

VANDERBILT AVENUE ASSET MANAGEMENT, LLC

PORTFOLIO THEORY vs. PORTFOLIO PRACTICE

Modern portfolio theory has had a profound effect on investment practice. While much of this change is undoubtedly beneficial, I also believe that some of the important messages have been ignored and in other cases the implications have been misinterpreted or misapplied. I propose to illustrate this view with five examples.

You Can't Make Superior Profits with Equilibrium Models

Suppose one accepts the evidence that small company stocks have given significantly higher average returns. This could be due to:

1. The high returns were expected but were needed to compensate for some disadvantage such as illiquidity. In this case the apparent superior performance of small company stocks is simply because our risk-adjusted performance measures are inadequate and the only relevant question for the portfolio manager is whether he is better placed than average to buy or sell liquidity.

2. The alternative explanation is that the high returns on small cap. stocks were non-equilibrium returns and reflected either a series of coincidences or market inefficiency. In that case the high return in the past on small cap. stocks tells you that they were underpriced once but it tells you nothing about whether they are cheap now. Suppose, for example, that investors suddenly become aware that small cap. stocks are cheap and therefore there is a realignment of prices. Would you want to interpret this high return as an indication that small cap. stocks are even cheaper or that they are less cheap than they were?!!

Small cap. stocks behave differently from large cap. stocks. So, if you want a well-diversified portfolio, you need an investment in these stocks. My criticism is directed only at those who believed that the high average returns on these stocks in the past was evidence that an investment in such stocks was likely to provide superior performance and was therefore in itself an argument for taking a larger position in these stocks.

My point here is a general one. You cannot use an equilibrium factor model to obtain above-equilibrium expected returns and any portfolio that claims to do so is simply gaming deficiencies in performance measurement services. Alternatively, any differences in the mean return to different factors in the past that were unexpected cannot provide any information about the future returns to these factors (including the "size" factor).

Do Clients Really Need Designer Portfolios?

For my second example I would like to take a case where one of the important messages of MPT seems to be increasingly ignored.

In 1958 Tobin published an important article demonstrating that if two investors face the same opportunity set, they should both hold the same portfolio of risky assets and vary only the proportion of their wealth invested in it. Of course investors don't all face the same opportunity set. For example, there are tax differences, so you might want one risky asset portfolio for tax-exempt funds and another for taxable funds. I am not therefore suggesting that Tobin's theorem should be taken literally or that investment management institutions should each offer a single comingled fund. But I do find surprising that since the publication of Tobin's paper the trend has been progressively away from the use of comingled funds, that this trend has largely been independent of any theory and indeed that there seems little interest in even trying to come up with coherent policies on comingling.

Asset pricing models rely heavily on Tobin's separation property. Yet one comes across many portfolio managers who are happy to rely on, say, the Sharpe-Lintner capital asset pricing model but still believe that it is important to design tailor-made portfolios for each client. That does not make sense.

The Response to Closet Indexing is not to Diversify Further

Fifteen years after Tobin's paper was published, Treynor-Black suggested that the equity portfolio could also be conceptually divided into two components - an active and a passive portfolio.

Treynor-Black showed that the first step is to select the active portfolio which represents a series of bets on mispriced stocks. The active portfolio should consist of a long position in all stocks with a positive forecast residual return and a short position in all those with a negative forecast residual return.

Since the stocks in the active portfolio are also likely to be influenced by market movements, the active portfolio will give some exposure to the market. But it is unlikely to give the correct balance between bets on individual stocks and a bet on the market.

So the second step in portfolio construction is to blend in the passive portfolio which we can loosely think of as an index fund.

While Treynor-Black's distinction between the active and passive components is conceptually important, their paper has also been used as a justification for dividing the management of a portfolio between an index fund and one or more separate actively managed portfolios. This division is often far removed from the ideas of the original article:

1. The proportions invested in the active and passive portfolios depend on the return forecasts and the variances. If, for example, the outlook for the market is particularly rosy, you would wish to reduce the investment in the active portfolio and increase that in the passive. Investing a fixed sum in the index fund is therefore suboptimal.
2. You don't know how much to invest in the index fund until you know how much market exposure you have incidentally taken on in the active portfolio. Thus investment in the active and passive portfolios involves sequential, not concurrent, decisions.
3. Approximately half the stocks analyzed will have negative forecast residual returns and therefore the active portfolio should sell them short. Unless the active manager can either borrow and sell stock from the index fund or can replicate short positions using options, up to half the gains from security analysis are likely to be wasted.
4. Suppose that the active manager cannot sell short overvalued stocks but can only take long positions in undervalued ones. Each of these long positions provides a positive stake in the market. Even with very modest forecasting ability the manager is unlikely to wish to increase his exposure to the market. Instead of buying an index fund, it is more probable that he should be selling index futures.

One of the more sophisticated complaints of plan sponsors is that instead of being prepared to take residual risk, active managers tend to closet index. I suspect that one of the main reasons for handing over part of the money to an index fund has been the view that, if the active manager is going to closet index (or over time have index like returns after fees), then it might be better to reduce the proportion actively managed and get a corresponding reduction in fees. But if the active manager is closet indexing, the appropriate response should be to reduce the fund's market exposure not add to it (short of firing the manager).

Do Funds with Specialist Management Bet Only on Events About Which They Have No Specialist Knowledge?

The problems of ensuring that the separate parts add up to a sensible whole are accentuated when the active portion of the portfolio is divided among several managers. A portfolio that is split in this way cannot perform better than a single manager who has access to the same aggregate information.

Therefore, the case for split funding must rely largely on the view that the different managers have between them access to more information than any single manager.

Suppose that you divide the equity portfolio among several active managers and possibly an index fund. Suppose also that each manager behaves as if he were managing the whole fund. Then the aggregate portfolio will be even more diversified than that of any single manager. In other words each manager should be required to be less diversified than he would otherwise be. Adding an index fund to a portfolio that is split among a number of managers is likely to be even less appropriate than adding an index fund to a portfolio with a single active manager.

How far you should ask the active managers to take on extra residual risk depends on how closely their forecast errors are correlated. For example, at one extreme, if they are all listening to the same information source, each manager is effectively a clone of the others and you would want him to behave as if he were managing the entire fund. At the other extreme, if you have N equally competent managers whose errors are uncorrelated, then each manager should take proportionate positions that are N times as large as he would do if he were managing the entire fund.

Suppose you divide the fund between two equally competent managers whose forecast errors are uncorrelated. One has information that a share is overpriced by 5 percent and the other has information that it is underpriced by 5 percent. Get the two managers together in a room and they would agree that these two separate pieces of information are offsetting and they should not take any position in the active portfolio. If you separate the managers, the parts will add up to a sensible whole only if the bearish manager can borrow stock from the bullish manager and sell it.

It has become increasingly common to hire a number of specialist managers. This trend has been encouraged both by plan sponsors and by the pension consultants, for whom the selection of specialist managers is a profitable occupation. Unfortunately it accentuates the problem of split funding. The fund is often divided among such loosely defined entities as a growth fund, a high P/E fund, a 'quant' fund and so on.

Since there is seldom any attempt to define the separate portfolios to be as independent of each other as possible, there is no way to control the fund's exposure to common factors that cut across the different portfolios. The second difficulty is that each manager may be tempted to hold a well-diversified portfolio within his allotted brief. If so, the only residual risk borne by the whole fund is the risk that is not being managed at all, namely the relative proportion of the fund that is invested in growth stocks, high P/E stocks etc. Thus the irony is that a fund divided among specialist managers may end up placing no bets on events on which it has specialized

knowledge and large bets on events about which it has no knowledge at all. (Note that the optimal portfolio for a low P/E - earnings surprise manager may well turn out to be a one-industry exposure. How many managers are willing to take on that risk?)

Only Good Managers Should Be in the Bottom Quartile

I believe that some of the problems that I have discussed result from the misuse of portfolio performance measures. Performance measurement systems suffer from two almost inevitable defects. The first is the difficulty in constructing a benchmark. We know that it makes no sense to compare the returns of equity portfolios with very different degrees of risk. One way to adjust for risk is to rely on the capital asset pricing model and compute the fund's alpha. It may be difficult to do much better than this but it is fairly clear that equilibrium returns are not just a function of beta - for example, the differential returns on small cap. stocks suggests that beta is not the whole story. If that is so, there is a clear incentive for any manager to game deficiencies in the performance measurement system. The more reliance that you place on a performance measurement system and the more explicit the link between the performance measure and management rewards, the more likely you are to provide perverse incentives to the portfolio managers.

The second difficulty with performance measures relates to the problem of sample size. Most of the apparent differences in performance stem from good or bad luck. Indeed to a large degree the better your manager, the more residual risk he should take and therefore the more chance he should be in the bottom quartile of fund managers in any one year. It is only the incompetent managers who should hold an index fund and never have inferior performance. Thus, simply judging a manager's ability by how often he is in the bottom quartile is likely to be very inefficient.

As a rough rule of thumb, you probably need at least 25 years of fund performance to distinguish at the 95 percent significance level whether a manager has above average competence. The implication of this is not that the plan sponsor should go on vacation for 25 years but that he should not focus exclusively on achieved returns and ignore other information about a manager's competence and diligence. The second implication is that instead of presenting a set of numbers that are almost entirely noise, performance measurement services should be required to present Bayesian estimates of performance that show the expected differences in performance given the past performance. It is easy to understand why performance measurement services do not do this voluntarily. These services have an obvious incentive to create the impression that there is substantial information in the numbers that they produce. Bayesian estimates of performance that adjust for differences in luck would show that there was almost no information in performance statistics.