



QUARTERLY

VOLUME 11, ISSUE 2 JUNE 2014

THE EFFECTS OF PORTFOLIO REBALANCING

Introduction

When most investors look at their portfolios they see a mix of assets that were acquired over the course of many years. Often the amount of capital allocated to any specific investment within a portfolio is arbitrarily based on the amount of cash that was available at the time the asset was purchased. This “buy and hold” strategy is common, but unfortunately it seldom produces a portfolio that is appropriate for an investor’s risk tolerance and return objectives over time.

A more thoughtful approach to long-term investing involves identifying the mix of assets which best meets an investor’s individual needs and then allocating investment dollars accordingly. All investors using this approach should be aware of how changes in the relative value of assets within their portfolio will cause exposures to drift away from desired weights over time. As active asset allocators, we at Stairway Partners manage this drift within the context of our forward looking return estimates. However, we believe that passive investors should also rebalance their portfolios periodically to insure that the mix of assets stays in sync with their long-term objectives. In this *Quarterly*, we describe several

rebalancing strategies and examine how their implementations impact the long-term returns and risk characteristics of a passively managed portfolio.

Constructing and Evaluating Balanced Portfolios

We believe that a globally diversified balanced portfolio is the best alternative available to most investors for achieving their financial objectives over time. By combining specific amounts of various asset classes based on their long-term expected return and risk characteristics, investors can create a portfolio that is tailored to meet their individual needs. Figure 1 shows the asset allocation for a balanced portfolio that would generally be categorized as having a moderate level of risk. We use the performance of this portfolio as an example in the following analysis.

One of the benefits of explicitly defining the target mix of assets, as we have done here, is that it allows investors to look back through time and observe how the combined portfolio would most likely have performed in different market environments. This perspective helps investors to set their expectations of what their experience is likely to be going

forward, which makes sticking to a disciplined plan much easier.

Having an explicit asset allocation also allows the investor to examine the effectiveness of their implementation by comparing the performance of their portfolio to the performance of an appropriately weighted market benchmark. To measure the performance of our balanced portfolio, we use a combination of 35% Russell 3000, 20% MSCI EAFE, 5% MSCI Emerging Market Equity, 35% Barclays US Aggregate Bond and 5% Barclays US High Yield Bond.

The industry convention for calculating the performance of a blended index such as this is to weigh the returns of the component indices on a monthly basis based on market value percent, and then link the re-

(Continued on page 2)

CURRENT TOPIC

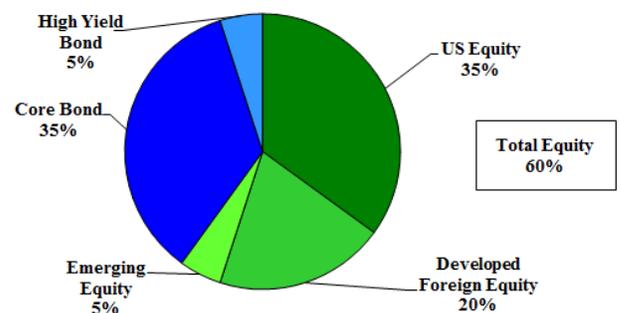
The Effects of Portfolio Rebalancing

- Introduction
- Constructing and Evaluating Balanced Portfolios
- Rebalancing Methods
- Rebalancing’s Impact on Risk and Return
- Rebalancing Costs
- Conclusion

Strategy

- Portfolios are currently overweight foreign equity exposure and broadly underweight bond exposure.

Figure 1 - Balanced Portfolio Asset Allocation



THE EFFECTS OF PORTFOLIO REBALANCING - CONT'D

sulting monthly returns through time. This methodology produces returns that are equivalent to those of a hypothetical portfolio which is rebalanced on a monthly basis. As a result, the index return reported for a balanced portfolio which is generally thought of as passive actually requires rebalancing transactions to achieve in real life.

Rebalancing Methods

Since markets are constantly moving and some asset classes are more volatile than others, the weightings within an untended balanced portfolio will change over time. In order to keep the mix of assets from drifting too far away from the intended target weights investors must periodically rebalance their portfolio by selling a portion of assets whose weight has risen and purchasing more of the assets whose weight has declined.

There are two methodologies which are commonly used to rebalance portfolios as relative market movements pull allocations away from their long-term targets.

		Figure 2 - Rebalancing Statistics										
		Calendar Based Rebalancing					Never	Drift Based Rebalancing				
		Monthly	Quarterly	Semiannual	Annual	1% threshold		2% threshold	3% threshold	4% threshold	5% threshold	
Rebalances Per Annum		12	4	2	1	0	5.0	2.2	1.2	0.8	0.5	
Portfolio Risk and Return	Annual Return	8.47%	8.59%	8.70%	8.74%	8.46%	8.51%	8.57%	8.58%	8.58%	8.59%	
	Standard Deviation	9.6%	9.6%	9.5%	9.4%	10.7%	9.6%	9.6%	9.6%	9.7%	9.6%	
	Sharpe Ratio	0.47	0.48	0.50	0.51	0.42	0.47	0.48	0.48	0.48	0.48	
	Worst 12 Month Return	-31.1%	-30.6%	-29.8%	-28.6%	-33.9%	-31.10%	-30.89%	-30.95%	-31.07%	-30.56%	
Total Equity Weight	Average	60.0%	60.0%	60.2%	60.0%	66.7%	60.1%	60.3%	60.4%	61.0%	61.0%	
	Minimum	60.0%	53.5%	48.7%	45.0%	57.5%	59.0%	57.7%	56.6%	55.9%	55.3%	
	Maximum	60.0%	63.8%	65.5%	67.7%	76.7%	61.1%	62.1%	63.2%	64.3%	65.7%	

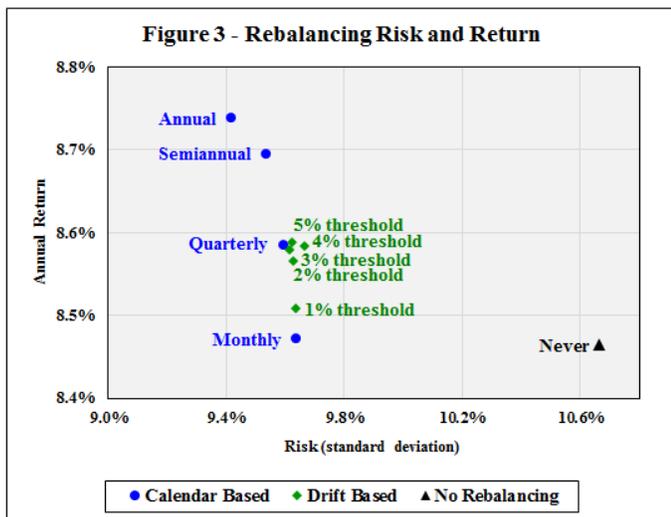
The most common rebalancing strategy is based on a fixed schedule, such as monthly, quarterly or annually. This *calendar based* rebalancing strategy is appealing because of its simplicity and the fact that it requires relatively little monitoring. For example, if a portfolio is passively managed to fixed asset allocation targets and rebalanced quarterly, then it only requires attention once every three months. Many investors with company sponsored retirement plans such as 401Ks will effectively use this strategy as they review their holdings and contribution rates as part of their annual enrollment process.

An alternative methodology for rebalancing involves continually monitoring the allocations within a portfolio and only rebalancing when exposures drift away from their targets by more than a specified amount. We refer to this strategy as *drift based* rebalancing. An example would be an investor who chooses not to rebalance their portfolio unless their exposure to a given asset class deviates from its target weight by more than 3%. The benefit of drift based rebalancing is that an investor can save the expenses associated with rebalancing if their asset allocation has not moved by a material amount. The downside of drift based rebalancing is that it requires constant monitoring and may be costly due to frequent transactions in choppy markets.

under different rebalancing strategies. For our analysis we have constructed a hypothetical portfolio using the asset allocation strategy described in Figure 1. We assume that the investor is pursuing a completely passive investment strategy and only executes transactions to bring the portfolio's asset allocation back to the pre-defined targets at month-end dates. The table in Figure 2 shows a number of key return and risk statistics for this passively managed portfolio maintained under different rebalancing strategies over a 25 year time period (1988-2013). As discussed above, the monthly rebalancing strategy represents the performance that would be reported for the blended benchmark.

Figure 3 illustrates the impact of the various rebalancing strategies by plotting average annualized returns versus risk, as defined by the annualized standard deviation of returns. The figure shows that the average return had a tendency to increase as allocations were allowed to deviate more under the various calendar and drift based rebalancing strategies. Over the 25 year time-period, the calendar

(Continued on page 3)



Sources: MSCI, Russell, Barclays, Stairway Partners

About Stairway Partners, LLC

Stairway Partners was formed to provide ourselves and our clients with an effective and comprehensive solution for managing financial assets. Our disciplined and rigorous approach comes from our collective knowledge in serving large institutional clients over many years. Our core investment belief is that the overwhelming majority of a portfolio's risk and return comes from the asset class mix, not from the choice of individual investments. Stairway Partners constructs separately managed global balanced portfolios focusing on long-term returns and risk management.

(Continued from page 2)

dar based strategies actually showed a pattern of higher returns at modestly lower risk levels with less frequent rebalancing. A similar pattern was observed when drift based rebalancing was used, as the strategies allowing a wider tolerance for drift produced better returns at equivalent levels of risk.

The point that stands out the most in Figure 3 is the one labeled *Never*, which represents the portfolio if it was not rebalanced at any time during the course of the 25 year time period. Although the average return under this scenario was equivalent to the return using the monthly rebalancing strategy, the level of risk was significantly higher than any of the rebalanced alternatives.

The reason for the higher level of risk in the un-rebalanced portfolio can be seen in Figure 4, which shows the total equity weight over time compared to the same portfolio when rebalancing was done on an annual basis. Looking back over the 25 year time-period, without any

rebalancing the portfolio would have had an average equity weight of 66.7%, which is materially higher than the 60% target and all of the other rebalancing strategies. In fact, without rebalancing the total equity exposure for the portfolio would have drifted as high as 76.7%. As one would expect, the risks associated with this larger equity weight also produced the worst 12 month return, which can also be seen in Figure 2.

The tendency for a portfolio's asset allocation to drift toward a higher equity weight over time is not specific to this 25 year time period. Because equities have higher long-term expected returns relative to less risky assets like bonds, without rebalancing we would expect their weight to increase over time. This drift is particularly problematic when viewed from the perspective of an individual investor who is headed toward retirement and generally needs less risk as their retirement date approaches.

In our analysis of rebalancing strategies, risk did not increase when the portfolio was allowed

to drift within any of the defined bounds of time or percentage of assets. In fact, with the calendar based rebalancing the risks declined modestly as more time was allowed to pass between rebalancing.

Rebalancing Costs

The risk and return numbers discussed above do not take into account the impact of transaction costs, because these costs can vary significantly based on an investor's choice of securities and account-specific characteristics. Nevertheless, an investor should think about how rebalancing costs might impact the overall performance of their balanced portfolio over time.

The most obvious cost associated with any transaction is the commission rate. Because most brokerage platforms have a minimum transaction fee, a greater impact to overall performance will most often be observed in smaller accounts. For example, a mutual fund purchase with a commission rate of \$20 will subtract 0.04% from the performance of a \$50,000 account but only 0.0004% from a \$5 million account.

In addition to commissions, there can also be liquidity costs for securities that are traded on the open market, like individual stocks and bonds or exchange traded funds (ETFs). These costs are difficult to measure but can be significant for some securities. Both the commission and liquidity costs increase as rebalancing is done more frequently.

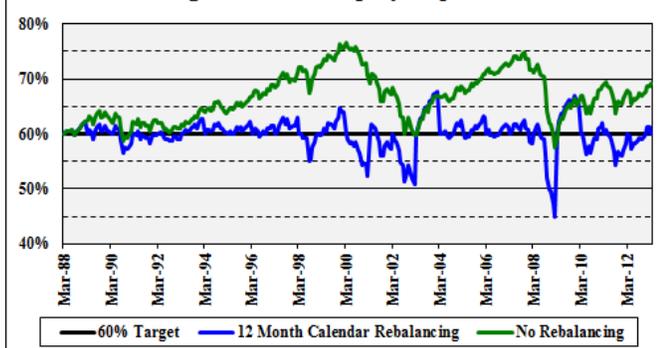
Finally, taxes can also have an impact on investor returns. Since the securities with the greatest amount of appreciation are most often sold to rebalance, capital gains taxes may need to be paid if the account is not tax sheltered.

Conclusion

A well-diversified balanced portfolio can be tailored to provide an investor with attractive market returns at a level of risk that is appropriate for their unique financial situation. However, maintaining a balanced portfolio through time requires rebalancing.

In the time period that we studied, any systematic rebalancing strategy provided better or equivalent returns with less risk than allowing the portfolio's asset allocation to drift indefinitely. Our study also showed that returns improved modestly when the rebalancing was done less frequently than on a monthly basis. Based on these observations, we believe that investors who are not actively managing their asset allocation are best served with a disciplined strategy of rebalancing on an annual or semiannual basis.

Figure 4 - Total Equity Exposure



Sources: MSCI, Russell, Barclays, Stairway Partners



3 Year Annualized Return Estimates for Global Markets

6/9/2014

	<u>Total Returns</u>			<u>After-Tax Total Returns</u>		
	Expected	Hurdle	Excess	Expected	Hurdle	Excess
Equities						
United States	-0.7%	5.2%	-5.9%	-0.5%	4.5%	-5.1%
Large & Mid Cap	-0.3%	5.1%	-5.5%	-0.2%	4.4%	-4.7%
Growth	-0.8%	5.4%	-6.1%	-0.6%	4.7%	-5.2%
Value	0.1%	4.9%	-4.8%	0.1%	4.2%	-4.1%
Small Cap	-3.0%	5.8%	-8.8%	-2.3%	5.1%	-7.4%
Growth	-3.6%	6.2%	-9.8%	-2.7%	5.5%	-8.3%
Value	-2.4%	5.4%	-7.7%	-1.8%	4.7%	-6.4%
Foreign Developed Markets	8.6%	5.7%	2.9%	6.5%	5.0%	1.6%
EMU	11.7%	6.0%	5.7%	8.9%	5.3%	3.6%
UK	16.3%	6.0%	10.4%	12.4%	5.3%	7.1%
Japan	0.9%	6.1%	-5.2%	0.7%	5.4%	-4.7%
Canada	-4.5%	5.4%	-9.9%	-3.4%	4.7%	-8.1%
Emerging Markets	22.9%	6.9%	16.0%	17.1%	6.2%	10.9%
Fixed Income						
US Aggregate	-1.5%	3.1%	-4.7%	-1.7%	2.4%	-4.2%
US Treasuries						
2 Year	-0.1%	1.9%	-2.1%	-0.5%	1.2%	-1.8%
5 Year	-1.7%	2.4%	-4.1%	-1.8%	1.7%	-3.5%
10 Year	-3.6%	2.9%	-6.5%	-3.2%	2.2%	-5.5%
30 Year	-6.2%	3.1%	-9.3%	-5.2%	2.4%	-7.6%
TIPS						
5 Year	-1.4%	2.5%	-3.9%	-1.5%	1.8%	-3.3%
10 Year	-3.6%	3.0%	-6.6%	-3.3%	2.3%	-5.6%
30 Year	-10.0%	3.3%	-13.3%	-7.8%	2.6%	-10.5%
Municipal	1.3%	2.5%	-1.3%	1.7%	1.8%	-0.1%
2 Year	-0.3%	1.9%	-2.2%	0.2%	1.2%	-1.0%
5 Year	-1.2%	2.2%	-3.4%	-0.4%	1.5%	-1.9%
10 Year	-0.7%	2.6%	-3.3%	0.2%	1.9%	-1.7%
20 Year	3.6%	2.8%	0.8%	3.7%	2.1%	1.5%
High Yield	-1.6%	4.0%	-5.7%	-2.3%	3.3%	-5.7%
High Quality High Yield	-1.1%	3.2%	-4.3%	-1.9%	2.5%	-4.4%
Emerging Market (\$ denominated)	-1.0%	4.3%	-5.2%	-1.7%	3.6%	-5.3%
Foreign Aggregate	-3.0%	4.6%	-7.5%	-2.6%	3.9%	-6.5%
Foreign Aggregate (hedged)	-3.2%	2.9%	-6.1%	-2.7%	2.2%	-4.9%
Foreign Treasury	-2.5%	4.1%	-6.6%	-2.2%	3.4%	-5.7%
Foreign Treasury (hedged)	-3.3%	2.5%	-5.8%	-2.7%	1.8%	-4.4%
Cash	1.6%	1.6%	0.0%	0.9%	0.9%	0.0%

Notes

1. Foreign market returns assume US dollar as the base currency and are unhedged unless otherwise indicated.
2. All hurdle returns are based on long-term asset volatility. Equity and fixed income hurdle rates include expected cash returns.
3. After-tax total returns assume that all gains and losses are long-term and realized within the investment horizon.
4. After-tax total returns only take into account Federal taxes based on the following tax rates:
 - 43.4% Ordinary Income, 23.8% Qualified Income, 0% Exempt Income, and 23.8% Capital Gains/(Losses)

Stairway Partners, LLC © 2014

This material is based upon information that we believe to be reliable, but no representation is being made that it is accurate or complete, and it should not be relied upon as such. This material is based upon our assumptions, opinions and estimates as of the date the material was prepared. Changes to assumptions, opinions and estimates are subject to change without notice. Past performance is not indicative of future results, and no representation is being made that any returns indicated will be achieved.

This material has been prepared for information purposes and does not constitute investment advice. This material does not take into account particular investment objectives or financial situations. Strategies and financial instruments described in this material may not be suitable for all investors. Readers should not act upon the information without seeking professional advice. This material is not a recommendation or an offer or solicitation for the purchase or sale of any security or other financial instrument.