OVERLAY STRATEGIES: INCREASING PORTFOLIO EFFICIENCY THROUGH DERIVATIVES

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Introduction

Investment program sponsors and their consultants spend considerable time and energy designing strategic asset allocation policy targets. An ugly reality of asset allocation policies, however, is that no matter how carefully crafted they are, numerous forces are constantly conspiring to veer them off course. Departures from policy targets can lead to shortfalls in performance, potentially inhibiting a program's ability to meet long-term financial objectives.

At NEPC, we believe derivative overlay strategies offer an array of benefits, which can include securitizing idle cash, maintaining policy target exposures and managing transitions within the portfolio. An overlay solution can also help manage risk related to currency exposure, equity beta or, particularly for corporate pension plans, interest rates. In addition to maximizing the efficiency of an investment portfolio, overlay strategies also aim to keep costs low through the use of liquid and transparent derivatives that are a cheaper alternative to trading physical securities.[1]

The case for overlay strategies is fueled by the day-to-day realities of running a portfolio, which are constantly pulling asset allocations away from their policy targets. Be it money sitting in a cash account awaiting immediate investment, or funds marked for pension plan benefit payments or other spending needs, the opportunity cost of idle cash is a potential drag on performance. Combine this frictional cash with other disruptions, such as the termination of an investment manager, or differences in relative asset class or strategy performance, and you have the potential for these seemingly small cuts to inflict a deeper wound. To this end, derivative overlay strategies are aimed at maximizing the targeted efficiency of investment portfolios. An overlay strategy can be implemented to mirror an investor's asset allocation policy to maintain market exposure for any idle cash sitting in the program. This not only helps in meeting target allocation goals, but also eliminates the inefficiencies associated with unintentionally holding cash.

To be sure, overlay strategies can be challenging to implement and monitor. They involve very specific and nuanced rules-based guidelines that have to be outlined for every manager and policy band within the program. The initial exhaustive groundwork may discourage some investors. That said, an overlay strategy can be worth the initial work by helping achieve the desired return potential of a program's asset allocation through reducing cash-drag over time, improving liquidity and creating greater operational efficiencies for investments.

What is an Overlay Provider?

An overlay provider sees the entire investment program and makes adjustments, as needed, on a daily basis to keep investments in line with program objectives. This is typically done through the use of exchange-traded futures which are capital-efficient, liquid derivatives. The program sponsor still retains authority over asset allocation targets and provides clear rules-based guidelines for the overlay provider to act upon.

In the marketplace today, overlay providers are few in number with significant differences between them. Some are full service, possessing in-depth experience, technology, and dedicated resources that allow them to deliver all-in-one solutions for all aspects of an overlay mandate; others

[1] *It should be noted, however, that for taxable entities the use of derivatives may be less efficient due to tax treatment.*

may specialize in particular areas, such as providing a Liability Driven Investment (LDI) overlay for a corporate defined benefit plan, providing only basic cash equitizing to a static target, or focusing on short-term transitional services.

The types of firms also vary, ranging from custodian banks, and boutique firms whose core business is derivative strategies, to large global asset managers with overlay among their core competencies. The provider best suited for any individual program depends on the type of services being sought by the program sponsor and the type of relationship the program sponsor wishes to have. In addition to evaluating these needs, it is highly recommended to conduct a detailed Operational Due Diligence review. Given the operational and trading-intensive nature of overlay programs, it is critical to gain comfort with a firm's trading, portfolio management, and back office capabilities.

VALUE IS REALIZED BECAUSE OF THE ABILITY TO REBALANCE ON *ANY* DAY, RATHER THAN *EVERY* DAY

Is an Overlay Strategy Appropriate for You?

An overlay strategy can be useful and practical for many different types of investment pools. Any diversified portfolio that regularly rebalances or is faced with a need to transition exposures can benefit greatly from a tightly controlled and systematically implemented overlay strategy. Other programs that stand to benefit are those with numerous cash flows in and/or out of the program. An overlay strategy can ensure that cash sitting on the sidelines—from the time it is set aside or redeemed from an investment strategy to the time it is needed for payments—remains passively invested. In addition, programs with limited staff dedicated to managing the investment program, or for whom the investment program is just one among a larger list of responsibilities, can benefit from an overlay strategy ensuring the smooth and efficient running of day-to-day operations. This is achieved by reducing the need for constant rebalancing or raising/investing cash as the overlay strategy will see to it that the program is aligned with its investment goals and invested.

That said, the effectiveness of rebalancing the portfolio and equitizing cash is somewhat diluted when a large percentage of the assets are in alternative and hard-to-replicate investments such as hedge funds, private equity or private debt. An overlay strategy can still provide value but the effectiveness of the investment policy replication may be reduced.

Finally, it is important to have a clear understanding of the fees and other related costs accompanying this type of service. The fee structures between providers can vary widely; fees may be based on total program assets, the notional exposure created by the overlay provider, or they may vary by the individual services selected. It is also necessary to understand how an overlay provider works to minimize other expenses, for instance, commissions and roll costs.

What are the Benefits of Using an Overlay Provider?

1. Equitizing cash

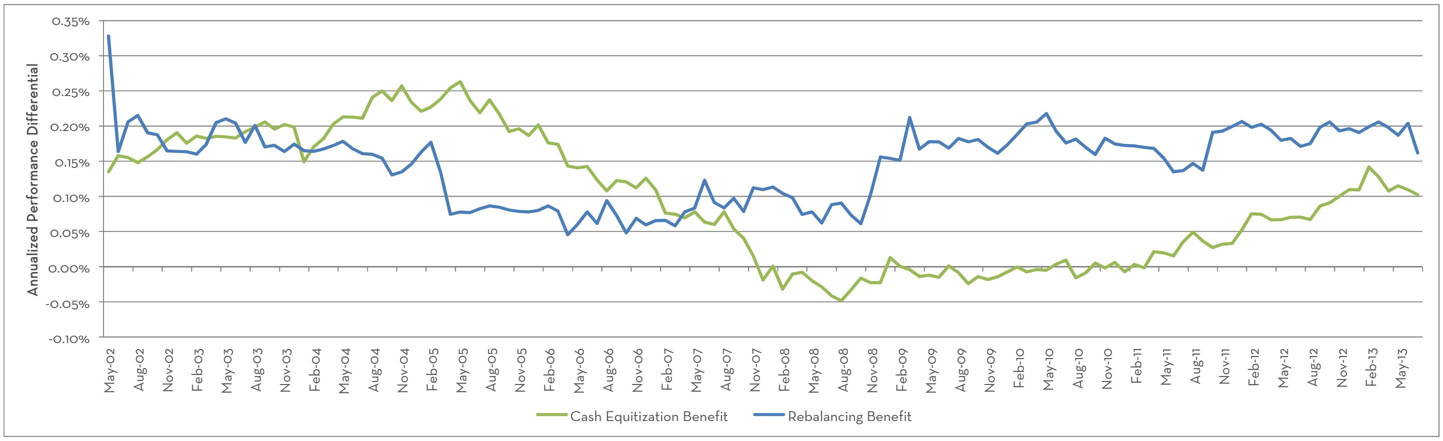
This is the most basic of services and can be delivered effectively by almost all providers. Most programs carry anywhere from 2%-3% cash at any given time due to periodic cash flows in or out of the program. Assuming this cash position is unintentional and not part of the program's target allocation, it could result in a cash drag on the program's performance.[2] If provided with a specific and set target allocation, an overlay provider can minimize unintentional cash and effectively implement exposures. Over time, with the assumption that equities and bonds will outperform cash, the benefit to a traditional investment program—say, 60% Standard & Poor's 500 Index/40% Barclays Aggregate Index—can be as much as seven basis points a year **(see Exhibit 1)**.

2. Policy implementation or rebalancing

Instead of simply equitizing cash to a static target, an overlay provider can equitize frictional cash in order to maintain program asset allocation targets across the entire portfolio. This requires more detailed guidelines and daily monitoring, but the potential benefits from more efficient and timely rebalancing are significant **(see Exhibit 1)**. The benefits have averaged 15 basis points over rolling five-year periods, according to NEPC's analysis. Given specific parameters for rebalancing bands—which can be tighter and implemented more quickly through exchange-traded futures—an

[2] *It is also possible to equitize any cash held with an individual investment manager in a separate account; however, this may be undesirable if holding cash is a tactical decision by the manager.*

Exhibit 1: Five-Year Rolling Cash Equitizing and Rebalancing Benefits



Source: Bloomberg, NEPC

This analysis assumes a $400 million program with 2% cash and a 60% Equity/40% Fixed Income target allocation. Annualized benefit is the average of five-year rolling periods from 1992 through the present for both cash equitizing (7 basis points) and rebalancing (15 basis points).

overlay provider can ensure that over- and underweights are monitored daily and corrected. Our analysis indicates that despite the ability to rebalance daily, transaction costs and cutting off "winning" asset classes too soon can be less than ideal. However, value is realized because of the ability to rebalance on *any* day, rather than *every* day.

3. Managing transitions

Once an overlay provider is in place, manager transitions can be achieved with greater operational ease. There are many instances when capital is received days or weeks before it can be invested in a new mandate, for instance, when moving between investments with monthly liquidity. At these times, an overlay manager can easily equitize that cash and keep it invested until the funds are delivered. These situations occur less frequently, but the operational ease of implementing with an overlay manager already in place is a valuable additional benefit.[3]

4. Risk management

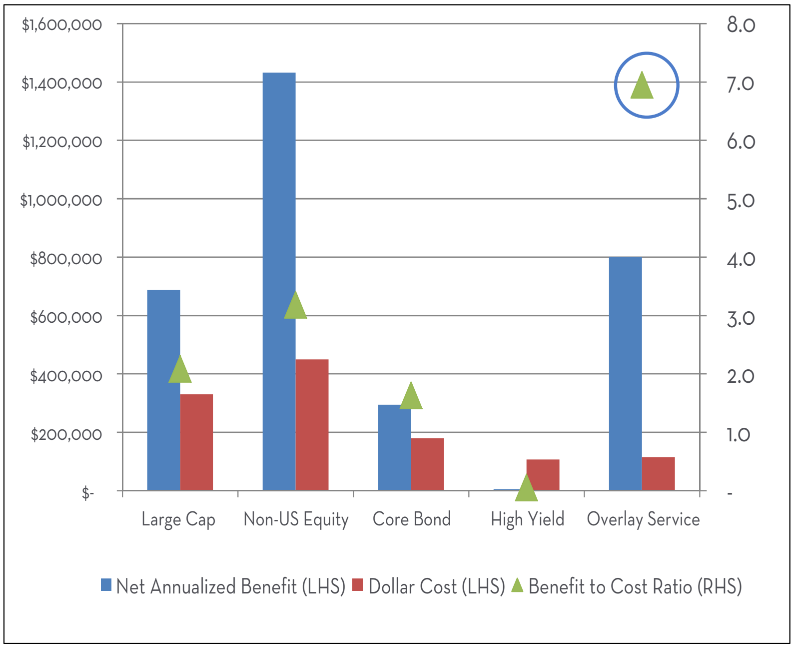
Overlay solutions also have the ability to create custom hedges against certain risks more efficiently and effectively. These include risks related to extreme equity downturns, foreign currencies, or interest rates. Many corporate pension plans with Liability Driven Investment (LDI) programs may also benefit from more closely matching the duration of assets to liabilities. For LDI implementation done with fixed income strategies benchmarked to a common index, such as the Barclays Long Credit Index, there may be a mismatch in duration between assets and liabilities along the yield curve. An overlay manager can improve the effectiveness of the hedge by filling in the gaps that may exist between liabilities and assets at various points in the yield curve, that is, key rate durations, and move a plan's target hedge ratio along a pre-determined "glide path" on any given day, thereby taking greater advantage of intra-month moves in rates and return-seeking assets.

Measuring the Potential Benefit

One way to measure the potential benefits of an overlay provider is a net benefit-to-cost ratio: How much incremental return did the program earn relative to the amount paid for the services provided? Investment committees and their consultants spend significant amounts of time and money attempting to identify and monitor managers that will outperform a particular benchmark. Using eVestment data annualized over 10 years, NEPC calculated the benefit-to-cost ratio, that is, the net dollar outperformance of the benchmark divided by the manager's fees **(see Exhibit 2)**. For top quartile active managers, the benefit-to-cost ratio ranges from 2:1 for a core bond mandate, to 3:1 for developed international equity. This assumes a program consistently has a top quartile manager and pays the median institutional fee. In contrast, based solely on the estimated historical value provided by equitizing cash and rebalancing, an overlay provider's net benefit-to-cost ratio can be as much as 7:1. This means that for every dollar spent on fees for the overlay service, the program earns seven dollars. This does not incorporate

[3] *When looking to transition individual securities between managers, it may still make sense to hire a separate dedicated transition manager since the skill set and resources are different. NEPC recommends evaluating this on a case-by-case basis.*

Exhibit 2: Benefit-to-Cost Ratios—Summary of 10-Year Results



Source: eVestment Data, NEPC

other benefits such as better liquidity, managing transitions, and hedging currency or interest rate risk.

What are the Challenges of an Overlay Strategy?

1. Education/comfort level with derivatives

There can be some unease associated with derivatives. Recollections of the financial crisis and its causes, including the role played by complex structured derivatives, fuel fear and caution. This is understandable and warranted. Education on the particular uses and types of derivatives in the context of an overlay strategy needs to be fully understood to assuage any concerns.

OVERLAY STRATEGIES PROVIDE OPERATIONAL EASE FOR PROGRAM SPONSORS THROUGH GREATER LIQUIDITY AND PORTFOLIO EFFICIENCY

Program sponsors need to become comfortable with the use and requirements of exchange-traded futures (**see Sidebar on last page**). They also need to know the role of leverage, if any, in the implementation of the overlay. These are highly customized strategies, which can accommodate a gradual approach, that is, to start small with a narrow focus, and then, over time, expand the scope and mandate of the strategy.

2. Getting started

It is common for several meetings to occur in order for program sponsors to understand overlay services, how they will be implemented, and evaluate potential providers. The selected provider and sponsor then need to establish which services will be implemented along with clear, rules-based guidelines. In addition, other tasks include coordinating the account set-up with futures brokers; umbrella or customized International Swaps and Derivatives Association (ISDA) agreements, if necessary; custodian data feeds; and custodial accounts. Thorough due diligence is required to gain comfort with the capabilities of any potential provider across this breadth of services.

a. Asset selection: The process begins with selecting which assets to replicate. Many investment programs will face the challenge of determining whether to include illiquid or hard-to-replicate assets in the overlay mandate. The decision rests with balancing the potential imprecision of any replication approach with marginal policy deviation. Depending on the resources and experience of the overlay provider, and the key attributes of the investments, there may be different solutions for each client. Typically, most traditional equity, fixed income, commodity and global asset mandates can be replicated relatively efficiently. Assets that are harder to replicate, for instance, hedge funds, private equity and/or debt, real estate, or opportunistic investments, may be excluded.

b. Proxy and replication: Once the assets to be included are determined, it is time to select the proxy method and replication vehicle for each manager. The proxy is utilized for daily monitoring; it could be the actual value of a mutual fund or separately managed account, or simply the market index if the fund is not daily valued. The replication vehicle is how the overlay manager will add or reduce exposure to that asset class. It may not be the same as the proxy benchmark due to cost and liquidity concerns (**see Exhibit 3**). For instance, a core bond manager may use the Barclays Aggregate Index as a proxy, but the replication index may utilize only Treasury futures to mimic the duration characteristics; obtaining credit spread exposure may be deemed too expensive or complex given the instruments available.

Exhibit 3: Sample of Replication Index Complexity

Easy and Accurate	Possible with Increased Tracking Error	Imprecise and Inefficient
• S&P 500, S&P 400, Russell 2000, Treasury Rates, MSCI EM • Goldman Sachs Commodity Index (GSCI)*, MSCI EAFE* • Individual Currency	• MSCI ACWI • TIPS • Risk Parity, GAA • Basket Currency Hedging, other commodities • Credit, Emerging Market Debt	• Hedge Funds • Private Markets • Alpha Product • Real Estate

Source: NEPC
*Although a single contract exists, sizing of desired position may require a basket approach to accommodate sufficient liquidity.

c. **Setting up trading bands and tolerance levels:** As noted previously, it is likely undesirable to trade every day to maintain target exposures due to the increased trading costs. Therefore, guidelines need to be set that dictate trading bands around those targets. These can be much tighter than for programs without an overlay provider and can be based on a set percentage deviation, or customized based on the volatility of the particular asset class. Additionally, a tolerance level of notional exposure should be established to indicate when physical rebalancing is necessary.

3. Governance/monitoring/reporting

Daily monitoring and implementation, based on a specified set of guidelines, will typically reside with the overlay provider. The overlay provider is also responsible for monitoring any counterparties involved. Counterparty risk is minimal with the use of exchange-traded futures because of their central clearing, high-quality collateral requirements and daily mark-to-market values **(see Sidebar for more information on how futures work)**. However, the selection and monitoring by the overlay provider is critical as an investor begins employing more complex derivatives, such as swaps, that still trade over-the-counter (OTC). Any search process for an overlay provider should include careful examination of the providers' credit monitoring team related to counterparties, and procedures for limiting or diversifying exposures.

Evaluation of the overlay provider must distinguish between their effectiveness at obtaining the necessary exposures to maintain policy targets and equitize the cash, and the actual performance of those exposures. If the program is underweight equities, then the overlay provider should be adding equity exposure; whether the equities gain or lose value (assuming minimal tracking error to the benchmark) is a reflection of the program's asset allocation, not the "performance" of the overlay provider.

An additional challenge for program sponsors undertaking an overlay service is the disruption this can cause to typical reporting metrics and tools. For instance, looking at only the program's physical investments will not provide a clear view into all the program's exposures and will likely show an overweight to cash. In reality, however, that cash is effectively invested by the overlay manager. It is important to incorporate all the program's physical and derivative exposures to fully understand the asset allocation and performance relative to target benchmarks.

Conclusion

NEPC believes incorporating an overlay strategy can provide a systematic and cost-effective approach to delivering market exposures such that investors' assets are closely aligned to their policy allocation targets. The use of an overlay solution should enhance investment returns over time, and help finely calibrate risk management in order to achieve better risk mitigation. At the same time, overlay strategies provide operational ease for program sponsors through greater liquidity and portfolio efficiency.

Sidebar: How do typical futures work?

The use of exchange-traded futures can improve liquidity as only a small portion of the desired dollar exposure is required up front, otherwise known as the margin or collateral. The margin or collateral can be categorized into two buckets. The first is initial margin, which is put up at the onset of establishing a position. The amount, which will vary in size, is typically a small percentage, for instance, 5% for an S&P 500 contract of notional exposure. This means that in order to equitize $100 in cash, the initial cash outlay is $5. In addition, there is a variation margin, which is an additional amount the overlay provider may want readily accessible in order to meet daily mark-to-markets. For that same $100 exposure, an additional $5 is required to cover daily cash flows based on the change in value of the futures. If the S&P 500 declines 1%, then $1 will be delivered to the counterparty to recognize the decrease in the value of the position by $1. This happens daily and is managed by the overlay provider. At certain thresholds, the client may need to post additional margin in instances where the value of the underlying security declines. However, it is important to remember that the remaining $90, that is, $100 minus $10 ($5 initial margin and $5 variation margin) is typically sitting in cash at the custodian and, is therefore, available.

The use of derivatives also conjures up concerns about counterparty and liquidity risk. While employing more complex swaps and other OTC derivatives requires additional monitoring and risk management tools, using centrally cleared futures effectively minimizes these risks. It is also important to recognize that even at the peak of the financial crisis, exchange-traded futures remained a liquid and functioning market.