Guide to PMC Quantitative Portfolios

ENVESTNET® PMC™

What are Quantitative Portfolios?

Quantitative Portfolios, or QPs, are separately managed accounts (SMAs) that are designed to passively track an underlying index. QPs are concentrated, in that they hold only a subset of the index's constituents. For example, a concentrated portfolio tracking the Russell 1000 Index might consist of only 100 of the stocks in the index. The concentration allows for reduced minimum investment amounts, which can be as low as $60,000. The objective is to generate only enough portfolio turnover to stay within the desired tracking error allowance.

Key Attributes

The passively managed SMA structure of QPs enables them to provide four primary features:

- Cost-efficient beta exposure
- Potential "tax-management alpha"
- Ability to customize the portfolio
- Exclusive sourcing through independent advisors

These features can enable an advisor to demonstrate added value independent of investment performance, reduce the impact of tax liabilities for clients, potentially enhance after-tax performance, and allow for customized portfolio holdings and tax management.

QPs are available in several formats, including a UMA sleeve and three SMA versions: Beta, Tax-Optimized and Custom Tax-Optimized (used primarily in tax-transitions situations). Each of these will be discussed later.

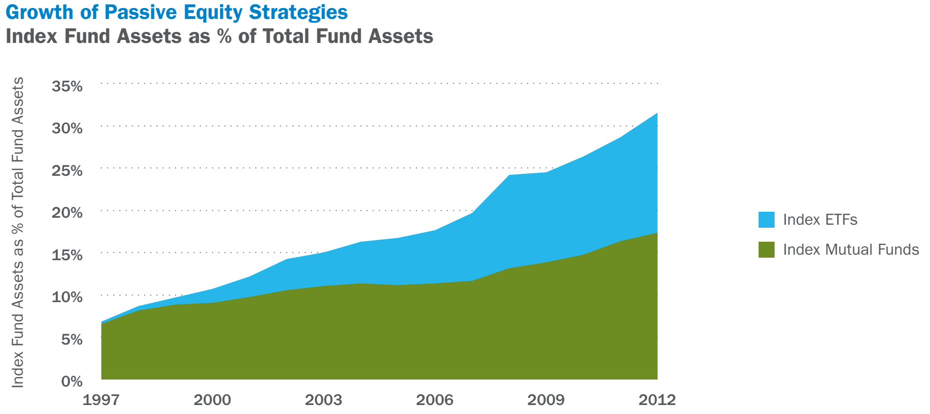
Cost-Efficient Beta Exposure

QPs Can Provide an Attractive SMA Alternative to ETFs

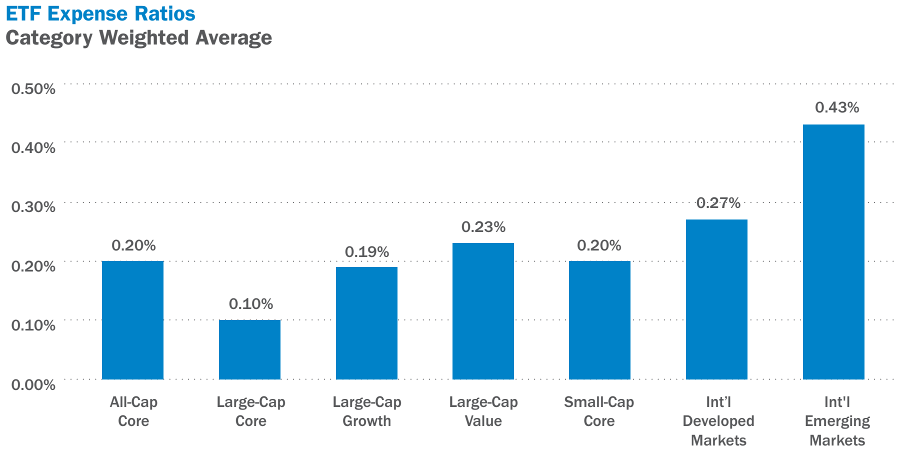
As it has for decades, the debate as to whether active management can consistently add value over a passive, or indexed, portfolio is sure to continue. Some point to the long-term record of success of active managers such as Warren Buffett and others in arguing that active management adds value. Conversely, staunch proponents of indexing generally agree with Nobel Laureate William Sharpe, who wrote in an oft-cited paper: "Properly measured, the average actively managed dollar must underperform the average passively managed dollar, net of costs. Empirical analyses that appear to refute this principle are guilty of improper measurement."[1] Other research notes that investing is a zero-sum game where, in aggregate, investors will obtain market performance gross of fees, and that there are very few active managers who possess the skill to consistently outperform the market.[2] Yet others believe that a "core-satellite" strategy is best, whereby a passive approach is used for a portion of the portfolio—perhaps the large-cap allocation—and an active approach is employed for asset classes deemed less efficient, such as small-cap.

In general, passive portfolios are used by investors who are seeking to obtain exposure to the asset class represented by the underlying index. Historically, indices used for tracking purposes have been the well-known, broad-based benchmarks such as the S&P 500 and Russell indices favored by institutional investors. Over the past several years, however, there has been

[1] William F. Sharpe, "The Arithmetic of Active Management." The Financial Analysts' Journal, Vol. 47, No.1 (January-February 1991): 7-9.
[2] Fama, Eugene F. and Kenneth R. French, "Luck versus Skill in the Cross-Section of Mutual Fund Returns." The Journal of Finance, Vol. LXV, No. 5, October 2010.



Source: Investment Company Institute, PMC



Source: Morningstar, Inc.

substantial growth in indices providing exposure to fundamental and other niche factors that investors may wish to target, such as dividend growth opportunities and stock buyback situations.

Implementing Beta Strategies

Once the decision to employ a passive approach, whether in whole or in part, has been made, investors have a limited number of options when implementing. Institutional investors such as pension plans have often hired managers to construct and manage indexed portfolios in a separate account structure. Individual investors have generally implemented a passive approach through the use of either index exchange-traded funds (ETFs) or open-end index funds.

But employing a passive approach through an SMA structure may be a superior alternative for individual investors when compared to ETFs or open-end funds for several reasons: cost structures of passive SMAs can be extremely competitive with ETFs, and since SMAs hold individual tickers, tax-management and portfolio composition can be customized to client needs. In addition, the concentrated nature of QPs allows for minimum investment amounts of as low as $60,000, making them useful either as sleeves in Unified Managed Accounts (UMAs) or as standalone SMAs.

Constructing Indexed SMAs

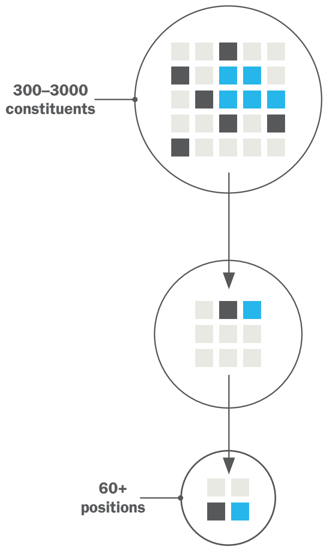
In constructing portfolios which are designed to track an index, but which do not hold all of the constituents of that underlying index, there are several factors that need to be considered. First, an appropriate tracking index must be selected. Ideally, the index should provide comprehensive exposure to the desired asset class or factors. S&P and Russell indices are frequently used for domestic equities because of their wide acceptance as benchmarks for institutional portfolios. For international exposures there are two primary options: indices tracking either foreign ordinary shares or American Depositary Receipts (ADRs). For domestic individual investors, ADR indices are often used because of lower administrative and execution costs.[3]

Second, if minimizing portfolio turnover is a goal, selecting a benchmark which is rebalanced or reconstituted less frequently would be preferable. Certain index families are reconstituted once per year, while others will be rebalanced more frequently.

Third, the various portfolio mandates or constraints must be established. For example, the construction process should balance the desired level of tracking error[4] with any limits on number of holdings or target account size. As the allowable number of holdings and account size increases, more of the tracking index's constituents can be held in the portfolio, making it easier to reduce the tracking error. The target level of tracking error is generally in the range of less than 0.50% to 2%, depending on the asset class and the desired number of holdings in the portfolio.

Finally, a quantitative risk model is employed to develop a concentrated portfolio that is designed to track the underlying index. The risk model identifies the factor exposures of the index's constituent securities, and then matches the aggregate exposures of the portfolio with that of the benchmark while remaining within the tracking error and holdings constraints.

The Quantitative Portfolio Construction Process



Index Constituents	Index constituents are obtained from index sponsors (Russell, S&P, BNY Mellon). The tracking indices have between **300–3000 constituents**.
Portfolio Optimization	A sampling technique and optimization process based on Envestnet | Tamarac's proprietary optimizer and risk model is applied to the index constituents.
Manager Review	PMC's portfolio managers review the portfolio to ensure target characteristics are satisfied.
Portfolio	The resulting Quantitative Portfolio model is a concentrated portfolio of **60+ positions** closely tracking the underlying index.

[2] A common misconception is that because they trade on U.S. exchanges and are denominated in U.S. dollars ADRs are not exposed to currency risk. However, due to the way ADRs are constructed, if the value of the ADR's home country currency appreciates, the ADR will also rise.

[4] Tracking error is defined as the standard deviation of a portfolio's excess return relative to the underlying benchmark. It is a measure of the consistency of the portfolio's excess return over the measuring period.

Potential for Tax-Management Alpha

QPs Can Add Value Independent of Performance

For the taxable investor, taxes have often been an overlooked aspect in the portfolio management process, which is somewhat surprising since taxes have been referred to as the single largest cost in a portfolio.[5] Due to the recent tax changes enacted as part of the America Taxpayer Relief Act of 2012 in which taxes on capital gains and dividends rose to 20% from 15% for high income investors[6], the tax impacts of portfolio management decisions are receiving renewed attention.

While active investment managers have generally not been overly mindful of the tax consequences of their portfolio management decisions, much research focused on tax considerations has been conducted over the years. There are generally two broad conclusions reached in these papers: first, whether active or passive management is employed, after-tax, and not pre-tax, returns should be the focus. In a groundbreaking 1993 paper, Jeffrey and Arnott pointed out that most of the effort spent over the years on improving investment performance has been focused on institutional tax-exempt portfolios, even though the majority of investable assets are held in taxable accounts.[7] The authors assert that "managing taxable portfolios as if they were tax-exempt is inherently irresponsible, even though doing so is the industry standard."

A survey of advisors conducted by Horan and Adler (2009) found that 76 percent of taxable clients expect the advisor to manage their portfolios with taxes in mind, but that only 11 percent of advisors report performance on an after-tax basis.[8]

The second general finding is that, as between tax-managed active and tax-managed passive strategies, the latter will typically provide superior results. One of Jeffrey and Arnott's (1993) conclusions is that it is very difficult to outperform passive indexing on an after-tax basis. Numerous studies have shown that taxes detract one to three percentage points from the typical active manager's return on an annual basis, primarily as a result of trading costs stemming from frequent turnover.[9] Active managers may have to generate substantial alpha in order to simply meet the portfolio's tax obligations.

Active Tax Management Tactics

Proper active tax management is much more comprehensive than simply allowing gains to accumulate. In many instances, a strategy of allowing gains to go unrealized may not be practical. For example, client-driven cash flows into or out of the account will necessitate some level of portfolio turnover. In cases where the portfolio is passively indexed, changes to the underlying benchmark may result in an increase in tracking error that may require portfolio rebalancing.

There are several common principles which should be considered when incorporating active tax management:

1. **Consider location of assets when constructing an investment program.** When establishing an overall investment program, consideration should be given to asset location. For example, investments that are inherently tax-efficient may be best suited for a taxable account, while those that are less tax-efficient would be candidates for tax-deferred accounts such as IRAs.
2. **Defer realization of capital gains.** Selling securities at a gain incurs a tax obligation that either needs to be paid or offset (in whole or in part) with losses. By holding a security with an unrealized gain, the tax obligation is deferred. However, risk management and other factors may warrant realizing a gain.
3. **Holding period management.** Because gains on securities held less than one year are currently taxed at ordinary income tax rates, it may be preferable to postpone gain realization until the one-year holding period has been met, at which time the gains are treated as long-term and are taxed at the lower capital gains tax rate.

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[5] Fronk, Chris, Anne Hickman and Michelle Markus. "Loss Harvesting: Examining Tax Efficient Strategies for Maximizing After-Tax Wealth." http://www.northerntrust.com, November 2012. See also, Garland, James P., "Taxable Portfolios: Value and Performance." Journal of Portfolio Management, Winter, 1987: "Taxes are the biggest expense [many] investors face – more than commissions [and] more than management fees."

[6] The higher rates apply to individuals with incomes greater than $400,000 and married couples filing jointly with incomes greater than $450,000 (http://www.gpo.gov/fdsys/pkg/BILLS-112hr8eas/pdf/BILLS-112hr8eas.pdf).

[7] Jeffrey, Robert H. and Robert D. Arnott, "Is Your Alpha Big Enough to Cover its Taxes?" Journal of Portfolio Management, Spring 1993, Vol. 19, No. 3, 15-25.

[8] Horan, Stephen M., and David Adler, "Tax-Aware Investment Management Practice." The Journal of Wealth Management, Fall 2009, Vol. 12, No. 2, 71-88.

[9] See, e.g., Arnott, Robert, Andrew L. Berkin and Paul Bouchey, "Is Your Alpha Big Enough to Cover Its Taxes: Revisited." Investments and Wealth Monitor, January/February 2011.

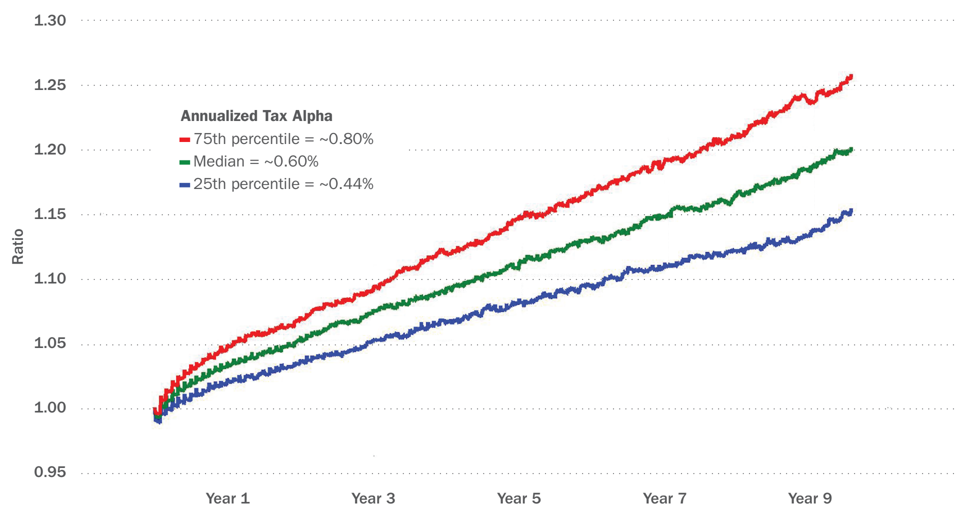
4. **Harvest losses where possible.** Selling securities at a loss is an important tax-management tool because the losses can be used to offset gains in the current or future years. While year-end tax loss harvesting is useful, additional harvesting opportunities often arise throughout the course of the year, and may add to a portfolio's tax-efficiency. Because loss harvesting necessitates portfolio turnover, the benefit of the loss realization should be weighed against the additional transactions costs.
5. **Consider tax lots.** One of the benefits of SMA portfolios is that multiple lots of the same security may often be held. In such cases, it may be advantageous to sell the highest-cost lot to minimize the tax impact.
6. **Avoid wash sales.** A capital loss is disallowed and deferred until later if the same (or substantially identical) security is repurchased within 30 days after being sold for a loss.
7. **Consider the investor's age.** The cost basis of an asset is reset upon the death of the owner. This so-called "date of death step-up" in cost basis should be taken into consideration for older investors, but may be overridden by other factors for younger investors.

What is the Value of Active Tax Management?

Much research has been done over the past two decades on the impact of taxes on investment returns. Studies generally show that, on balance, active managers must generate 2%-3% of pre-tax alpha in order to match the after-tax return of passive indexing.[10] We believe there are very few, if any, managers that have the security selection skill to deliver such results consistently. However, research has also shown that active tax management strategies—in which no security selection skill is required—can generate an annualized "tax-management" alpha, or simply "tax alpha," of about 0.60%, an amount corroborated by PMC's Quantitative Research Group through its own analysis.[11]

The graph above shows the impact tax-optimization can have on a portfolio's returns. To create the graph, the Quantitative Research Group constructed two portfolios designed to passively track a simulated index. One of the portfolios was constructed to minimize the tax consequences from monthly rebalancing, and the other to maximize the tax consequences. Ratios of the market values of the two portfolios over time are presented in the graph. The median of the simulations resulted

Ratio of Tax-Optimized Portfolio Market Value to Non-Tax-Optimized Portfolio Market Value



Source: Envestnet | PMC

[10] Arnott, Robert D., Andrew L. Berkin and Jia Ye, "Loss Harvesting: What's it Worth to the Taxable Investor?" The Journal of Wealth Management, Spring 2001, Vol. 3, No. 4, 10-18.

[11] See, e.g., Arnott, Berkin and Ye, "Is Your Alpha Big Enough to Cover Its Taxes: Revisited." Investments and Wealth Monitor, January/February 2011

in an annualized tax alpha of approximately 60 basis points; the 75th and 25th percentiles of simulations resulted in a tax alpha of about 80 basis points and 44 basis points, respectively.

Ability to Customize the Portfolio

Focus QPs Can be Tailored to Meet Client Needs

Another key attribute of QPs that distinguishes them from ETFs and index mutual funds is that they can be customized to meet the objectives of the client. Because of the SMA structure in which individual tickers are held in the portfolio, QPs can be customized at both the ticker and industry levels.

Investors may wish to restrict a portfolio from holding a particular ticker for various reasons. An example of a ticker-level restriction would involve an investor who is a CPA, and whose firm is the auditor for a certain publicly traded company. The CPA is likely restricted from owning shares directly in that company, and therefore would need to have a ticker-level restriction placed on his SMA portfolios.

Industry-level restrictions can also arise in certain situations. For example, an employee of a technology firm who has company stock or options may not want to have any additional exposure to that particular industry. Or a bank executive may wish to avoid owning additional shares in financial services companies. Industry-level restrictions can be useful in such situations.

Quantitative Portfolios from PMC

PMC offers QPs in several different domestic and international equity asset classes. QPs in the domestic category include All- Cap Core, Large-Cap Core, Large-Cap Growth, Large-Cap Value and Small-Cap Core. In the international equity category, International Developed Markets and International Emerging Markets QPs are available.

Each of the QPs is also offered in various formats on the Envestnet platform in order to accommodate various implementations. QPs can be accessed in the following account structures:

- **Unified Managed Account ("UMA") Sleeve—**Designed to provide cost-efficient beta exposure for sleeve amounts as low as $60,000. Ideal for a core-satellite UMA where a passive core QP is completed with active managers in satellite asset classes. A fully diversified equity UMA QP can also be constructed using several of the individual QPs.
- **SMA Beta –** An SMA designed to provide pure beta exposure with account minimums of $100,000. The advisor has discretion over when to harvest losses.
- **SMA Tax-Optimized –** This QP version has the same cost-efficient beta exposure as the UMA and SMA Beta versions, and also includes proactive tax-optimization performed by PMC embedded as part of the portfolio management process. The account minimum for this version is $200,000.
- **SMA Custom Tax-Transition –** Designed primarily for custom situations in which the client desires to effect a tax-efficient transition from an existing concentrated portfolio with low cost basis positions to a more diversified QP. All aspects of the QP can be customized, including the number of positions and tracking error constraint. The account minimum for this version is $750,000.

Category	Style	Quantitative Portfolio	Tracking Index
Domestic Equity	All-Cap	Quantitative Portfolio—All-Cap Core	Russell 3000® Index
	Large-Cap	Quantitative Portfolio—Large-Cap Core	Russell 1000® Index
	Large-Cap	Quantitative Portfolio—Large-Cap Growth	Russell 1000® Growth Index
	Large-Cap	Quantitative Portfolio—Large-Cap Value	Russell 1000® Value Index
	Small-Cap	Quantitative Portfolio—Small-Cap Core	S&P Small Cap 600® Index
International Equity	Developed Markets	Quantitative Portfolio—Int'l Developed Markets	BNY Mellon Classic Developed Markets ADR Index℠
	Emerging Markets	Quantitative Portfolio—Int'l Emerging Markets	BNY Mellon Classic Emerging Markets ADR Index℠

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