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DECEMBER 2023

Topic of Interest

Liquidity Needs During Market Drawdowns

Introduction

What is the fundamental reason why investors should care about liquidity? In short, investors want to avoid being forced to sell high-returning assets that have fallen in value in order to pay for benefits, philanthropic spending, expenses, and cover capital calls for their private asset programs.

In this Topic of Interest white paper, we will first touch on the different definitions of liquidity and illustrate how these relate to institutional portfolios. Second, we will examine those liquidity characteristics in times of market stress, the way in which illiquid assets often behave, and how that impacts investors. Lastly, we outline a tool that we have created and discuss how this can be used to assist clients with gauging the appropriate level of liquidity in their own portfolios. Overall, we believe investors should put much thought and care into portfolio liquidity decisions.

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Defining liquidity for institutional investors

Liquidity is generally defined as **the ability to sell an asset without materially impacting that asset's price at a time when the investor must sell**. There are three parts to this sentence which we believe illustrate the definition of liquidity: 1), the ability to sell assets (how quickly?); 2), without materially impacting that asset's price (how large of a discount would an asset need to be sold for if it were sold quickly?); and 3), at a time when the investor must sell (how much do an asset's liquidity change during market stress?).

—**The amount of time it would take to sell an asset for cash is a raw measure of liquidity.**

- Many assets such as publicly traded stocks and bonds can be sold quickly for cash. Other assets such as those that are privately traded may require months, quarters, or even years to sell.

—**If an asset were to be sold quickly, how large of a price discount would be required to attract a buyer?**

- If an asset can be sold quickly but only at a -20% discount, this reflects very poor liquidity.

—**Liquidity characteristics of an asset can vary drastically depending on market conditions.**

- Certain assets may be easily sold quickly at a competitive price during normal market conditions, but may be difficult to sell at a competitive price during strained market conditions.
- This concept can be illustrated by the “bid-ask spread” of an asset. The “bid” of an asset is the price that a broker is willing to purchase the asset from an investor. The “ask” of an asset is the price that a broker is willing to sell the asset to an investor. For the most liquid assets, the difference between “bid” price and “ask” price is very small.

Pricing & asset class considerations

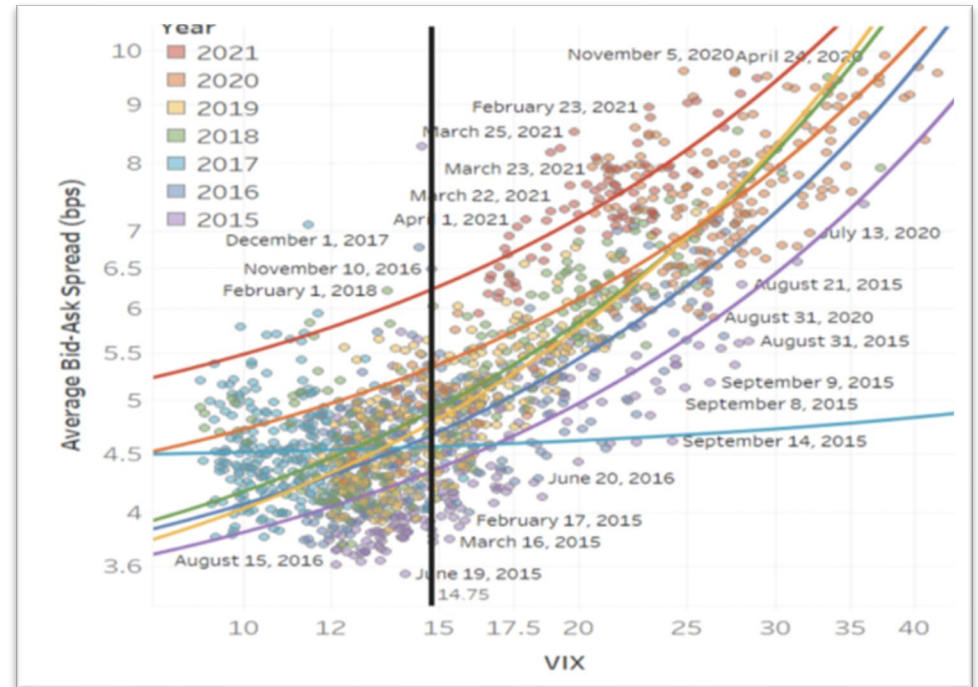
During times of market stress, a lack of liquidity can create more serious problems that are deleterious to the long-term value of the portfolio.

Illiquidity issues during market stress include: 1) bid-ask spread widening, 2) the tendency for credit to dry up at the same time that borrowers require that credit, 3) problems caused by the appraisal-based pricing nature of private assets, and 4) private market capital calls.

Bid-ask spreads widening

- “Bid-ask spread” is the difference between the price at which an asset can be purchased and the price at which it can be sold in the open market.
- In times of market stress, imbalances between supply (sellers) and demand (buyers) may lead to a widening bid-ask spread.
- Also, higher market volatility and uncertainty may result in market makers demanding a wider bid-ask spread to compensate them for the higher risk inherent in the market.

EXHIBIT 1: BID-ASK SPREADS VS. VIX FOR S&P 500 STOCKS



Shown in Exhibit 1 is an analysis performed by Nasdaq. This illustrates that during times of market volatility, bid-ask spreads are substantially wider.

Source: Nasdaq Economic Research Note: From February 1st 2015 to April 30th. Note: From February 1st 2015 to April 30th 2021. Half trading days are excluded from the sample. Days where the average bid-ask spread were higher than 10 basis points have been removed from the sample

Pricing & asset class considerations

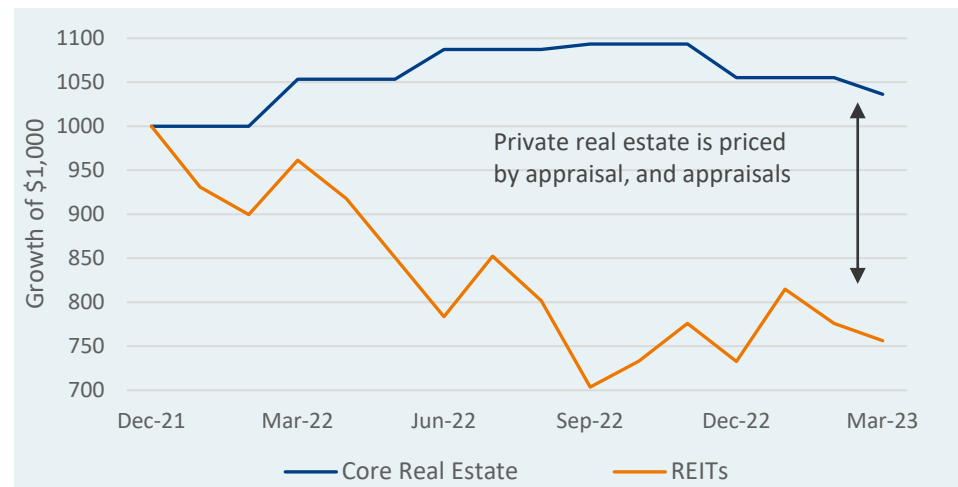
Credit tends to dry up when borrowers need that credit.

- As markets are stressed and credit is reduced, there is more demand to sell assets (to access cash) than to buy assets (to invest cash).
- Certain investment strategies—particularly private market and alternatives strategies—may exercise their ability to *put up gates* and stop investors from withdrawing their funds, often for an extended period.
- The credit that *is* available to investors may be costlier, with tighter borrowing covenants, and may only be available to higher-quality borrowers.

Problems with appraisal-based pricing

- A disadvantage of private assets is that the market value of these assets take time to appraise as they are not publicly traded³, which can create complications regarding portfolio rebalancing.
- As illustrated in exhibit 2, private real estate has recently failed to reprice downward to the level where market transactions are occurring⁴.

EXHIBIT 2: PRIVATE VS. PUBLIC REAL ESTATE PRICING



- The overstated appraisal basis may increase the reported allocation of an investor's total real estate portfolio above policy targets, which creates issues for investors because when rebalancing, they are only able to feasibly sell their publicly traded real estate exposure (which is trading at a deep discount).

Source: NCREIF Property, Wilshire REIT, Verus, as of 3/31/23

Verus Liquidity Coverage Tool

Most investors allocate to illiquid assets with the belief that they will be rewarded with higher returns. But how much liquidity should be retained in a portfolio? To evaluate the liquidity *safety net* that is available to an investor for any given asset allocation mix, we have employed a banking regulation-type framework to measure liquidity.

In the Basel III accord, regulators defined the Liquidity Coverage Ratio (LCR) as the ratio of highly liquid financial assets relative to short-term obligations. This formula has been modified and applied to institutional portfolios in order to capture the total liquidity available relative to liquidity needs. Exhibit 3 below illustrates the LCR formula.

EXHIBIT 3: THE LIQUIDITY COVERAGE RATIO

$$\text{Liquidity Coverage Ratio (LCR)} = \frac{\text{Liquidity Available}}{\text{Liquidity Needs}}$$

EXHIBIT 4: GENERALIZED LIQUIDITY COVERAGE RATIO

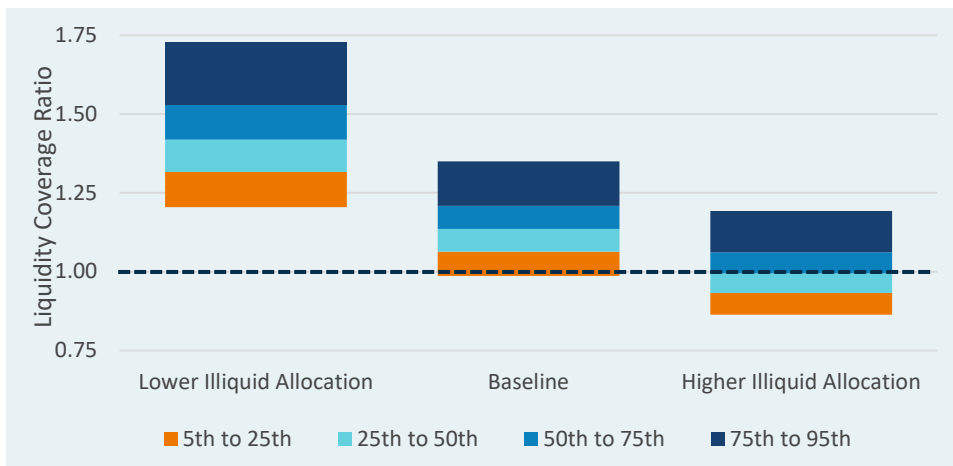
$$\text{Pension LCR} = \frac{\text{Liquid Financial Assets} + \sum (\text{Illiquid Distributions}) + \sum (\text{Various Cash Inflows}) + \sum (\text{Liquid Investment Return})}{\sum (\text{Cash Obligations}) + \sum (\text{Illiquid Capital Calls}) + \sum (\text{Expenses})}$$

Different types of institutions will have different cash flows, and therefore will have unique inputs to this formula. A generalized version of the formula is provided on the right-hand side. In the Appendix we have included components that may be most relevant to different types of institutions.

Liquidity Coverage Ratio

- The *range* shown in the Liquidity Coverage Ratio shown in Exhibit 5 represents the distribution of outcomes regarding the ability of cashflows over the time horizon to cover liquidity needs.
- The 50th percentile represents the expected outcome, or *base case*, and the distribution of outcomes around the base case represents what an investor might expect given a more positive outcome (higher LCR) or a more negative outcome (lower LCR).
- An LCR below 1 represents the expectation that the portfolio will have insufficient total liquidity over the next five-year period to cover cash obligations.

EXHIBIT 5: 5-YEAR LIQUIDITY COVERAGE RATIO



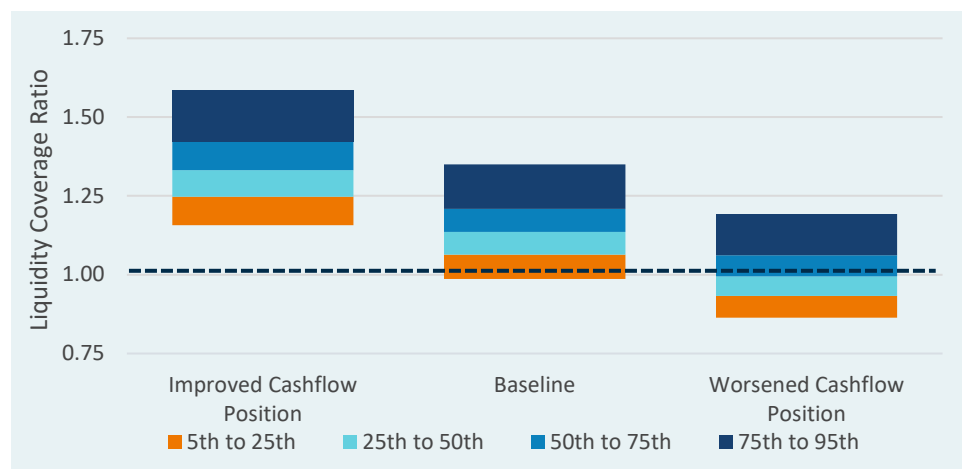
Source: Verus, for illustrative purposes only

- The ‘Low Illiquid Allocation’ portfolio mix in Exhibit 5, based on its liquidity profile, suggests there is an extremely low probability that liquidity will be insufficient to cover all cash needs.
- The ‘Baseline’ portfolio mix suggests a small but material chance that liquidity will not be sufficient to cover all cash needs.
- The ‘High Illiquid Allocation’ portfolio mix suggests a substantial chance that liquidity will not be sufficient to cover cash needs.

Additional drivers of liquidity risk

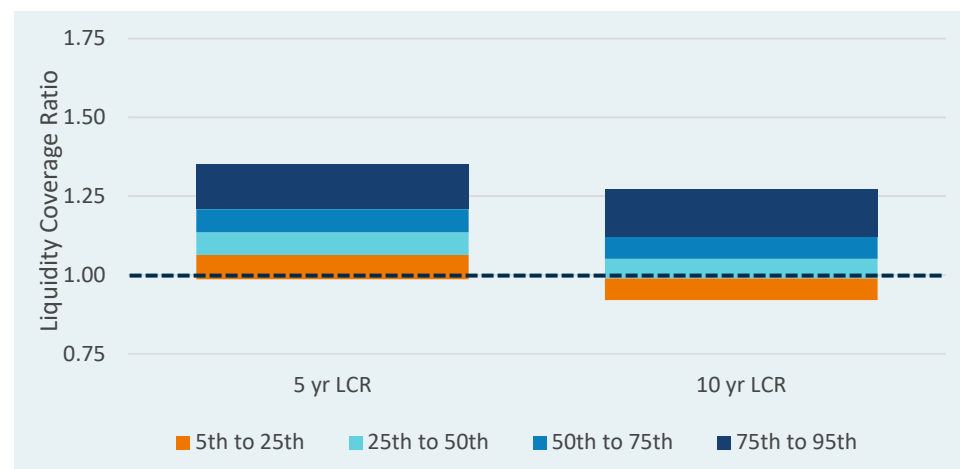
- An institution that expects higher liquid outflows (e.g., cash obligations and capital calls) or lower liquid inflows (e.g., contributions and distributions from illiquid assets) will have greater liquidity risk, all else equal.
- This is shown in Exhibit 6, where the asset allocation in each scenario is constant and only the cashflow position changes. Despite holding the same allocation, these three investors face materially different levels of liquidity risk.
- An assessment of liquidity risk is also impacted by the time horizon over which the analysis is done. The longer the time horizon of the analysis, the more variability that is introduced from an asset return perspective.
- The illustration to the right shows how the same investor may appear to have low liquidity risk over a 5-year timeframe but has high liquidity risk when analyzed over a 10-year timeframe.

EXHIBIT 6: 5-YEAR LIQUIDITY COVERAGE RATIO



Source: Verus, for illustrative purposes only

EXHIBIT 7: 5- VS. 10-YEAR LIQUIDITY COVERAGE RATIO



Source: Verus, for illustrative purposes only

Conclusion

Investors must consider portfolio liquidity because they never want to be in a position where they are forced to sell their higher-returning assets that have just gone down in value in order to cover cash obligations or capital calls—effectively locking in market losses. Overall, we believe investors should put much thought and care into portfolio liquidity decisions.

We have developed a tool using the Liquidity Coverage Ratio to assist clients in decision making regarding the appropriate *liquidity safety net* that they believe is prudent for their investment objectives. This tool provides an in-depth understanding of an investor's liquidity profile and how that profile may be expected to evolve over time.

For further information regarding our views on this topic, please reach out to your Verus consultant.

Most institutional investors can maintain a long-term focus regarding their return objectives.

At the same time, even a very long-term investment horizon requires short-term cash flows to meet payment obligations.

Appendix & disclosures

EXHIBIT 8: INVESTOR SPECIFIC LIQUIDITY COVERAGE RATIO

Liquidity Coverage Ratio Component	Public, Multiemployer, or Corporate Pension Plans	Not-For-Profit Endowment Funds
Liquidity Available	— Starting liquid financial assets	— Starting liquid financial assets
	— Liquid investment return	— Liquid investment return
	— Illiquid Distributions	— Illiquid Distributions
	— Employer contributions	— Gifts / donations
	— Employee contributions	
Liquidity Needs	— Illiquid capital calls	— Illiquid capital calls
	— Plan expenses	— Plan expenses
	— Benefit payments	— Spending policy

1 This concept can be illustrated by the “bid-ask spread” of an asset. The “bid” of an asset is the price that a broker is willing to purchase the asset from an investor. The “ask” of an asset is the price that a broker is willing to sell the asset to an investor. For the most liquid assets, the difference between “bid” price and “ask” price is very small.

2 The mispricing of U.S. TIPS was most widely publicized when the inflation breakeven rate of the TIPS market dropped to a level that appeared to be detached from reality, at one point pricing a 0.5% annualized inflation rate for the next decade, which was very different from other investor and household inflation expectations at the time. The illiquidity and therefore price discounts of the TIPS market was leading to an unusually depressed inflation breakeven rate during this period.

3 Some investors might argue that not having access to market price is an advantage rather than a disadvantage, because it reduces reported portfolio volatility. We are skeptical of this argument.

4 This is reflected in the extraordinarily large gap between the current average appraised price of private real estate relative to the average transaction price at which sales are occurring in the market.

5 In the Verus Topic of Interest white paper *Strategic Liquidity* authored by Danny Sullivan in April 2020, this framework is described in deeper detail. View the paper here: <https://www.verusinvestments.com/strategic-liquidity/>

Further disclosures

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