Pizza lover's guide to PORTABLE ALPHA...

a portfolio construction technique

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New portfolio construction techniques based on synergies between alpha and beta remind us of pizza pie. A full menu of custom ingredients enables diners to eat to their satisfaction, selecting thick vs. thin crust; plain cheese vs. 'everything' on top. The challenge is in finding the right combination of ingredients.

In the beginning there was pizza. Plain or pepperoni. Pizza in the old days was a hit-or-miss affair consisting of three prime ingredients: dough, sauce, and cheese. It provided an easy solution to a relatively straightforward problem: ravenous hunger, no time to spare. Recent updates of pizza (and its portability!) remind us of advancements in the realm of delivering excess return in portfolios.

Pizza's notable upgrade, California pizza, makes us proud of our state. Topped with suspiciously healthy items like avocado or roasted corn; or *outré* ones like barbecued chicken, bacon, or clams, Cal pizza is a new way of forging known ingredients into a new and different context. Who would have guessed, for example, that Thai peanut sauce would perform so meltingly well on a slice of baked dough? Or how about our personal favourite, mango tandoori chicken pizza? Not a hint of mozzarella there.

These exotic pizza pies represent more than just fruitless noodling with seemingly uncharismatic components. They reflect a purposeful attempt to re-invent, re-combine and restructure the familiar – for synergistic and enhanced results. Just like pizza, portable alpha consists of a myriad of highly customisable menu items from which to choose, from traditional plain cheese to the hearty meat lover's variety. Managers tether the portfolio to a tried-and-true stream of market return (the crust: beta), and then overlay and combine it with a non-correlated stream of excess return (the toppings: alpha).

Investors now have supreme options – thin or thick crust (e.g., a single market beta or multiple market betas) piled with virtually endless forms of alpha (see "where's the beef? where's the alpha?" section) to enhance the dining experience. All of this has been done before; what's new is the notion of combining it all together into one pizza pie.

Why portable alpha now?

Portable alpha strategies are gaining widespread acceptance among investors globally. The extensive range of alternative investment strategies used when implementing portable alpha have also gained exposure and acceptance.

We see two factors driving the interest in portable alpha. First, many investors anticipate that long-term returns from traditional asset classes will fall short of their return targets. Second, investors' liabilities are sensitive to changes in interest rates. These investors are seeking ways to improve the match between their assets and liabilities without giving up too much in terms of overall return.

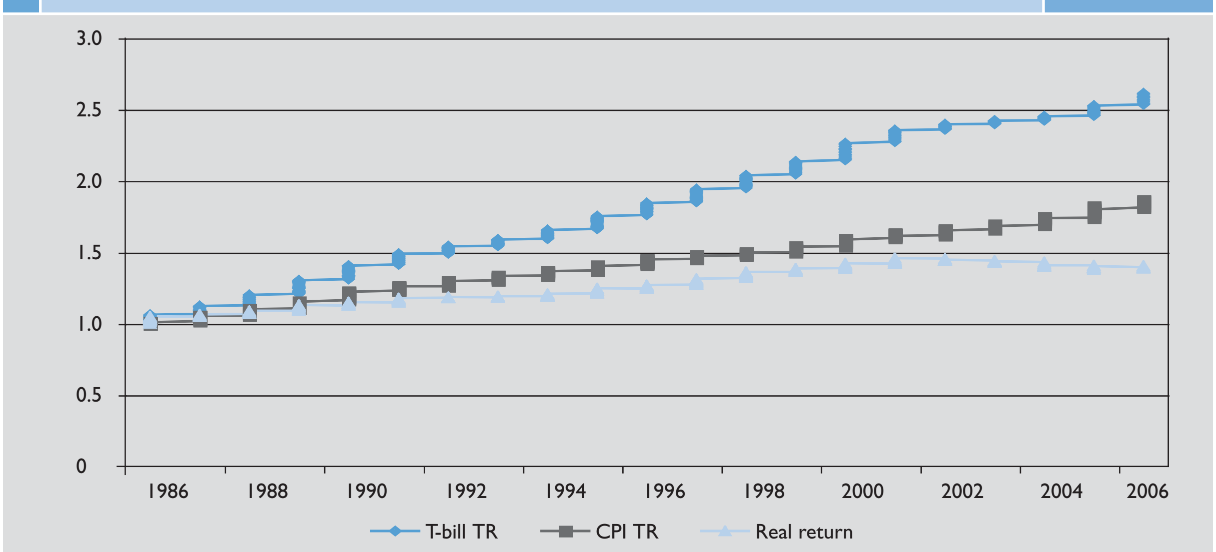
The need to enhance returns to meet projected liabilities while offsetting the debilitating effect of inflation on the portfolio – and doing so in a risk-efficient manner – has become so acute that the market has responded with new and creative means of portfolio construction. While some investors continue to construct portfolios using traditional asset allocation techniques, others seek new paradigms based upon the notion of separating passive market exposure (beta) from excess market return (alpha). This resourceful approach seeks the best available excess return, wherever sourced, and transports, or 'ports' it to beta at a low cost without changing the underlying asset allocation. The result is an efficient means of implementing the strategic asset allocation decisions using low cost betas, while independently looking for, and managing the alpha. In the end, portable alpha is just that: an innovative portfolio construction technique. From an investor's perspective it means paying little for beta while paying more for active managerial skill. We at First Quadrant have worked this way with clients for many years and have seen its effectiveness.

WHY ALPHA MATTERS

Alpha matters for many reasons but first and foremost because inflation matters. Over time, tax-exempt buyers of Treasury bills (T-bills) will barely maintain the purchasing power of their assets. In periods of rising inflation, tax-exempt buyers of T-bills may actually lose purchasing power because simple market returns are not good enough

20-year total return series

Exhibit 1



Source: Bloomberg, First Quadrant

in the long run. Excess returns (positive alpha) is needed to offset and exceed the odds of unexpected inflation. This, of course, assumes that these tax-exempt investors don't have spending needs. Once spending needs are factored into the equation, many investors in Treasuries see the real purchasing power of their assets decline over time.

As shown in Exhibit 1, an investor in US government three-month T-bills has earned a real yield above and beyond inflation over the past 20 years.

However, over the past 10 years, this same investor has barely kept pace with inflation. By investing in Treasuries, the investor has a miniscule positive real rate of return (see Exhibit 2).

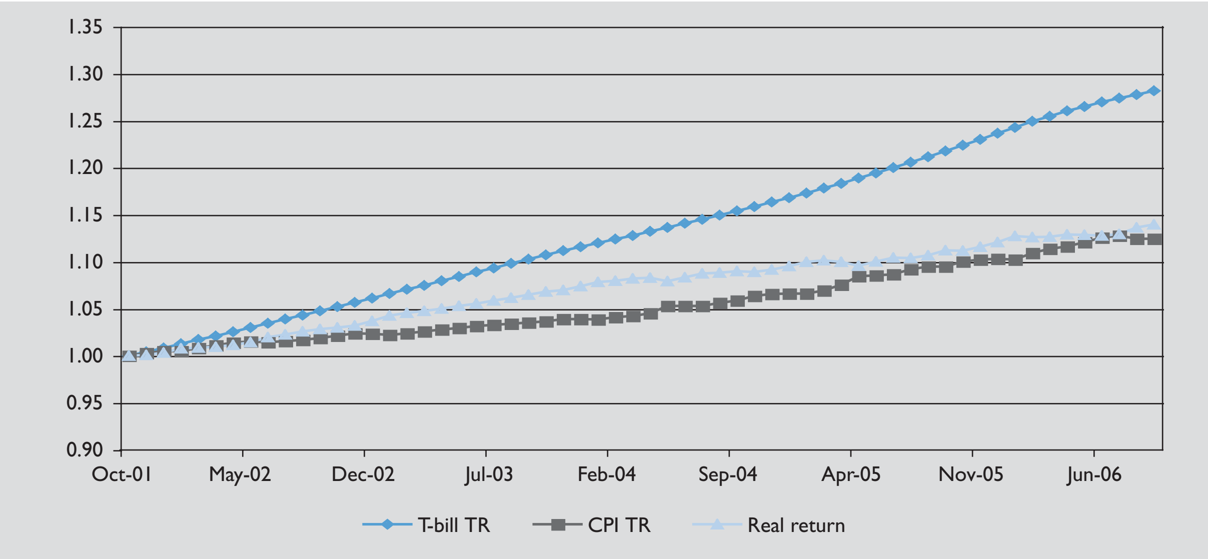
Over the past five years, investors in T-bills have seen the real purchasing power of their assets actually decline by a significant margin due to unexpected inflation. Inflation – both expected and unexpected – erodes real rates of return, forcing the investor into riskier assets (see Exhibit 3).

As shown in Exhibit 4, returns for the (generic and completely arbitrary) conventional assets classes of equities, bonds, commodities and real estate do earn a risk premium over time. This risk premium, or beta, can be obtained cheaply and is completely independent of investor skill. Index futures, index funds, and exchange-traded funds are all vehicles that allow investors to capture market beta.

(These categories represent a small set of systematic risks all markets may carry. One could broaden systematic risks far beyond this list to include interest rates, inflations, growth or value characteristics, sector exposures, individual

10-year total return series

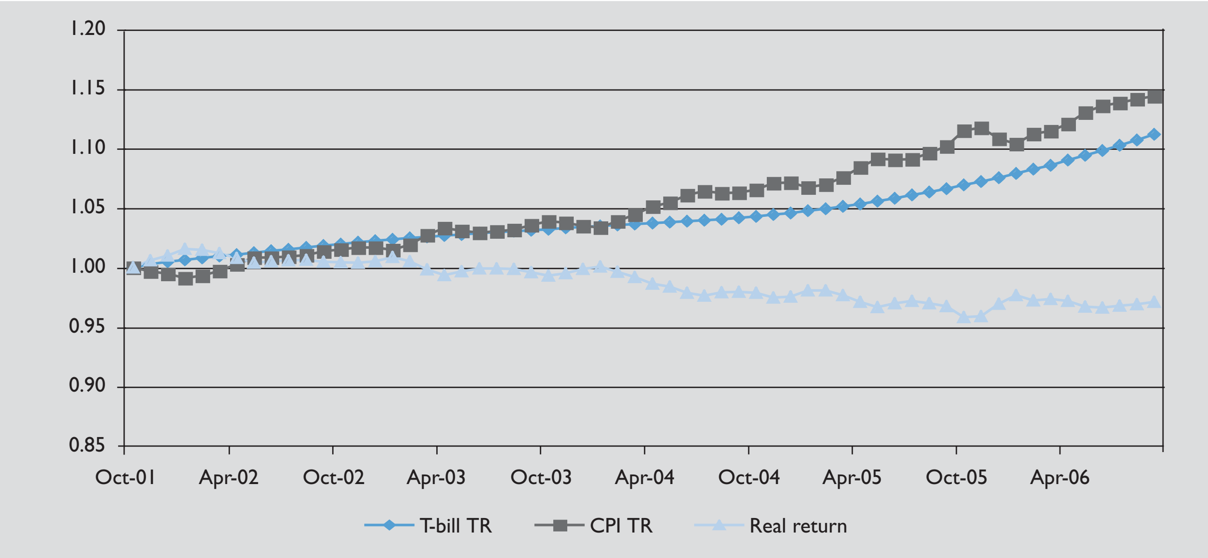
Exhibit 2



Source: Bloomberg, First Quadrant

Five-year total return series

Exhibit 3



Source: Bloomberg, First Quadrant

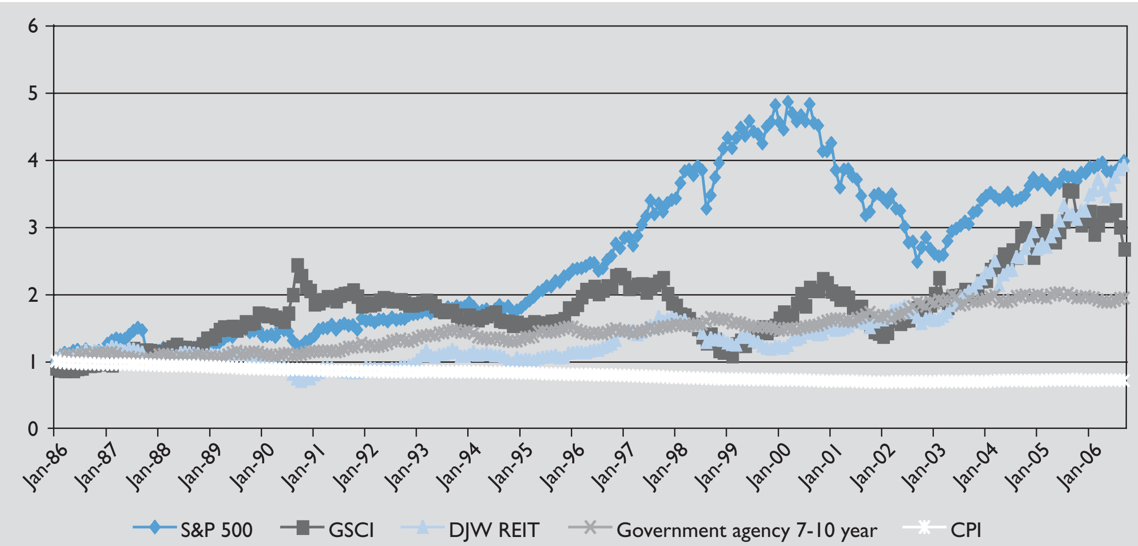
stocks, etc. The debate on the index strategy breadth falls beyond the scope of this article, but is a central tenet in portable alpha investing. For the purposes of this article, we focus on the concepts of alpha's portability and its role as a portfolio construction technique.)

Riskier assets do earn a premium over time. However, more important is the correlation between these assets and how their correlations change over time. From the latter half of the nineties into the first years of the 21st century, the correlation between the conventional asset classes (as defined above) was small to negative. Since 2003, however, these four asset classes have experienced high and positive correlation. Simply put, investors are not gaining diversification benefits from investing in these four assets classes. As conventional asset classes grow more correlated, the need for new non-correlated alpha strategies is even more vital to ensure the continued success and evolution of portable alpha strategies as a core component of institutional investors portfolios.

If market beta is relatively easy to obtain, how do investors improve their risk-adjusted performance? This is achieved by combining portable alpha strategies that have low or negative correlation to broader asset classes or other alpha programmes. This means that investors can move alpha from a segment or asset class in the portfolio where the opportunity to generate alpha is higher to more efficient markets and/or market segments where alpha generation is more difficult. The large capitalisation segment is the example of a very efficient segment, while small capitalisation markets are generally considered inefficient and ripe with opportunity to earn alpha.

Exhibit 5 presents a small set of conventional assets to demonstrate the time-varying nature of how assets move (or don't move) in tandem. For the most part, the correlations among these asset classes are time-period sensitive and illustrate the benefits of systematic risk found in broadly diversified portfolios. These broad portfolios provide a solid foundation (crust) for return-enhancing alpha strategies.

Asset/index minus T-bill total return **Exhibit 4**



Source: Bloomberg, First Quadrant

Conventional assets

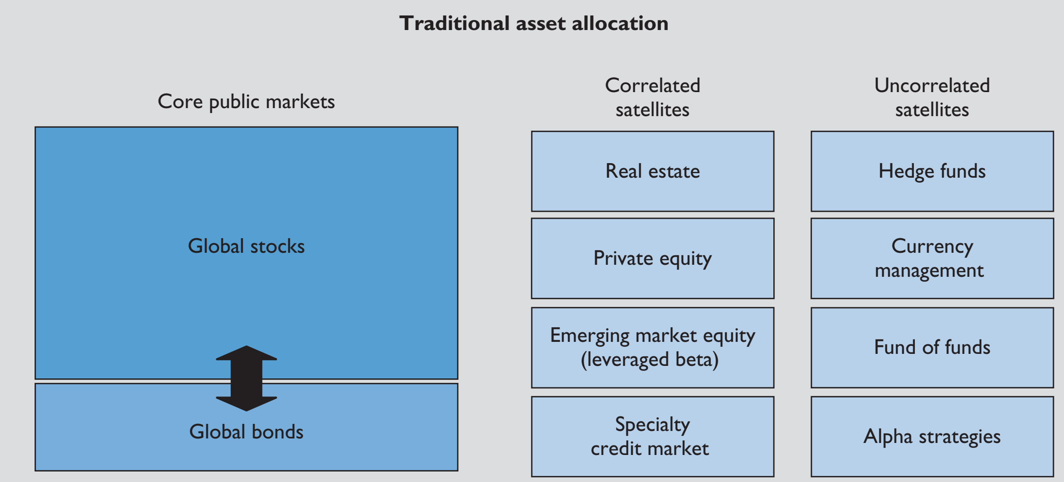
Exhibit 5

5-year		S&P 500	GSCI	DJW REIT	US Treasury/ Government 7-10 year
	S&P 500	1.00			
	GSCI	(0.21)	1.00		
	DJW REIT	0.38	(0.12)	1.00	
	US Treasury/Government 7-10 year	(0.40)	0.04	0.01	1.00
10-year		**S&P 500**	**GSCI**	**DJW REIT**	**US Treasury/ Government 7-10 year**
	S&P 500	1.00			
	GSCI	(0.02)	1.00		
	DJW REIT	0.27	(0.03)	1.00	
	US Treasury/Government 7-10 year	(0.17)	0.07	(0.01)	1.00
20-year		**S&P 500**	**GSCI**	**DJW REIT**	**US Treasury/ Government 7-10 year**
	S&P 500	1.00			
	GSCI	(0.06)	1.00		
	DJW REIT	0.41	(0.09)	1.00	
	US Treasury/Government 7-10 year	0.09	(0.01)	0.12	1.00

Source: Bloomberg, First Quadrant

Beta and alpha together

Exhibit 6



Source: First Quadrant, Maarten Nederlof, k2 Advisors

PORTABLE ALPHA

Traditional pizza consists of crust, sauce and cheese. Portable alpha components also number three:

- The first, **beta,** is the extent to which an investment moves with the market. It can be said to represent the passive returns associated with a discrete long or short market exposure, or a combination of long and short exposures to markets in a portfolio.
- The second, and more important, alpha, is a measure of a manager's ability to generate returns by taking active risk. Active risk here is simply defined as any exposure unlike that of the benchmark. The goal is to invest or implement a strategy where returns are 1) unrelated to the underlying market, 2) absolute in nature, and 3) not dependent on market direction.
- The third is the risk-free or **cash portfolio**. Cash results from 1) the investor's initial investment, 2) proceeds of physical securities shorted during hedging or investing, or 3) cash required as collateral to support derivatives exposures (beta or alpha).

TRADITIONAL BUILDING BLOCKS

The overwhelming majority of investor portfolios are diversified among assets and strategies by liquidity, their relationship to one another, and the risk they introduce to the portfolio. The capital asset pricing model (CAPM) popularised the notion that the only free component in investing is diversification of a portfolio using widely held assets – some liquid, others less liquid – along the following lines:

- Core public markets – long investments in global stocks and bonds give investors a starting point for investing large amounts of capital in the quest for investment income and capital appreciation.
- Correlated satellites – strategies that are typically less liquid, carry higher transaction costs, and a higher beta relative to core public markets.
- Uncorrelated satellites – a myriad of strategies where performance is unrelated or loosely related to core public markets. The proliferation of these strategies has resulted in growth and liquidity in the derivatives market, spurred by development of portfolio construction and risk allocation techniques in the quest for alpha.

Exhibit 6 illustrates one way to categorise assets and begin to make innovative portfolio construction decisions. This type of construct enables investors to 1) manage asset allocation independently, 2) aggressively seek alpha and manage it independently, and 3) examine risks in alpha and beta portfolios discretely. The investment portfolio has now become a pizza pie in which the diner can clearly identify and select ingredients that satisfy his or her appetite, e.g., thick crust vs. thin crust; plain cheese vs. 'anything' on top.

HOW TO MAKE PIZZA: IMPLEMENTATION OF PORTABLE ALPHA STRATEGY

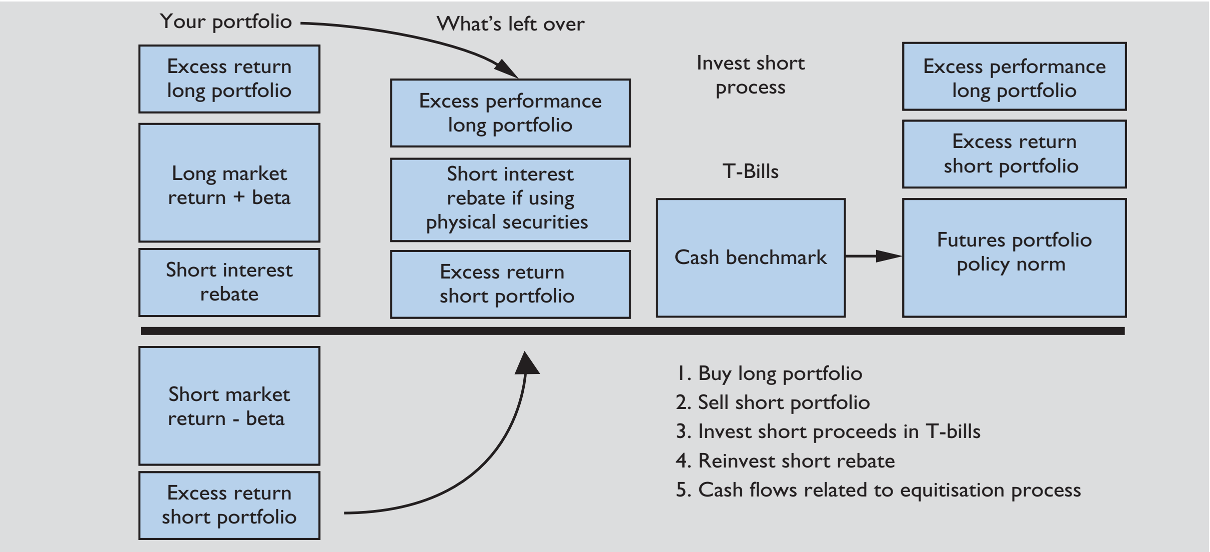
The basic ingredients needed to create a portable alpha strategy are: easily replicable benchmarks, and alpha producing strategies. Portable alpha is the systematic combination of the two, hence the pizza. We call it portable because the alpha can be applied to any asset class through the use of overlays to ensure the desired market exposure is maintained – strategic or tactical.

Portable alpha involves the following steps:

- identify the desired alpha strategy and the target beta;
- determine the risk budget for the strategy comprised of both alpha and beta;

Basic cheese pizza

Exhibit 7



Source: First Quadrant

- deploy risk capital so that the alpha manager is funded and 100% of the desired market exposure is achieved; and
- establish risk parameters, whereby active risk and beta risk are monitored discretely, as well as in combination.

There are many other considerations when structuring these portfolios, i.e., the selection of alpha strategies, how they are combined, the strategy's individual risk vs. portfolio risk, the portfolio's residual risk, the portfolio's objective measures of success. Does one rely on information ratios, Sharpe ratios, tracking error alone, or alpha alone to measure success, for example? While these questions fall outside the scope of this article, they are all elements for consideration.

Let's look at some examples. Just like pizza, there are both simple and sophisticated versions of portable alpha strategies. The menu below provides examples of both and demonstrates some of the accompanying operational benefits.

Cheese pizza: the most basic pizza on the menu

In portable alpha parlance, it contains a beta, the crust, and one single alpha source, the cheese. Equity market neutral strategies are the most intuitive example here. The alpha strategy manager invests both long and short to achieve three objectives: 1) earn an alpha from the performance differential of the long portfolio relative to the short portfolio, 2) construct the portfolio so it is equally invested long and short on the dollar basis and is beta neutral as well. In other words, extract the beta from the strategy so that skill, and not the market, drives returns, 3) identify the market to which one wishes to 'port' the alpha typically an equity beta is used, let's assume it is the S&P 500. The result is a portfolio comprising a single alpha source (long/short equity portfolio – one manager's skill level), a cash investment resulting from the short sale of stocks, and futures contracts to re-invest in the equity market synthetically. Put another way, the futures portfolio overlays the equity market neutral alpha with equity returns.

Pepperoni pizza: toppings improve cheese pizza's flavour and attracts patrons

The addition of toppings adds spice to the offering and improves the dining experience. With pepperoni pizza, one need only add multiple market neutral equity managers in combination with a single overlay. With consideration given to how the equity market neutral strategies perform relative to one another, the general outcome is an equity portfolio of diversified alpha sources.

California pizza: unconventional pies for a sophisticated palate

These pies are based on the same crust as the others but are crafted for diners with an appetite for the unconventional: barbecue, tandoori, chipotle, curry, and the like. Portable alpha strategies developed in this vein enable diners to not only invest in beta synthetically; but to improve risk-adjusted returns by diversifying manager skill in the alpha portfolios. Remember, beta is inexpensive and managerial skill is not. The focus here is on how to combine alpha strategies in more efficient ways to improve the outcome. Examples: 1) investing in low-correlated strategies with high volatility to reduce risk in the overall alpha portfolio while efficiently utilising cash; 2) investing in hedge funds to capture manager skill, a hedge fund's focus on capital preservation, and illiquidity, while porting these returns to synthetically replicated beta exposures. Next, consider more efficient ways to deploy risk in the portfolio to improve the outcome.

Thick crust pizza: digging deeper, the strategy is more flexible and operationally efficient

Asset allocation vs. alpha allocation: Now that one beta is replicated, we can extend the use of multiple betas in the portfolio. Why not fully replicate the normal portfolio? This effectively separates asset allocation decisions from alpha allocation decisions. Investors can change the underlying correlated beta exposure, either tactically or strategically, without disrupting active alpha seeking strategies, e.g. short small-cap exposure (Russell 2000) with higher alpha opportunities and invest long in the large-cap market (S&P 500). We can now concurrently adjust risk in the alpha portfolio to manage tracking error without disturbing the underlying asset allocation and incurring costs.

Transition management: With a broader beta replication programme in place, we can quickly and efficiently gain beta exposure to facilitate manager transitions.

Contributions and benefit payments: There is now a cash pool of assets replicating the desired benchmarks that can accept contributions or make benefit payments in a cost-effective manner. Lower transaction costs and the speed with which funds may be invested or liquidated allow staff to be responsive to unforeseen needs.

Less liquid and high beta: Private equity commitments may be fully invested and drawn upon efficiently. Presently private equity and real estate investments are costly candidates for portable alpha programmes. As mechanisms for shorting, hedging, or swapping exposures mature, hurdles to including these strategies will come down as secondary markets develop.

WHERE'S THE BEEF? WHERE'S THE ALPHA?

An elusive concept in most asset classes, reliable alpha may be found in less efficient markets like small and micro-cap equity markets. As long as the underlying beta is effectively modified to favour the desired market exposure, that alpha is a candidate for porting, e.g. sell small-cap beta and buy large cap, bond exposure, or another desired beta. As discussed previously, certain strategies with value-added returns, like private equity and real estate, remain underutilised. Here is a representative sampling of 'alpha engine' strategies for portable alpha programmes.

- Aggressive growth
- Convertible arbitrage
- Managed futures
- Market neutral – arbitrage

ISSUES TO CONSIDER WHEN IMPLEMENTING A BETA REPLICATION PROGRAMME:

You must address...	...and consider the following implementation issues:
Benchmarks – equity, fixed income, or non-traditional	• Tracking error • Manager skill • Risk management
Instruments – futures, swaps, options	• Exchange vs. OTC • Counterparty • Credit • Settlement – cash flows
Transaction costs	• Vary

- Currency
- Dedicated short bias
- Distressed short bias
- Emerging markets
- Event driven
- Fixed income arbitrage
- Fund of funds
- Income
- Long/short equity
- Systematic global macro
- Market neutral equity
- Market timing
- Opportunistic
- Multi strategy
- Variable
- Short selling
- Special situations
- Value
- Volatility arbitrage
- List grows daily

NOT JUST PIE IN THE SKY

We at First Quadrant were early pioneers in the portable alpha space, delivering alpha-focused strategies to the market since our inception in 1988. We've long used the expression 'alpha shop' to describe our business, and continue to manage alpha and portable alpha strategies today.

ISSUES TO CONSIDER WHEN EVALUATING ALPHA STRATEGIES:

Capacity constraints	• How much money can an individual manager invest in the strategy and how much money is chasing the strategy market-wide?
Manager risk	• Three key elements to a successful firm, client service, research and investment process consistency, and solid operations.
Liquidity risk	• Is the strategy investing in liquid or illiquid assets, or both?
Tail risk	• Is there a possibility of a large negative loss?
Beta risk	• How much of the strategy is dependent on 'the market'?
Cost-of-carry risk	• Is there a reason to leverage the strategy or other costs one should consider before investing?

Over the years, we've watched as key obstacles to the strategy diminish and even disappear. The need for incrementally higher returns intensifies while the costs of implementation have come down. At the same time, investor sophistication about return – specifically the separation of alpha from beta – has grown, with new concepts gaining broad acceptance. This is a market that continues to evolve.

But it's a market that has moved well beyond the tipping point. We're now in a new world that demands innovation, creativity, and new modes of implementation, as well as robust risk management.

Portable alpha may be usefully viewed as one large step forward in the progression of portfolio construction techniques. As investors' needs grow in complexity, investment managers compete to deliver targeted and innovative solutions. This evolution is characterised by ever finer segmentation of risk into its fundamental components. Portable alpha is an efficient means for investors to completely separate asset allocation from alpha allocation, and each of the components' intended risks. Longtime players at the forefront of portable alpha management, First Quadrant remains a committed leader in the field. And by the way, would you mind passing the red hot chilli pepper?

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