



Cross Asset Portfolio Solutions

Comprehensive Beta and Risk-Management
Capabilities for Institutions

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Markets are dynamic. Views can shift.
Circumstances change.

How nimbly can your portfolio react?

For many institutional investors, once you've allocated assets according to market opportunities and investment policies, adjusting exposures can be time-consuming, operationally cumbersome, and disruptive to both staff and the portfolio itself.

What's more, the variety of instruments available to help manage exposure can be overwhelming. Publicly available research is limited, and uncovering the most efficient means to execute a desired adjustment can seem like a daunting task.

On the bright side, investors may benefit from access to a comprehensive beta platform that provides the ability and flexibility to make on-demand portfolio adjustments with a range of instruments. While certain investors may have the willingness and resources to build an internal team and systems on their own, some prefer seeking a partner to serve as an extension of their staff, allowing them to leverage the guidance, expertise, controls, and cost-effectiveness such a relationship can offer.

Investment philosophy

At Parametric, we've built extensive beta management and implementation capabilities that span equities, fixed income, currencies, and commodities. Our goal is to be a one-stop beta shop for institutional investors. The capital markets form an elaborate system for creating, distributing, and recycling money. Businesses get the capital they need to grow and flourish. Investors bear risk in hopes of getting a return. If the system is well governed, the economy and society prosper. In quantitative investing circles, this relationship is known as earning a risk premium.

Parametric captures these risk premiums while keeping costs and unrelated risks as low as possible. The simplest risk premium is beta, or exposure to a market index, such as those found in our Custom Core[®] equity, fixed income, and derivative overlay strategies. More sophisticated risk premiums can be captured using our factor and liquid alternative strategies. We don't believe an informational edge over other investors is needed to earn these long-term risk premiums; what's required is a focus on risk management and keeping frictions to a minimum.

A cost-effective extension of your staff

Parametric's Cross Asset Portfolio Solutions (CAPS) is a partnership-based offering that delivers an expanded set of investment tools, consultation, investment expertise, and implementation capabilities through which investors can obtain or augment customized portfolio exposures in a thoughtful, efficient, and risk-controlled manner.

CAPS investment staff will take time at the outset of the relationship—and on an ongoing basis—to understand the portfolio structure and goals of the investor to help identify ways to improve portfolio and operational efficiency.

For example, when an investor is seeking to add, remove, or hedge exposures to a particular asset class or benchmark, an experienced CAPS portfolio manager helps evaluate whether physical securities, futures, options, or swaps would be the most efficient instrument given the investor's unique circumstances. The assets are still allocated to long-term external managers to fill out the asset allocation. Parametric simply provides a platform to adjust and hedge these exposures without disrupting the underlying manager portfolios.

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Beyond the up-front consultation, Parametric provides thoughtful trade execution and operations, including all back-office functions needed to successfully implement and maintain portfolio exposures. Our operations and accounting staff are experienced and knowledgeable in securities of all types—from equities, bonds, and ETFs to exchange-traded and over-the-counter (OTC) derivatives.

Once exposures have been implemented, we provide independent trade confirmation and verification. We also reconcile all trades with the broker or counterparty and the investor's custodian—in addition to reviewing and managing all collateral flows, settlements, and other operational aspects. We provide daily reporting of all exposure positions, which can be expanded into fund-wide exposure and risk analytics reporting if desired. Parametric conducts independent valuation of outstanding positions, delivers detailed performance reports and accounting statements, and monitors counterparty credit risk if derivatives are used.

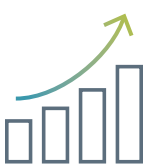
Independently setting up and maintaining the operational infrastructure for such a program may be cost-prohibitive and a primary reason to partner with Parametric. Investors can realize potential cost savings through the following means:



Due to economies of scale, we provide clients with comprehensive front- and back-office capabilities at a fee that's typically more cost-effective than most investors can achieve on their own.



Guidance from our team of experts regarding trade structuring and instrument selection may result in material cost reductions in the portfolio.



Parametric is a significant market participant, which means investors benefit from pricing power that can reduce trading costs—alongside a proven trade execution process that includes competitive bidding to improve price realizations.

Further, some investors believe that working with an external partner enhances their risk-management controls while simultaneously extending their capabilities to operate in a more efficient, prudent manner.

What does a comprehensive beta platform look like?

Parametric's capabilities span a wide array of asset classes, markets, and instruments, allowing investors to effect strategic portfolio initiatives, address specific risk-management concerns, and implement tactical market decisions. At its most basic level, CAPS is a service that allows investors to add, remove, or hedge portfolio exposure.

Figure 1 outlines the primary applications of Parametric's CAPS offering. Our core capabilities include building custom, index-based portfolios of stocks and bonds in a separate account and trading futures, forwards, options, and swaps to create synthetic beta exposures. From these two skill sets, we offer four basic components of our beta platform:

1. Equity solutions
2. Fixed income solutions
3. Portfolio solutions
4. Risk-management solutions

Using these components and areas of expertise, we can derive a number of different services and strategies, enabling us to partner with institutions to help them build, manage, and protect their portfolios.

Figure 1: Primary CAPS applications

Portfolio solutions

- » Efficiency
 - Cash overlay
 - Liquidity management
 - Synthetic rebalancing
 - Transition exposure
- » Exposure
 - Beta completion
 - Commodity
 - Leverage management
 - Portable alpha
 - Tactical view implementation

Risk-management solutions

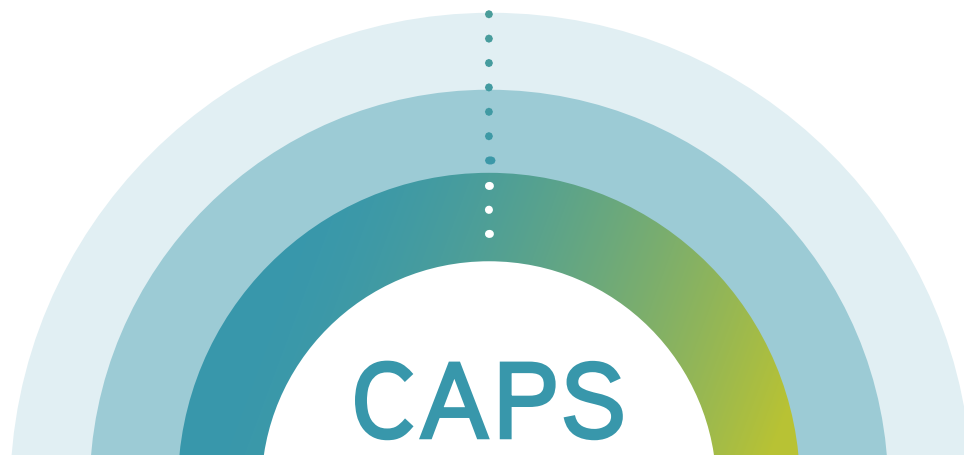
- » Concentrated exposure hedging
- » Currency management
- » Equity portfolio hedging
- » Inflation hedging
- » Tail risk solutions

Equity solutions

- » Centralized portfolio management
- » Customized global equity portfolios
- » Factor strategies
- » Manager model implementation
- » Responsible investing (ESG)
- » Portfolio completion

Fixed income solutions

- » Cash and collateral management
- » Core exposure expertise in:
 - Government debt, investment-grade credit, municipal bonds, inflation-linked bonds
- » Duration targeting
- » Fixed income ESG
- » Liability-driven investing



Investing in a Cross Asset Portfolio Solution involves risk. There is no guarantee that the program will be successful. All investments are subject to loss.

Illustrative examples

Because the Parametric CAPS offering covers so many capabilities, it can manifest in different ways for different clients. A few examples may help.

This material is provided for illustrative purposes only and should not be construed as investment advice, a recommendation to buy or sell specific securities, or direction to adopt any particular investment strategy. This material is based on the experiences and observations of Parametric. No representation is made that a client will, or is likely to, achieve results similar to those presented. Client outcomes will differ depending on each client's specific circumstances as well as changes in securities or financial markets or general economic conditions.

Example 1

A large pension seeks to employ a portable alpha program, requiring multiple capabilities across physical and synthetic instruments to solve specific exposure needs.

Build	Manage	Protect
Asset exposures: <ul style="list-style-type: none"> » Domestic large-cap equities (using a smart beta index) » Global REITs » Emerging-market debt 	Portfolio management: <ul style="list-style-type: none"> » Portable alpha and beta overlay (synthetic) » Risk parity » LDI management 	Risk management: <ul style="list-style-type: none"> » Equity hedging » Currency hedging » Cash management

Example 2

An endowment looks to Parametric first to discuss market ideas and portfolio risk.

Build	Manage	Protect
Asset exposures: <ul style="list-style-type: none"> » Custom basket of global equities (physical and synthetic) » Custom global equity factor portfolio (synthetic) » TIPS and Treasury portfolios (physical and synthetic) » Active muni strategy with duration overlay (physical and synthetic) 	Portfolio management: <ul style="list-style-type: none"> » Beta adjustments and rebalancing (synthetic) 	Risk management: <ul style="list-style-type: none"> » Duration management » IPO hedging

Example 3

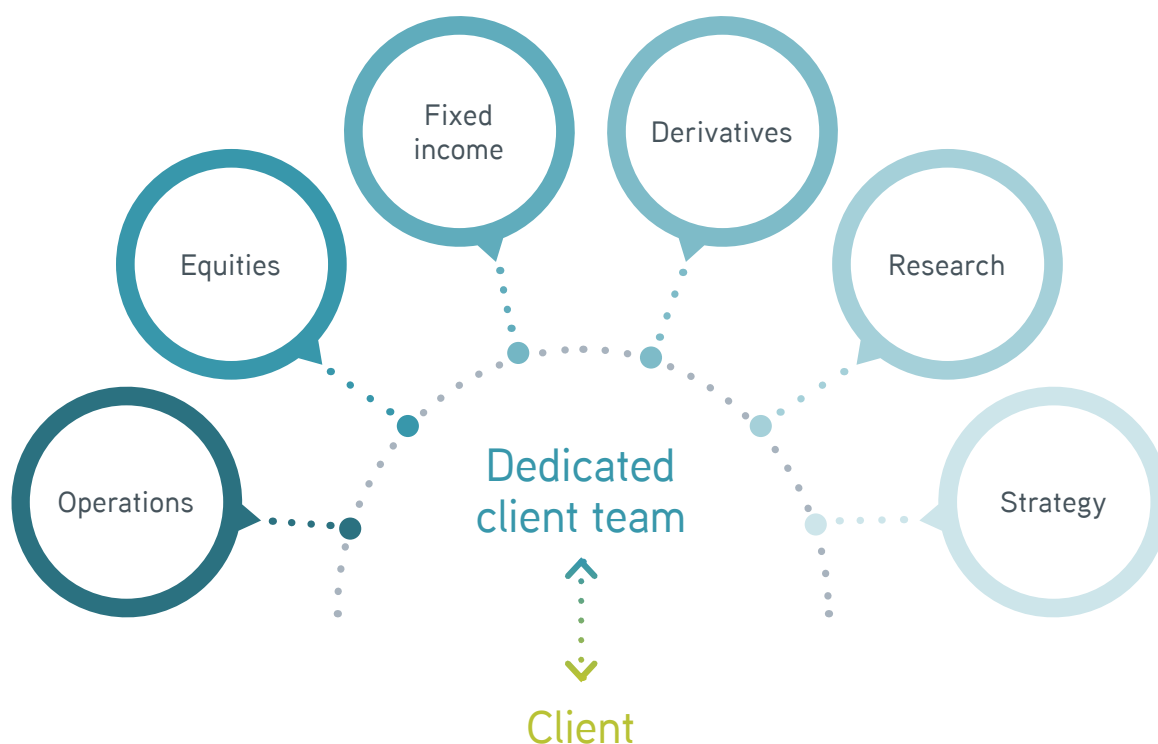
An endowment allocates a significant portion of its equity, bond, and alternatives portfolios to passive index strategies.

Build	Manage	Protect
Asset exposures: <ul style="list-style-type: none"> » Core equity exposure (synthetic) » Core fixed income exposure (synthetic) » Commodity portfolios (synthetic) » Real estate index replication (physical) 	Portfolio management: <ul style="list-style-type: none"> » Portable alpha (synthetic) » Transition management » Active manager model implementation 	Risk management: <ul style="list-style-type: none"> » Cash management

A trusted fiduciary with client-aligned interests

Importantly, our service model shown in figure 2 provides institutions with a single point of contact to access our asset class strategies and research specialists in each of these areas, providing a simple and holistic experience.

Figure 2: CAPS service model



Our CAPS platform provides clients with relationship managers who are fluent in our services and strategies. These dedicated employees provide access to key experts at Parametric with proactive, purposeful client outreach. Parametric has more than 30 years of experience working with institutional investors and their committees. We offer direct access to staff who are experienced in global markets and have strong relationships with local market experts across the industry. We leverage these resources to offer thoughtful advice, evaluate strategies, and determine how best to structure and implement exposures across asset classes and instrument types.

A comprehensive suite of capabilities

Increasingly, investors seek the capability to act more directly and efficiently to manage unique risks, enhance returns, and customize portfolio exposures. Parametric CAPS offers a powerful means of scaling an existing investment team using our full-service implementation solutions. Our investment staff is charged with delivering creative, cost-conscious approaches to unique investor challenges and functions as an extension of your team by providing consultation, analysis, execution, and ongoing management. They accomplish this through a high-touch consultative approach using our full suite of beta management tools.

By partnering with a full-service provider, investors can remain focused on asset allocation and strategic decisions. This helps investors be nimbler in dynamic markets and enables them to implement exposures in a transparent, cost-effective, and timely manner. Our mission is to empower institutional investors to take control of their portfolios through a comprehensive, flexible, and customizable platform across a full spectrum of solutions.

About

Parametric Portfolio Associates®, LLC ("Parametric"), headquartered in Seattle, is registered as an investment advisor with the US Securities and Exchange Commission under the Investment Advisers Act of 1940. Parametric is a leading global asset management firm, providing investment strategies and customized exposure management directly to institutional investors and indirectly to individual investors through financial intermediaries. Parametric offers a variety of rules-based investment strategies, including alpha-seeking equity, fixed income, alternative, and options strategies. Parametric also offers implementation services, including customized equity, traditional overlay, and centralized portfolio management. Parametric is part of Morgan Stanley Investment Management, the asset management division of Morgan Stanley, and offers these capabilities through offices located in Seattle, Boston, Minneapolis, New York City, and Westport, Connecticut.

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Derivatives such as futures, swaps, and other investment strategies have certain disadvantages and risks. Futures require the posting of initial and variation margin. Therefore, a portion of risk capital must be preserved for this purpose rather than being allocated to a manager. Liquid futures may not exist for published benchmarks, which may result in tracking error. Also, some intraperiod mispricing may occur. Swaps require periodic

payments, may be less liquid than futures, and may have counterparty or credit risk. Some investment strategies require a cash investment equal to the desired amount of exposure.

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