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## Cash Securitization: The Challenge of Effective Liquidity Management

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Although fund sponsors have been implementing cash securitization (also known as cash equitization or cash overlay) for many years, the topic remains esoteric for some. This paper will clarify in plain language what cash securitization is and how it can be used within a broader liquidity-management program. We'll also review the challenge of liquidity management, introduce the tools that make cash securitization possible, and provide an example of the mechanics involved for effective implementation.

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## The challenge of liquidity management

Most institutional investors begin the portfolio-building process by establishing long-term return and risk objectives. To achieve these objectives, they create investment policies to determine asset-allocation targets. Cash, as an asset class, generally receives a small or zero allocation. A fundamental thesis of investing is that, over the long run, more-volatile asset classes are expected to earn a risk premium above cash returns.

However, cash may be required for a variety of reasons, including payments of pension benefits, endowment distributions, capital call commitments, and other expenses accrued during operations. Selling just the right amount of invested assets to make these payments with perfect precision would be onerous if not impossible. Additionally, when cash comes into the institution via contributions or other sources, investing it in the desired vehicles isn't always immediately possible or cost-effective. As a result, institutions typically keep at least some cash ready to meet these on-demand liquidity needs.

But if cash exposure reduces long-term return expectations (commonly referred to as *cash drag*) and creates tracking error, or deviation from the investment policy, how can investors address their liquidity-management challenges? Via cash securitization.

## Expanding the investment tool kit: An introduction to futures

Before we can understand how cash securitization works, we must first understand the investment instruments that make it possible. Let's begin with the concept of a derivative, a term that's often thrown around but little understood. A derivative is a financial instrument that derives its value from its relationship to some underlying asset. The most common derivatives used in a cash-securitization program are exchange-traded futures.

In a futures contract, a buyer purchases an asset (such as a physical commodity or a financial instrument) from a seller at a predetermined future date and price. Exchange-traded futures are highly liquid forms of futures contracts, and they allow investors to earn a similar return as the underlying asset with an important advantage: capital efficiency. Unlike index funds or ETFs, futures need not be fully funded because they require only a small amount of initial margin.

For example, an investor can buy \$100,000 of an underlying asset by purchasing the asset in exchange for \$100,000 in cash or receive the same \$100,000 exposure (called *notional exposure*) by purchasing a futures contract. The investor is required to pledge initial margin, say \$5,000,<sup>1</sup> and receives the entire \$100,000 notional exposure on the underlying asset. In other words, an investor can buy enough futures contracts that the notional value of their exposure is equal to their cash position. Since only a portion of the cash is used for margin, the rest is available on demand for other uses. It's important to keep in mind that leverage isn't introduced into the portfolio, since the futures exposure matches the overall cash exposure in the fund.

In this way fund sponsors can maintain the practical benefits of holding cash while remaining effectively fully invested via futures, reducing the impact of cash drag and policy deviation.

<sup>1</sup> Initial margin varies by contract and may change over time.

## Establishing a cash-securitization overlay program

Now that we've covered the basic concepts behind cash securitization, let's consider the process of implementing an effective cash-securitization overlay program. It involves three steps.

**Step 1: Know your cash balance.** Identify the cash exposure in the fund by capturing the daily cash balances held in all the custodial accounts used for liquidity management. Institutional investors can also securitize cash held by their asset managers. If the manager allocation is separately held, you can determine the cash balance by monitoring the custodial account each day. Commingled vehicles require assumptions about the level of cash held by their managers. Investors can estimate this by either discussing it with their managers or reviewing the cash balances included in their managers' periodic reporting.

**Step 2: Determine the appropriate allocation for your securitized cash.** As a general rule, funds prefer their securitized cash have an asset allocation that attempts to mimic their policy portfolio. However, many institutional investors will have policy allocations to asset classes that are uninvestable via existing derivative instruments—for example, hedge funds, private equity, or real estate. Investors may choose to reassign those portions of the policy to liquid asset categories for purposes of cash securitization.

Two common approaches are to proportionally reallocate those asset classes into the investable asset classes or strategically select investable asset classes that may be a reasonable proxy. For example, an allocation to private equity could be reallocated proportionally across all the investable asset classes, or it could be reallocated into domestic small-cap equity because the investor believes private equity and domestic small-cap equity share investment characteristics.

Another common practice for securitizing cash is to use cash dynamically in the portfolio to gain exposure to the most underweight asset classes. You can survey the overall fund to determine which asset classes are underweight relative to the target allocation and add exposure to move the fund closer to policy targets. Conversely, when funds are withdrawn, exposure is removed from the overweight asset classes.

Asset-class exposures commonly acquired via futures include:

- » Domestic equity (S&P 500®, S&P 400®, Russell 2000, Russell 3000)
- » International equity (MSCI EAFE, MSCI Emerging Markets, MSCI ACWI ex US)
- » Fixed income (benchmark duration profile created via an optimized basket of Treasury futures)
- » Commodities (GSCI, Bloomberg)

**Step 3: Purchase futures contracts to cover the value of your cash.** Having determined the cash balance in step 1 and the allocation in step 2, investors will be ready to implement a cash-securitization overlay program. Assume the portfolio has \$10 million in fund cash and a simple allocation of 60% S&P 500® Index and 40% Bloomberg US Aggregate Index. Because there's no Bloomberg US Aggregate futures contract, that position will be proxied by a combination of US Treasury futures contracts with a similar duration profile to the Bloomberg US Aggregate Index.

The portfolio should hold enough S&P 500® futures contracts to have notional exposure of \$6 million and enough Treasury futures contracts to have duration-equivalent notional exposure of \$4 million. Once their notional value is clear, investors can determine how many contracts to purchase.

Figure 1: Sample futures contract calculation

Asset	Desired notional value	Number of contracts to purchase	Approximate notional value of the purchase contracts
S&P 500®	\$6MM	27	\$6MM
Basket of Treasury futures	\$4MM	25	\$4MM

Source: Parametric, 3/17/2022. For illustrative purposes only. It is not possible to invest directly in an index.

In figure 1, the purchase of 27 S&P 500® futures contracts and a basket of 25 Treasury futures contracts has created notional exposure of approximately \$10 million. Nearly 100% of the value of the cash position is now effectively fully invested, greatly reducing cash drag and bringing the fund closer to its policy target. However, as you can see in figure 2, the acquisition of these futures contracts now necessitates posting initial margin and maintaining variation margin.

Figure 2: Sample futures contract cost calculation

Asset	Approximate notional value of the purchased contracts	Required initial margin	Recommended variation margin	Total recommended margin	Total recommended margin as a percent of the notional value
S&P 500® futures	\$6MM	\$339k	\$597k	\$936k	16%
Basket of Treasury futures	\$4MM	\$57k	\$396k	\$453k	11%
Total	\$10MM	\$396k	\$993k	\$1.4MM	14%

Source: Parametric, 3/17/2022. For illustrative purposes only. It is not possible to invest directly in an index.

The investor pledges a total of \$1.4 million of cash in initial and recommended variation margin. The remaining \$8.6 million in the cash pool is still available for use for the institution's operations.

This is how a cash-securitization overlay program may solve the liquidity-management challenge. Nearly 100% of the cash position's value is invested, greatly reducing cash drag and helping the portfolio meet its policy objectives. Simultaneously, 80% to 90% of the fund's cash is available for use on demand for the institution's operations, and 100% of the cash is available in as little as one day's notice.

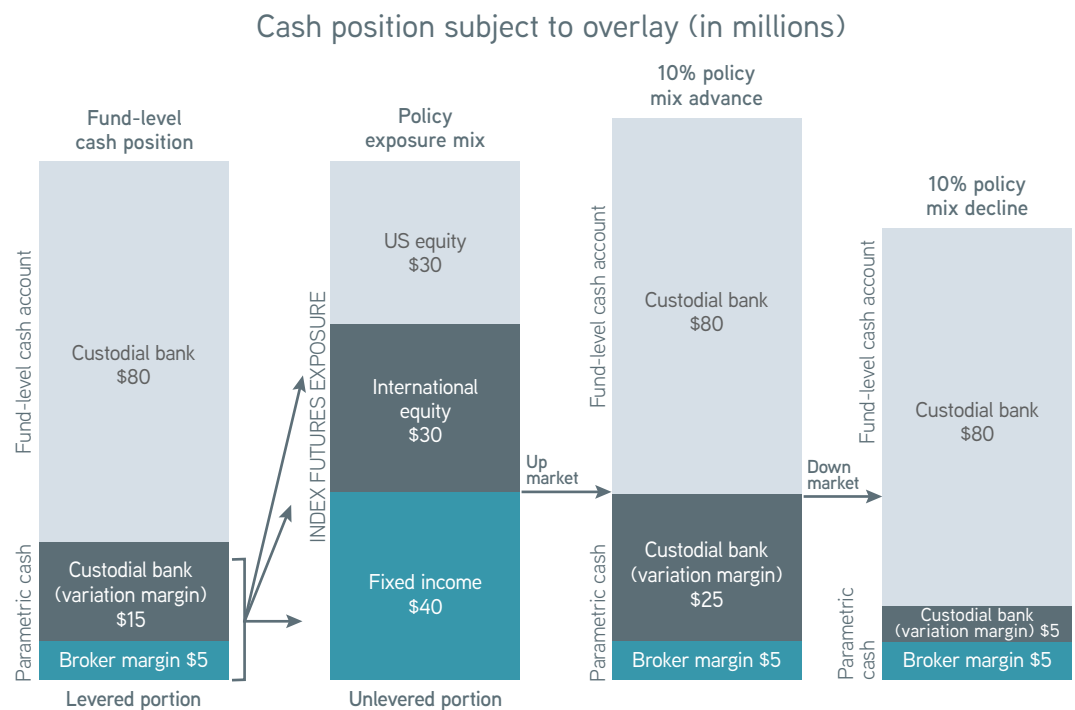
What happens next?

After you establish a cash-securitization overlay program, market conditions and the cash balance may change. How do these changes affect the cash-securitization overlay program?

In the case of market moves, futures contracts follow a daily mark-to-market process, resulting in cash flows to and from the cash account each day. Let's assume that the day after you establish the cash-securitization overlay program, the S&P 500® rallies by 1%. The S&P 500® portion of the program described above will earn \$60,000 that's deposited into the cash account as part of the daily mark-to-market. The fund's cash balance increases by \$60,000, as does its notional exposure. Similarly, a 1% decline in the S&P 500® would result in a \$60,000 mark-to-market withdrawal.

In terms of cash flows, an effective cash-securitization overlay program monitors cash balances daily and adjusts exposures as cash balances change. Imagine that the fund must make a payment of \$1 million. To prevent leverage from entering the portfolio, the program's S&P 500® and Treasury futures positions will be reduced to match this outflow. The plan remains effectively fully invested with a new cash balance and notional exposure of approximately \$9 million.

Figure 3: Where the cash resides in an overlay program

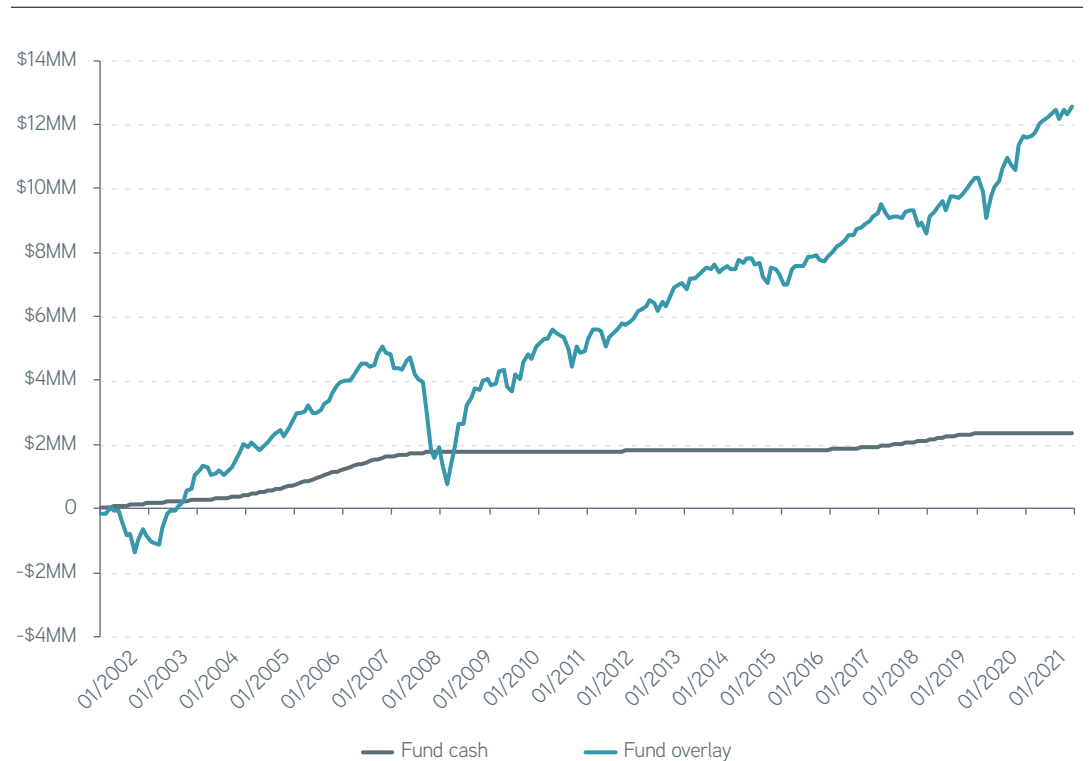


For illustrative purposes only.

### What happens over the long run?

Imagine two institutional investors with a market value of \$1 billion and a constant cash balance of approximately \$10 million. From 2001 to 2021, one holds its cash in T-bills (or money market funds that earn a T-bill-like return), and the other investor securitizes its cash according to a 60% MSCI ACWI and 40% Bloomberg US Aggregate allocation. Over the course of 20 years, the cash-securitized overlay portfolio earns a potential 4.8% annualized incremental return, or \$10.2 million more than the portfolio earning a T-bill return.<sup>2</sup>

Figure 4: Simulated cumulative return of fund cash in a cash-securitized overlay program (net of fees), 2002–2021



Sources: Parametric, Bloomberg, 9/30/2022. Simulated performance is for illustrative purposes only, does not represent actual returns of any investor, and may not be relied upon for investment decisions. Actual client returns will vary. All investments are subject to loss. Please refer to the disclosures included at the end of this material for additional important information.

### Conclusion

Effective liquidity management presents an implementation challenge to institutional plan sponsors. Institutions need cash to operate, yet cash can drag down their long-term expected investment performance, potentially hindering the achievement of long-term investment objectives. A cash-securitization overlay program allows institutions to remain fully invested while retaining all the benefits of on-demand liquidity. By expanding their investment tool kit and embracing a cash-securitization overlay program, institutions can address the challenge of liquidity management and strive to maximize the efficiency of their investment programs.

<sup>2</sup> Transaction costs and management fee estimates of approximately 20 basis points per year are included in this analysis.

## Appendix A: Risks and costs

Investors should understand the risks before beginning a cash-securitization overlay program.

Risk	Description	How an investor could mitigate
Market	Market performs in a way that wasn't anticipated. For example, cash outperforms capital markets.	Systematic market risk is an inherent part of an overlay program and can be neither diversified away nor mitigated. Specific policy guidelines should be established to clearly define desired market risk based on the investor's asset-allocation targets.
Communication	Overlay index exposures are maintained based on underlying investment values provided by one or more third parties. There are often delays in the receipt of updated information, which can lead to exposure-imbalance risks. Inadequate communication regarding cash-flow moves into and out of the fund and manager changes can lead to unwanted asset-class exposures and loss.	An investor could establish communication links with custodial, manager, and other sources to obtain and verify positions and cash-flow data as soon as it's available. Suspect data may be researched.
Leverage	Creation of market exposure in excess of underlying collateral value may lead to significant capital losses and position liquidation.	An investor could obtain daily collateral pool values and adjust beta overlay positions to maintain the ratio of total exposure to collateral within a predefined band.
Margin and liquidity	The market could move in a manner adverse to the overlay position, causing a mark-to-market loss of capital to the fund and a resulting need to raise liquidity or close positions. This could happen at a time when the underlying fund or positions are also declining in value.	Investors should be aware of potential collateral and cash requirements to reduce the risk of needing to remove positions. Margin adequacy should be checked daily.
Tracking error	Futures (synthetic) index returns don't perfectly track benchmark index returns. This divergence between the price behavior of a position or portfolio and that of a benchmark is tracking error and impacts performance.	An investor should seek to minimize tracking error by using liquid futures contracts with sufficient daily trading volume and open interest. All derivative contracts will have some tracking error that cannot be mitigated.

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