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Maximizing the Rebalance Benefit Through Synthetic Implementation

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The benefits of portfolio rebalancing have been well established by previous research. While much has been written on identifying an "optimal" rebalancing strategy, there has been less focus on which financial instruments are best suited to implement a rebalance strategy.[1] Many institutional investors have rebalanced portfolio exposures by moving physical assets. However, synthetic exposures may provide for increased implementation efficiency.

Synthetic rebalance implementation involves using futures, swaps, and other derivatives to align total portfolio exposures with target levels. This paper compares the relative strengths of physical versus synthetic rebalance implementations and their effect on total portfolio performance.

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[1] William J. Bernstein, "The Rebalancing Bonus: Theory and Practice," *Efficient Frontier* (1996), http://www.efficientfrontier.com/ef/996/rebal.htm.

Trading costs

Trading costs have a direct impact on portfolio performance and therefore should be a primary consideration when evaluating how to implement a rebalance strategy. Synthetic instruments may trade at lower costs than their physical counterparts, which also may help maximize the strategy's potential return. Several factors drive this difference in trading cost.

First, since futures are commonly the instrument of choice for hedging activity, the trading volume for futures contracts can be multiples of the trading volume for the cash market. This liquidity narrows bid-ask spreads, minimizes market impact, and thus may decrease trading costs. Second, synthetic instruments often require the trade of only a single contract or small set of contracts, whereas physical trading may require a whole basket of securities to be sold. The higher number of required trades pushes up transaction and processing costs for rebalancing physical positions. Trading a single synthetic instrument instead of a basket of physical securities potentially reduces the operational risks associated with trading.

For the most common asset classes, physical trading costs can be multiples of synthetic trading costs. A selection of indexes and their one-way trading costs are listed in figure 1.

Figure 1: Estimated one-way trading costs (in bps)

Asset class	US equity large cap	US equity small cap	Developed international equity	Emerging international equity	Core fixed income
Instrument	S&P 500® Index	Russell 2000 Index	MSCI EAFE Index	MSCI Emerging Markets Index	Bloomberg US Aggregate Bond Index
Futures	0.6	0.8	1.1	2.5	1.5
Physicals*	4.5	13.5	8.0	16.0	4.1
Difference in cost	Over 6x	Over 20x	Over 7x	Over 7x	Over 5x

Source: Parametric, 11/28/2023. For illustrative purposes only. Costs include annual maintenance, contracts roll cycle, commissions, midpoint on roll spread, and expected market impact. Physical trading costs assume full index constituent replication. Modeling assumes synthetic returns exactly match the physical returns of the underlying asset. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses.

*Estimates based on ITG's ACE Model under passive level of urgency to fill. Increased urgency will increase trading costs. Costs assume a one-year holding period, estimated as two-way trading costs based on bid/ask spread and commissions.

Possible advantages of synthetics

Synthetic instruments may enjoy several operational advantages when implementing a rebalance strategy:

Closing exposure gaps. Synthetic instruments can help rebalance a portfolio without introducing gaps in equity exposure. Futures contracts have same-day liquidity, whereas physical securities generally require one to three settlement days. This difference is particularly important when investors trade among not only different asset classes but also different managers. Settlement-timing differences among different portfolio managers may lead to market-exposure gaps when rebalancing is required. In each instance the resulting gap can create uncompensated performance risk relative to policy goals. Over time the presence of cash exposure may become a cash drag, potentially decreasing portfolio returns.

Real-time decision making. Synthetic rebalancing is in some cases coupled with an overlay program that provides daily monitoring of the client's entire portfolio. Rebalancing physically is generally managed by using periodic valuations that can be delayed. For example, comprehensive portfolio exposure reports based on physical stock holdings may not become available until several weeks after month-end. Taking the necessary steps to approve and institute a physical rebalance can slow the process even further.

A synthetic program is designed to allow investors to make rebalancing moves with almost continuous real-time data, allowing rebalances to occur at the point when exposures exceed the bands rather than on a potentially delayed basis. Moreover, synthetic rebalancing positions can be established at almost any time, allowing investment decisions and execution to concur with little or no staff action. Trading physical assets is generally a more costly and time-consuming process that requires staff resources for activities like drafting letters and moving assets.

Fewer disruptions. Synthetic rebalancing works to help portfolios maintain their target allocations without disrupting underlying active-management strategies. Investors often invest with alpha-generating managers after a careful selection process. Unfortunately, physical rebalancing can require redemptions from the best-performing managers. With synthetic rebalancing, investors can use short futures positions to reduce beta exposure in overweight asset classes without lowering exposure to active managers who have produced alpha and without introducing leverage into their overall portfolio. This feature of synthetic rebalancing can be particularly advantageous when asset managers charge a fee for redemption or when a favored fund is closed to new investments.

Combining physical and synthetic rebalancing bands. Let's assume our example fund has a 5% proportional rebalance band for synthetic rebalancing and a 5% absolute band for rebalancing the underlying physical positions. Such a strategy, common among synthetic rebalancing users, allows the fund to reap the potential benefits of regular rebalancing without incurring the costs associated with physical rebalancing, particularly during periods of high volatility, when reversals are likely. Combining the synthetic and physical rebalance strategies may allow the portfolio to keep up with its rebalancing policy while moving physical assets much less frequently.

Disadvantages of synthetics

Margin. Extended market moves may produce the need for margin at a time when the fund has become less liquid.

Tracking error. Futures may move in a manner that's significantly different from that of the underlying benchmark when futures may not exist for a specified index (for example, fixed income replication).

Assets included. Certain asset classes don't offer efficient ways to gain or remove exposure in synthetic instruments (for example, hedge funds).

Behavioral. Investors may stop rebalancing activities using synthetic contracts due to short-term risk-aversion preference.

Conclusion

Rebalancing can often be an effective strategy for improving portfolio performance. Implementing a rebalancing program using synthetic instruments may help improve rebalancing-program performance by reducing trading costs, removing exposure gap risk, facilitating real-time decision making, and reducing disruptions. Incorporating rebalancing activities into a broader cash overlay program may help preserve the rebalance benefit while mitigating the liquidity risks inherent in synthetic rebalancing.

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