PGIM REAL ESTATE

PRIVATE REAL ESTATE DEBT

A Portfolio Risk-Return Enhancer Through the Lens of Maximum Drawdowns

August 2023 | Investment Research

EXECUTIVE SUMMARY

Private core real estate debt offers investors exposure to the multi-faceted real estate sector, while investment-grade corporate bonds offer exposure across many sectors. Differences in performance highlight the nuances of public versus private markets, where publics have greater liquidity and faster price discovery, hence more volatile fluctuations in performance.

As such, core real estate debt has the potential to enhance performance of an investment-grade fixed income portfolio but not at the expense of additional risk. The diversifying benefits of private real estate debt is emphasized through maximum drawdowns – a risk metric that is commonly used in investment risk management – helping to assess potential large losses during severe market downturns.

KEY FINDINGS

- Private core real estate debt delivered a higher annualized return (7.3%) than the U.S. Aggregate (6.5%) and U.S. Corporate Bonds (7%), with equivalent or lower standard deviation of returns over the period from 1978 to the second quarter of 2023.
- Since 1978, maximum drawdowns – the largest peak-to-trough loss before a return to previous peak levels – have been more severe and more frequent for the U.S. Aggregate and Corporate Bonds than for core real estate debt.
- The duration of a drawdown (the time it takes from peak to trough and back again) and period to recovery (the time from trough to new peak) following a maximum drawdown is shorter for core real estate debt than it is for the U.S. Aggregate and U.S. Corporate Bonds.

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REF: 009155

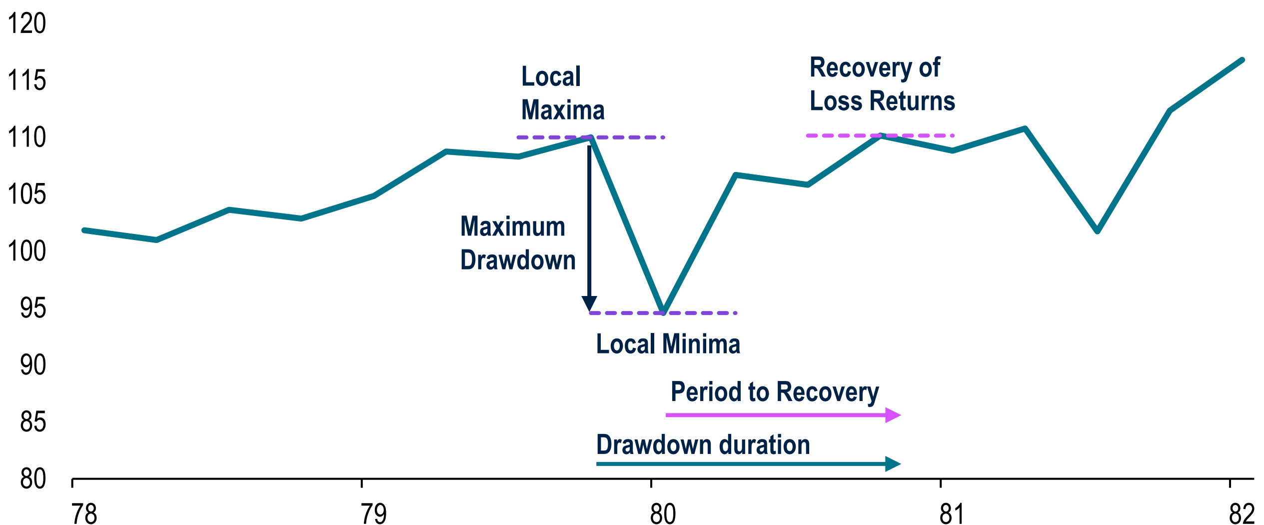
INTRODUCTION

PGIM Real Estate's publication, *Four Compelling Reasons to Diversify with Private Real Estate Credit*, outlines the benefits of private core real estate debt for investors looking to bolster income and durability of their investment-grade fixed income portfolios: consistent performance during periods of market volatility and opportunities for capital deployment and diversification. Additionally, there is an even more compelling reason as assets face further valuation write-downs: maximum drawdown (MDD).

Maximum drawdown, the largest cumulative loss from peak to trough (**Exhibit 1**), is one of the most widely used risk indicators in the investment management industry. Its assessment of worst-case scenarios provides insight into the potential severity of losses, especially important during periods of market turmoil. As such, MDD is a key metric in investment risk management and should be considered.[1] Yet, its application to private real estate debt has rarely been cited.

Exhibit 1: Illustration of Maximum Drawdown

Cumulative Performance (December 31, 1977 = 100)



Source: PGIM Real Estate. As of August 2023. Past performance and target returns are not a guarantee and may not be a reliable indicator of future results.

[1] Sources for further reading on maximum drawdowns: Corporate Finance Institute, Finance Strategists.

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Research on maximum drawdown and real estate (equity) shows that portfolios optimized in the return-MDD space resulted in a lower portfolio MDD than portfolios optimized in the return-standard deviation space. Furthermore, optimal portfolio allocations to real estate were much more in line with actual allocations held by institutional investors when substituting standard deviation with MDD in portfolio optimization, according to *Hoesli and Hamelink*.[2]

This paper explores the potential investment benefits of private core real estate debt for an investment-grade fixed income portfolio through the lens of MDDs with a focus on the U.S. market, which has the largest and deepest debt capital markets globally[3] for fixed income as well as private real estate debt. Since senior private real estate debt behaves more like fixed income,[4] the analysis was conducted using 45 years of quarterly total return data on investment-grade, senior secured and unlevered fixed-rate first commercial mortgage loans, compared with the U.S. Aggregate (Agg) and U.S. Corporate Bonds (Corporates). References to private real estate or bonds in this paper refer to these subsets.

Information Box

The analysis is based on total returns of private core real estate debt and investment-grade bonds.

Private core real estate debt refers to investment-grade, senior secured and unlevered commercial mortgage loans using the Giliberto-Levy, G-L 1, quarterly index for fixed-rate first commercial mortgage loans from 4Q1977 to 2Q2023.

Bonds refer to investment-grade fixed income indices, the U.S. Aggregate and U.S. Corporate Bonds using the Bloomberg/Barclays respective quarterly total return indices over the same period.

[2] Source: Hoesli, M., Hamelink, F., Maximum drawdown and the allocation to real estate, 2004, Journal of Property Research, vol. 21, n° 1, pp. 5-29.
[3] Source: SIFMA Fixed Income: Research Quarterly - Outstanding
[4] Source: v.d. Spek, M., Investing in Real Estate Debt: Is it Real Estate or Fixed Income?

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Risk-Return Enhancing Features of Private Real Estate Debt – A Focus on Max Drawdowns

Private real estate debt shares similar characteristics to that of bonds: steady income, predictable returns and low volatility. Performance is highly correlated to that of bonds, with a correlation of around 80% (**Exhibit 2**). As a private asset class, it offers a yield premium over bonds known as the private market or illiquidity premium. Since 1978, real estate debt has delivered a higher total return of 7.3% annualized compared to 6.5% for the Agg and 7.0% for Corporates, with on par or lower standard deviation of returns of 6.3%, compared with 6.3% for the Agg and 8.1% for Corporates. Thus, real estate debt provides return-enhancing benefits but not at the expense of higher risk, measured by standard deviation.

Although standard deviation is a commonly used measure of risk that makes sense from a statistical perspective, it is less intuitive from an investment perspective. This is where maximum drawdown offers another representation. As MDD measures the largest peak-to-trough loss before regaining loss returns (i.e., reaching the previous peak), expressed as a percentage of the peak, it helps to assess potential large losses in a severe market downturn and, more importantly, the period to recovery.

This is demonstrated in **Exhibit 3** using real estate debt performance data. On the left is the MDD from the early 1980s and the right is the MDD from the global financial crisis (GFC). In the early 1980s, returns fell by 14% from peak to trough, and it took a gain of 16.5% to recover the lost returns. During the GFC period, the peak-to-trough decline was 7.6%, and the subsequent gain was 9% to breakeven. This also demonstrates the non-linear recovery following a MDD event, i.e., if returns fell by 50%, a gain of 100% is needed to be back at square one. In both instances, it took just one quarter of falling returns to reach the trough but three quarters to recover, whereas typically a larger fall would require a longer recovery period or a larger return to recover.

Exhibit 2: Risk, Return and Correlation in Private Real Estate Debt and Bonds From First Quarter 1978 to Second Quarter 2023

	Real Estate Debt	U.S. Aggregate	U.S. Corporate Bonds	Return	SD
Real Estate Debt	100.0%			7.3%	6.3%
U.S. Aggregate	82.3%	100.0%		6.5%	6.3%
U.S. Corporate Bonds	79.5%	93.9%	100.0%	7.0%	8.1%

Source: Giliberto-Levy, Bloomberg, PGIM Real Estate. As of August 2023.

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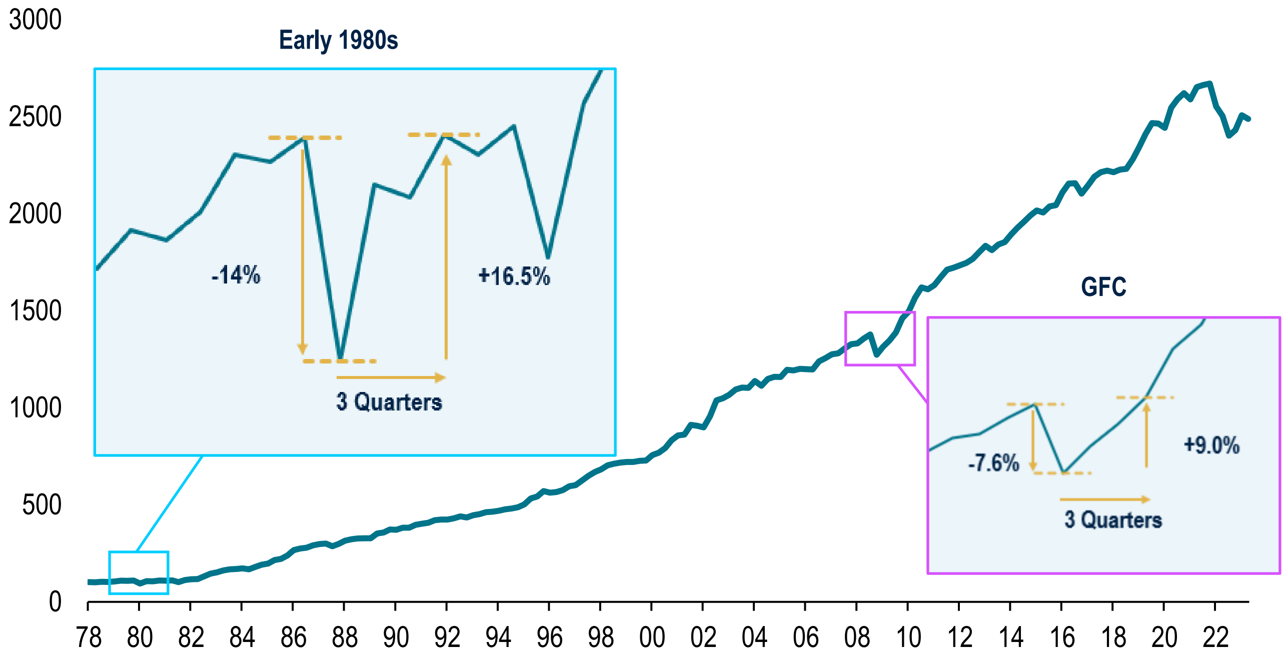
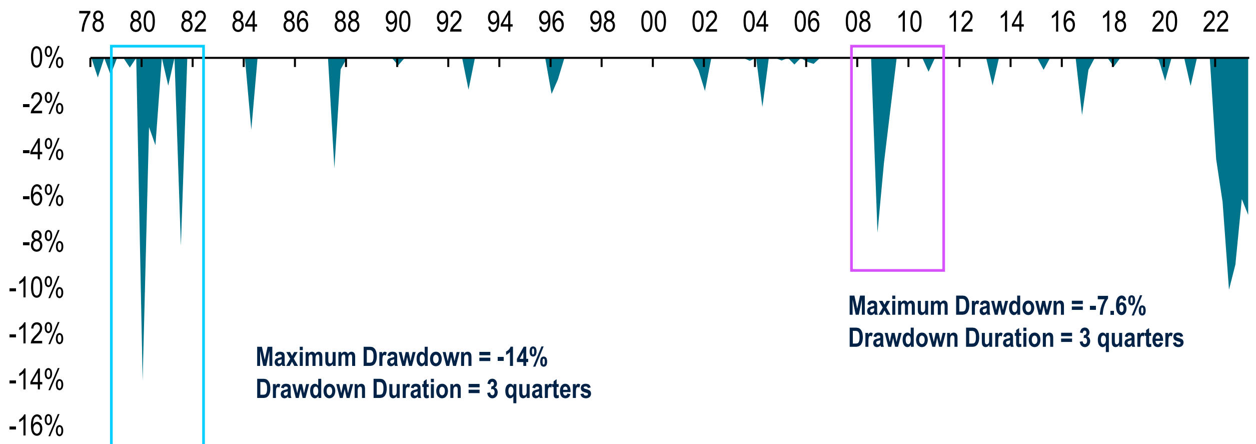
Exhibit 3: Maximum Drawdown Events in Private Real Estate Debt Since 1978

Cumulative Performance (December 31, 1977 = 100)



Maximum drawdown events: decline from local peak (%)



Source: Giliberto-Levy, Bloomberg, PGIM Real Estate. As of August 2023. Past performance and target returns are not a guarantee and may not be a reliable indicator of future results.

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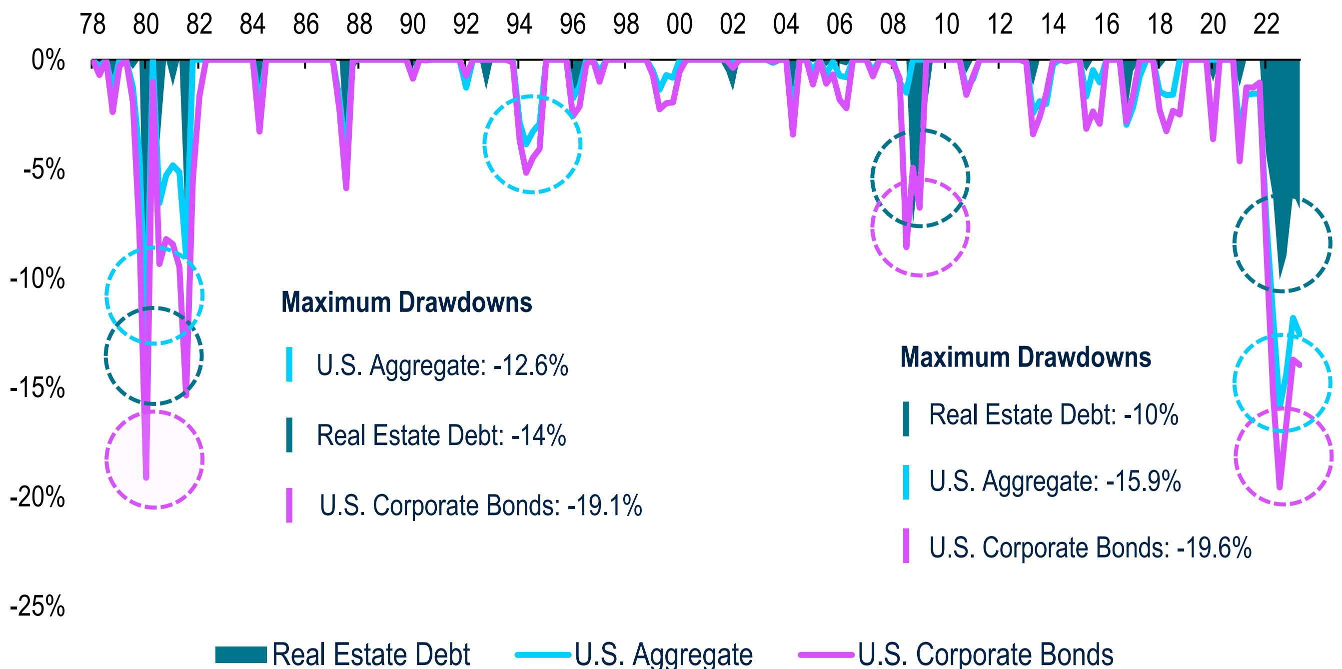
Historical Drawdowns in Real Estate Debt and Bonds

Next, past drawdowns in real estate debt, the Agg and Corporates over the period from 1978 to the second quarter of 2023 were explored (**Exhibit 4**). Due to the high correlation in returns as mentioned earlier, drawdowns have largely occurred over the same time periods, but not always. However, drawdowns have occurred more frequently and have been more severe for bonds, especially Corporates. Furthermore, the periods to recovery have also been longer for bonds than for real estate debt.

The largest real estate debt drawdown (-14%) occurred in the early 1980s and lasted for three quarters, as noted above. During this period, Corporates experienced its longest drawdown, which lasted for 11 quarters, the severity of which reached -19.1%, while the Agg recorded a MDD of -12.6% over the same period (**Exhibit 5**). The differences between bonds and real estate debt can largely be explained by differences in public versus private markets, where publics have greater liquidity and faster price discovery, hence more volatile fluctuations in performance.

Exhibit 4: Maximum Drawdown Events in Private Real Estate Debt and Bonds Since 1978



Source: Giliberto-Levy, Bloomberg, PGIM Real Estate. As of August 2023. Past performance and target returns are not a guarantee and may not be a reliable indicator of future results.

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The most severe losses for the Agg and Corporates are being observed today, in the current post-COVID-19 inflation environment. The MDD for Corporates thus far is -19.6%, while the return on the Agg has fallen by 15.9%. Thus far, real estate debt has posted a drawdown of -10%, and although it is not its largest drawdown to date, it is its longest, lasting five quarters so far. With events still unwinding at the time of writing, the MDDs and the periods to recovery can be more severe and longer than those recorded in the past. However, the relativity between bonds and real estate debt are expected to remain since bonds will remain a public asset class and real estate debt a private one.

Exhibit 5: Top 3 Most Severe Drawdown Events for Real Estate Debt and Bonds

Real Estate Debt Drawdown Event	Starting Quarter	Ending Quarter	Maximum Drawdown	Quarters of Drawdown	Quarters to Recovery
Post-COVID-19 Inflation	1Q22	Present	-10%	N/A	N/A
Global Financial Crisis	4Q08	3Q09	-7.6%	3	3
1980	1Q80	4Q80	-14%	3	3

U.S. Aggregate Drawdown Event	Starting Quarter	Ending Quarter	Maximum Drawdown	Quarters of Drawdown	Quarters to Recovery
Post-COVID-19 Inflation	1Q21	Present	-15.9%	N/A	N/A
1990s	1Q94	1Q95	-3.9%	4	3
Late ’70s / Early ’80s	3Q79	2Q80	-12.6%	3	1

U.S. Corporate Bonds Drawdown Event	Starting Quarter	Ending Quarter	Maximum Drawdown	Quarters of Drawdown	Quarters to Recovery
Post-COVID-19 Inflation	1Q21	Present	-19.6%	N/A	N/A
Global Financial Crisis	1Q08	2Q09	-8.6%	5	3
Late ’70s / Early ’80s	3Q79	2Q82	-19.1%	11	9

Source: Giliberto-Levy, Bloomberg, PGIM Real Estate. As of August 2023 Past performance and target returns are not a guarantee and may not be a reliable indicator of future results..

Maximum Drawdown Analysis: Benefits to a Mixed Asset Portfolio

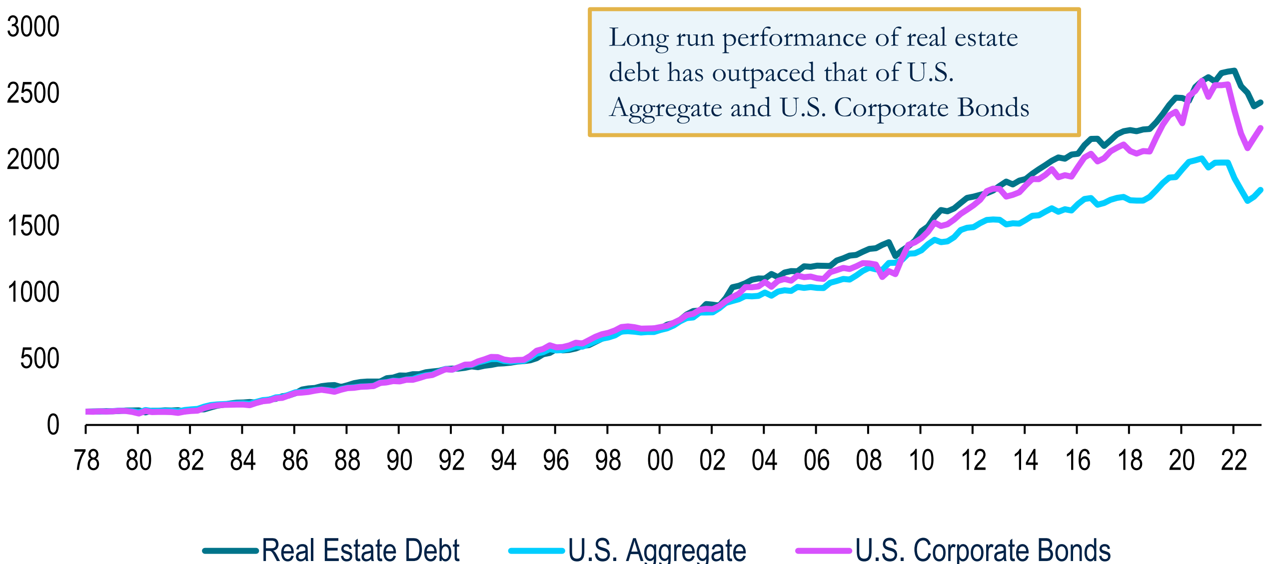
A recap of the findings thus far is summarized below:

1. Private real estate debt offers higher returns than bonds with lower standard deviation.
2. Real estate debt drawdown events have been less frequent than that of bonds.
3. MDDs in real estate debt have been less severe than in bonds.
4. Recovery following a MDD has been quicker in real estate debt than in bonds.
5. Drawdown events do not always occur over the same periods for real estate debt and bonds.

MDDs can also be applied to portfolios of mixed asset classes. It is especially useful for assessing potential losses, which is crucial when trying to balance potential returns with potential risks. As investors continue to face a volatile and uncertain investing environment, achieving positive returns can be challenging, and strong risk-adjusted returns can be even more challenging. While a higher portfolio return is often desired, to do so while taking on more risk is not, especially in a market downturn where potential losses can be severe.

Over the long run, real estate debt has delivered higher cumulative performance than bonds (**Exhibit 6**). Therefore, having real estate exposure in an investment-grade bond portfolio would have boosted portfolio returns, while also reducing portfolio risk through lower volatility of returns, as noted earlier (Exhibit 2).

Exhibit 6: Cumulative Total Return Performance in Real Estate Debt and Bonds Since 1978



Source: Giliberto-Levy, Bloomberg, PGIM Real Estate. As of August 2023. Past performance and target returns are not a guarantee and may not be a reliable indicator of future results.

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What is more compelling is that when assessing worst-case scenarios through the lens of MDDs, the downside analysis suggests that real estate debt has the potential to reduce portfolio losses through less frequent and less severe MDDs, as well as provide a faster recovery after hitting a trough. These additional benefits emphasize the downside protections and potential for performance loss reduction that could be available by adding real estate debt to an investment portfolio.

CONCLUDING REMARKS

Among investment risk strategies, the evaluation of maximum drawdowns emerges as a powerful tool for measuring and comparing risks across different asset classes. Within this context, private real estate debt stands out as a compelling investment opportunity and as an asset class perfectly suited for risk diversification.

While core real estate debt offers investors exposure to the multi-faceted real estate sector, bonds offer exposure across many sectors. Differences in performance highlight the nuances of public versus private markets, where publics have greater liquidity and faster price discovery, hence more volatile fluctuations in performance.

The analysis of MDDs reveals that private real estate debt exhibits relatively low downside risk compared to bonds, positioning real estate debt as an attractive route for investors seeking to balance risk within their portfolios. Real estate debt can enhance portfolio resilience and potentially mitigate the adverse impacts of market downturns. The inclusion of real estate debt as a diversification strategy offers investors the opportunity to optimize risk-adjusted returns and achieve a well-rounded investment portfolio.

In the current market landscape characterized by uncertainties, recognizing the importance of MDDs and leveraging real estate debt for diversification is highly relevant for managing risk and capitalizing on market opportunities. By embracing this approach, investors can enhance their risk management strategies and navigate the challenges of a volatile market environment with confidence. Crucially, real estate debt has the potential to enhance portfolio returns, while reducing portfolio risk and limiting loss returns.

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DEFINITIONS

The G-L Commercial Mortgage Performance Index or G-L 1 tracks investment results for fixed-rate senior mortgages made by lenders such as life insurance companies, GSEs, pension funds and investment managers and held on their balance sheets. G-L 1 has been produced continuously since 1993, with a return inception date of January 1, 1972.

The Bloomberg U.S. Agg Index is a broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate pass-throughs), ABS and CMBS (agency and non-agency).

The Bloomberg U.S. Corporate Bond Index measures the investment grade, fixed-rate, taxable corporate bond market. It includes USD denominated securities publicly issued by US and non-US industrial, utility and financial issuers.

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