Bruce Jacobs's Memorandum to Prudential Insurance Company of America's Client Service and Sales Forces regarding Portfolio Insulation

January 17, 1983

Memo to Bob Ferrari

Re: Portfolio Insulation

Recently, a few financial institutions and consulting organizations have started to market a "portfolio insulation" technique which claims to "protect" asset values. Leland, O'Brien and Rubinstein (LOR) were the first to package and market an insulation product and have since been emulated by Kidder Peabody and Wilshire. While these competitors employ the same basic methodology, their products have been alternately branded "Dynamic Asset Allocation," "Protective Portfolio Management," and "Portfolio Risk Control."

Portfolio insulation techniques utilize the concept of a "protective put." A "put" is on option to sell a stock at a specified price, the strike price, over a given period of time. A put purchased on a security in conjunction with a long position in that security affords downside protection. For the cost of the put, referred to as the "premium", the investor's capital can be protected, hence the term "protective put". If the security's price falls, the put can be "exercised," i.e., the security can be sold at the strike price. If the security appreciates, the gains accrue to the investor less the premium paid for the put.

Theoretically, an entire portfolio can be protected through the purchase of puts on each security in the portfolio. However, puts are not available for all securities. In addition, the cost associated with protecting the investment in each security would be far costlier than protecting the capital invested in the portfolio as a whole. This cost problem arises because the premium paid for a put is directly related to the volatility of the protected asset. The volatility of a portfolio of securities, however, is significantly less than the average volatility of the component securities. Thus the put premium for an entire portfolio would be substantially less than the sum of the put premiums across all underlying securities.

It has been recently recognized in the financial literature that a protective put can be synthetically created for any portfolio of securities. The methodology dichotomizes the total portfolio into two segments--an actively managed portfolio and a cash-equivalents portfolio. The actively managed portfolio can be an all equity, all debt, or a balanced portfolio.

The initial portfolio position would consist of both a cash-equivalent portion and an actively managed portion. The cash equivalent portion is in a sense a buffer to limit the extent of losses. If the actively managed portfolio falls in value, a portion would be liquidated and invested in cash equivalents. Asset value declines require a more conservative posturing to protect remaining capital. Conversely, cash equivalents would be traded for investments in the actively traded portfolio if it appreciates in value. Asset value appreciation permits a riskier posturing since the appreciation provides a larger buffer above the protected value. The premium is paid implicitly and is represented by the opportunity costs of the hedge position in cash equivalents.

Portfolio insulation is not intended as a market timing technique. There is no attempt to forecast returns, but rather trading is precipitated by past returns. The trades between the actively managed portion and the cash-equivalents portion of the portfolio are activated by recent performance.

The portfolio insulation technique protects asset values for any time period specified by the client, usually a calendar year. Since the chosen horizon bears no relationship to the duration of the liabilities, it is arbitrary. The client may be comforted by limiting losses year-by-year. However, the implicit premium on the synthetic put represented by the opportunity costs of the hedge, will hinder longer-term performance. While simulations of the portfolio insulation technique using the last decade as a sample period show favorable performance, this period was characterized by poor equity performance. Any methodology that would have had large cash positions would have performed favorably.

If the actively managed segment of the portfolio is a "balanced" portfolio, the portfolio insulation technique would trade a vertical slice of the balanced portfolio for cash when the balanced portfolio fell in value, and conversely, would trade cash for a vertical purchase of the balanced portfolio when the balanced portfolio rose in value. The asset mix of a balanced portfolio is appropriately determined by an efficient frontier analysis, which determines the mix of assets that maximizes expected return for any chosen level of risk. Trades between the balanced portfolio and the cash portfolio, required by the portfolio insulation technique, would alter the mix of assets and thereby be a violation of the long-run efficient frontier assumptions in order to reach a short-term goal of protecting asset values, alternatively stated as "assuring" returns, for an arbitrarily chosen time period. Short-run returns could be assured only by moving off the efficient frontier.

Compared to a traditionally managed portfolio, the trades required by the portfolio insulation technique would increase transaction costs, including both commissions and market impact costs. The insulation technique also requires that the actively managed portfolio consist of highly liquid securities. In fact, if the value of the actively traded portfolio falls significantly, the entire active segment will have to be liquidated. In this case, the portfolio would consist of cash equivalents until the beginning of the next performance period. Such asset categories as real estate, for example, may not be readily liquidated.

There are also potential slippages in the system so that the protected amount may not be fully protected. For example, since execution prices may differ from the price at the time of the sell signal, the entire portfolio value may fall below the protected amount. In addition, since the expected volatility of the actively managed portion determines the magnitude of the implicit premium on the synthetic put and thus the appropriate hedge, the technique may fail if the volatility of the actively managed portion is mis-specified.

On a more theoretical note, since the portfolio insulation technique trades cash for the actively traded portfolio when values appreciate, and conversely, trades the actively traded fund for cash when values fall, there is an implicit assumption that the investors utility for wealth displays decreasing risk aversion (increasing risk tolerance). An individual displaying decreasing risk aversion will commit an increasing (decreasing) proportion of his wealth to risky assets as his wealth rises (falls). The evidence in the financial literature is more supportive of the notion of constant proportional risk aversion, i.e., independent of wealth level, an individual will commit the same proportion of wealth to risky assets. That chosen proportion is of course unique to the individual.

Also, from a macro perspective, if a large number of investors utilized the portfolio insulation technique, price movements would tend to snowball. Price rises (falls) would be followed by purchases (sales) which would lead to further price appreciation (depreciation). Market prices would not be efficient and it would pay to not use portfolio insulation, since the resulting over- or under-valuation would represent opportunities for savvy investors.

A final criticism is that while it may be possible to assure nominal returns, after-inflation or real returns cannot be assured. While the plan sponsor may feel comfort in protecting nominal values for a chosen time period, purchasing power will remain unprotected. Since the plan sponsor's liabilities are real and not nominal in their nature, there is little comfort in assuring nominal returns, especially when the cost is a longer-run return sacrifice.

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