

## MONITORING AND REBALANCING THE PORTFOLIO

Robert M. Lovell, Jr.  
*Chairman*  
*First Quadrant*

Robert D. Arnott  
*President*  
*First Quadrant*

---

## MONITORING AND REBALANCING THE PORTFOLIO<sup>1</sup>

---

Do even carefully crafted portfolios run themselves? They do not. Investment managers are not architects, who erect an edifice then leave its denizens to their own devices. Instead, they abide with the client, making revisions when circumstances demand it. Portfolio structures that suited clients yesterday are already out of date, though the extent and even the direction of their move toward inefficiency is often hard to assess. Change is the only constant, working inexorably to alter client circumstances, market risk attributes, and securities' return prospects. Our constant charge is to monitor these changes and respond by rebalancing portfolios to accommodate them.

Much has been written on portfolio construction. How does an investment manager assess the client's situation? What are the significant differences between individual investors and their institutional counterparts? What role do these differences play in shaping asset allocation policy, and what effect will the result have on risks and rewards? Which vehicles build efficient sub-portfolios and how can one transact to structure them?

---

## OBSERVATIONS ON PORTFOLIO REBALANCING

---

This monograph concerns itself with day-to-day portfolio management. How does the investment manager assure the portfolio remains appropriate to the ever-changing environment?

Portfolio rebalancing involves a simple trade-off: the cost of trading versus the cost of not trading. The cost of not trading affects clients in several ways. It may mean holding an asset or a portfolio that has become overpriced, offering inferior future rewards. It could involve holdings which no longer fit the needs of the client. It may mean holding a poorly diversified portfolio, riskier than it needs to be. Trading exacts its own set of costs: commissions, the impact that a trade may have on the market, and the substantial cost of desirable trades that never occur. The essence of rebalancing, indeed that of portfolio management, lies in weighing and balancing these countervailing costs.

The cost of transacting can take nonfinancial forms. If a client grows uncomfortable with turnover he considers excessive, lost credibility may limit future trading. In short, even if trading is timely and likely to be profitable, it may impose subjective costs that are all too real. Finance theory recognizes these by directing managers to optimize client utility rather than maximizing return. Even the most profitable strategy or investment process is useless if the client abandons it. Its elegance is then wasted.

Not trading also imposes costs. After even one day, no portfolio is exactly optimal. On the other hand, the cost of transacting is real and it might be prohibitive. Hence, **rebalancing** may not make sense when there are only small differences between the current portfolio and the best one.

### *The Wrong Way to Revise Portfolios*

There are pervasive misconceptions and ironic gaps between rebalancing theory and its practice. Some of these errors are so flagrant that they might amuse a thinking **person if they** were not so very costly. Some managers persist in rejuvenging asset mixes and churning portfolios in response to what are basic emotions and clouded thinking, but which **are often** shrouded in marketing glitz. This sorry drama is part of the human condition.

**"If it ain't broken, fix it."** Ironically, for the investor, profitable management requires a counterintuitive change in the old cliché. If it "ain't broken," we should fix it, and if it is broken, we should exhibit patience.

---

<sup>1</sup> This is the first of a series of five monographs. Together they constitute our contributed chapter, by the same name, to the forthcoming second edition of Managing Investment Portfolios, edited by Maginn Tuttle

Nature conditions us to feel that what has been working will continue to work and that failure heralds failure. This all too human model suggests that trees grow to the sky and that indisposition foreshadows extinction.

Experience belies this notion. Consider investment managers who scramble to find a fix when their style is out of fashion. Often they change their approach as a period of disappointment ends, and just before results rebound. Clients suffer from the same tendency: hiring managers on the crest of a performance wave, and discharging them when they approach their nadir.

Each of these costly errors stems from a quest for the comfort that the capital markets rarely reward. Investors, and most others, crave the solace that companionship affords. In this business, when one has too much company, success is improbable.

In 1984, Myra Drucker, in an unpublished work, reviewed historic performance data for the assets and markets used in the pension fund of Xerox, then her employer. She tested two exactly opposite strategies: shift just 5 percent of plan assets from last year's winning market to that which had trailed or, alternatively, increase the bet in typical fashion. The contrary strategy dominated the more typical one by an astonishing 80 basis points annually on the whole pension plan. This difference would compound mightily over time. For a \$1 billion portfolio growing at 10 percent per year, this 80 basis point advantage translates into almost \$200 million after 10 years! What her research fails to reveal is how many sponsors mounted such a rebellion against the real world. It is easy to guess.

**Clashing Cultures.** Successful corporations and winning investors are profoundly different. Corporations, known to be cooperative enterprises, prize teamwork and reward triumph while dismissing failure. The exceptional investor pursues an opposite course, staying distant from the crowd, seeking opportunities in its occasional excesses. Securities, after all, stand apart from their owners. Owners, in turn, should resist viewing their holdings as either paragons or pariahs.

There is a subtle pattern in successful clients' trading. They increase turnover when they are performing well, and endure disappointment patiently. That behavior challenges both human nature and the culture of the typical business. When investments have performed poorly, instinct directs one to address the problem by changing the portfolio. If investments are doing well, the tendency is to coast with the winning strategy. This common pattern is a sure way to ride down the same elevator we just rode up.

### *Traditional Portfolio Revision*

Professional investment managers follow two dictates: "Know your client," and "know your markets." When this knowledge engenders effective action, portfolio managers discharge their responsibility. How might one muster the confidence to buy bonds after the 10 year bear market that concluded in 1981? How can an investor defend (even to himself) an investment style when his chosen game plan falls out of favor, attracting no players or customers? There is an overriding reason why investors sacrifice return by fleeing to comfort. Investors, preferring sleeping well to eating well, price fashionable securities to reflect reduced demand for reward.

A perfect world would hold investors to a demanding standard. If an investor or portfolio manager were to begin to build a portfolio afresh today, would it mirror his existing portfolio? If not, he should consider changing his existing portfolio.

## **FACTORS SUGGESTING PORTFOLIO REBALANCING**

---

A myriad of factors might suggest portfolio rebalancing. Important changes in client objectives demand that we consider rebalancing. Change in the markets' risk attributes or in return prospects for individual investments may lead one to act. When change warrants revision, it affects portfolios in three primary ways.

1. Most significantly, the portfolio manager may adjust asset mix by selling overpriced or overweighted classes, reinvesting in others. The impact of asset allocation can be considerable. But, as we will suggest in a forthcoming monograph, it inevitably introduces risk relative to the predetermined strategic or normal policy allocation.
2. An investor may alter investment emphasis within sub-portfolios. Two examples would include changing duration in the fixed-income sector or adjusting the style of the equity portfolio.
3. Finally, one might trade an individual issue for one which seems to offer better value.

### *Changes Affecting the Client*

It is important to remain sensitive to client needs and make every effort to anticipate events which might alter them. Every client is unique? precious to the enterprise and worthy of our concern. Their circumstances change for a host of reasons.

**Change in Wealth.** Unalloyed utility theory suggests that increased wealth allows investors to move out on the risk spectrum, accepting more systematic risk with its attendant reward. In reality, they often behave contrarily. Concerned that newfound riches will dissipate, they may incur inordinate opportunity costs to keep what they never expected to have. As a portfolio manager, it is important to try to understand the psychology and work to restrain its excesses.

**Changing Time Horizons.** Time is one of life's certainties, advancing inexorably on mankind and its institutions. In the abstract, we should reduce investment risk as the calendar runs its predictable course and time horizons shorten. Bonds become more suitable as this occurs. Individuals age and pension funds mature, reflecting that inevitability. With luck, continuing generosity and conservative spending rules, endowments may avoid time's scythe, but even this is far from certain.

Occasionally, time horizons shift abruptly. When the last income beneficiary of a trust dies and the residue passes to the remaindermen, one should adjust the policy as well as the portfolio promptly. Termination of an existing pension plan by providing annuities for retirees and vested employees should elicit a similar response. The successor pension fund, serving a younger population, should consider an aggressive policy, particularly in its early stage when assets are modest and the time horizon is long. More time is available to make up for adverse outcomes, permitting a more aggressive stance, which in turn should lessen contributions over time.

**Changing Liquidity Requirements.** When the client needs money to spend, strive to provide it. Inevitably, the exigencies of the client's situation shorten the available menu of suitable investments. Managers of trust accounts serve two masters, balancing the income requirements of life tenants and growth expectations of the remaindermen. Money spent today, along with the return it would have earned over time, will be unavailable to meet future demands.

**Tax Circumstances.** Taxes are another of life's certainties. What is uncertain is the form they will take next year. Managers for taxable investors must assess the current situation and construct portfolios that deal with it. There will be no lasting solutions, but other things being equal, managers should avoid taxes. The tactical niceties are client and location specific and thus lie beyond the scope of this paper.

**Laws and Regulations.** In the United States, the Reagan years saw heralded changes in the tax laws, but the Administration's advertised fealty to deregulation produced mixed operating results for many segments of the economy. Pension managers, in particular, need to be aware of significant developments affecting their clients.

As noted by Bader and Arnott (1988), accountants and legislators brought U.S. corporations Financial Accounting Standards Board Statement No. 87 (FASB 87) and the more recent Omnibus Budget Reconciliation Act of 1987 (OBRA), respectively. Keying on the ratio of assets to the actuarial Accumulated Benefit

Obligation, they draw critical attention to the natural volatility of the funding ratio, which affects pension expense. In simpler times, actuarial smoothing had hidden it from corporate management.

OBRA's immediate impact on pension cash flow will concentrate corporate minds on volatility, as underfunded plans confront sharply accelerated contributions and increased Pension Benefits Guaranty Corporation insurance premiums. Simultaneously, it blocks contributions to the most comfortably funded plans, gradually forcing their funding ratios into a range where the risk of underfunding becomes a legitimate threat.

Thus recent regulations, enacted for a host of persuasive reasons and for a benevolent purpose, subject pension managers and their clients to unintended consequences. All funds will face new pressures to adopt conservative policies which will suboptimize long-term investment returns for most. Pension sponsors and their managers should plan strategies to resist them.

**Unique Circumstances/Preferences.** The client's circumstances may change for many reasons, including extraneous political ones. For example, in recent years, distaste for the apartheid system in South Africa led to decisions in a number of cases to divest institutional holdings in companies doing business there. Endowments and public pension plans have been particularly affected by this change of investment attitude. Such changes in circumstances, when translated into investment action, incur a series of costs, both explicit and subtle. Liquidation of proscribed holdings with reinvestment in approved alternatives produced transactions costs. Also, the portfolios' inability to participate in the large companies, disproportionately represented among those doing business in South Africa, introduced non-market related risks and an unavoidable small-capitalization-stock bias. In the mid-1980s, when smaller stocks had been demonstrating their usual return advantages over their larger brethren, this seemed a costless (even profitable) strategy. But the long run risks of such an imbalance or bias are sizeable and cannot be ignored.

### *New Investment Alternatives*

The 1980s saw the growth and acceptance of derivative securities that permit asset allocation shifts without transacting in individual securities. This development finally permitted investors to adjust asset mix without interfering with management of the underlying stock and bond portfolios. Surprisingly, many have ignored this new and efficient opportunity. This is unfortunate for both managers and their clients because these vehicles sharply expand their opportunity horizons. Later, we will show that they offer the most practical way to expeditiously accomplish important tactical asset shifts in large portfolios.

In addition, some old investment alternatives have virtually disappeared. For example, new income tax laws in the United States have greatly reduced the use of tax-sheltered vehicles which were previously encouraged by high marginal rates and favorable accounting rules.

### *Changes in Asset Risk Attributes*

Market prices for all assets reflect consensus perceptions of risk and reward. Changes in those perceptions produce immediate gains or losses. Once again, comfortable investments are rarely profitable because the market prices tend to reflect reduced regard for reward. Successful managers assess differences between actual risk and perceived risk and embrace it when the consensus view is unduly pessimistic.

Changes in risk present both opportunities and threats to investment professionals. Historically, increasing volatility has signaled opportunity more often than not. It provides buying opportunities when intuition prompts others to sell.

Investment theoreticians and practitioners have long recognized the risk-reward tradeoff. Important incremental rewards are unattainable without incurring incremental risk. Conversely, one must sacrifice some

return when seeking to minimize risk. Systematic risk, which diversification cannot eliminate, should be most likely to promise reward. There is some linkage between systematic risk and return, but it is less dominant than pure theory suggests. Table 1 shows a surprisingly strong relationship between past volatility and future return. The relationship over the more recent 20-year period is stronger than that over the entire 40-year period in most cases.

Table 1

**Correlations of Prior-Period Standard Deviations  
with Subsequent One-Month Returns for Bond  
and Stock Market Indexes, 1947-1986**

Time Period and Asset Return	S&P500	20-Year U.S. Treas.	S&P 500	20-Year U.S. Treas.
	Prior 6 Mos.	Prior 6 Mos.	Prior 24 Mos.	Prior 24 Mos.
1946-1985:				
S&P 500 Stocks	0.12 <sup>a</sup>	0.04	0.07	0.03
2-Year U.S.				
Treasury Bonds	0.06	0.11 <sup>b</sup>	0.07	0.14 <sup>a</sup>
1966-1985:				
S&P 500 Stocks	0.22 <sup>a</sup>	0.11 <sup>c</sup>	0.14 <sup>b</sup>	0.10 <sup>c</sup>
20-Year U.S.				
Treasury Bonds	0.07	0.08	0.08	0.13 <sup>b</sup>

<sup>a</sup> Significant at the 1% level

<sup>b</sup> Significant at the 5% level

<sup>c</sup> Significant at the 10% level

Source: First Quadrant Corp.

Here, stock return standard deviation measures stock market volatility over the preceding 6 or 24 months. This variable has been a useful indicator of future market returns in the United States. The relationship travels well. Overseas, stock market return differentials calculated relative to bond and cash returns (called “relative returns” throughout this chapter) were positively related to past volatility in over three-quarters of the 13 countries examined. Thus, past volatility has had global relevance.

**Table 2**  
**Monthly Relative Returns on Stocks and Bonds versus**  
**Prior Stock Market Volatility for 13 Countries, 1978-87**

Regression Coefficients Between 6-month  
Stock Market Standard Deviations and  
Subsequent Relative Asset Class Performance

Country	Stock/Bond	Stock/Cash	Bond/Cash
Australia	-0.33	0.77	1.01
Belgium	0.65 <sup>a</sup>	0.88 <sup>b</sup>	0.23 <sup>b</sup>
Canada	2.00 <sup>a</sup>	2.48 <sup>b</sup>	0.47
Denmark	0.14	0.60	0.46
France	-0.47	-0.84	-0.37
Germany	0.22	0.44	0.22
Italy	0.36	0.37	0.02
Japan	1.00	1.13	0.13
Netherlands	0.73	1.04	0.32
Sweden	2.40	2.88 <sup>a</sup>	0.48
Switzerland	0.25	0.28	0.04
United Kingdom	-0.18	-0.25	-0.11
United States	1.27 <sup>a</sup>	1.83 <sup>b</sup>	0.56
Average	0.62 <sup>a</sup>	0.89 <sup>b</sup>	0.27 <sup>b</sup>

<sup>a</sup> Significant at 5% level

<sup>b</sup> Significant at 1% level

Source: First Quadrant Corp.

**Bull and Bear Markets.** The markets' major swings present unusual opportunities...to be either right or wrong. When things are going well, securities eventually perform too well; during economic weakness, assets decline excessively. Weakness engenders an environment that may foreshadow extraordinary profits while ebullient markets provide unusual opportunities to sell, reinvesting elsewhere. Market veterans recall (often ruefully) the environment of late 1974 as an extraordinary opportunity. At one point the earnings yield of stocks was 600 basis points higher than bond yields, a difference not seen in over 20 years. Conversely, in 1980 and

1981, bond yields exceeded earnings yields by a wide margin. That presented another historic opportunity: to sell the stocks which had proven so comfortable and to buy the bonds the investment world abhorred.

Individual securities routinely show similar excesses. There are always securities whose issuers have received either such laudatory notices or suffered such unremitting adversity that their prices depart from reality. It is difficult to isolate them and then to act. Only those suitably prepared and armed with courage will accept the challenge.

Opportunistic investors must steel themselves against discomfort. Only knowledge and discipline can give them the confidence needed to transact. Indeed, even then, consideration for clients (or fears of their reactions) may inhibit the profitable move.

Who was aggressively buying stocks in late 1974? How many dared to buy long bonds in 1981? Who backed Lee Iacocca's Chrysler with their buying in early 1982? These perceived speculations filled most investors with fear at the time. Disciplined investment decision processes make their contribution by providing an objective basis for confidence to pursue the uncomfortable investment.

**Central Bank Policy.** Federal Reserve and other central bank monetary policy retains its power in the capital markets through its influence on liquidity. Money supply growth, and the policy that determines it, in essence funds stock market demand. Monetary and liquidity constraints eventually exact a toll on the stock market. The stock market has generally flattened or declined on those occasions when the Federal Reserve reduced liquidity.

Policy also has an immediate impact on the money markets, but it has less effect on long-term bond yields. This observation contradicts conventional market wisdom. The Federal Reserve's influence on bond market volatility, on the other hand, is profound. In 1979, the Board, under Paul Volcker, changed its focus from controlling interest rates to controlling monetary growth. Thus, it made adjustments to the discount rate in response to movements in the money supply, while simultaneously trying to manage it. Interest rates took a back seat in the Board's deliberations. The effect was dramatic. Volatility in the bond market exploded from late 1979 into mid-1982, at which point the policy was quietly reversed to combat recession.

This unprecedented alteration in the Fed's traditional focus may have made its intended contribution to reducing the rate of inflation in the early 1980's. It unequivocally magnified bond market volatility, spreading ripple effects throughout the world. Greater volatility heralded greater risk and investors demanded payment. Yields soared as bond prices plunged. Bonds provided a compelling high-yielding alternative to stocks, then affording relatively low yields. This unwanted competition put downward pressure on stock prices until the summer of 1982, when rallying bond prices and declining bond yields finally eased the pressure.

This lesson bears repetition. Fed policy matters. Ignore it at your peril. Restricted credit hurts stock returns, while ease enhances them.

**Inflation Rate Changes.** Inflation has its own pervasive effect on the markets. Eugene Fama found that unexpected increases or decreases in the presumed inflation rate work their way through the pricing mechanism. Unfortunately, surprises are indeed surprises, and it is idle to pretend that we can forecast them consistently. When inflation rises beyond expectations, bond investors face a cut in real yield. As nominal yields rise in turn to counteract this loss, bond prices fall. Unexpected changes in the inflation rate are highly significant to stock market returns as well.

Simple measures of inflation, such as the Consumer Price Index (CPI), are undependable predictors of future stock and bond returns. The market seems to incorporate current inflation efficiently. Fortunately, rates of change in producer prices, which usually lead CPI inflation, provide better signals. Table 3 provides relationships of Producer Price Index (PPI) inflation with subsequent asset class relative performance for 13 countries from 1978 to 1987.



In every country tested, accelerating PPI inflation translated directly into eroding bond performance. In six of the thirteen countries, the relation was statistically significant, and in five, it was significant at the 1 percent level.

Such acceleration also weighs on the stock market, reducing stock market excess returns in nine of the thirteen markets. Five of these relationships are statistically significant, and each of them is negative. In short, changes in PPI inflation provide useful signals.

### *Changing Return Prospects*

Other things being equal (as they seldom are), price changes accompany changes in return prospects. With each downtick in a bond's price, its prospective yield rises, as its total return falls. For equities, prices change constantly and so do return prospects. Enough change should lead to portfolio adjustments.

Bonds are simultaneously the most quantifiable and the least quantified asset class. If relative yields of lower-quality issues exceed historical norms, the prospect of higher returns by downgrading quality is enhanced. For example, if outstanding bonds issued by nuclear utilities with high start-up costs and heavy regulation are selling at a substantial discount to their nonnuclear counterparts, producing abnormally large yield spreads, they may have higher total returns in succeeding periods.

**Table 3**  
**Monthly Relative Returns on Stocks and Bonds versus**  
**Prior Price Inflation Experience for 13 Countries, 1978-&7**

Regression Coefficients Between 12-Month  
Percentage Change in the Producer Price Index  
and Subsequent Asset Class Relative Performance

Country	Stock/Bond	Stock/Cash	Bond/Cash
Australia	0.13	0.08	-0.06
Belgium	-0.43	-0.55 <sup>a</sup>	-0.12 <sup>a</sup>
Canada	2.34	1.43	-0.91
Denmark	0.60	0.13	-0.47
France	-0.14	-0.34	-0.20 <sup>b</sup>
Germany	-0.98	-1.91 <sup>b</sup>	-0.92 <sup>b</sup>
Italy	-0.02	-0.75	-0.73 <sup>b</sup>
Japan	0.46	0.45	-0.01
Netherlands	-0.62	-0.87 <sup>a</sup>	-0.25
Sweden	-0.90	-1.36	-0.46
Switzerland	-1.45 <sup>b</sup>	-1.81 <sup>b</sup>	-0.35 <sup>b</sup>
United Kingdom	0.17	-0.60	-0.78
United States	-0.18	-1.08 <sup>b</sup>	-0.90 <sup>b</sup>

## MONITORING AND REBALANCING THE PORTFOLIO

Average	-0.08	-0.55 <sup>a</sup>	-0.47 <sup>b</sup>
---------	-------	--------------------	--------------------

<sup>a</sup> Significant at 5% level

<sup>b</sup> Significant at 10% level

Source: First Quadrant Corp.

Even a measure as simple as the slope of the bond market yield curve is an indicator of bond performance relative to (short-term) cash equivalents. As Table 4 shows, if the yield curve is unusually steep (i.e. if bond yields are high relative to cash equivalent yields), the outlook is good for bonds. This relationship is statistically significant for over half of the countries tested. The table shows that, if the yield curve is more positively sloped, measured relative to the average slope over the past 24 months, subsequent monthly bond returns tended to be higher.

**Table 4**  
**Monthly Relative Returns on Stocks and Bonds versus Prior Bond/Cash**  
**Yield Spreads of 100 Basis Points or More for 15 Countries, 1978-87**

Regression Coefficients Between 24-Month Bond/Cash  
Yield Spreads of 100 Basis Points or More and  
Subsequent Asset Class Relative Performance

Country	Stock/Bond	Stock/Cash	Bond/Cash
Australia	-0.38	-0.34	0.05
Austria	-0.54	-0.14	0.40 <sup>b</sup>
Belgium	0.01	0.10	0.08 <sup>b</sup>
Canada	-0.05	0.19	0.24
Denmark	-0.02	0.24	0.26 <sup>a</sup>
France	-0.04	0.28	0.32 <sup>b</sup>
Germany	0.27	0.45 <sup>a</sup>	0.19 <sup>a</sup>
Italy	-0.12	-0.04	0.08
Japan	0.30	0.64	0.34
Netherlands	0.37	0.60 <sup>b</sup>	0.23
Spain	-0.60	-0.50	0.10
Sweden	0.63	0.69	0.06
Switzerland	0.21	0.41	0.20 <sup>b</sup>
United Kingdom	-0.10	-0.11	-0.01
United States	0.40 <sup>a</sup>	0.60 <sup>b</sup>	0.20 <sup>a</sup>
Average	0.02	0.20	0.18 <sup>b</sup>

<sup>a</sup> Significant at 5% level

<sup>b</sup> Significant at 1% level

Source: First Quadrant Corp.

This interpretation of steep yield curves is unconventional. The usual fear is that they foreshadow rising yields and falling bond prices. The empirical evidence tends to refute that apprehension. The relationship is imperfect, but suggestive enough to caution us against joining the crowd thronging the exit.

## SUMMARY

---

Even efficient markets allow room for the most competent and disciplined portfolio managers to help to realize their clients' goals. Whatever market inefficiencies exist will provide the nimble and the wise opportunities to profit from the errors of the crowd. The manager should start by understanding his or her clients. Nothing is more important than the client's inherent tolerance for risk. Each client is unique; so should be the manager's understanding of his needs. When those needs change sufficiently, transaction costs assume a secondary role.

The investment decision process must include disciplined analysis of market opportunities. When consensus perceptions of risk exceed objective risk prospects, the markets reward those with the courage to act. Nothing undermines investment success so perniciously as emotion--the markets never compensate comfort. It is useful to watch the economic, political, and regulatory environments. When they change enough, the perceptive investment manager will act--except when the shift is already reflected in the market's valuation, as it often is.

Managers must accord markets the respect they deserve. Implementation of portfolio strategies and tactics must be as rigorous as the investment decision process. Legitimate chances to improve on diversified portfolios are rare. It pays to be wary of the multitude of vendors whose commercial interest argues otherwise. Excepting the market makers, there are no consistent winners in the transactions game.

Normal policy, while hardly sacred, is the beacon; one should generally steer toward it. Even if one refuses to believe in the value of a disciplined framework for opportunistically shifting portfolios, there is still the need to rebalance them periodically. After-the-fact moves between asset classes impose terrible costs, actually destroying value. Investors should resist, at whatever cost, the inevitable pressures to indulge in such shifts.

## BIBLIOGRAPHY

---

**Arnott, Robert D. and James N. von Germeten**, "Systematic Asset Allocation," *Financial Analysts Journal*, November/December, 1983.

**Arnott, Robert D.**, "Risk and Reward: An Intriguing Timing Tool," Salomon Brothers Inc., April 4, 1987.

**Arnott, Robert D. and Frank J. Fabozzi**, Asset Allocation, New York: Probus Press, 1988.

**Arnott, Robert D. and Robert M. Lovell, Jr.**, "Resisting the Mounting Pressures for a Shift to Conservatism," *Financial Analysts Journal*, November/December, 1988.

**Bader, Lawrence N. and Robert D. Arnott**, "Pension Funding Under the Omnibus Budget Reconciliation Act of 1987," Salomon Brothers Inc., January 18, 1988.

**Bagehot, Walter**, (Jack L. Treynor), "Money Will Not Manage Itself," reprinted in the *Journal of Portfolio Management*, Spring 1975.

**Brinson, Gary P., L. Randolph Hood, and Gilbert L. Beebower**, "Determinants of Portfolio Performance," *Financial Analysts Journal*, July/August 1986.

- Buffett, Warren E.**, "The Superinvestors of Graham-and-Doddsville," *Hermes, Columbia Business Review*, 1984.
- Crowell, Richard A.**, "You Cannot Live With One Decision," *The Journal of Portfolio Management*, Fall 1977.
- Dunn, Patricia C. and Rolf D. Theissen**, "How Consistently Do Active Managers Win?" *The Journal of Portfolio Management*, Summer, 1983.
- Etzioni, Ethan S.**, "Rebalance Disciplines for Portfolio Insurance," *The Journal of Portfolio Management*, Fall 1986.
- Hill, Joanne M.**, "Is Optimal Portfolio Management Worth the Candle?" *The Journal of Portfolio Management*, Summer, 1981 .
- Hill, Joanne M. and Frank J. Jones**, "Equity Trading, Portfolio Trading, Portfolio Insurance, Computer Trading and All That," *Financial Analysts Journal*, July/August, 1988.
- Ippolito, Richard A. and John A. Turner**, "Turnover, Fees and Pension Plan Performance," *Financial Analysts Journal*, November/December, 1987.
- Jones, Charles P., Donald L. Tunle, and Cherrill P. Heaton**, Essentials of Modern Investments. New York: John Wiley & Sons, 1977.
- Jones, Robert C.**, "Introduction to the Multifactor Model," Goldman, Sachs & Co., July, 1988.
- Kirby, Robert G.**, "The Coffee Can Portfolio," *The Journal of Portfolio Management*, Fall, 1984.
- Kritzman, Mark**, "How to Detect Skill in Management Performance," *The Journal of Portfolio Management*, Winter 1986.
- LeBaroo, Dean**, "A Psychological Profile of the Portfolio Manager," *The Journal of Portfolio Management*, Fall, 1981.
- Lovell, Robert M., Jr.**, "Alternative Investments," *Financial Analysts Journal*, May/June 1980.
- McClay, Marvin**, "The Penalties of Incurring Unsystematic Risk," *The Journal of Portfolio Management*, Spring 1978.
- Merton, Robert C.**, "On Market Timing and Investment Performance. An Equilibrium Theory and Value for Market Forecasts," *Journal of Business*, 1981, vol. 54, No.3.
- Murphy, J. Michael**, "Why You Can't Win," *The Journal of Portfolio Management*, Fall, 1977.
- Perold, Andre' F. and William F. Sharpe**, "Dynamic Strategies for Asset Allocation," *Financial Analysts Journal*, January/February 1988.
- Rendleman, Richard J. Jr and Richard W. McEnally**, "Assessing the Costs of Portfolio Insurance," *Financial Analysts Journal*, May/June 1987.
- Rubinstein, Mark**, "Portfolio Insurance and the Market Crash," *Financial Analysts Journal*, January/February 1988.
- Sharpe, William F.**, Investments, 3rd Ed. Englewood Cliffs, N.J.: Prentice-Hall, 1985.
- Shiller, Robert J.**, "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?" *American Economic Review*, June, 1981.