF Property Index (CRE Private Equity); FTSE Nareit US All Equity REIT Index (REITs), Bloomberg Barclays Non-Agency CMBS Index (Non-Agency CMBS); Bloomberg Barclays US Aggregate Bond Index (US Bonds); Bloomberg Barclays Global Aggregate Bond Index (Global Equities); S&P 500 (US Equities); MSCI World Equity Index (Mid & Large Cap) (Global Equities) as of November 2021. **Past performance is not indicative of future results.**

The current environment has been characterized by declining yields in income-oriented investment products (Figure 12). However, in this environment, private real estate debt has continued to provide attractive relative returns, both on an absolute and risk-adjusted basis.

Figure 12: Performance versus alternate investments over time

Yields have been on a secular decline; private real estate debt has had the highest relative return over the past five years

Interest rates and total returns (rolling five-year averages, %)



Source: Invesco Real Estate using data from the Gilberto-Levy Commercial Mortgage Index (CRE Private Debt); Bloomberg Barclays Non-Agency CMBS Index (Non-Agency CMBS); Bloomberg Barclays US Aggregate Bond Index (US Bonds); Moody's Analytics (10Y Treasury Yield) as of November 2021. **Past performance is not indicative of future results.**

3. Inflation Hedge

Commercial real estate has historically been a decent hedge against rising inflation. Lease structures allow landlords to move rents upon expiration and many have preset annual increases, often indexed to CPI. This provides some insulation for equity investors, maintaining income and an ability to pay debt service. In addition, for debt investors, floating rate product adjusts as interest rates move higher (which is typical in an inflationary period), maintaining a spread to the base rate and backstopping yields. As such, floating rate real estate debt may be doubly attractive to investors focused on the potential for inflationary pressures and/or a rising rate environment: the security of the loans should improve as underlying real estate values benefit from rent increases, while income should adjust in real time with any upward movement in rates.

4. Diversification

An allocation to US private real estate debt also improves portfolio volatility through its low correlations with other traditional asset classes. Figure 13 illustrates the correlations between US private real estate debt and various domestic traditional asset classes, including stocks and bonds. A private real estate debt portfolio (represented by the Gilberto-Levy Commercial Mortgage Performance Index) has produced low/negative correlations with US and global equities and private equity real estate and modest correlations with public equity real estate and US and global bonds. In addition, real estate debt can offer investors a higher-yielding fixed income investment that has a complimentary and accretive return profile relative to their broader fixed income portfolios. In this way, an allocation to private real estate debt serves as a diversifier to a portfolio that already contains other types of real estate and fixed income exposure.

Figure 13: Correlations of real estate debt with other asset classes

Private debt has virtually no correlation with private equity

Correlation coefficients

	CRE Private Debt	CRE Private Equity	REITs	Non-Agency CMBS	US Bonds	Global Bonds	US Equities	Global Equities
CRE Private Debt	1.00	-0.03	0.42	0.83	0.67	0.53	-0.02	0.01
CRE Private Equity		1.00	0.29	-0.03	-0.24	-0.12	0.21	0.21
REITs			1.00	0.69	0.01	0.12	0.66	0.71
Non-Agency CMBS				1.00	0.46	0.40	0.35	0.36
US Bonds					1.00	0.65	-0.39	-0.38
Global Bonds						1.00	-0.09	0.02
US Equities							1.00	0.93
Global Equities								1.00

Trailing 20-years of data: As of 2Q 2021

Source: Invesco Real Estate using data from the Gilberto-Levy Commercial Mortgage Index (CRE Private Debt); NCREIF Property Index (CRE Private Equity); FTSE Nareit US All Equity REIT Index (REITs), Bloomberg Barclays Non-Agency CMBS Index (Non-Agency CMBS); Bloomberg Barclays US Aggregate Bond Index (US Bonds); Bloomberg Barclays Global Aggregate Bond Index (Global Equities); S&P 500 (US Equities); MSCI World Equity Index (Mid & Large Cap) (Global Equities) as of November 2021. **Past performance is not indicative of future results.**

In the most recent 5-year period, the relative correlations of CRE private debt have strengthened somewhat. For example, the non-agency CMBS correlation coefficient to private CRE debt was 0.94 during the 5-year trailing period and the US Bond correlation coefficient to private CRE debt rose to 0.82 during the same period.

The diversification benefits from private real estate debt are best realized from allocation to a broad, diversified portfolio of multiple assets that further reduces any single-asset risk. Engaging an allocation to US real estate debt through a private fund may offer a quicker, more capital efficient way of achieving asset diversification benefits than acquiring and compiling a book of loans one by one.

How did private real estate debt perform during the COVID disruption?

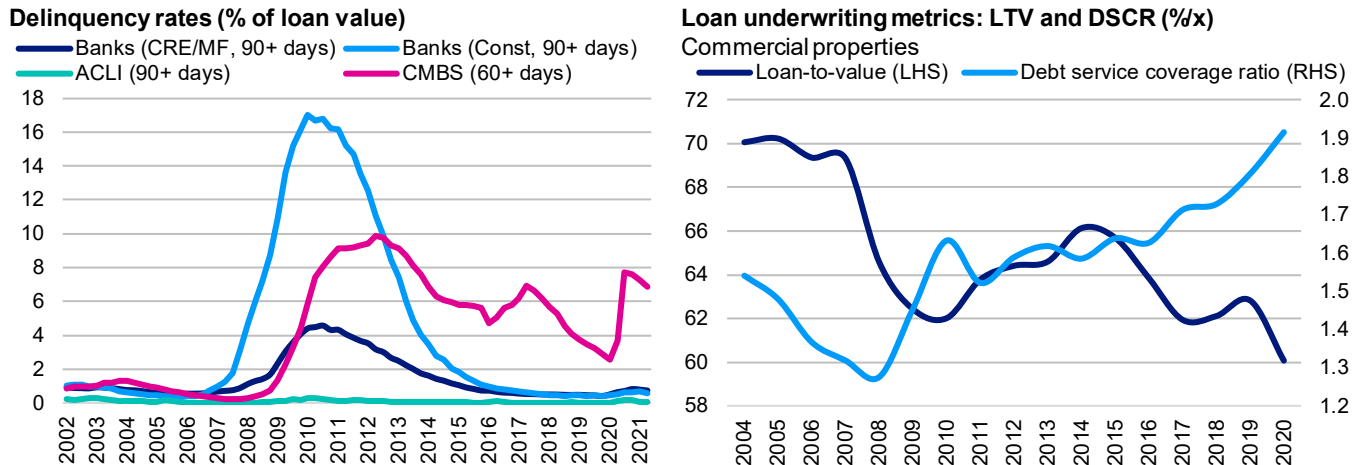
Illustrating the durability of the sector, during the highly disruptive COVID period real estate debt delivered an attractive total return of 6.3% in 2020.

The recent performance of the sector stands in contrast to its performance during the GFC. As Figure 14 illustrates, delinquency rates have for the most part remained very low and well below the levels seen during the GFC. (The exception to this is delinquency rates for CMBS loans secured by hotel and retail properties, two consumer-facing sectors that were essentially shut down due to COVID-related restrictions early in the pandemic.) Contributing to this performance has been a continued focus on disciplined underwriting, including leverage and debt service coverage ratios that have remained notably more conservative compared to the period prior to the GFC, and more regulated loan covenants.

In fact, as illustrated in Figure 14, the loan-to-value (LTV) ratio of CRE loans reached a historic low over the past several years while the debt-service coverage ratio reached historic highs.

Figure 14: Real estate debt performance during COVID

Delinquency rates remained low, reflecting more disciplined underwriting compared to the GFC



Bank data (FDIC) represents loans 90+ days past due and nonaccrual; ACLI data represents loans 90+ days past due; CMBS data (Trepp) represents conduit loans 60+ days past due, nonperforming loans, loans in foreclosure, and real estate owned (REO). Underwriting metrics from RCA; calendar year averages. Source: Invesco Real Estate based on data from Moody's Analytics as of October 2020

Risks and considerations

With underwriting standards remaining historically strong, it is our view that real estate debt is an attractive option from a risk/return perspective relative to other fixed income alternatives. Additionally, with the size of the US mortgage market increasing, loan maturities expected to increase in coming years, and debt portfolios gaining market share, there is a growing opportunity for investors to access the asset class through pooled investments.

Capped upside/returns: During periods of asset inflation, credit investments may underperform equity investments due to the stated interest rates of these investments. Real estate debt similarly may log relative underperformance compared to real estate equity investments during periods of asset price growth. Investors may find that this limitation of upside potential is offset by the lower volatility and potential for downside mitigation offered by real estate debt, but each investor's unique objectives must be considered.

Returns may be reliant upon use of leverage: Real estate debt strategies may be levered or unlevered, but increasingly alternative investment managers have utilized leverage to achieve returns in the high-single digit to low-double digit range. A careful analysis of the underlying leverage utilized for a real estate credit strategy should be considered when reviewing any investment opportunities. Factors to consider include the amount of leverage utilized, the risk profile of loans to which leverage is applied, and the structure of such leverage (duration, margin call rights, etc.).

Structural considerations: Real estate debt investments are inherently more passive investments relative to equity. Accordingly, lenders have more limited oversight of property level decisions including leasing, property management, construction and cash management related matters. During periods of heightened competition, lenders may compete to win business by agreeing to "covenant light" transactions with less rigorous underwriting and/or ongoing oversight requirements. Additionally, different loans may have different rights for the pursuit of remedies after an event of default. As such, investors should understand the structures of underlying debt investments.

Conclusion

For many investors, an allocation to US private real estate debt is driven by a desire to preserve capital and hedge against inflation while still enjoying steady and accretive income-based returns. Debt offers investors a differentiated way to participate in the real estate asset class, and with historically low correlations to stocks, bonds, and public and private equity real estate, it can serve to enhance overall portfolio diversification.

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Risks Warnings

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