

A STRATEGY FOR PROPERTY-LIABILITY INSURERS
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This paper appears to be a logical outgrowth of Mr. D'Arcy's earlier paper entitled An Illustration of the Impact of Inflation On Insurance Company Operations which was a part of the 1979 Call Paper Program.

Inflation has historically had a significant impact on insurance company results. This paper demonstrates that both underwriting profit margin and investment return have had a negative correlation with inflation for the property-liability insurance industry.

The observation is then made that 1) long-term government bonds and long-term corporate bonds have returns that are not significantly correlated with inflation, 2) short-term treasury bills are positively correlated with inflation and 3) common stocks are negatively correlated with inflation. These different characteristics of alternative investments provide the basis for determining a method for creating an investment portfolio, that when combined with underwriting results, yields an overall return that is the same as the historical return for insurance companies but is not significantly correlated with inflation.

The elimination of inflation as a factor affecting profits appears to be attractive, but I don't believe that it is the right objective. The reason for eliminating the impact of inflation on profitability is

presumably to stabilize results from one year to the next. If this is the case, it would seem that a direct attack on the problem would not consider inflation at all. Instead it would attempt to develop an underwriting result and investment portfolio mix that would minimize variance over time. If it also were to maximize rate of return subject to management's perceived risk-reward acceptability curve, then an actionable result would be obtained.

Putting aside this basic issue and assuming that the objective stated in the paper is a proper one, there are several technical observations to be made.

The return on long-term bonds was calculated based upon interest income and changes in market value. As was acknowledged in the paper, this is not consistent with statutory accounting procedures that do not reflect changes in market value. Before, the results of this paper can be considered valid, one of two adjustments should therefore be made. First, the return on long-term bonds could be adjusted to eliminate the effect of market value changes. This would put the correlation of long-term bond returns with inflation on a proper basis for the insurance industry. The other alternative is to adjust the insurance company rates of return to reflect the market value of long-term bonds. This would put the insurance company returns on a consistent basis with the financial markets. This second alternative seems less desirable than the first as it then alters the stated objective of removing the impact of inflation of reported insurance company results.

Another observation with respect to the insurance company investment returns is that the effect of tax exempt securities has not been utilized in the analysis. If all returns were placed on a pre-tax basis, then the insurance company investment returns would rise. This implies that the penalty for creating an inflation immunized portfolio would be greater than the .7 and 1.1 percent reductions cited in the paper.

The mathematical techniques used in the paper appear to be accurately applied. Thus, with the removal of the data problems, the procedures used in the paper could be followed to produce some revealing insights into construction of insurance company investment portfolios.

In the summary and conclusion section of the paper, brief reference is made to commodity prices and put options and their possible positive correlation with inflation. This would seem to be a particularly fruitful area for analysis. There is an active market in trading treasury bill futures in the International Monetary Market at the Chicago Mercantile Exchange. An alternative market is also being developed at the New York Futures Exchange. Since treasury bills are positively correlated with inflation, the sale of futures contracts for up to a year in advance could significantly reduce the impact of changes in the inflation rate on company results.

If interest rates go up, then funds will be received under the contract. If interest rates go down, then additional margin will have to be put up. Since the original margin requirements are on the order of \$1,500 per \$1,000,000 of treasury bills, this is a highly leveraged market. In

order to protect \$100,000,000 of portfolio, 100 contracts would have to be sold. If there is no change in interest rates during the course of the contracts, then the margin is returned and the only cost is the transaction fees which run approximately \$65 each. The total cost of using hedging in this simplified case is \$6,500 if there are no changes in interest rates. There is also likely to be some loss of investment income on the margin, but treasury bills can be used to meet the margin requirements. This cost can then be compared to the reduction in investment income cited in the paper of .7 to 1.1 percent, or \$700,000 to \$1,100,000.

It should be mentioned, however, that insurance regulations in some states prohibit trading in these markets.