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SOLVING THE INVESTOR'S PROBLEM

*Rethinking policy portfolios
and separating alpha from beta*

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EXECUTIVE SUMMARY

This paper explores a revolutionary rethinking of the way the investor's problem is solved. One outcome of this rethinking is a radical shift in the role of the policy portfolio for investors. Policy portfolios are the mix of stocks and bonds, domestic and international that make up an investment portfolio.

In an article in *Economics and Portfolio Strategy*, legendary economics and finance writer Peter Bernstein criticized the conventional practice of the investment industry of maintaining fairly static policy portfolios because they are based on long-run assumptions of the future, which are tenuous at best. Mr. Bernstein argued that policy portfolios are "obsolete" and investors are better off focusing on the short-run and allowing the policy portfolio to be more responsive to the shorter-term outlook.

This paper attempts to build on the foundation laid by Mr. Bernstein. Both papers agree that the way policy portfolios are used needs to change, that big bets based on long-run forecasts are folly, and that this is the time for radical change. But this paper also argues that while policy portfolios are NOT obsolete, they are grossly misused; that tactical shifts in the policy portfolio may make sense but are likely to have a smaller role than suggested by Peter Bernstein; that alpha and beta can be more efficiently employed through a new approach to solve the investor's problem; and that errors in long-run forecasts can be mitigated by restructuring the solution to investor's problem.

Current policy portfolio use can be called a "two hats approach," where one hat is hedging the investor's liability and the second hat involves

reaching for growth over that of the liability. Typically, the policy portfolio relies on long-run assumptions of stock and bond performance and risk. Because of the unreliability of lone-range forecasts, Mr. Bernstein suggests investors employ more tactical policy portfolio shifts based on shorter-term predictions. However, this market timing approach requires extraordinary skill, as made clear by the fundamental law of active management.

Instead, this paper proposes a "one-hat approach" to policy portfolios. Under this approach, alpha, or outperformance, is separated from beta, the benchmark. The investor constructs a portfolio of assets, the policy portfolio, simply to hedge the liability with no eye on growth above the liability. The investor then finds investment products expected to deliver alpha, irrespective of the policy portfolio. He or she builds a portfolio with the desired level of alpha and maximum consistency given the desired level of growth over the liability and proclivity for bearing risk. Finally, the investor employs derivatives or structured products to neutralize the benchmark or beta exposure of this alpha producing portfolio vis-à-vis the liability such that the alpha is transported onto the hedge portfolio. The result is a portfolio that makes better use of alpha and beta to solve the investor's problem.

Introduction

T

he single most profound change in investment thinking since Markowitz's work on Portfolio Theory is upon us. Not surprisingly Peter Bernstein is in the middle of it. Mr. Bernstein wrote an *Economics and Portfolio Strategy* piece in March 2003 titled, "Are Policy Portfolios Obsolete?" Mr. Bernstein's thesis that policy portfolios are indeed obsolete has generated considerable interest.

Policy portfolios are the mix of stocks and bonds, domestic and international, plus alternative assets (real estate, private equity, hedge funds, etc.) that in a broad sense define an investment portfolio. A typical policy portfolio might be 50% domestic stocks, 10% international stocks, and 40% domestic bonds. In a nutshell, the Bernstein article suggests that it is folly to rely so heavily on a fairly static policy portfolio when the policy portfolio is based on long-run assumptions of what the future holds and those assumptions are tenuous at best. The article argues that since the long run is so difficult to forecast, investors are better off focusing on the short-run and allowing the policy portfolio to be more responsive to the shorter-term outlook.

This paper is sympathetic to much of what Mr. Bernstein writes. Both papers agree that the way policy portfolios are used needs to change, that it

is folly to make big bets based on long-run forecasts, and that this is the time for radical change. But the main points of what follows are:

- policy portfolios are NOT obsolete but they are grossly misused;
- tactical shifts in the policy portfolio may make sense but are likely to have a smaller role than suggested by Mr. Bernstein;
- alpha and beta can be more efficiently employed through a new approach to solve the investor's problem; and
- errors in long-run forecasts can be mitigated by restructuring the solution to investor's problem.

The investor's problem

Before discussing the changes it might help to step back and describe the investor's problem and consider how it is currently solved. Every investor—an individual saving for retirement, a pension fund, a foundation, etc.—is solving a similar problem. In its simplest form the problem boils down to how much needs to be saved and

Step 3: Find investment products that fill in the policy portfolio. In the example this might be a US equity index fund, some fixed income exchange traded funds, and an international equity mutual fund.

This is called the “two hats approach” because the policy portfolio wears two hats. One hat has the policy portfolio hedging the liability. The second

Every investor—an individual saving for retirement, a pension fund, a foundation, etc.—is solving a similar problem.

how it should be invested such that there is sufficiently high probability of having enough money to accomplish a goal some time in the future. The classic trade-off in solving this problem is trying to raise the probability of achieving one's goal while fighting to lower the cost of doing so.

THE CURRENT SOLUTION— THE TWO HATS APPROACH

The way this problem is currently solved can be summarized in three steps.

Step 1: Construct a series of cashflows needed to successfully reach one's goal. In the individual retirement example this might be the annual paycheck, accounting for expected inflation, necessary to live 20 years comfortably in retirement. Call this the liability.

Step 2: Construct a portfolio of assets in which to invest. Call this the policy portfolio. The policy portfolio seeks to maximize the probability of funding the liability while minimizing the amount that needs to be saved and must be consistent with the investor's penchant for taking risk. This might look like a 60% stock, 40% bond mix where 10% of the equity allocation is invested internationally.

hat has the policy portfolio reaching for growth over that of the liability. Typically the policy portfolio is constructed based on long-run assumptions of how well domestic and international stocks and bonds will perform and how much risk each asset in the policy portfolio adds at the portfolio level.

Mr. Bernstein takes issue with long-run forecasts that underlie the policy portfolio and suggests that the solution is to make more tactical policy portfolio shifts based on shorter-term forecasts. This market timing approach faces considerable challenges made clear by the fundamental law of active management.

The Fundamental Law of Active Management

To set the stage for a new way of solving the investor's problem, it will help to say a few things about active money management. Total return can be decomposed into three principal components—the risk-free rate, the beta or benchmark component, and the alpha component. The riskless component provides a time premium—payment for delaying consumption. Beta is the exposure of the invest-

ment to the benchmark.¹ The alpha component is the return over and above that generated by the benchmark. Active management is all about alpha, the return over and above the benchmark.

The capacity to add value over a benchmark and the consistency of this added value are captured in the information ratio (IR). The IR is the ratio of alpha per unit of active risk; consequently the

roll of the dice or pull of the slot once per year. With one such bet per year, the edge would be unchanged but the breadth would be too low to give much confidence that the edge would be realized with any degree of consistency.

The Fundamental Law is important because it gives an indication of which avenues of active management are more likely to be successful. In the

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IR increases as the alpha increases and as the degree of consistency of alpha improves. The Fundamental Law of Active Management states that the IR increases as the skill applied increases and as the opportunity to apply that skill, the “breadth,” increases.²

Skill in this context can be thought of as the correlation between the forecast and what is being forecasted. We think of a skillful weather forecaster as one who is generally right when she says that it will be warmer tomorrow than yesterday, or that the rains will continue through the weekend.

The notion of breadth may be best brought out by an example. Consider how Las Vegas operates. The edge, or “skill,” that the house has is small, but Vegas exists and is so profitable because the house realizes their edge with pinpoint precision. This degree of precision results because the breadth, the number of times that edge is applied (each roll of the dice, each pull of the slot, each game of cards), is tremendous. Las Vegas would not exist if all the money that flows through Vegas in one year were pooled together and placed on a single

Bernstein paper the advice to tactically allocate the policy portfolio mix is the recommendation of a very low breadth strategy.³ The Fundamental Law tells us that for this to be a consistent way of adding value, an extraordinary level of skill is required.

Building a portfolio of alpha is a bit like picking fruit. When picking fruit the fruit lowest on the tree is picked first. Subsequently fruit higher in the tree is picked, and the highest, most difficult to reach fruit, is picked last and least. Low hanging fruit corresponds to high IR investment strategies while fruit higher in the tree is analogous to lower IR strategies. High IR strategies are employed first and lower IR strategies occupy progressively less and less of the portfolio.

They say you want a revolution

As Mr. Bernstein suggests, the time is ripe for change and it is time for revolutionary thinking about the policy portfolio. This paper argues, however, that the policy portfolio should not

be abandoned. On the contrary, the policy portfolio should continue to be relied on heavily, but it should be constructed and used differently. Recall from above that under the current approach to solving the investor's problem the policy portfolio wears two hats. The first is a hedging hat and the second is a growth hat. On the hedging front, the policy portfolio should behave very much like the liability that the investor is trying to fund. On the growth front the policy portfolio needs to grow faster than the liability to reduce the amount that needs to be invested. These two competing demands placed on the policy portfolio force a compromise between the quality of the hedge and the desire to take on risk versus the liability in hopes of greater growth.

A DIFFERENT WAY— THE ONE HAT APPROACH

Here is an alternative way to solve the investor's problem.

Step 1: As above. Construct a series of cashflows needed to successfully reach one's goal. This is the liability.

Step 2: Construct a portfolio of assets, the policy portfolio, in which to invest. The policy portfolio seeks to be the best hedge portfolio for the liability with no eye on growth. The policy portfolio becomes a pure liability hedge.

Step 3: Find investment products expected to deliver alpha, irrespective of the policy portfolio. Build a portfolio with the desired level of alpha and maximum consistency, i.e. maximize the portfolio IR given the desired level of growth over the liability and proclivity for bearing risk.

Step 4: Employ derivatives or structured products to neutralize the benchmark or beta exposure of this alpha producing portfolio vis-à-vis the liability such that the alpha from Step Three is transported onto the hedge portfolio.

UNDER THE MICROSCOPE

What follows takes a closer look at what differs between the two hats approach and the one hat approach.

Step 1: No difference.

Step 2: Under the one hat approach, the policy portfolio performs only one function, which is acting as a hedge for the liability. The growth in the portfolio does not come from a beta bet in the policy portfolio as occurs under the two hats approach. Growth under the one hat approach comes from a portfolio of alpha, not from the policy portfolio.

Step 3: The one hat approach requires a suspension of the notion that alpha is captive to the beta where the alpha is garnered. Can an international

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- 1 Beta captures the average exposure to the benchmark and any tactical shifts in benchmark exposure are rightly captured in the alpha component.
 - 2 See Richard C. Grinold and Ronald N. Kahn, *Active Portfolio Management*, New York: McGraw Hill, 2000.
 - 3 Tactically allocating the policy portfolio amounts to making calls across the broad asset classes: stocks versus bonds, US versus international and traditional assets versus alternatives.

equity manager be employed to add alpha to a domestic bond portfolio? Yes!⁴ Once the idea of separating alpha from beta is embraced, the problem becomes one of finding skilled active managers and building an attractive portfolio of their alpha, irrespective of each manager's respective benchmark.

Step 4: Address the beta exposure that accompanies the portfolio constructed in Step Three and convert it so that it behaves like the liability. In Step Three it is possible that some of the alpha sources will come from tactical beta shifts or even static beta tilts.⁵ Step Four would not negate these but permit them as alpha sources, as ways of generating growth above the liability. But for these beta plays to enter the growth portion of the portfolio they would be forced to compete with all other sources of alpha and would have to be believed in with sufficient conviction to overcome their inherent low breadth. Consequently they would likely play a small role in the alpha portfolio reflecting their low IRs.

ADVANTAGES OF THE REVOLUTION

The suggested approach has several advantages over the current approach to solving the investor's problem.

Better beta: Focusing the policy portfolio on the single task of hedging the liability results in a much better liability hedge. The beta risk of the policy portfolio is minimized versus the liability.

Better alpha: Removing constraints that bind the construction of the optimal portfolio alpha in the current framework produces a better and more consistent alpha.

By separating alpha from the underlying beta, the constraints that currently bind investors seeking alpha are removed. In the current framework, fixed income alpha must be delivered by investments in fixed income assets while international equity alpha must be delivered by investing in non-US equity securities, etc. By ignoring the underlying beta and seeking alpha where the highest quality alpha is available, the highest quality alpha from many sources contribute to the portfolio alpha in proportion to their quality not in proportion to their underlying beta representation in the policy portfolio.

Taking a portfolio approach to alpha also removes constraints that, under the two hats approach, lead to optimizing alpha within each beta dimension (optimizing the portfolio of alpha from international equity managers separately from the optimal portfolio of alpha from fixed income managers, etc.). Under the one hat approach, the portfolio of alpha is viewed at the overall portfolio level and optimized at this level.

To see the advantage of operating at the portfolio level, think about a meal where each course is perfectly prepared: the best pancakes with real maple syrup, perfect sweet and sour chicken, rich and thick chocolate cake, and a Coke. The meal is

4 Invest in the international equity manager and then sell a basket of derivatives that hedge away the exposure to that manager's international equity beta and buy another basket of derivative exposure that gives the desired bond exposure. This effectively transports the international equity manager's alpha and places it on the domestic bond exposure.

5 A beta tilt would occur if one believed strongly in a positive equity risk premium, for example.

a disaster because the courses don't work together; the whole is less than the sum of the parts. The same can be said of a portfolio where alpha is optimized within each beta dimension rather than at the portfolio level.

By optimally employing beta as the hedge and optimally building a portfolio to generate return over that of the liability, the resulting combined portfolio should have lower active risk versus

preclude, for example, an equity tilt based on the belief in a positive equity risk premium. This tilt is in addition to any equity exposure that may be appropriate in the policy portfolio, which, under the one hat approach, acts as the best hedge for the liability. But the one hat approach requires that this extra tilt be thought of as part of the growth component of the portfolio, not as part of the policy portfolio, and as such the responsibility for this decision to tilt into equities must be

Under the two-hat approach, no one takes responsibility for the huge equity tilt held in most portfolios versus the liability.

the liability than that borne under the two hats approach, where beta is inefficiently employed to both hedge and generate growth, and alpha is optimized under binding constraints.

Many of the assumptions that need to be made about the cashflows that make up the liability are the same assumptions that need to be made about the assets that make up the bulk of the hedge portfolio. This is advantageous because the errors in these assumptions will tend to offset each other on the asset and liability side under the one hat approach, and not lead to a poorly specified hedge (policy) portfolio. This helps mitigate the valid concerns that Mr. Bernstein has with long-run forecasts in the current approach. His concern is that these long-run forecasts do significantly shape the policy portfolio, because they impact the asset and liability differently.

It is important to note that the one hat approach does not require one to abandon one of the few central tenets of financial theory, that undiversifiable risk must be compensated with the promise of higher return. The one hat approach does not

borne and evaluated like all other alpha generating decisions. Under the two-hat approach, no one takes responsibility for the huge equity tilt held in most portfolios versus the liability. The biggest bet in the portfolio and, in the two-hat approach, all hands are washed clean of accountability for it.

Conclusion

Is this the Holy Grail? No. The holy grail is calling levels: the level of the S&P500 in one year, oil prices in six months, or bond yields in two years. The two hats approach, in which the policy portfolio takes a big beta bet versus the liability, attempts to solve a forecasting problem. The goal of the two hats approach is to beat an actuarial hurdle rate, say 8%. To do so requires accurate forecasts of market levels, in order to ensure that the policy portfolio earns at least the actuarial rate. However, the last three years dealt the investing world a double whammy: Falling discount rates raised the present value of the liability, while a three-year bear market ravaged the asset base.

The one hat solution concedes that predicting market levels is too difficult⁶ and recognizes, fortunately, that it is unnecessary if the problem is restructured. To the extent the hedge portfolio behaves similarly to the liability, and both the liability and hedge portfolio share the most critical and difficult assumptions, the problem is converted from a levels problem to a spread problem. Hedge the liability and manage the spread over the liability. Compared to the two-hats approach, the proposed solution to the investor's problem takes less beta risk and more alpha or manager risk. But importantly, it employs each type of risk more optimally using beta risk as a liability hedge and managing the spread with alpha risk. Hedging the liability is essentially passive management, a beta problem. Managing the spread to the liability

is active management, an alpha problem. The fundamental law tells us that consistency of the spread over the liability is maximized by employing a portfolio of skilled managers and high breadth strategies.

Mr. Bernstein is right—long run forecasts of stock returns or bond returns are simply guesses. Arguably, forecasts of these levels out one year are not much better. In the two-hats approach, the levels forecasts drive the lion's share of the portfolio performance. In the one-hat approach, the levels forecasts drop out to the extent that the policy portfolio is a good hedge for the liability. Beta no longer determines success or failure.⁷ Alpha determines success.

6 Howard Marks at OakTree calls this the “I don't know' school.” Roughly speaking, this school of thought says, “Recognize what you don't know and make sure you don't bet on it.”

7 Might the apocalypse be averted if the stock market just has a positive year? The problem with the levels approach exists whether the market is rewarding it or punishing it. The last three years were sufficiently punishing that it opened our eyes to a new way to solve the investor's problem, but it is possible that one “good” stock market year will be enough salve on our wounds to get back to being comfortable with the current approach. Remember, in every roller coaster ride there is period where it seems the worst is over and the lull sets in. To the extent big beta bets versus the liability are still in place, you are still on the roller coaster even when it is not scary.

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