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Combining Public and Private Debt: Considerations for Investors

Fixed income market dynamics have changed considerably in the 10 years since the onset of the global financial crisis. Many institutions have reconsidered their investment approach as a result, embracing sophisticated strategies—including exposure to private debt markets—in an effort to boost returns while optimizing portfolio liquidity. Private debt presents investors with a differentiated opportunity set offering prospective return, liquidity and diversification benefits, and can serve as a complement to their public debt holdings. For many, an investment approach that combines exposures across both public and private debt markets in a single portfolio may offer the best opportunity to maximize the potential of each.

Executive Summary

- Private debt—corporate lending, consumer non-residential and small-business lending, and residential mortgage lending, among other more-niche categories—presents investors with an expanding, differentiated opportunity set offering potential return, liquidity and diversification benefits that may complement their public debt holdings.
- While liquidity historically was the key practical distinction between public and private debt, the line between the two has begun to blur in the post-crisis world. Looking forward, investors should structure portfolios in anticipation of the further convergence of liquidity characteristics across these markets.
- **Post-crisis changes on both the supply side and the demand side of the private debt market have fueled its recent growth. We believe these changes are structural in nature and will continue to support the development of private debt and the benefits of its integration into investor portfolios.**
- New regulations in the wake of the financial crisis have made certain risk exposures prohibitively expensive for traditional banks in both the U.S. and Europe, creating a funding gap that increasingly is being filled by nonbank market participants.
- Any consideration of the benefits of adding private debt to a portfolio of public securities must center on the trade-offs—based on the interaction and correlation between liquidity compensation and other risk factors—an investor makes when allocating capital away from public markets and toward private ones.
- Given their information asymmetries and barriers to entry, private markets may offer more attractive opportunities to capture certain risk premia relative to what is available in the public markets. Moreover, these premia likely are higher in private markets, suggesting that private debt investors able to accurately assess default- and severity-adjusted spreads have the potential to add incremental returns compared to public markets.
- **We believe there are a number of good reasons for fixed income investors to consider a one-portfolio public/private solution, the most significant of which is that it allows investment managers to create more compelling liquidity characteristics compared to separate allocations while better capturing risk premia and relative value opportunities across the liquidity spectrum.**
- While a combined public/private debt portfolio may be suitable for a range of investor objectives, effective management of such a strategy will require an investment manager whose processes, platforms and experience are equally robust in both markets.

Introduction

The structure and valuations of the fixed income market have changed significantly in the decade since the financial crisis. Some of these changes, such as the decline in fixed income term premia and the overall low level of global interest rates, likely are temporary and will unwind as global central banks continue to push toward more normal monetary policies. Others, however, are likely to persist; regulations that require banks to hold more capital, for example, is a change that emerged 10 years ago and is likely to be with us for at least 10 more.

Institutions have been forced to adjust their approach to fixed income investment as a result of these shifting market dynamics. One notable development has been the embrace of increasingly sophisticated investment strategies that seek to boost returns while optimizing portfolio liquidity; this has included adding exposures to private debt markets, either through separate mandates managed in parallel with public market investments or combined in a single public/private fixed income portfolio. The merits of a combined approach appear fairly straightforward: By expanding the opportunity set to include private securities, a fixed income investor should potentially be able to generate more attractive returns—in part by harvesting the illiquidity premia that accompanies private debt—while gaining access to differentiated exposures that promote greater portfolio diversification.

That said, implementation of such a strategy can be complex, particularly for investors that choose to do it on their own through specialized mandates. Further, it's natural to wonder if the spiking interest in public/private debt portfolios is a temporary phenomenon

driven by the extraordinarily low-return environment and changing public market issuance patterns, or if it represents the beginning of a more permanent shift in how institutional investors manage their fixed income exposures. Our view leans toward the latter. As discussed in our recent white paper 08-18-28: The Dissolving Divides that Will Shape the Post-Crisis Investment Era, we expect the formerly pronounced divisions between asset classes will continue to blur, impacting the role of the asset allocator. With opportunity sets broadening to include securities that previously had been out of scope, many fixed income investment managers will need to take a more generalist approach that combines public markets portfolio construction techniques with the ability to source and structure private market deals. We believe the end result of such an approach may be similar to the public/private debt portfolios we describe in this paper.

While registration status is the technical distinction between public and private debt, the key practical difference historically has been their liquidity profiles, though this divide has begun to blur.

On the pages that follow we review the growth of the private debt market and why we expect it to continue. We then introduce a framework for thinking about combining public and private debt, discuss some potential advantages and investor uses of a single public/private debt portfolio, and provide details on our asset allocation approach for one-portfolio solutions.

Distinguishing Between Public and Private Debt

Generally speaking, public debt securities are those that are registered with the Securities and Exchange Commission or are exempt from doing so under Rule 144A of the Securities Act (as well as non-U.S. securities that meet similar criteria under a global regulatory framework); "traditional" fixed income asset classes such as investment grade credit, agency mortgages, high yield bonds and emerging markets debt all fall under the public umbrella. Private debt, in contrast, is either unregistered or registered under more specific exemptions. There are also certain investments—including bank loans, collateralized loan obligations (CLOs) and distressed debt—that straddle the line between public and private in our estimation, although not all such investments are considered securities or registered with a regulatory authority.[1]

While registration status is the technical distinction between public and private debt, the key practical difference historically has been their liquidity profiles, though this divide has begun to blur in the post-crisis years. Once thought of as having no post-purchase liquidity—given either legal restrictions on transference or the prohibitive discounts to fair value involved with it—private debt in general has seen its secondary market expand over the past decade. In contrast, public market liquidity, while still ample, has become less abundant in the wake of new regulations like Basel III and the Dodd-Frank Act that have made "warehousing" securities more capital intensive for market-making investment banks. The reduced economic activity that will accompany the eventual turn in the credit cycle should curb liquidity still further. And as we saw during the financial crisis, even public markets may dry up under extreme conditions—exactly when liquidity is needed most.

We should note also that private debt is not homogenous. Private debt now finances a range of investments, including some that closely resemble exposures available in public markets. We provide a summary of several types of private debt investments below; further detail can be found in the Appendix at the end of this paper.

- **Corporate lending.** Secured and unsecured lending, primarily to companies in the U.S. and Europe. Corporate lending in the U.S. tends to focus on domestically oriented businesses with smaller market capitalizations—less than $200 million in annual EBITDA—with a bias toward non-investment grade issuers; the European market is centered on issuers with annual EBITDA in the $20 – 40 million range. Loans are highly customized and are available across the capital structure—including senior secured and mezzanine debt, as well as unitranche financing and revolving credit facilities—and with various payment characteristics. Intermediate loan maturities are typical in both regions.

[1] We classify tradable bank loans and CLO debt as public securities given their well-developed secondary markets, while we consider distressed debt to be a private market opportunity.

- **Consumer non-residential and small-business lending.** Lending to individuals or small companies, primarily in the U.S. and Europe and typically on an unsecured basis. This segment of the private market has seen significant growth in recent years driven by the emergence of technologies that enable easier and more efficient access to capital for borrowers. The cross-section of borrower types and use of proceeds has broadened as a result, and the market for investors has begun to mature via a growing securitization and secondary market. Loan maturities range from a few months to five years, with amortization occurring daily or monthly.
- **Residential mortgage lending.** Primarily secured lending in the U.S., collateralized by liens on single-family and multi-family residential real estate. These loans are extended to borrowers unable to meet the requirements for a "qualified mortgage" from traditional lenders—due to self-employment, for example, or a high debt-to-income ratio—as well as borrowers seeking loans on properties they will not occupy, among other reasons. Today's non-agency mortgage market is of significantly higher quality than the pre-crisis non-agency market, and it's not uncommon today to find borrowers with 700-plus FICO scores. Though residential mortgage opportunities are concentrated in the U.S., the Netherlands has a well-established market for nonbank mainstream mortgages while a rebound in the U.K. is being driven by alternative loan structures.

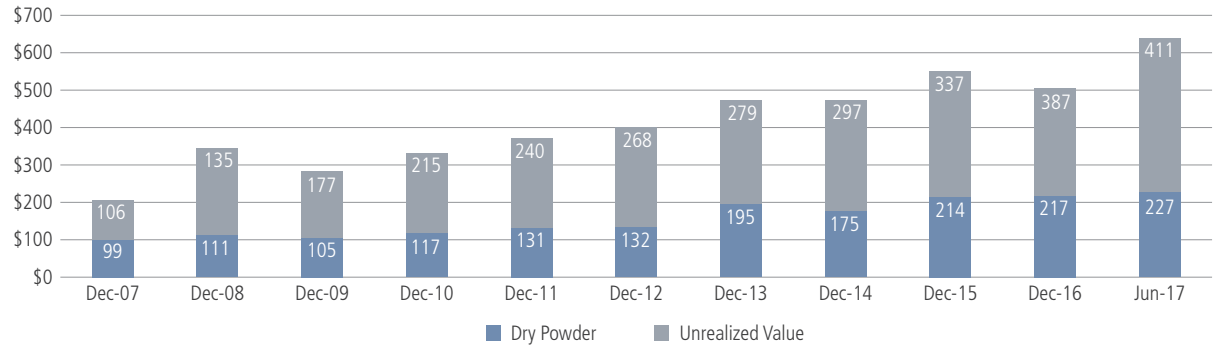
A key distinction—and advantage—across these types of private debt is the ability to customize lending terms. Compared to public markets, private market investors have greater control over such elements as coupon payment schedule, loan covenants, information access and control rights, and thus can better tailor investments to their desired liquidity, return and volatility profile. Experience negotiating these types of contracts serves as a competitive advantage among allocators managing portfolios that combine public and private debt.

Private Debt Markets Have Grown Sharply Post-Crisis

While private debt is not a new concept, interest in these investments among issuers and investors has expanded rapidly since the financial crisis, as shown in Figure 1, driven by structural changes on both the supply side and the demand side of the market. We have little reason to expect these structural changes will reverse direction in the near term, and they should continue to support the growth of private debt and the benefits of its integration into portfolios.

FIGURE 1. PRIVATE DEBT ASSETS UNDER MANAGEMENT HAVE SPIKED POST-CRISIS

Assets under Management, in Billions of $



Source: Preqin. "Private Debt" in this instance includes venture debt, special situations, mezzanine, distressed debt and direct lending.

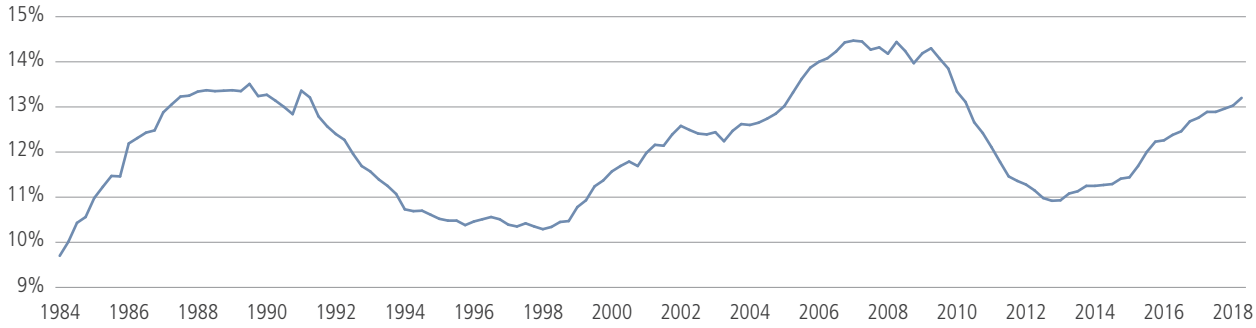
Let's first look at changes on the supply side of the market. As we discussed in our 2016 white paper The Changing Banking Landscape: Opportunities and Risks for Investors, new financial regulations enacted in the wake of the financial crisis overhauled the supervisory structure for banks. While these regulations have made the global banking system safer and have reduced risk to the financial system, certain risk exposures have become prohibitively expensive for traditional banks as a result of the new rules, creating a funding gap that increasingly is being filled by nonbank market participants. These regulations also have ushered in the rise of disruptive lending platforms and financial-disintermediation technologies that provide individuals and small businesses access to new sources of financing, from crowdfunding and nonbank payment systems to blockchain technologies that enable partial ownership of illiquid assets by a broader group of small investors.

Structural changes in the private debt markets should continue to support the growth of the asset class and the benefits of its integration into portfolios.

U.S. banks now face higher minimum capital ratios and must hold more capital against certain assets than they had in the past. Take, for example, a hypothetical bank that held $100 million of high-volatility commercial real estate (HVCRE)[2] loans on its balance sheet. Under the old pre-crisis regulatory guidance (Basel I) this bank would have needed $2 million of common equity on its balance sheet—or 2% of its HVCRE exposure—to comply with the minimum standards. Under the current Basel III guidelines, however, this bank would need to hold approximately $7 million of common equity to support that same HVCRE position. Were this lender a large bank-holding company subject to an annual Comprehensive Capital Analysis and Review by the Federal Reserve, more than $11 million in common equity would be necessary—more than five times beyond what was required under pre-crisis standards. These capital requirements are likely on top of the significant additional direct expenses banks face in complying with the new regulations.

The increased cost to hold risk has meaningfully altered bank business models across virtually all lending activities; as they now must consider the risk-adjusted returns of potential investments in the context of more stringent and complex capital requirements, banks have grown more conservative in their underwriting. Note that these changes are not limited to the U.S.; the Basel III regulatory framework has been adopted in full or in part by most industrialized nations. As one example of the impact of new regulations, Figure 2 shows that commercial real estate loans as a percentage of U.S. bank total assets have yet to recapture pre-crisis levels.

FIGURE 2. POST-CRISIS REGULATIONS HAVE HINDERED COMMERCIAL REAL ESTATE LENDING BY BANKS
Commercial Real Estate Loans as a % of Total Assets, all FDIC-Insured Institutions



Source: Bloomberg, Federal Deposit Insurance Corporation.

[2] In May 2018 Congress passed a law that narrowed the types of loans considered HVCRE loans. In September 2018 the Federal Reserve, the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation issued a proposal to amend the regulatory capital rules in accordance with this new definition, potentially leading to higher levels of commercial real estate lending by banks.

These changes in bank lending patterns have an important implication for investors. Bank securities—both fixed income and equity—should have different risk-return profiles going forward, as investors in bank-issued bonds and stocks are no longer likely to achieve significant implicit exposure to mid-size corporate lending or mortgage lending via the balance-sheet activity of their bank holdings. Investors may, however, use the private debt strategies we mentioned earlier to replicate or replace these much-reduced exposures.

Private debt presents investors with a differentiated opportunity set that may complement their public debt holdings, offering potential return, liquidity and diversification benefits.

Investor demand for private debt strategies is being driven by a range of considerations. Key among them is the decline in risk premia available in the public fixed income markets as a result of the low interest rates and narrow credit spreads that have prevailed over the past five to 10 years; Figure 3 depicts the limited to negative term premia the 10-year Treasury has offered since the financial crisis. While the increased interest in private debt strategies could be characterized as part of the post-crisis chase for yield across fixed income markets, we believe most investors are turning to these instruments for more sophisticated, strategic reasons. Investors, rationally, are seeking to build portfolios that most efficiently capture available risk premia, some of which are more attractive in private markets. Moreover, investors view private debt markets as a potential source of investment and liquidity benefits in conjunction with their public market exposures.

FIGURE 3. THE TERM PREMIUM HAS SHIFTED LOWER POST-CRISIS
10-Year U.S. Treasury Term Premium

Source: Federal Reserve Bank of New York.
Note: Reflects term premia estimates of New York Fed economists Tobias Adrian, Richard Crump and Emanuel Moench (aka "ACM").

From an investment perspective, private debt presents investors with a differentiated opportunity set that may complement their public debt holdings, offering potential return, liquidity and diversification benefits. Given the complexity of sourcing, structuring and analyzing securities in the private markets relative to the public markets, a particularly skilled private debt manager may have a notable advantage over the less-adept competition. Further, since private debt strategies typically deploy investor capital over a multiple-year period rather than all at once, managers are structurally positioned to take advantage of shifting opportunities and valuations as they arise. And the limited liquidity in private debt suggests that in difficult market environments investors may be less adversely affected by the distressed selling of other investors and can often better control the ultimate outcome of an investment.

Meanwhile, as we noted earlier, there are reasons to believe that public fixed income market liquidity—while currently ample—may decline when the economic cycle turns, suggesting that the liquidity trade-off for private debt investment in the future may not be as high as it has been historically. With market makers holding fewer securities in inventory and dedicating less capital to trading activities, the ability of the capital markets to accommodate rapidly shifting investor flows may be compromised. Moreover, liquidity is already heavily concentrated in the market's largest issues, a trend that likely will be exacerbated once the fixed income investment environment becomes more challenging.

Private Debt Trends in Europe

The European corporate loan market historically was dominated by traditional banks providing longer-maturity loans; in fact, loans could not be extended in some jurisdictions unless the lender held a banking license. Though banks maintain a much larger share of the corporate lending market in Europe than they do in the U.S.—nonbank ownership of European corporate loans is estimated at less than 10% compared to a 70–80% share of the U.S. market—the introduction of Basel III has severely limited bank lending on the Continent, as capital charges on loans with maturities in excess of five years have increased significantly while structured and off-balance sheet lending has practically disappeared. Though new participants—mostly private equity and high yield managers—have entered the European loan market, they typically have targeted higher-risk loans; conservative, long-maturity deals continue to be underfunded. In addition, both public and private companies have displayed some reluctance to borrow from private equity-oriented lenders, given borrowers' biases toward working with domestic banks when possible as well as lenders' requirements for confidential information disclosure.

Demand for private debt in Europe is likely to increase. With the European Central Bank's targeted longer-term refinancing operations (TLTRO) program running off over the next few years, banks will lose access to an ultra-cheap source of funding they had used to extend corporate loans. As companies look to refinance outstanding debt and/or meet their general borrowing needs in such an environment, it's likely they will put aside their reservations about nonbank lenders. In addition, there has been an increase in regulatory capital trades in which banks reduce the risk weighting of their assets by buying credit protection on a portfolio of loans (often those made to small- to medium-sized enterprises) from institutional investors via credit default swaps. European insurers should continue to be major participants in private markets, as the adoption of Solvency II made private debt less capital-intensive to hold relative to certain securitized vehicles. Finally, the growth of private equity-backed leveraged buyout activity in Europe also should help fuel the supply of corporate private debt opportunities, in both the primary and secondary markets.

Risk Premia and How to Think About Public and Private Debt

A consideration of the benefits of adding private debt to a portfolio of public securities should center on the trade-offs an investor makes when allocating capital away from public fixed income markets and toward private ones. This process is qualitatively no different than what investors currently do when constructing a public-only fixed income portfolio and evaluating, for example, trade-offs across duration, credit spreads, volatility, convexity and liquidity.

However, asset allocation processes often make implicit assumptions about the liquidity of investments. This is not a significant issue for public markets, particularly in normal market environments; while bid/offer spreads may be wider in high yield debt than in investment grade credit, for example, investors typically can transact and adjust portfolio exposures to these assets as desired. In contrast, understanding liquidity and the compensation an investor receives in exchange for purchasing an illiquid investment becomes critical when moving from public debt to private debt. And liquidity, as we discuss below, is more complicated than simply being able to buy or sell an investment at will. To illuminate these trade-offs, it is helpful to step back and think about both public and private fixed income returns from a factor—or risk premia—standpoint.

A risk premia approach posits that there are persistent and intuitive sources of a security's return attributable to something other than its market exposure; instead, these sources of return are available to investors in compensation for bearing specific risks. While researchers and practitioners have identified countless sources of risk premia into which security returns can be decomposed, our public markets fixed income model focuses on only a handful of factors: momentum and value, along with related premia to which investors can generate specific exposures like credit, carry and liquidity.

We've modified our factor framework for use with public/private portfolios, recognizing that 1) factors like momentum—which inherently requires frequent portfolio rebalancing—are difficult to implement in private debt markets, and 2) the key factor trade-offs for public/private portfolios are based on the interaction and correlation between liquidity compensation and other factors. As such, we believe long-term institutional investors should intuitively frame public/private portfolio allocation in terms of exposures to credit, carry and liquidity factors, as described below.

	Credit Factor	Carry Factor	Liquidity Factor
Description	Compensation for fundamental default risk compared to a risk-free asset	Compensation for exposure to: • Term premia, including roll down • Convexity premia • Spreads	Compensation for: • Funding liquidity risk • Market liquidity risk
Measurement examples	Spread levels versus default- and severity-adjusted spreads, using a distance-to-default or ratings-based methodology	Income levels versus funding levels, slope levels, spreads compared to risk-free assets	Funding liquidity: TED spreads, swap spreads Market liquidity: on-the-run versus off-the-run spreads

How does this impact asset allocation decisions in public/private debt portfolios? Based on research across public fixed income markets and our own judgment about how private debt returns will evolve over time, there are two main points we'd like to make. First, carry risk premia—or the compensation for taking duration, convexity or spread risk—are related to credit risk premia, though capturing credit risk premia is a more efficient way to earn such "carry." It's generally accepted that correctly assessing a credit's true risk of default and whether spreads provide the appropriate level of compensation for that risk is an efficient way to earn excess returns in the public markets. Given information asymmetries and barriers to entry that exist in the private markets, however, they may offer more attractive opportunities to capture credit risk premia relative to what is available in the public markets. Moreover, these premia are likely higher in private markets, suggesting that private debt investors able to correctly assess default- and severity-adjusted spreads likely can add incremental returns compared to public markets.

Second, research shows that in general a portion of the return on carry in public markets is compensation for potential liquidity shocks; as such, when carry strategies are performing poorly we'd expect decreased liquidity and higher liquidity premia in the public markets. There's no reason to expect this stylized fact to be different for private debt markets over time; if the elements that influence the return on carry in the public markets are low—as term premia and generic spread levels currently are—it's rational for investors to consider taking increased liquidity risk in private markets in pursuit of potentially greater return. The decision hinges on the relative pricing of liquidity risk in public and private markets, and how valuable and accessible that public market liquidity likely will be in the future.

To understand the impact of liquidity on allocation decisions we must first understand the two types of liquidity risk and their relative impact on public and private markets. Liquidity risk can be broken down into funding risk and market risk. The most dramatic example of funding risk occurred in 2008. Banks, broker-dealers and insurance companies, for example, depend on access to short-term funding; when this source of liquidity dries up, as it did quickly in 2008, the risk of bankruptcy emerges. Private debt markets typically finance smaller companies and have limited exposure to the types of businesses that employ a steady stream of short-term funding, suggesting less exposure to funding risk in private debt markets than in public markets.

The other type of liquidity risk is related to the general underperformance of non-risk-free markets that is unrelated to funding stress, as manifest in conditions like rising bid/offer spreads and/or a lack of liquidity in smaller, off-the-run or more aged issues. One reason for these short-term liquidity shocks in public markets is the concentration of leveraged investors; it is not uncommon for such investors to leverage their holdings in government bonds or public corporate bonds at a ratio of 5:1 to 10:1 (or greater) via repo markets or prime brokerage, magnifying the liquidity risk when fundamentals shift and they want to sell. Borrowing is significantly lower in private debt markets, and our sense is that this will help insulate private markets from these "leverage-driven" liquidity events that appear to becoming more common in the public markets.

In summary, when comparing public and private debt investments investors should 1) evaluate them on an equal basis, with a focus on default- and severity-adjusted spreads; 2) consider the compensation (in terms of carry) offered by each for liquidity risk, given the expectation that a liquidity shock would have a negative, though perhaps not equal, impact on these markets; and 3) decompose generic liquidity risk into its components of funding risk and market risk, a context that suggests the liquidity risk of private markets may appear less severe than commonly perceived.

As we will discuss later, public/private debt portfolios frequently are oriented toward shorter-duration and higher-yielding investments, a bias that has an important implication for fixed income investors. Namely, the key advantage of a private debt allocation is derived from the degree and diversification of carry risk premia that can be added to a portfolio via credit and how that exposure relates to a liquidity premium. And there are good reasons to believe that carry and liquidity premia in private markets can be both higher than—and differentiated from—those available in public markets.

Private debt markets may offer more attractive opportunities to capture credit risk premia relative to what is available in the public markets.

The One-Portfolio Solution

By now you likely have surmised that we believe an allocation to private debt could be beneficial to fixed income portfolios. Implementation can be complicated, however, as building a portfolio of exposures across the private debt spectrum cannot be done instantaneously. Further, institutional investors must decide whether to manage a private debt allocation in parallel with their public fixed income portfolio or to combine all fixed income exposures into a single public/private portfolio.

As discussed in our white paper A Changing Landscape for Multi-Sector Fixed Income Investing, we see institutional investors—excluding those who manage assets fully in-house—migrating into one of two general categories. On one hand, there are investors with sophisticated resources that often prefer to partner with specialty asset managers while internally managing a dynamic asset allocation process across their fixed income exposures. On the other hand, there are a large group of investors looking for one-portfolio solutions, often in the form of mandates that provide the investment manager greater flexibility in pursuit of higher return targets.

We believe there are good reasons for investors to consider a broad, combined public/private debt portfolio. In many ways, the advantages of robust asset allocation processes on the public-only side are further enhanced by the differentiated opportunity set available in private markets. Compared to distinct public and private portfolios, a one-portfolio solution offer investors:

- A holistic approach to assessing the type and level of risk premia available across fixed income markets and to allocating capital opportunistically and appropriately; the sophistication of this effort should grow over time
- Improved risk efficiency, as public and private investments can be considered in aggregate when managing the portfolio's industry, sector and credit-quality characteristics
- A mechanism to take advantage of short-term dislocations in capital markets and their knock-on effects in private markets, a trend we believe will remain a key market feature for the foreseeable future
- A relatively straightforward and efficient way to introduce private debt exposures into an investment program without the addition of significant staffing or monitoring costs

An additional advantage of a combined public/private debt portfolio is that it allows investment managers to create better liquidity characteristics and to better capture liquidity premia than separate public and private allocations run in parallel. Investors need liquidity or a number of reasons: to fund a private debt commitment or to settle a public market purchase, for example, or, particularly in the case of liability-oriented portfolios, to meet distribution requirements. A combined public/private portfolio also has an edge in capitalizing on stressed financial conditions, as liquidity at the total portfolio level can be deployed across both public and private markets as appropriate to take advantage of market dislocations.

Part of the liquidity enhancement in a one-portfolio solution is simply a function of the structure of some private investments. The short duration and amortizing features typical of consumer loans creates natural liquidity over time, for example, while private corporate debt issues also may generate pre-maturity liquidity events should the interest rate and spread environment incent borrowers to prepay their loans. Liquidity enhancement also can come from the integration of public and private investment efforts. For example, short-duration public investments such as asset-backed securities or investment grade floating-rate securities can be added to maximize portfolio income while also providing funding, over time, for private investments.

The attributes of public and private markets debt can be combined to generate better portfolio-level liquidity than would be available with parallel investment processes. Further, as the opportunity set continues to evolve and expand, particularly in the already-diverse private markets, combined portfolios may be better positioned to capitalize on innovative new structures and their interaction with existing public and private investments. Making the most of these opportunities, however, demands sophisticated scenario analytics and a robust portfolio construction process in which ensuring liquidity needs are met is a basic, but crucial, requirement.

The attributes of public and private markets debt can be combined to generate better portfolio-level liquidity than would be available with parallel investment processes.

Constructing a Combined Public/Private Debt Portfolio

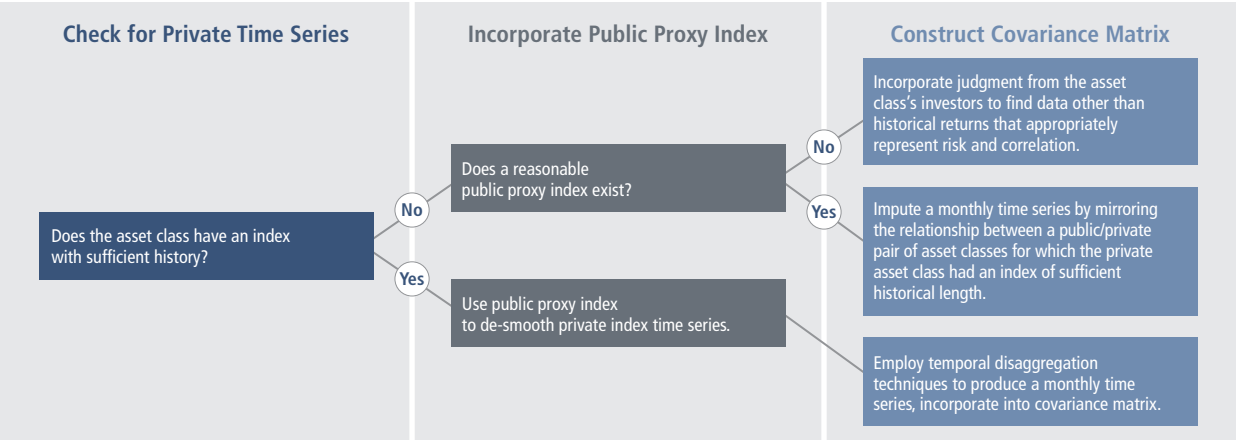
Asset allocation techniques for public fixed income portfolios are well developed and time tested. Whether approaching portfolio construction from a factor perspective or from a more traditional sector-based approach, allocators use historical data extensively to understand the return, risk and correlation behavior of the factors or sectors they employ. Forward projections also can be used, as can various optimization processes, but the critical starting point for all this analysis is a robust set of historical return and correlation data.

The challenge immediately becomes clear, as historical data for private debt strategies are severely lacking relative to the abundant statistics for public markets. Unlike public market securities, private debt tends to be valued quarterly, often using cost-based methodologies, and lacks decades of return history through multiple market cycles that could guide allocations. Given the low reported volatility of private debt, traditional asset allocation methodologies often result in suggested portfolios allocated 100% to it.

Thus, a different approach to constructing combined public/private debt portfolios is needed. Ours is based on two key premises:

- Modifying private debt return streams to make them comparable to public market data is useful, but the results should be understood as more uncertain given the assumptions made to arrive at them.
- As discussed earlier, private markets likely offer higher liquidity premia and credit risk premia than public markets, and portfolio construction should be centered on how to best capture it.

Given the complexities involved in asset allocation and portfolio management for a public/private solution, we have developed a proprietary process that guides portfolio construction decisions. At a high level, our process aims to estimate public and private debt returns, volatility and correlations as accurately as possible. Using the methodology highlighted below, we constructed a database of public and private debt market returns and equilibrated default- and risk-adjusted returns across asset classes. This analysis also allows us to estimate historical correlations between various public and private fixed income sectors.

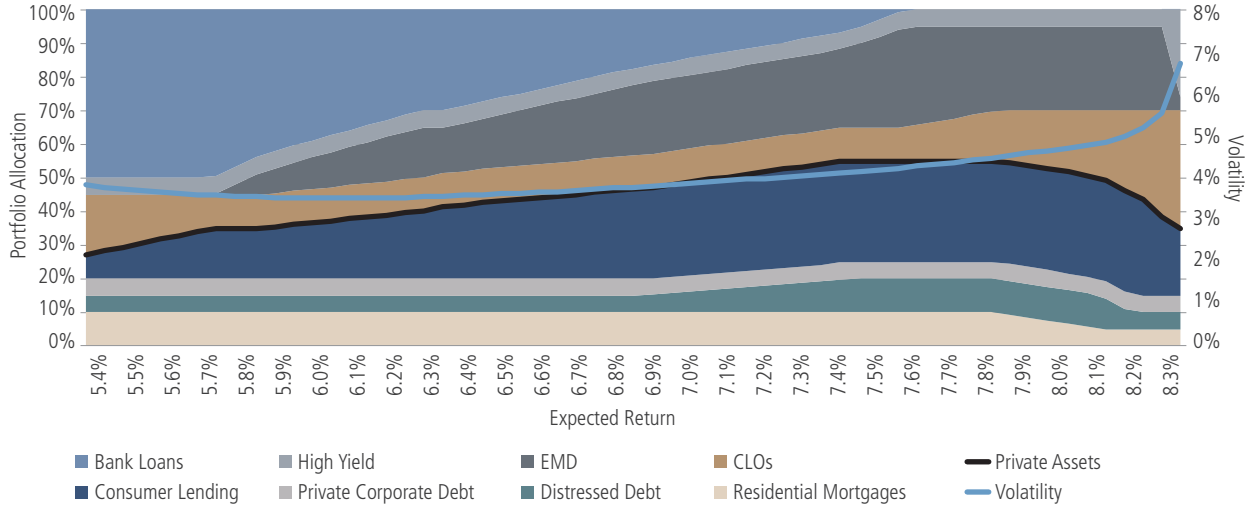


Using this return and correlation data as inputs, we depict in Figure 4 how return, volatility and liquidity trade-offs potentially can be exploited across the public and private investment spectrum in pursuit of short-duration, higher-yielding objectives. It is important to note that this process can be customized for a range of objectives—as measured by quality, volatility or duration, for example—depending on an investor's goals.

We've come to one key conclusion across the range of public/private combinations we modeled in Figure 4. Namely, as the expected return of a portfolio increases to a certain level, marginal return is generated primarily by the increased illiquidity premia that is captured through greater exposure to private debt; to target returns beyond this level, investors also must accept increased portfolio volatility. In our view, these results capture what we discussed previously and what intuitively should be a major advantage of adding private debt to a fixed income portfolio: the potentially higher returns that can be generated by capturing liquidity premia and diversified credit risk premia.

Figure 4 reveals some specific insights for higher-yielding portfolios. First, consumer lending and residential mortgage portfolios—given their short durations and amortization features along with the diversification benefits they offer versus credit exposure—are attractive and relatively stable allocations across return targets. Second, as noted above and as depicted by the black and light blue lines in the graphic, public/private portfolios can generate higher potential yields, up to a point, by capturing other risk premia without taking on greater volatility or reduced liquidity. Third, the pursuit of even higher-yielding portfolios requires a reduction in corporate debt—both public and private—in favor of emerging markets securities.

FIGURE 4. STRUCTURING PUBLIC/PRIVATE PORTFOLIOS TO CAPTURE LIQUIDITY OPPORTUNITIES



Source: Neuberger Berman. As of September 2018. Note: Distressed debt is included in "Private Assets."

Of course, the sample allocations in Figure 4 represent just a portion of the fixed income opportunity set and the public/private portfolios that can be constructed based on an investor's needs. For instance, a long-duration investment grade credit exposure might be appropriate for an investor with longer-term liabilities, while investors seeking more targeted risk exposures can incorporate narrow subsets of markets (short-duration high yield bonds, for example, or local-currency emerging markets corporate debt).

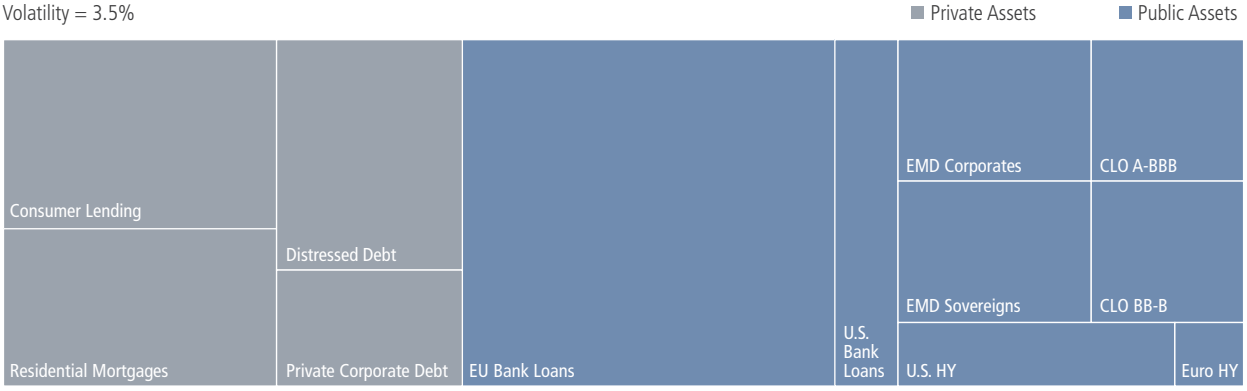
In Figure 5 on the following page, we provide detail on three potential sample allocations, each with an overall credit quality of BB/BB- and relatively low interest rate and spread durations. These public/private allocations may seem counterintuitive at first glance. While higher potential returns in public market portfolios normally are derived from the marginal risk of accepting increased duration and/or decreased credit quality, public/private portfolios boost expected return by capturing illiquidity, credit and/or complexity premia. This explains why private assets tend to generate a higher expected return than would be presumed given their credit quality and duration profile. For many investors, constructing portfolios in the ranges depicted in Figure 5 may result in greater portfolio efficiency.

It's important to highlight three additional points about this framework. First, the portfolio allocations in Figures 4 and 5 are strategic allocations; from a tactical perspective, it often will be useful to maintain cash allocations to fund private commitments or as an investment reserve. While these strategic allocations explicitly incorporate liquidity considerations and provide it over time through various exposures, further tactical increases in liquidity can be useful depending on the market valuation and opportunity environment. Second, these allocations represent an unlevered opportunity set; asset classes such as global investment grade credit may be incorporated into the strategic allocations for investors pursuing leveraged solutions. Related to this idea, derivatives can be used to tactically adjust the interest rate and credit exposures of these public/private portfolios. Finally, any portfolio allocation process should be supplemented with shortfall analysis. While forecasts of expected portfolio losses in negative environments are inherently uncertain, such uncertainty only reinforces the importance of shortfall analysis as part of the investment process.

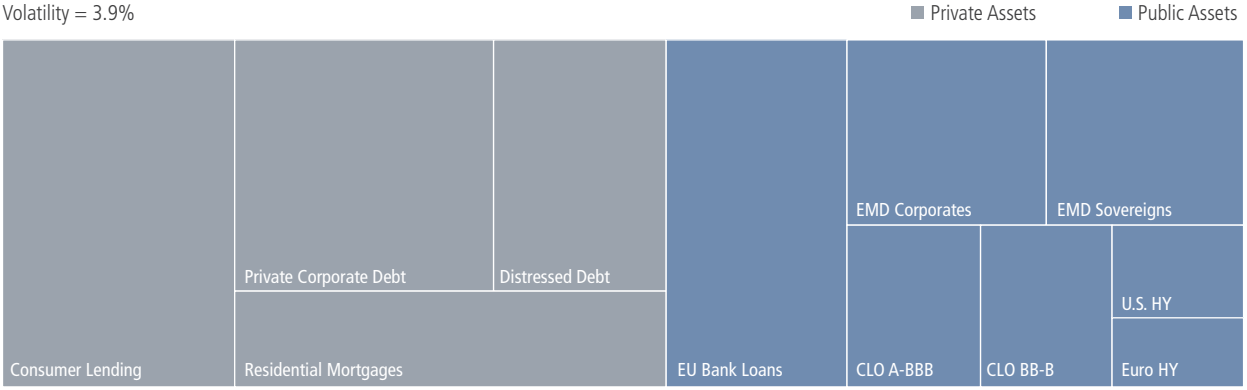
Our work suggests that public/private portfolios can boost expected return by capturing illiquidity, credit and/or complexity premia, and do so without taking on greater volatility or reduced liquidity.

FIGURE 5. GREATER ALLOCATIONS TO PRIVATE DEBT CAN INCREASE EXPECTED RETURNS WITH LIMITED IMPACT ON VOLATILITY

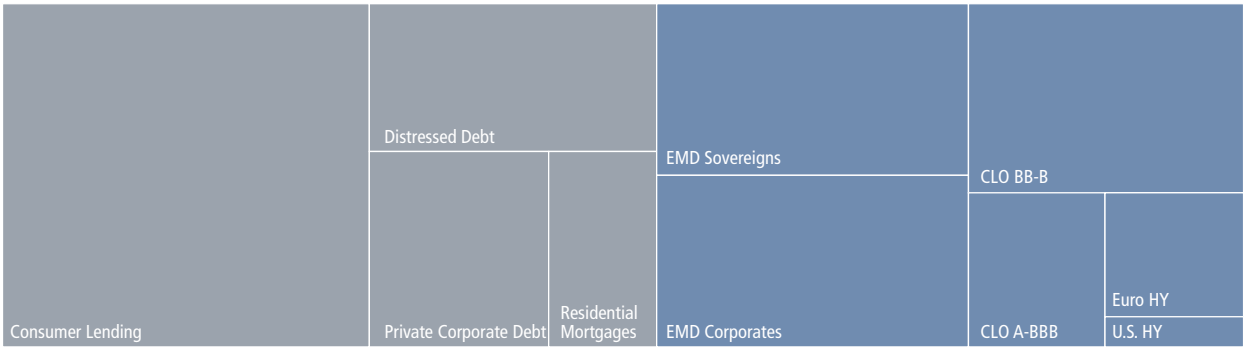
Sample Allocation 1
Duration = 2.2 years Spread Duration = 4.6 years
Volatility = 3.5%



Sample Allocation 2
Duration = 3.2 years Spread Duration = 4.6 years
Volatility = 3.9%



Sample Allocation 3
Duration = 3.4 years Spread Duration = 4.4 years
Volatility = 4.7%



Source: Neuberger Berman. As of September 2018. Volatility for non-USD asset classes reflect currency hedged values.

Investor Applications for Combined Public/Private Debt Portfolios

We expect institutional investors to increasingly embrace combined public/private debt strategies for a range of investment objectives, most notably:

- **Absolute return or higher targeted alpha strategies.** Very broad and flexible strategies tend to lend themselves to higher absolute or relative return objectives, as the expansive opportunity set naturally presents more possibilities for investors to add incremental return. In addition, the greater flexibility public/private mandates have in deploying capital can help make absolute-return objectives more achievable, particularly if interest rates rise and credit spreads widen.
- **Liability-aware strategies.** For investors operating in a liability-hedging framework, public/private debt portfolios offer a number of advantages. For many of these portfolios, this type of highly opportunistic strategy can help generate additional returns and income as a complement to the liquid, high-quality investments held to match liabilities. In addition, given that many liability-focused portfolios have less need for current liquidity than traditional portfolios, we find that a public/private combination can be structured to target higher income and returns and thus drive higher plan funding levels. On the other hand, the lower volatility of private debt instruments can create higher tracking error relative to liabilities that are marked-to-market more frequently, a challenge for liability-aware investors.
- **As a complement to core fixed income.** With an environment of low interest rates, relatively low credit spreads and potentially declining diversification benefits, investors remain focused on the role of core fixed income allocations in their portfolios. While these portfolios are and will remain an important holding for institutional investors, we believe most also should consider an opportunistic-type allocation as a complement to their core strategies. Introducing private debt via a combined public/private portfolio can offer investors modest exposure to this market segment—and its potentially higher income and return levels and diversification benefits—without the need for the management and oversight resources a separate private debt allocation would demand.
- **As an alternative to traditional credit strategies.** Combined public/private portfolios potentially can be used as part of a long-term allocation strategy to credit markets, allowing managers to deploy capital in this space opportunistically over an extended period of time. With relatively low yields currently available in public markets, this type of unhurried approach may prove attractive to some investors.

The implementation of public/private solutions can be accomplished through a range of investment structures, including separate accounts or commingled funds, as dictated by an investor's objectives, constraints and assets.

The emergence of combined public/private fixed income portfolios demands investment managers with expertise in both asset classes.

It's important to note that the emergence of combined public/private fixed income portfolios demands investment managers with a hybrid skillset. A manager not only must have deep experience with the nuances of the large, fragmented public bond markets, but also the sourcing and structuring expertise upon which success in the private markets depends. They will need derivatives hedging capabilities to manage portfolio risk, and have the processes in place to understand how capital deployment into the private markets can be exploited to enhance portfolio liquidity. With the convergence of public and private markets continuing apace, managers who do not already possess such crossover skills will need to develop them quickly in order to compete.

Conclusion

While cyclical factors such as low interest rates and tight credit spreads have contributed to the growth of private debt markets over the past decade, these markets serve an important function in the post-crisis capital markets and we expect they should continue to be supported by robust levels of supply and demand going forward. In fact, we believe that over the next 10 years we'll see a continued blurring of the line between public and private debt—not unlike how the sharp delineations between public market investment grade, high yield and emerging markets debt faded away over the years—as investors increasingly consider their exposures and liquidity risks across the entire spectrum of fixed income investments. Such an approach likely will require modifications of traditional valuation and asset allocation processes and almost certainly will demand a greater focus on liquidity management than is typical for public-only portfolios. It also will necessitate investment managers whose processes, platforms and experience are equally robust in the public and private markets. But this is the world we think is coming—perhaps much sooner than many investors expect.

APPENDIX

Types of Private Debt Investments

"Private debt" is a catchall for a wide array of credit investments across a range of styles and exposures. Below we discuss a few of the more prominent types.

Corporate lending. Corporate-oriented private debt includes a range of structures and an array of underlying borrowers. In the U.S. these loans typically are made to entities generating $200 million or less in annual EBITDA, with a substantial segment of the market focused on middle-market borrowers with EBITDA of $50 million and below. In Europe the opportunity set is focused on issuers with $20–40 million in annual EBITDA. Private equity transactions are the primary source of corporate private debt supply, as private equity sponsors will issue private debt to fund a leveraged buyout.

Though non-investment grade companies predominate the corporate lending market, high-grade corporations also tap into it, offering investors a yield premium to comparable public market debt in exchange for reduced liquidity—typically not an issue for their traditional insurance investors in search of long-duration, high-grade debt to meet their asset-liability matching needs. Both issuers and investors in the corporate lending market benefit from a high degree of customization, regardless of rating, as loans can be structured with various payment characteristics (from high cash coupons to payment-in-kind structures) and across the capital structure (from senior secured to mezzanine). Covenants built into these deals offer investors the additional benefit of structural protections.

Co-investments are another approach to private corporate debt lending, as hedge funds have been partnering with a range of institutional investors to directly originate loans and hybrid financings to borrowers in need of flexible liquidity solutions. These loans are not typical, directly originated loans to middle-market borrowers; they are more like rescue-financing opportunities, and represent a smaller component of the corporate private debt market. The structure of these loans varies significantly, ranging from revolving liquidity facilities to lending secured by assets or equity pledges.

Consumer non-residential lending. The specialty finance industry is composed primarily of nonbank lenders that have assumed some of the functions traditional banks abandoned in the face of more restrictive regulations. In recent years technology has spurred a new wave of industry growth, as lenders increasingly are using web-based platforms to provide borrowers—both consumers and small businesses—with easier and more efficient access to capital, an approach often referred to as "marketplace lending" or "peer-to-peer lending." Not only has loan origination volume grown exponentially as more and more lenders enter the space, the cross-section of borrower types and their needs has broadened and the market for investors has begun to mature via growing securitization and secondary markets.

There are alternative lending platforms in both major developed economies and emerging markets, focusing on wide range of borrowers with diverse credit profiles. These platforms employ proprietary underwriting models that often are more sophisticated than those of traditional banks, particularly in certain markets; these lenders may analyze hundreds of data points per borrower to determine the terms of a loan, compared to the single FICO score on which traditional banks often rely. Sectors of this diverse market include consumer, small business, real estate, point of sale, invoice factoring and equipment leasing, among others. Loan characteristics differ across sectors, with maturities typically ranging from a few months to five years and amortization occurring daily or monthly.

Fixed income investors can gain exposure to specialty finance assets in a number of ways, including direct funding of marketplace loans, provision of warehouse financing to balance-sheet lenders or the purchase of securitization tranches in the primary or secondary markets. The platforms typically provide prospective investors with the loan terms (e.g., interest rate and maturity) and borrower characteristics, including custom credit ratings.

Residential mortgage lending. As the U.S. federal housing agencies and banking system have limited the capital available for mortgage lending, the private debt markets have increasingly provided financing for a range of borrowers. There are a number of reasons a borrower may seek a residential mortgage in the private debt markets rather than through a traditional lender, including an inability to meet the requirements for a "qualified mortgage" (often the case for borrowers with a high net worth but relatively low income or whose loans exceed maximum debt-to-income levels, as well as self-employed borrowers), a desire for an interest-only loan or to purchase investment properties they will not occupy.

It's important to note that today's non-agency mortgage market is significantly different than the pre-crisis non-agency market; for example, it is not uncommon today to find borrowers with 700-plus FICO scores accessing capital through these private channels. And all of the owner-occupied loans will meet the "ability to repay" standards established in the Dodd-Frank legislation.

Borrowers and loan structures in the private markets vary and include:

- **Jumbo-prime or near-prime mortgages.** Typically higher loan-to-value loans, interest-only loans for up to 10 years followed by normal amortization, or loans to self-employed borrowers
- **Expanded-prime mortgages.** Often extended to borrowers with non-standard documentation
- **Investor property financing.** For purchases of rental property or other non-owner-occupied lending
- **Bridge financing.** Lending for the redevelopment or construction of a property

In Europe, growth in nonbank mortgage lending has occurred primarily in the U.K. and the Netherlands. While the U.K. is widely considered the most diverse market for such lending, with a particularly deep market for alternative loan products ("buy-to-let" loans perhaps most notably), nonbank lenders represent only about 7% of U.K. mortgage lending. In contrast, nonbank lenders account for about 40% of mortgage activity in the Netherlands and hold a much more significant place in the mainstream mortgage market.

Multifamily lending. Renter households in the U.S. have increased by about 20% in the 10 years since the onset of the financial crisis. To finance the ownership, development and improvements of multifamily properties to meet this demand, operators have turned to a variety of resources for capital solutions, including the federal housing agencies, banks, CMBS, insurance companies and private lenders. In certain cases, the private market and the federal housing agencies have worked in tandem; for example, Freddie Mac maintains a multifamily loan securitization program collateralized by agency conforming loans to stabilized apartment buildings in which it places the first-loss tranche to a private debt holder. Other forms of private multifamily real estate debt include senior and mezzanine construction loans, bridge and transitional loans, and mezzanine loans on rent-stabilized properties. As private loan terms are negotiated directly between lender and borrower, structures and coupon terms can vary widely, with the circumstances of the underlying real estate and sponsor a key factor.

Commercial real estate lending. With big banks pulling back from the nearly $3 trillion commercial real estate space, a variety of nonbank lenders—including real estate investment trusts, hedge funds and private equity firms—have stepped forward to meet the needs of developers, typically in higher-risk segments of the market like commercial loans. In many cases these alternative lenders have sought to bring greater speed and efficiency to the funding of commercial real estate loans, which can appeal to borrowers that need to move quickly on an opportunity and are willing to pay a premium for it. With commercial real estate markets appearing to have topped out, many traditional real estate investors are showing a preference for the safer part of the capital stack.

Asset-based lending. These are business loans secured by both real and financial collateral—such as equipment or account receivables—typically at interest rates higher than traditional bank loans. The borrowers, who often are undercapitalized, use the loan proceeds for everything from working capital to M&A.

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