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Successful Investing

ISSUE Q3 September 2011

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What's New At Empirical

- Empirical was a proud sponsor at the Gloria's Angels Celebrity Golf Classic. Gloria's Angels seeks to lift burdens and build communities so people can focus on caring for a family member with a life-threatening condition. To learn more about this nonprofit organization, please visit www.gloriasangels.org.
- CEO, Kenneth Smith, was featured in the October issue of Alaskan Airlines where he discusses ways to improve cash flow.
- To sign up for the Client View Portal or to receive ***paperless*** statements going forward, please email Simon Liu at techsupport@empiricalfs.com. For a visual overview of the Client View Portal, please go to **client.empiricalfs.com**.
- Follow us on Twitter and Facebook for the latest news, developments and research.
- Tune into Empirical Investing Radio every Thursday at 2PM PST on the VoiceAmerica business channel: *business.voiceamerica.com*

Portfolio Rebalancing Alternatives

Over the years, we have examined many different aspects of investing that enable investors to get the most out of their long-term investment strategy. Throughout periods of market uncertainty, we have focused our attention to the issues on investors' minds. During the financial crisis from 2008 to 2009, we covered topics such as The Deficit, The Dollar, and Investor Safety (December 2009), An Empirical Examination of Recessions (February 2009) and An Empirical Examination of Market Volatility (October 2008), among others. After reaching the bottom in March of 2009, global markets rebounded significantly through May of this year. Over the past few months, we have received several inquiries about how market conditions affect the timing of portfolio changes. These inquiries were prompted by the recent, and unusually high, global stock market volatility. In response to these questions, this quarter's letter discusses rebalancing a portfolio's mix of stocks and bonds.

Our letter begins by recapping the email we sent on August 25th 2011, explaining the standard way Empirical rebalances between stocks and bonds. This is followed by an examination of alternative methods to adjust a portfolio's stock exposure in response to a declining equity market. Our goal is to examine an empirical model designed to assess the potential costs and benefits of decreasing or increasing stock exposure during a declining stock market.

This letter also discusses the alternative fixed income strategies we will introduce to clients in the coming months. With Treasury yields hovering at historically low levels, we have been diligently looking for methods to improve yields without compromising sound risk management objectives. We introduce our research in this letter, to be followed with a complete description in next quarter's communication.

Empirical Targeted Risk Rebalancing

Many investors are aware of the idea of rebalancing at a set frequency; such as, quarterly or annually. This is referred to as a time-bound approach. Many 401k plans offer this on an annual or semi-annual basis as part of the account settings. The purpose of rebalancing is to maintain a specific balance of risk and expected return by controlling equity exposure. In other words: if your allocation is 60% stocks and 40% bonds, keeping your portfolio as close to 60% stocks as reasonably possible is needed to secure the return of a 60% equity portfolio. Typically, investment strategies that rebalance over fixed time intervals would trade regardless of how far the portfolio is off from the original target. This approach may create frequent and unnecessary portfolio rebalancing.

Empirical utilizes a "band" or "threshold" system that triggers action only when the mix of stocks and bonds has drifted more than 10% away from the original target. After the portfolio drifts beyond the 10% band, it is rebalanced back in line to the targeted allocation. We refer to this as ***Targeted Risk Rebalancing*™ (or TRR)**. TRR is intended to provide investors with a more efficient balance between achieving a targeted return and staying within a given range of risk. The TRR approach seeks to avoid excess trading, which can generate unnecessary taxes and transaction costs. In **Figure 1**, you can see that the TRR model achieves a higher return than the annual rebalance model. The difference in return may seem small at first. However, we have to keep in mind that Annual Rebalancing generated 41 separate actions instead of the mere eight generated by TRR. The additional transactions produced by Annually Rebalancing would have certainly increased transaction costs, and for taxable accounts, additional tax liabilities. These additional costs are not captured by the data presented in **Figure 1**. You may have

this issue

looking ahead

Credit Enhanced Bond Strategies ♦

Figure 1: **Risk and Return of Empirical 60/40 Strategies Compared with Equity Index (1/1970 – 9/2011)**

	60/40 Empirical Portfolio (Annual Rebalancing)	60/40 Empirical Portfolio (Targeted Risk Rebalancing)	MSCI World Index (100% Equity)
Annualized Return	9.77%	9.85%	8.26%
Growth of $100,000	$4,894,905	$5,056,976	$2,743,628
Worst Drawdown	-37.0%	-38.4%	-54.0%
Average of 5 Worst Drawdown's	-19.9%	-21.0%	-37.3%
Average Equity Exposure	60.8%	62.9%	100.0%
Number of Rebalances	41	8	N/A

Source: See full performance disclosure. Empirical model returns net of 1% advisory fee. The 100% Equity Index is presented to provide a reference point for historical risk and return characteristics of the world equity markets. It is not meant to say that the appropriate benchmark for the Empirical 60% Global Equity Model is the MSCI World Index. The equity portion of the Empirical model consists of the Moderate Targeted Premium; the fixed income portion is invested in the Empirical low credit risk model.

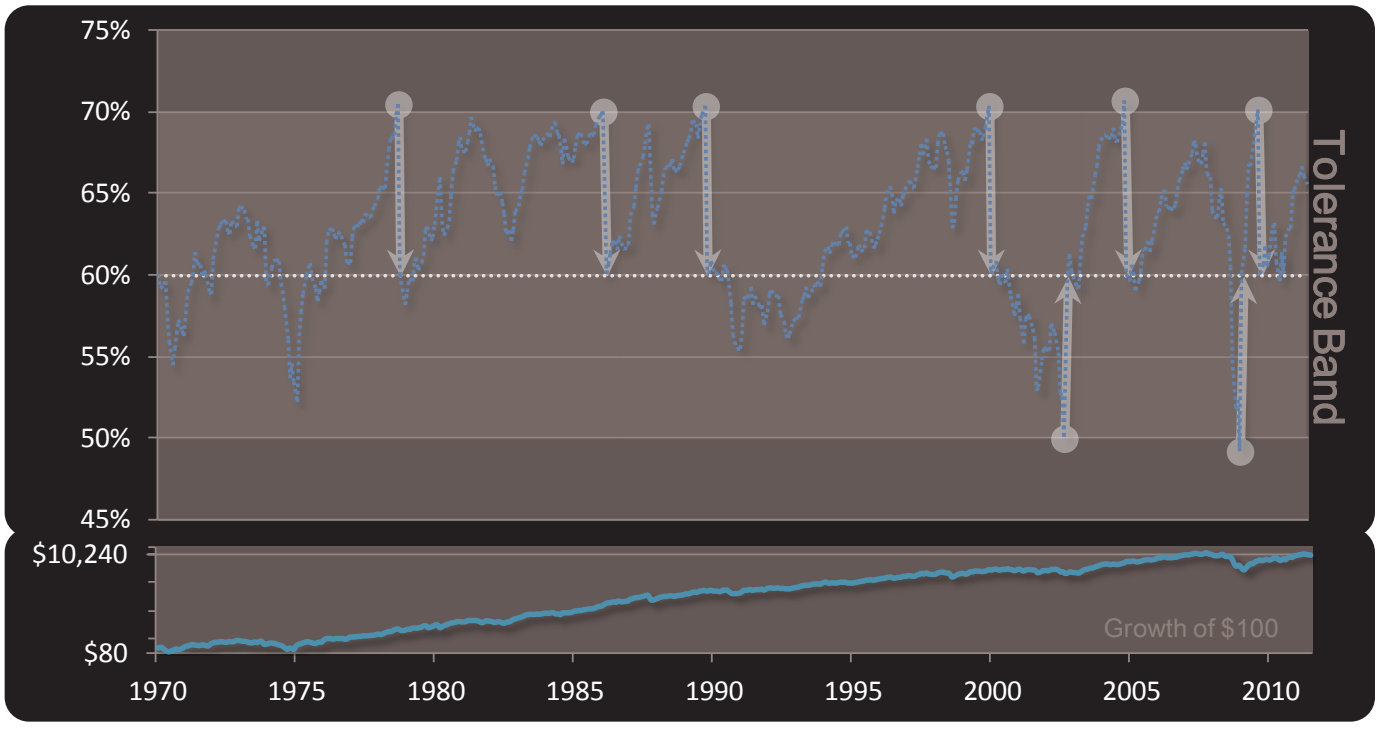
also noticed that the TRR model resulted in a slightly higher average exposure to stocks. This can be explained by the fact that equities trend upward more frequently than they trend downward.

Figure 2 shows how a 60% stock and 40% bond portfolio with Targeted Risk Rebalancing would have behaved since 1970. The green line represents the equity allocation moving up and down over time as a result of market movements. Whenever the equity allocation increases more than 10% from the 60% target, the portfolio is rebalanced back to 60% equities. Over the entire 41 year period, the portfolio is rebalanced eight times or about once every five years.

This strategy requires actions that one may find counter intuitive, and at times, difficult to do. A rising stock market will push the equity allocation above target, requiring an investor using TRR to sell stocks even during the widespread optimism that often accompanies stock market rallies. Rebalancing after a downturn can be even more painful for individual investors. During sharply falling markets, investors may feel worse, and develop a more visceral understanding of the riskiness of stocks. This is compounded by the fact that during these downturns, the media envelopes us with pessimism and stories of economic malaise. Yet in spite of all this, we have to swim against the current by selling bonds and buying stocks to stay on track.

Some investors want to take an approach that reduces stock market risk as markets begin to look shaky. They either believe they can improve their results, or simply want to reduce risk in spite of possibly lower returns. This approach is

Figure 2: **Equity Allocation of 60/40 Portfolio Using Targeted Risk Rebalancing**



Source: See full performance disclosure. Equity portfolio represents Empirical Targeted Premium 3 model portfolio net of 1% management fee.

typically coupled with the notion of returning to equity markets when "things look better." Because this is a very natural and reasonable desire, we were interested in designing tests to see how various rebalancing approaches would affect portfolio results over several market cycles. To a smaller degree, there are those who see stock market downturns as opportunities to increase future expected returns by increasing exposure to stocks as markets decline; this is also something we tested. As we suspected, the results show that over the long-term, the standard Targeted Risk Rebalancing approach does the best job of getting an investor the return of the equity allocation targeted without dramatically changing the risk equity allocation drift down until the equity market fully recovers.

We call this the Downturn Drift Rebalancing strategy, and we define a market downturn as a 15% drop in the equity portfolio. As you can see in **Figure 3**, a 60/40 portfolio using the Downturn Drift strategy would have had a lower return coupled with lower risk than the Targeted Risk Rebalancing approach. Some investors may be comfortable accepting a lower expected return in exchange for less risk (particularly when the news of the day is creating anxiety). The Downturn Drift strategy does not require an investor to engage in what

Figure 3: **Targeted Risk versus Downturn Drift Rebalancing (1/1970 – 9/2011)**

60/40 Empirical Portfolio	Targeted Risk	Downturn Drift
Annualized Return	9.85%	9.74%
Growth of $100,000	$5,056,976	$4,842,375
Worst Drawdown	-38.4%	-33.3%
Average of 5 Worst Drawdown's	-21.0%	-19.4%
Average Equity Exposure	62.9%	61.4%
Number of Rebalances	8	5

Source: See full performance disclosure. Net of 1% advisory fee.

characteristics. However, when you meet with your advisor to review your individual strategy, the other three approaches may be an interesting discussion point.

The first two alternatives we studied are more risk averse than Targeted Risk Rebalancing. The objective with these two approaches is to offer some form of downside risk management by lowering stock exposure as markets decline. The third is an aggressive approach to rebalancing that looks to capitalize on market downturns by increasing equity exposure after a market decline is experienced.

Empirical also employs a system for rebalancing within the equity and fixed income asset classes. For example: at times, the US Large Company portion of your portfolio may exceed its target weighting relative to another asset class, such as International REITs. We rebalance to correct the deviation, and return each asset class to their target weight. This is done when an asset class is off the target by more than a pre-specified percentage. The extensive diversification of Empirical equity portfolios means that most of the difference in risk among balanced portfolios is best explained by exposure to stocks versus bonds: the focus of our research here.

Downturn Drift Rebalancing

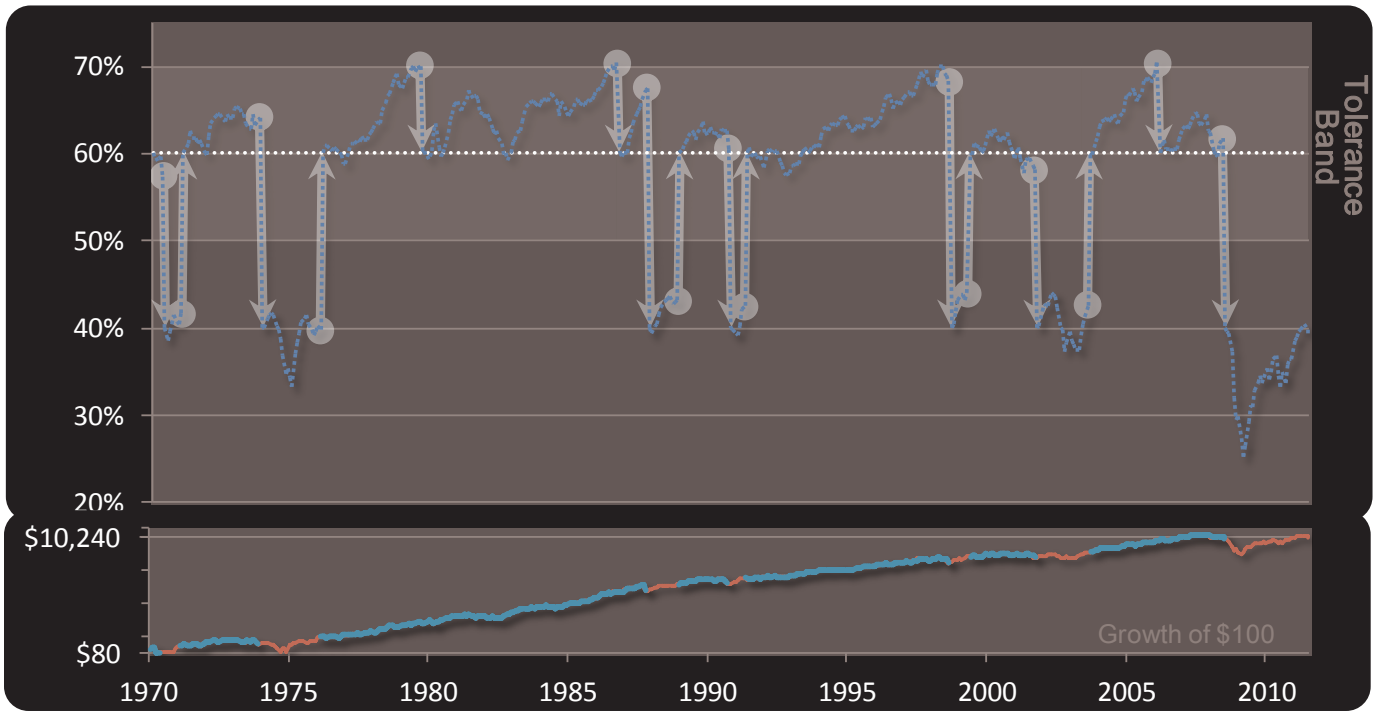
Compared to the Targeted Risk Rebalancing approach that allows the stock exposure to drift down by 10% before rebalancing, a more defensive method is to simply avoid buying stocks during a market downturn at all. As the market declines further, the portfolio becomes less aggressive because the stock exposure is not restored back to the target until after the market recovers. Instead, the investor lets the they may perceive as a painful task - buying more stocks during a market downturn. Additionally, this approach reduces the number of times the portfolio is rebalanced, thereby, potentially, reducing taxes and transaction costs.

Defensive Rebalancing

Another common investor response to a market downturn is moving to a more conservative allocation. We looked at the empirical record of portfolios that reduced equity allocation by 20% after a market decline of 15%. For example, a 60/40 stock/bond portfolio would move to a 40/60 allocation. The investor would not rebalance back to their target allocation until their equity model fully recovers. We call this strategy Defensive Rebalancing. **Figure 4** shows how this strategy would have worked since 1970 for a 60/40 portfolio. When the equity portfolio is down 15% (the start of the red periods), the portfolio is rebalanced to 40/60. The allocation remains there until the equity portfolio fully recovers, at which point it is rebalanced back to 60/40. Also, when the equity allocation rises above 70% it is rebalanced to 60%.

Figure 5 compares the Targeted Risk Rebalancing and Defensive Rebalancing strategies for a 60/40 portfolio. As is the case with the Downturn Drift Rebalancing strategy, the Defensive Rebalancing approach had lower risk and lower return. However, unlike the Downturn Drift Rebalancing approach, Defensive Rebalancing increases the amount of rebalancing, and by a significant amount. More rebalancing means more transaction costs and oftentimes more taxes. It is important to note that both strategies trade infrequently: the TRR strategy rebalances about every five years, while the Defensive Rebalancing strategy rebalances about every two

Figure 4: **Equity Allocation of 60/40 Portfolio Using Defensive Rebalancing**



Source: See full performance disclosure. Equity portfolio represents Empirical Targeted Premium 3 model portfolio net of 1% management fee.

and a half years.

For many investors, the difference in return between the Targeted Risk and Defensive Rebalancing strategies may seem negligible relative to the decrease in risk. It appears that investors would be able to trade .51% of annual return in exchange for significantly more downside protection if choosing the Defensive Rebalancing approach. While this is true over the long-term, it is important to remember that the Defensive Rebalancing approach produced $890,168 fewer dollars than TRR (that is $21,711 per year, for 41 years).

It is also important to be aware of situations where the Defensive Rebalancing strategy could do much worse than the average performance shown in **Figure 5**. This can occur when the stock market declines sharply, triggers the Defensive Rebalance, and then quickly rebounds. In this case, the Defensive Rebalancing strategy will hurt returns without decreasing risk. One example of this effect is during the downturn beginning in late 1990. For the year following August 1st, 1990, a Defensive Rebalancing 60/40 strategy would have performed 2.2% below the TRR approach. Equities only declined 16.2% during the downturn, therefore the Defensive Rebalancing Strategy had about the same decline as the TRR approach.

Lastly, it is important to remember that Defensive Rebalancing shifts money from stocks to bonds (not cash) as the 15% downside threshold is met. Since 1953, the average yield for 10 year treasuries is 6.27%. Today, the same bond is yielding only 1.99%. This means that as money is shifted to stocks from bonds during future market downturns, the returns we can expect from bonds should be lower than historical average, thus potentially increasing the difference in expected returns between this method and TRR going forward.

Figure 5: **Targeted Risk Rebalancing versus Defensive Rebalancing (1/1970 – 9/2011)**

60/40 Empirical Portfolio	Targeted Risk	Defensive
Annualized Return	9.85%	9.34%
Growth of $100,000	$5,056,976	$4,166,808
Worst Drawdown	-38.4%	-27.5%
Average of 5 Worst Drawdown's	-21.0%	-17.2%
Average Equity Exposure	62.9%	57.3%
Number of Rebalances	8	16

Source: See full performance disclosure. Net of 1% advisory fee.

Figure 6: **Targeted Risk Rebalancing versus Aggressive Rebalancing (1/1970 – 9/2011)**

30/70 Empirical Portfolio	Targeted Risk	Aggressive
Annualized Return	8.45%	8.78%
Growth of $100,000	$2,958,459	$3,362,653
Worst Drawdown	-17.4%	-30.9%
Average of 5 Worst Drawdown's	-11.0%	-16.0%
Average Equity Exposure	32.4%	37.0%
Number of Rebalances	7	13

Source: See full performance disclosure. Net of 1% advisory fee.

Aggressive Rebalancing

Another possible strategy is to increase the equity allocation during a downturn rather than decrease it. We examined an approach where an investor increases their equity allocation by 30% after equities decline more than 20%. For example, a 30/70 stock/bond portfolio would move to a 60/40 allocation. The investor does not rebalance back to their target allocation until their equity model fully recovers. **Figure 6** compares this strategy (called Aggressive Rebalancing) versus TRR for a 30/70 portfolio since 1970. In contrast to the Downturn Drift and Defensive Rebalancing strategies, Aggressive Rebalancing had both higher risk and higher returns.

Conclusion

We believe most investors would agree that all of the aforementioned rebalancing methods have acceptably good performance. Therefore, it may be easy to lose sight of some of the other fundamental principles that are part of a successful investment strategy. We need to keep in mind the two main reasons why these rebalancing strategies work so well:

1. All strategies assume a globally diversified portfolio was maintained through all market cycles.
2. All strategies require discipline in executing the strategy systematically through all market cycles.

Even the best strategies will fail to achieve the desired result if these two fundamental principals are forgotten. While it can be tempting to chase hot stocks and sectors, or move in and out of the market at times, the issue is that there is no evidence that suggests these approaches work better. In fact the available evidence shows the opposite is true. This should be a significant source of comfort for investors since everyone has the tools required for success. We only need to use them to succeed.

Credit Enhanced Portfolios

Today's low Treasury yields have caused some investors to hesitate to use Treasury bonds in their portfolio. These investors are left to choose between taking on more maturity risk or additional credit risk to boost yields. It is important to maintain a diversified portfolio when searching for higher yields however. To this end Empirical has created four new bond models (in addition to the Standard Empirical Bond Model), called the Credit Enhanced Models, numbered C1 (lower risk) through C4 (highest risk). The average yield-to-maturities of the portfolios are shown in **Figure 7**. The models achieve higher yields by taking on credit risk, not interest rate risk. As you will see in **Figure 7**, the duration (interest rate risk) does not change much between the various portfolios. We also have models for investors with taxable accounts, and in the higher tax brackets (typically 28% or above) shown in **Figure 8**. Depending on the level of equity an investor is exposed to, the Standard Bond Model is the most appropriate fixed income strategy for most clients who view their fixed income as a safe haven from equity risk. However, for investors looking to increase risk and return without changing their equity allocation, the credit enhanced bond portfolios provide an efficient solution. In next quarter's letter we will provide an in-depth explanation of the fixed income portfolios and how we recommend they be used.

Figure 7: **Credit Enhanced Models (Taxable Bonds)**

Bond Model	Average Yield-to-Maturity	Adjusted Average Yield-to-Maturity	Duration (Interest Rate Risk)
Standard Bond Model	1.65%	1.45%	4.09
C1	2.26%	1.99%	4.82
C2	4.39%	3.44%	4.89
C3	5.75%	4.40%	4.62
C4	6.47%	4.98%	4.88

Source: See full performance disclosure. Adjusted Average Yield-to-Maturity reflects estimated defaults, fund expenses, and other factors that will affect investor returns. Yields as of 10/4/2011. Assumes average inflation rate of 2.4% for TIPS. Sources: Vanguard, iShares, SSGA, WisdomTree, PIMCO, Schwab and Morningstar.

Figure 8: **Credit Enhanced Models (Tax-Free Bonds)**

Bond Model	Tax-Equivalent Average Yield-to-Maturity	Tax-Equivalent Adjusted Average Yield-to-Maturity	Duration (Interest Rate Risk)
Standard Bond Model	2.39%	2.19%	4.11
C1	2.88%	2.64%	3.98
C2	3.90%	3.54%	4.35
C3	4.43%	3.99%	4.25
C4	4.88%	4.38%	4.59

Source: See full performance disclosure. Adjusted Average Yield-to-Maturity reflects estimated defaults, fund expenses, and other factors that will affect investor returns. Yields as of 10/4/2011. Assumes average inflation rate of 2.4% for TIPS. Sources: Vanguard, iShares, SSGA, WisdomTree, PIMCO, Schwab and Morningstar.

Should you have any questions or concerns about the topics discussed here please contact your Empirical Advisor.

Sincerely,

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Performance Disclosure

The investment returns are hypothetical model returns, not actual returns, and should not be interpreted as an indication of such performance. The portfolios were designed well after the beginning date of the performance time period. The purpose is to estimate how Empirical's model portfolios would have performed historically based on the best available data. These portfolios were created with the benefit of hindsight, and do not take into account actual market conditions and available knowledge that would have impacted an investment advisor's decisions. There is no indication that the back-tested results could, or would have been achieved by Empirical had the program been activated during the years presented.

Past performance may not be indicative of future performance. (Calculating historical model returns is a method of estimating the risk of investing strategies. However, capital markets are constantly changing and poor performance in the past is not a worst case scenario.) The investment strategy that the back-tested results were based upon can be changed at any time in order to show better performance, was based on hindsight and can continue to be tested and adjusted until the desired results are achieved. Some of the funds in the Empirical model portfolios were not in existence 10 years ago. Prior to a fund's inception month, the performance of a similar fund or index adjusted by the fund's expense ratio is used. Similar funds were selected based on the historical return and risk characteristics. The estimated expense ratio is deducted monthly. Portfolios are assumed to be rebalanced annually. Model portfolios do not include an allocation to cash. All performance data includes dividends. The model performance can be adjusted to include Empirical's management fees. Client returns will be reduced by the advisory fees and other expenses it may incur in the management of its investment advisory account. A list of Empirical's fees is available on Empirical's form ADV Part II. Taxes and trading costs are not included. When index performance is used, estimated mutual fund expenses are deducted from index performance each month. The estimate used is the expense ratio of the current fund in the Empirical portfolio. Since indexes do not represent actual portfolios, they do not include several important costs, such as trading costs within funds, market impact costs, bid/ask spreads and other factors, which negatively impact performance.

There is always the risk that an investor may lose money. Even a long-term investment approach cannot guarantee a profit. Economic, political, and issuer-specific events will cause the value of securities, and the portfolios that own them, to rise or fall. Because the value of your investment in a portfolio will fluctuate, there is a risk that you will lose money. The information provided herein should not be construed as a recommendation to purchase or sell any particular security or an assurance that any particular security held in a portfolio will remain in the portfolio or that a previously held security will not be repurchased. It should not be assumed that any of the security transactions or holdings discussed herein have been or will prove to be profitable or that future investment decisions will be profitable or will equal or exceed the investment performance of the securities discussed.

The model performance is provided net of Empirical's highest management fee of 1%. For example, the following table compares an account with a 1.00% management fee and an account with no management fee, each with an initial investment of $50,000, assuming an annual rate of return of 12% (for illustrative purposes only):

	Starting Value	After 1 Year	After 3 Years	After 5 Years
No Fee	$50,000	$56,000	$70,246	$88,117
1% Fee *	$50,000	$55,440	$68,160	$83,798

*Annual management fee of 1.00% of assets

Appendix A: 60/40 Portfolios Results Using Various Rebalancing Strategies (1/1970 – 9/2011)

60/40 Empirical Portfolio	Annual	Targeted Risk	Downturn Drift	Defensive	Aggressive
Annualized Return	9.77%	9.85%	9.74%	9.34%	10.17%
Growth of $100,000	$4,894,905	$5,056,976	$4,842,375	$4,166,808	$5,695,506
Worst Drawdown	-37.0%	-38.4%	-33.3%	-27.5%	-48.4%
Average of 5 Worst Drawdown's	-19.9%	-21.0%	-19.4%	-17.2%	-24.8%
Average Equity Exposure	60.8%	62.9%	61.4%	57.3%	67.2%
Number of Rebalances	41	8	5	16	13

Appendix B: Portfolio Results of Rebalancing Strategies for Various Equity Allocations (1/1970 – 9/2011)

Equity Allocation	Annual Rebalance		Targeted Risk		Downturn Drift		Defensive		Aggressive	
	Return	Risk*	Return	Risk*	Return	Risk*	Return	Risk*	Return	Risk*
30%	8.32%	-10.83%	8.45%	-10.95%	8.32%	-10.54%	7.90%	-8.72%	8.78%	-16.05%
40%	8.83%	-13.69%	8.85%	-13.97%	8.73%	-13.59%	8.44%	-10.96%	9.27%	-18.99%
50%	9.32%	-16.64%	9.33%	-16.86%	9.20%	-16.41%	8.92%	-13.84%	9.73%	-21.74%
60%	9.77%	-19.93%	9.85%	-20.96%	9.74%	-19.36%	9.34%	-17.22%	10.17%	-24.83%
70%	10.19%	-23.11%	10.08%	-23.45%	10.08%	-23.45%	9.91%	-19.94%	10.67%	-27.88%
80%	10.57%	-26.18%	10.54%	-26.22%	10.54%	-26.22%	10.22%	-23.41%	10.78%	-28.34%
90%	10.92%	-28.49%	10.99%	-30.50%	10.99%	-30.50%	10.63%	-26.21%	11.23%	-31.39%
	Rebalance to target equity allocation at the end of every year		Rebalance when equity allocation is more than 10% from target		Targeted Risk, except when the equity portfolio declines 15% and until it recovers: do not rebalance (drift)		Targeted Risk, except when the equity portfolio declines 15% and until it recovers: rebalance to 20% below target equity allocation and drift		Targeted Risk, except when the equity portfolio declines 20% and until it recovers: rebalance to 30% above target equity allocation and drift	

*Risk is the average of the 5 worst drawdown's
Source: See full performance disclosure