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Consulting Group

THE ART OF REBALANCING

How to Tell When Your Portfolio Needs a Tune-up

SMITH BARNEY
citigroup

EXECUTIVE SUMMARY

Academic studies—as well as real-world experience—have shown that asset allocation is the key factor in long-term investment performance. By choosing the correct mix of stocks, bonds and other asset classes, investors can create the portfolios that best match their financial goals and tolerance for risk.

Asset allocation is a dynamic process, however. Over time, market forces will cause the composition of a portfolio to change in ways that may increase risk or lower returns. Investors need to decide whether—and when—to restore their original target allocations.

This process is known as portfolio rebalancing. In crafting an effective rebalancing strategy, investors face a number of issues. These include:

- Investors need to find the rebalancing strategy that is right for them. This may be a simple rule, or a flexible approach that takes market trends into account. (Page 1)
- Because more volatile asset classes tend to have higher returns, their weight in a drifting portfolio typically will rise over a longer-term time horizon. As a result, investors may assume more short-term risk than they want or expect. (Page 2)
- Investors can choose from an enormous variety of rebalancing strategies. Most fall into five general categories. Each has its advantages and disadvantages. (Page 4)
- The costs of rebalancing—such as taxes and commissions—need to be taken into account. It may be possible to reduce these costs through effective cash flow management. This can also help investors cope with liquidity constraints that may inhibit rebalancing of some portfolio components. (Page 5)
- Rebalancing typically decreases portfolio risk. It may or may not increase portfolio returns, depending on market conditions. Rebalancing works best when return differences are narrow, volatility is high and correlations are low. (Pages 6 – 7)
- Financial researchers have spent much time and effort trying to prove various rebalancing methods are optimal. The results of these studies are inconclusive. Different methods outperform over different time periods. (Page 9)
- Active rebalancing seeks to identify periods when rebalancing is the preferred alternative to portfolio drift. Studies have shown that active strategies can improve returns and reduce portfolio risk. However, active strategies can be quite complex, and may be unsuitable for some individual investors. (Pages 10 – 11)
- Individually managed accounts offer many rebalancing advantages. Working with a qualified Smith Barney Financial Consultant, investors can better manage all aspects of their investment strategies. (Page 12)

Introduction

Investment success begins with a sound asset allocation plan—one that matches an investor's financial goals and his or her tolerance for risk. But it doesn't end there.

Studies have suggested asset allocation—the process of deciding what portion of a portfolio should be invested in various asset classes, such as stocks or bonds—may explain up to 80% or more of the variability in the portfolio's returns, with the rest determined by security selection, timing and other factors.[1]

By analyzing the expected performance of different asset classes, investors can seek to construct portfolios that will—over the long run—yield the highest possible return for a given level of risk.

For Smith Barney clients, these allocations may be based on one of the model portfolios developed by the Consulting Group Asset Allocation Committee. Or, a Smith Barney Financial Consultant may craft more customized strategies to meet the special needs of certain investors, such as large institutions and high-net-worth individuals.

However, investors need to understand that asset allocation isn't a one-shot deal. Over time, market forces will tend to push portfolios away from their original targets. This may leave investors exposed to more risk than they want or expect. Letting a portfolio drift untended is like leaving a toddler alone in a room with a hot stove—the outcome depends far too much on the forces of chance.

Wise investors monitor their portfolios frequently, and have procedures in place to make course corrections as needed. This process is known as *rebalancing*, and it is a critical—if frequently misunderstood—aspect of the investment process.

Rebalancing requires investors to weigh many factors. For example, they must decide whether a simple rule—such as quarterly or annual rebalancing—is best, or whether a more flexible, "active" approach, one that takes expected market conditions into account, might yield superior results.

Investors also need to consider costs as well as benefits. Rebalancing may generate expenses—such as commissions and taxes—that outweigh the potential gains. Some investment vehicles are more suitable than others for effective rebalancing strategies; investors need to understand these differences.

The purpose of this paper is to clarify these issues. It describes the pros—and cons—of the more popular rebalancing approaches. It also explains why a single rebalancing strategy won't fit all portfolios, and shows how a qualified Financial Consultant can help investors develop the strategy that's right for them.

1 Gary P. Brinson, L. Randolph Hood and Gilbert L. Beebower. "Determinants of Portfolio Performance," *Financial Analysts Journal*, Vol. 42, No. 4, pp. 39 – 44.

Why Rebalance?

If history teaches any lessons, it's that the only certainty in the financial markets is change. Over time, market conditions can be expected to fluctuate dramatically, as industries, sectors and entire asset classes pass in and out of favor.

In the face of these changes, investors essentially have two choices: They can let their portfolios drift with the prevailing currents, or they can try to steer a steady course, holding close to their original asset allocations.

Many investors choose—usually by default—to drift. A survey of almost 1,200 401(k) participants by the Investment Company Institute (ICI), a mutual-fund industry group, found that only 25% had made any changes in the allocation of their account balances since they first enrolled in their plans. Of the rest, most had made only one or two changes.[2]

Economists who study financial behavior call this the "status quo bias." Left to their own devices, investors tend to avoid tinkering with their portfolios—usually out of a perception that change is dangerous. And indeed, the ICI survey found that 401(k) participants who never made changes in their portfolios tended to be more risk-averse than those who did.

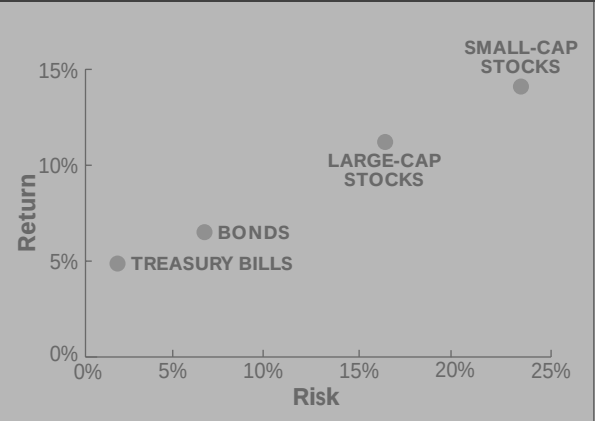
Trying to avoid risk, however, investors may end up *increasing* it. Over the long run, as returns on different assets lead or lag each other, their portfolios will be transformed accordingly. The percentage shares, or "weights," allocated to outperforming asset classes will tend to rise. Underperforming asset classes will tend to shrink.

In the short run, these changes can enhance portfolio performance—by automatically lifting the share allocated to the highest returning assets. But those gains can come at a price: As a portfolio becomes more concentrated, it can grow more top-heavy, and more vulnerable to a sea change in the markets.

Many investors learned this the hard way during the bull market of the 1990s—and in the market declines that followed. Because they failed to establish a rebalancing policy, several years of rising equity prices left their portfolios extremely heavy with U.S. large-cap stocks, particularly large technology stocks. This tilt greatly magnified their losses during the subsequent bear market.

[2] Investment Company Institute, "401(k) Plan Participants: Characteristics, Contributions and Account Activity," Washington, D.C., Spring 2000.

Chart 1—**Risky Business**



Source: Consulting Group

Risky Business

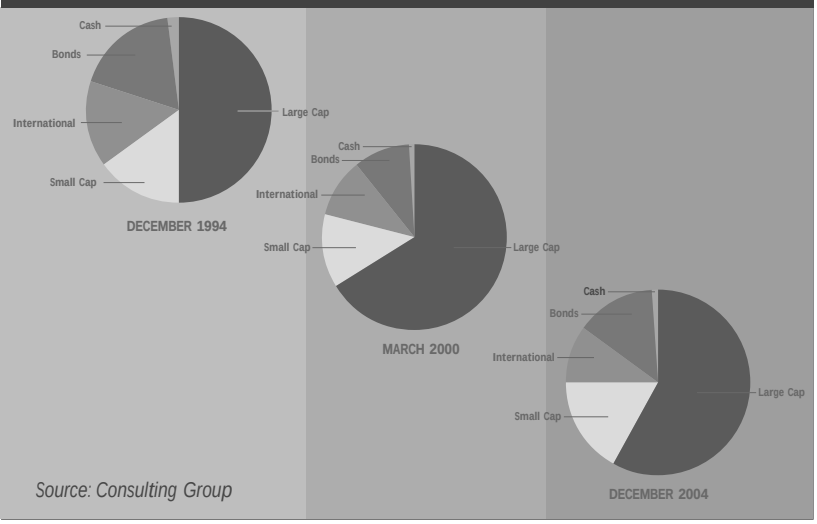
Why do untended portfolios tend to become more volatile over time? Because of the relationship between investment risk and return.

The chart illustrates this relationship. Return is shown on the vertical axis; volatility, as measured by a statistic called standard deviation, is shown on the horizontal axis.

As you can see, less volatile assets (such as Treasury bills) tend to pay relatively low returns. More volatile assets, such as stocks, tend to pay higher returns—at least over the long run. These returns compensate investors for accepting the risk of higher short-term volatility.

Because more volatile assets tend to pay higher long-term returns, the portion of a portfolio devoted to those assets will tend to grow faster than the portion invested in less volatile assets. So without rebalancing, even a well-diversified portfolio will tend to become less diversified—and more risky.

Chart 2—**Drifting Into Danger**



Source: Consulting Group

Drifting into Danger

The charts above show how quickly an untended portfolio can drift into the danger zone. They track a hypothetical diversified portfolio over the ten years ending December 2004. The portfolio shown would have been flying on auto-pilot throughout the entire period. No additional money would have been invested, nor would funds have been moved between asset categories. Thus, any allocation changes would have been due entirely to market conditions.

Initially, 50% of the portfolio would have been invested in U.S. large-cap stocks, 15% in U.S. small-cap stocks, 15% in international stocks, 18% in bonds (both corporate and government) and 2% in cash. This is roughly comparable to Consulting Group's model portfolio for moderately aggressive investors.

Between 1994 and March 2000, stock prices soared, with the S&P 500 Index rising almost 260%. As a result, the equity share of the portfolio would have jumped. By the end of the bull market, stocks would have accounted for nearly 90% of the asset mix, with bonds and cash reduced to less than 11%. U.S. large-cap stocks alone would have made up over 66% of the portfolio, up from 50% in 1994.

As long as the bull market lasted, this progressive asset shift would have worked in favor of our hypothetical investor—producing higher returns than the original allocation. The price, however, would have been a steady increase in risk, something that would only have become apparent when the stock market started to sink.

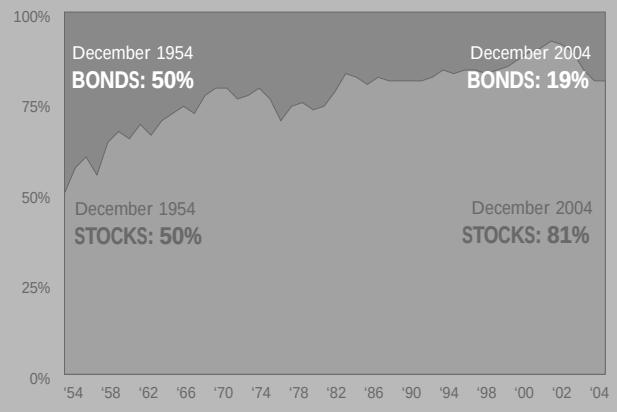
From the top of the bull market through December 2004, the autopilot portfolio would have lost just under 1% of its value. By contrast, if the portfolio had been rebalanced to its original asset mix at the end of March 2000, it would have gained over 3%.

Over longer periods, portfolio drift can produce even more extreme changes, in large part because of the historic tendency for stocks to earn higher returns than fixed-income securities. Over the 50 years ending December 2004, for example, the S&P 500 Index posted an annualized return of just under 11%. Over that same period, the annualized return on long-term corporate bonds was only 6.8%.[3] Compounded over five decades, such a differential would have had a profound effect on asset allocation.

This is demonstrated by the chart on page 4. The colored areas show the allocation shares of two asset classes—large-cap stocks and long-term corporate bonds—in a hypothetical portfolio composed of only those two assets. Without rebalancing, a portfolio split evenly between stocks and bonds in December 1954 would have had an equity share of 81% by the end of 2004. Thus, a portfolio appropriate for an investor with a relatively low tolerance for risk would have evolved into one more appropriate for an aggressive investor.

[3] As measured by the Ibbotson Long-Term Corporate Bond Index.

Chart 3—**Equity Drift**
Change in Asset Allocation Without Rebalancing



Source: Consulting Group

A Choice of Strategies

Saying every investor needs a rebalancing strategy isn't enough; investors also need to decide *what* strategy is most suitable for their own portfolios. This means taking into account factors such as investment time horizon, tax status, the timing of portfolio inflows and outflows, liquidity constraints and expected market conditions.

In recent years, financial professionals have proposed—and debated—a variety of rebalancing approaches. Most of these strategies fall into one of five broad categories:

- **Periodic Rebalancing.** *Portfolios are reset to their target allocations on a fixed schedule—such as annually, quarterly or monthly. Assets that are overweight relative to the long-term targets are sold, and the funds used to purchase underweighted assets, until the original allocations have been restored. This strategy has the virtue of simplicity, but can require frequent, minor adjustments. It is also rigid, and doesn't allow investors to temporarily overweight asset classes or sectors that are expected to outperform over the shorter term.*

- **Threshold Rebalancing.** *Portfolios are adjusted if and when a particular asset class deviates from its target allocation by more than a certain amount—say plus or minus five percentage points. So if, for example, the target for large-cap stocks was 60%, but a market rise caused that share to climb above 65%, stocks would be sold and other asset classes purchased until the original 60% target had been restored. This is obviously a more flexible rule than periodic rebalancing, but in volatile markets it can trigger a great deal of unnecessary buying and selling.*

- **Range Rebalancing.** *This approach is similar to threshold rebalancing, except that when an asset class rises or falls more than the allowed amount, it is rebalanced back to the maximum, not the target, allocation. Suppose, for example, a portfolio has a 20% target for small-cap stocks, plus or minus five percentage points, but a sudden market rise takes that percentage to 28%. Stocks would be sold until the small-cap share had been returned to 25%—not the initial 20% allocation.*

- **Volatility-Based Rebalancing.** *Triggers are based on the expected volatility of the portfolio as a whole. When volatility rises above a certain predetermined threshold, higher-volatility asset classes are sold and lower-volatility asset classes are purchased. So, for example, excessive volatility might lead an investor to sell small-cap stocks—a relatively risky asset class—and buy short-term bonds—a relatively low-volatility asset class.*

- **Active Rebalancing.** *Portfolios are rebalanced to the original target allocations as needed, based on analysis of expected market conditions. This approach is similar to "tactical" asset allocation, which seeks to exploit short-term market trends. However, it's more conservative than an out-and-out market-timing approach, because changes in the portfolio tend to be relatively modest.*

Cost Considerations

The actual benefits of rebalancing—and the correct choice of rebalancing strategies—depend on many factors, some of them unique to each investor. These have to be weighed carefully as part of the investment planning process. Rebalancing has its benefits, but it also has costs. Investors need to decide if the former justify the latter.

Most individual and corporate investors, for example, must pay taxes. Frequent rebalancing could lead to the realization of substantial capital gains, and the taxes on these gains might offset any improvement in before-tax returns. So a rebalancing strategy suitable for a tax-deferred vehicle, such as a 401(k) account, might be inappropriate for a taxable portfolio.

Brokerage commissions and other trading costs also need to be taken into account. One study, for example, estimated that over a period stretching from the end of 1994 through October 2001, a portfolio with a starting value of $100 million, and a policy of monthly rebalancing, would have generated trading costs in excess of $700,000—three and a half times the cost of a threshold rebalancing strategy with five percentage-point triggers.[4]

Fortunately, some costs can be avoided—or at least reduced—through the management of cash inflows and outflows. New cash, such as regular contributions to a pension fund, can be used to purchase underweighted asset categories to bring the portfolio back toward the target allocations. Cash withdrawals can be used to reduce overweighted asset classes. One study estimated that such cash management techniques can lower rebalancing turnover by more than half—reducing not only transaction costs, but tax liabilities as well.[5]

Cash for needed rebalancing moves can also come from the portfolio itself, in the form of dividend and interest income. These payments can be directed into an interest-bearing account, then invested in underweight asset classes as needed.

Such cash management techniques can be particularly useful when a portfolio contains asset categories—such as private equity or private placement bonds—that are relatively illiquid, or when it contains investment vehicles—such as hedge funds—that include lock-up agreements or other constraints that can inhibit the ability of investors to reallocate funds.

[4] The study assumed a portfolio with target allocations of 60% equity and 40% fixed income. Mercer Investment Consulting, *New Developments in Rebalancing: Techniques and Applications*, August 2002.

[5] First Quadrant Corp., *Rebalancing: Why? When? How Often?*, 1992.

The Rewards of Rebalancing

It is sometimes argued that a sound rebalancing strategy will always have a positive impact on portfolio returns, at least over the long run. In part, this is because the rebalancing process is inherently *contrarian*—it forces investors to sell assets that have appreciated in value, and buy assets that are temporarily out of favor.

The discipline this brings to the investment process can be particularly valuable in bull market cycles—not to mention periods of speculative excess, such as the large-cap equity bubble of the late 1990s.

Rebalancing also tends to reinforce one of the main benefits of portfolio diversification: the tendency of returns on different assets to offset each other over time. By remaining close to their target allocations, investors should be able to reduce portfolio volatility. This allows the magic of compound growth to work more quickly, boosting long-term returns.[6]

Reality, however, isn't quite so simple. There have been extended periods when a drifting portfolio would have yielded higher returns than a rebalanced portfolio—usually because of exceptional outperformance by a particular asset class. So the actual benefits of rebalancing can depend on the time frame in question.

This is demonstrated by the charts above. They show the returns and the volatility of two hypothetical portfolios over two time periods—the five years ending December 1999, and the five years ending December 2004.

Chart 4—**Risk and Return on Two Portfolios**
December 1994 to December 1999

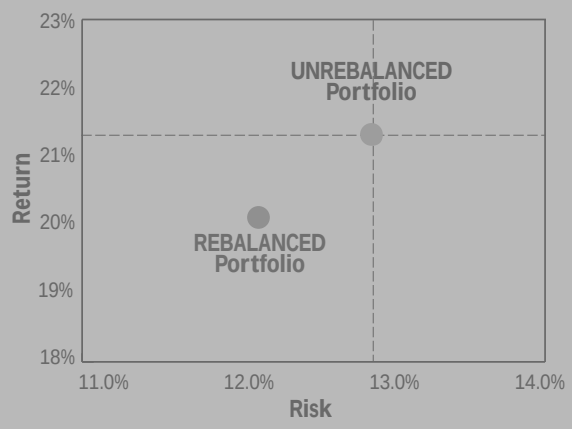
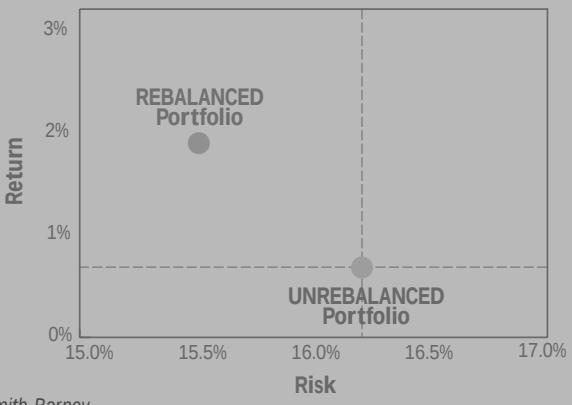


Chart 5—**Risk and Return on Two Portfolios**
December 1999 to December 2004



Source: Smith Barney

In each case, the starting asset mix is the same (and identical to the starting mix for the portfolio shown in the chart on page 3). However, in these examples, one portfolio is rebalanced to the original target allocation at the end of each quarter, while the other is left to drift.

As can be seen, the results are quite different. Over the five years ending December 1999, the drifting portfolio would have produced higher returns, but with greater risk. But over the next five years, the returns on the rebalanced portfolio would have been higher—with less risk.

[6] The benefits of offsetting returns are explained more fully in another Consulting Group white paper, *Investment Diversification Using Asset Allocation*, April 2004, No. CS2175.

Similar patterns have been found in other studies. An article in the *Journal of Portfolio Management* reported that a portfolio rebalanced each quarter to a 50-50 equity-bond allocation would have experienced lower volatility than a drifting portfolio in virtually every rolling 5-year, 10-year and 20-year period between 1925 and 2001. Over many of those periods, however, the drifting portfolio would have posted higher returns.[7]

One of the basic principles of modern finance is that investors should be compensated for accepting short-term volatility. For this reason, portfolio performance is usually measured on a *risk-adjusted* basis. In these terms, the *Journal of Portfolio Management* study found that a rebalanced portfolio would have outperformed a drifting portfolio in every rolling 20-year period, every 10-year period, and all but two 5-year periods between 1925 and 2001.

So rebalancing almost always reduces portfolio risk. But when does it boost portfolio returns? In general, a rebalanced portfolio will yield higher absolute returns when:

- **Return differences among asset classes are relatively narrow.** When differences are wide, drifting portfolios will gradually become concentrated in the assets with the highest returns. This will tend to increase portfolio returns. When asset returns are relatively similar, on the other hand, this trend is weaker. So rebalancing can improve both risk *and* return.
- **Market volatility is relatively high.** Volatility tends to lower returns by slowing compound growth. But rebalancing typically reduces portfolio volatility. The greater the volatility, the greater the benefits of using rebalancing to reduce volatility.
- **Correlations are low.** Correlation measures the degree to which the returns on different asset classes track each other. The lower the correlations, the more returns on different assets will tend to offset each other, reducing portfolio volatility. Frequent rebalancing will help preserve those offsetting effects, improving returns.

[7] Plaxco and Arnott, "Rebalancing a Global Policy Benchmark," *Journal of Portfolio Management*, Winter 2002.

What Is Correlation?

Correlation is a statistical measure of the degree to which returns on different asset classes tend to move in the same direction at the same time.

Correlation is similar to *beta*—a statistic that describes the degree to which a stock is sensitive to volatility in the broad market. But while beta relates the volatility of a particular stock to a broad index, such as the S&P 500, correlation typically is used to compare asset *classes*, such as large-cap stocks and long-term bonds.

Correlation is measured on a scale of -1 to +1. If the correlation between two assets is +1, they are said to be *perfectly correlated*. Their returns always move in the same direction at the same time and by the same proportions.

If correlation is -1, assets are said to be *negatively correlated*. Their returns always move in opposite directions, by exactly opposite proportions.

The lower the correlation between assets in a portfolio, the more those returns will tend to offset each other, reducing overall volatility. This accelerates the compounding of returns, which can boost portfolio values over time.

Positive correlation reduces, but doesn't eliminate, this effect. If the correlation is less than +1 (in other words, less than perfect), returns on different assets will tend to offset each other to some degree.

Investment analyst William Bernstein has tried to quantify the conditions under which rebalancing is likely to yield higher returns than a drifting portfolio. Using a statistical process called Monte Carlo simulation, Bernstein tested a hypothetical portfolio initially divided equally between two asset classes—both with approximately the same risk characteristics as U.S. common stocks. The correlation between the two assets was assumed to be zero. Sample returns were calculated for two investment time periods: five years and 50 years.

Under these conditions, Bernstein found, a rebalanced portfolio produced higher returns over the 50-year period as long as the return difference between the two asset classes was less than four percentage points. Over the five-year time horizon, rebalancing was the preferred strategy as long as the return spread was less than 12 percentage points.[8]

Bernstein's assumptions, however, were fairly extreme. In reality, correlations among most asset classes are substantially higher than zero. From December 1989 through December 2004, for example, the correlation between U.S. large-cap stocks and U.S. bonds was +0.16. Positive correlation lowers the "break-even" point—the return differential below which rebalancing will yield higher absolute returns.

Over most longer-run periods since 1926, U.S. equities have earned significantly higher returns than bonds. This is why, more often than not, drifting asset allocations have tended to produce higher absolute returns—albeit at the price of substantially higher risk.

Japanese Lesson

Extreme return differences are relatively rare in the international equity markets, but they are not unknown. The most famous example is Japan.

During the 1980s, Japan experienced one of the most dramatic stock-market bubbles in financial history. Between 1984 and the end of 1989, the Nikkei 225 Index more than tripled, fueled by rising exports, soaring real estate prices and a perception that Japan would soon replace the United States as the world's leading economic power.

By 1990, however, the problems in Japan's own economic system were becoming obvious, and the stock market tumbled, dropping nearly 60% over the next three years.

The chart at the right shows how this roller-coaster ride would have affected an international equity portfolio without rebalancing.

Let's assume Japanese stocks accounted for 40% of the portfolio at the end of 1980, while 60% was spread across the other markets that make up the Morgan Stanley Capital International Europe, Australia and the Far East Index, in proportion to their weights in the benchmark.

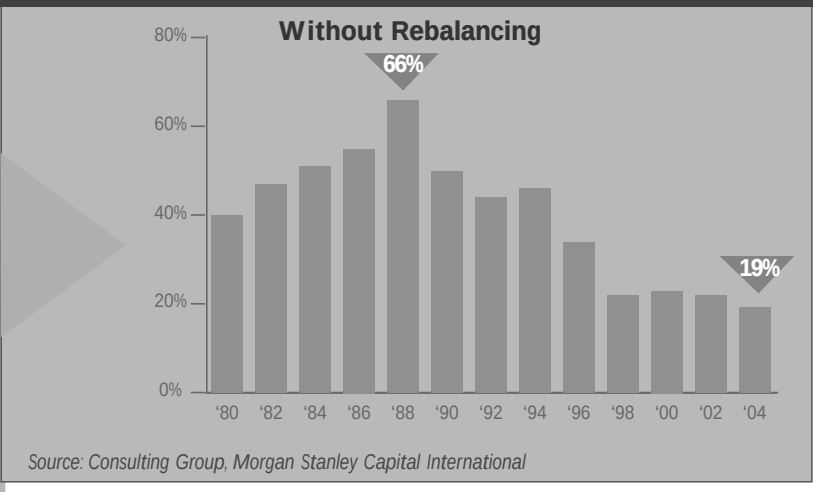
Over the next eight years, Japan's share would have risen to 66%—or two thirds of the entire portfolio. But by the end of 2004, it would have fallen to just 19%.

The impact on portfolio returns would have been almost as dramatic. From the end of 1988 through 2004, the drifting portfolio would have grown just over 140%. A portfolio rebalanced each quarter to the original 60/40 allocation, on the other hand, would have grown 149%—with less risk.

[8] William J. Bernstein, "When Doesn't It Pay to Rebalance," *The Efficient Frontier*, January 1997.

The same is *not* true, however, for many other asset pairings. For example, long-term return differences among foreign equity markets tend to be relatively narrow. Volatility, on the other hand, typically is higher than in the U.S. stock market. So rebalancing country exposures within international equity portfolios may improve both absolute *and* risk-adjusted returns.

Chart 6—**Japanese Equity Share in a Diversified International Portfolio**



Source: Consulting Group, Morgan Stanley Capital International

Bernstein, for example, found that over the period 1970 through 1994, rebalancing among the major developed markets in the Morgan Stanley Europe, Australia and the Far East Index would have produced higher absolute returns in almost every case. The exception: rebalancing between Australia and Italy, where returns were unusually low, and Japan, where returns were unusually high for most of the period.[9] Here, too, though, higher returns would have been purchased at the price of substantially higher risk.

Rebalancing in Action

Every investor is different, and the results of any rebalancing method will depend in large part on those differences. What's profitable for a pension fund may be self-defeating for an individual in the top federal income tax bracket.

A number of studies have tried to compare different rebalancing strategies, using historical returns for the major asset classes and making certain assumptions about taxes, commissions and other costs. For the most part, though, these studies have only extended the performance debate, not resolved it.

This isn't surprising, since the results of any rebalancing approach will depend heavily on the asset classes included and the specific time period under review. For this reason, some analysts reject the idea of fixed rules, such as quarterly or monthly rebalancing, in favor of a more opportunistic, "active" approach.

Much of the debate has been over the relative merits of periodic rebalancing—with its rigid time schedule—and strategies such as threshold and range rebalancing, which use percentage trigger points for allocation changes.

One study, for example, examined the performance of a hypothetical diversified portfolio over the ten years ending 1994. It found that, net of transaction costs, a threshold rebalancing strategy with 5% triggers would have yielded slightly more than a percentage point in extra annualized return, compared to a policy of quarterly rebalancing.

The quarterly strategy, however, would have resulted in somewhat lower portfolio volatility, and would have outperformed on a risk-adjusted basis. But the study also concluded that a volatility-based approach, with higher rebalancing trigger points set for riskier asset classes, would have outperformed *both* quarterly and threshold rebalancing.[10]

[9] William J. Bernstein, "The Rebalancing Bonus: Theory and Practice," *The Efficient Frontier*, September 1996.

[10] Douglas B. McCalla, "Enhancing the Efficient Frontier with Portfolio Rebalancing," *Journal of Pension Plan Investing*, Spring 1997.

Still other analysts suggest *combining* different strategies. One study, for example, argues the optimal strategy over a period stretching from 1987 to 2000 would have been threshold rebalancing with 5% triggers, but with daily portfolio monitoring to determine if those trigger points had been reached. The authors reported similar results using the Monte Carlo technique to simulate expected future performance.[11]

Staying Flexible

If the research data is ambiguous, and the outcomes so dependent on the periods studied, then perhaps there *isn't* a single, optimal rebalancing method. This idea is gaining favor with a growing number of financial experts, who suggest investors should craft rebalancing strategies that take expected market conditions into account.

Such an approach ties rebalancing to specific, measurable indicators that are thought to provide clues to future returns. These might include economic variables, such as interest rates and inflation; credit conditions, such as yields on low- and high-quality corporate debt; or equity valuation measures, such as price-to-earnings and price-to-book ratios.

As an example, suppose a portfolio has an allocation target of 15% for small-cap stocks. However, favorable trends in the small-cap market have pushed that allocation to 20%. Under a periodic or threshold rebalancing approach, this could be an automatic trigger for rebalancing.

An active rebalancing approach, on the other hand, might lead investors to look for signs that are bearish for small-cap stocks. This might trigger a move back to the target allocation. Absent such signals, the overweight allocation would be retained.

[11] Buetow et. al., "The Benefits of Rebalancing."

Still other active strategies might look to use such signals to identify longer-term periods when a periodic threshold rebalancing rule should remain in effect, and periods when the portfolio should be permitted to drift with the markets.

A Time for Timing

In some ways, active rebalancing resembles a much more aggressive investment technique known as tactical asset allocation, or *market timing*, in which an investor may jump into—or completely out of—a specific asset class in an effort to capture major up moves while avoiding major down moves. For most individual investors, this is a recipe for sub-par performance.

Active *rebalancing*, however, is a more cautious technique. Portfolio allocations typically are not lowered below the original targets, or raised above them, except by external market forces. This reduces the risk of being on the wrong side of an unexpected market trend.

Obviously, given the number of potential market indicators, active rebalancing strategies come in a vast selection of colors and flavors. Some efforts have been made, however, to test at least a few of them.

A study by First Quadrant, a Los Angeles-based money management firm, examined the performance of a hypothetical global bond and equity portfolio from 1987 through 1995, using the firm's proprietary forecasting model. The model was used to identify periods in which a threshold rule, with 2.5% trigger points, should have remained in effect, and periods when investors would have been better off letting their portfolios drift.

According to First Quadrant, the active strategy would have increased annualized returns by slightly less than one percentage point (net of costs) relative to a portfolio that drifted through the entire period. Portfolio volatility would have been reduced by roughly one half of a percentage point.

According to First Quadrant, the active approach was also more cost-effective than a simple periodic rebalancing rule: Portfolio turnover would have been reduced by slightly less than half, relative to quarterly rebalancing, and by two thirds compared to monthly rebalancing.[12]

Batting Practice

Consulting Group analysts also have examined the performance of various "mechanical" rebalancing strategies, such as periodic and threshold rebalancing. Their conclusion: While some strategies delivered superior performance over certain time periods, none delivered consistently higher returns over all time periods.

In fact, after reviewing the performance of monthly, quarterly and threshold rebalancing rules over the period 1979 through February 2001, a Consulting Group study concluded that all three approaches *reduced* portfolio returns, compared to a drifting portfolio. In all three cases, however, there was also a significant reduction in portfolio risk.[13]

Significantly, the study also found that the "batting average"—the percentage of all allocation changes that improved returns compared to a static portfolio—was only .360 for monthly rebalancing, .450 for quarterly rebalancing and .500 for threshold rebalancing.

This suggests investors would have been better off—or at least, no worse off—if they had made their rebalancing decisions by flipping a coin in the air!

A follow-up study by Consulting Group looked at the effectiveness of different active strategies for rebalancing between bonds and equities, between capitalization sectors (large-cap and small-cap) and between investment styles (value and growth) within the U.S. equity universe.

The study covered a period stretching from December 1986 through October 2001, and tested several active allocation models based on signals such as the equity risk premium (the difference between returns on stocks and bonds), relative price-to-value ratios and discounted future dividends.

The study found that each of the rules tested would have increased returns on a hypothetical test portfolio by amounts ranging from 0.20 to just over one percentage point. In most cases, portfolio volatility was also reduced.[14]

This may seem like the best of all possible worlds. But the Consulting Group study also sounded a cautionary note: Active rebalancing formulas can be highly complex, and under some conditions may increase, rather than decrease, portfolio turnover. This may make them unsuitable for some taxable investors.

12 Bill Goodsall and Lisa Plaxco, *Tactical Rebalancing*, First Quadrant, 1996.

13 James Beck and John Sievers, *Portfolio Rebalancing*, Consulting Group Research Bulletin, Vol. 4, No. 29, October 2001.

14 James Beck and John Sievers, *Portfolio Rebalancing: Active Strategies*, Consulting Group Research Bulletin, Vol. 4, No. 35, December 2001.

Why Consulting Group?

For some investors, the rebalancing equation must cover not just the allocation of funds among asset classes, but among portfolio managers as well. This can add yet another layer of complexity to the process.

Fortunately, Consulting Group can help. By working with a qualified Smith Barney Financial Consultant, investors can better manage their rebalancing strategies—and all the other aspects of their investment programs. Some of the benefits:

- **A customized rebalancing strategy.** A Financial Consultant can help investors develop rebalancing rules appropriate to their specific financial circumstances.
- **Performance monitoring.** A Financial Consultant can review client portfolios on a regular basis to determine whether rebalancing is needed, and then execute any required transactions.
- **Asset allocation advice.** Investors wishing to pursue active rebalancing can benefit from the work of Consulting Group's Asset Allocation Committee, a panel of senior analysts and outside experts that provides in-depth advice on capital market trends.
- **Individually managed accounts.** Through Consulting Group, Smith Barney clients have access to some of the world's leading portfolio managers. Managed accounts offer investors considerable flexibility to control their tax liabilities. This may improve the after-tax benefits of rebalancing.
- **Asset-based fees.** Brokerage commissions on all trades executed through Smith Barney are included in a quarterly, asset-based account fee. This can also reduce rebalancing costs.
- **Manager research.** Consulting Group analysts carefully review every manager that participates in our Fiduciary Services and Consulting and Evaluation Services programs. Armed with this data, Financial Consultants can help investors decide when funds should be reallocated among their portfolio managers.

CONCLUSIONS

Like many investment issues, rebalancing is a complicated problem with no easy solution. Some key points investors might want to remember:

- *Over time, market forces will tend to push diversified portfolios away from their target asset allocations. This drift typically will increase the allocation to riskier, more volatile asset classes.*
- *Simple rebalancing rules tend to reduce portfolio volatility, but may also reduce returns—particularly when differences among various asset classes are wide.*
- *An active rebalancing strategy—one that takes expected capital market trends into account—may reduce risk* and *improve returns. However, the costs of these strategies may make them unsuitable for some investors.*
- *Individually managed accounts offer inherent benefits that can improve the performance of a portfolio rebalancing strategy.*

For more information on how Consulting Group can help you maintain your financial balance, just talk to your Smith Barney Financial Consultant, or contact the Smith Barney office nearest you.

Consulting Group

The Consulting Group of Smith Barney, founded in 1973, is widely recognized as a leader in the investment consulting industry. Our Financial Consultants seek to provide their clients with the highest possible level of customized investment service. They work with each client to develop a suitable investment strategy, select the appropriate portfolio managers to execute that strategy and evaluate the performance of those managers over time. Clients include endowments and foundations, corporate pension funds, family offices, business owners, self-employed professionals and individuals. Consulting Group now advises investors on the management of more than $231.9 billion** worldwide.*

** Source: Cerulli Associates.*
*** As of March 31, 2005 and subject to change.*

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