

“The Economy Neutral Folio”

Prepared Specially for FOLIO^{fn} Investments, Inc.
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The Economy Neutral Folio

Summary

FOLIO^{fn} has developed a Ready-To-Go-Folio, the *Economy Neutral Folio*, which is a portfolio of individual stocks that has historically been quite insensitive to swings in the broader market.

Investors can combine the *Economy Neutral Folio* in varying amounts with a market index fund to manage the degree to which their portfolios are influenced by movements in the broader market. The cases discussed here have performed well during periods of higher volatility in the last fifteen years. Of course, there is no guarantee that this type of portfolio will continue to perform as it has in the past.

Background

It is not uncommon for the domestic and international equity markets to exhibit extended periods of volatility that are either substantially above or substantially below the long-term average. The period from 1999 through 2002 was one of high market volatility, while the period from 2004 through 2006 was one of very low volatility. During periods of low volatility, investors tend to become somewhat complacent and take on risk (and debt) more liberally. Complacency in taking on risk then raises the potential for substantial losses. Periods of low volatility are the precursor to future high volatility. There is a financial theory that examines this, Minsky's Financial Instability Hypothesis, which is explained in a recent article from *The Economist*¹. This article notes that during this most recent period of low volatility, many investors believed that volatility had been permanently conquered. The rise of volatility in the last half of 2007 demonstrated that this is not the case. History and Minsky's theory suggest that these large swings in volatility are a natural part of the investing landscape.

There is a standard measure of volatility for the S&P500 called VIX (ticker: ^VIX)². VIX is principally used by options traders, but the awareness of VIX among individual investors and financial planners is growing³. VIX measures the volatility that option investors expect in the S&P500. The prices of options are largely determined by the expected future volatility of the underlying (in this case the S&P500). VIX measures this *implied volatility* using options that expire soon. Implied volatility tracks recent historical volatility fairly well, too. VIX is reported as a number. High VIX means high volatility and vice versa.

¹ http://www.economist.com/finance/displaystory.cfm?story_id=10498937

² <http://seekingalpha.com/article/11098-why-volatility-index-vix-is-important-for-asset-allocation-etf-spy>

³ <http://www.kiplinger.com/magazine/archives/2008/02/interview.html>

Testing a portfolio's sensitivity to VIX can be very interesting, particularly in periods when substantial shifts in market volatility are occurring. Portfolios that have the potential to do well during periods of high market volatility can be designed using forward-looking models⁴ and by looking at different asset allocations during historical periods of high volatility and periods of low volatility.

FOLIO^{fn} has created a portfolio that is specifically designed to fare well in both high and low volatility markets. This portfolio, which we call the *Economy Neutral* Folio, is the subject of this memorandum.

Why Use This Folio?

Investors need to plan for a range of levels of market volatility, rather than becoming too aggressive when volatility is low and the reflexively becoming too conservative when volatility gets high. The *Economy Neutral* Folio is designed to provide relatively consistent performance in high-volatility markets and in low-volatility markets. These types of portfolio may not gain as much in rising market conditions, but they have historically tended to generate steadier returns in volatile markets than portfolios that more closely track the broader market.

How This Folio Works.

There are asset allocations that have historically tended to perform well in higher volatility environments⁵, and it is fairly straightforward to develop a portfolio that has not exhibited strong responses to market volatility (as measured by VIX). There are standard statistical measures that measure volatility of a portfolio (Beta and R-squared). Some sectors that have historically been fairly indifferent to what the market as a whole does. People tend to use just as many Q-tips and toothpaste when the market is going down as when it is going up, so companies like Johnson and Johnson (JNJ), Colgate-Palmolive (CL), and Walgreens (WAG) tend not to be impacted as much when the market gets volatile or heads down. The same is true for consumer products like mass-market beer (BUD) and processed meats such as those produced by Hormel (HRL). Energy utilities (SO, PEG, D) also tend to have fairly steady performance because it is hard to cut back demand for electricity and natural gas. Less obvious perhaps, insurers may be stable in volatile markets, too (SAF, AFL, PGR). These types of stocks can be combined into a portfolio that tends to fare well during periods of high volatility.

⁴<http://seekingalpha.com/article/34635-preparing-for-a-volatility-shock>

⁵<http://seekingalpha.com/article/11325-managing-increasing-market-risk>

The Economy Neutral Folio

The types of companies described above can be identified by screening for historical statistical properties, and we have assembled a model portfolio of these stocks for a model portfolio (below). We call this the ***Economy Neutral Folio***, because these stocks historically exhibit low sensitivity to the swings in the S&P500.

Name	Ticker	Percentage of Funds
LOCKHEED MARTIN CP	LMT	5%
ABBOTT LABORATORIES	ABT	6%
COLGATE PALMOLIVE	CL	5%
WALGREEN CO	WAG	5%
VALERO	VLO	5%
JOHNSON AND JOHNS DC	JNJ	5%
AFLAC	AFL	6%
PUB ENTRPR GP	PEG	5%
HORMEL	HRL	5%
ANHEUSER BUSCH	BUD	5%
WAL MART STORES	WMT	5%
ARCHER DANIELS MDLND	ADM	6%
PEPSICO INC	PEP	5%
UNITEDHEALTH GROUP	UNH	6%
DOMINION RES NEW	D	5%
SAFECO	SAF	6%
SOUTHERN CO	SO	5%
GLAXOSMITHKLINE PLC	GSK	5%
PROGRESSIVE CP	PGR	5%

The Economy Neutral Folio

In addition to the above, it is possible to build portfolios that have historically mitigated responsiveness to market volatility in this manner, while still retaining exposure to the broad S&P500 index. In other words, by combining these stocks with an S&P500 fund, the portfolio's sensitivity to market volatility can be 'tuned.' This type of portfolio provides the added diversification of owning the entire S&P500, with some concentrated stock positions that tend to partially de-couple the portfolio from the volatility in the S&P500.

The two model portfolios below show a variation on the Economy Neutral Folio by combining the stocks above with a substantial exposure to the S&P500 via an index ETF such as IVV or SPY. We will use these as illustrative examples in the analysis.

Name	Ticker	Percentage of Funds
S&P500 Index	IVV / SPY	38%
LOCKHEED MARTIN CP	LMT	3%
ABBOTT LABORATORIES	ABT	4%
COLGATE PALMOLIVE	CL	3%
WALGREEN CO	WAG	3%
VALERO	VLO	3%
JOHNSON AND JOHNS DC	JNJ	3%
AFLAC	AFL	4%
PUB ENTRPR GP	PEG	3%
HORMEL	HRL	3%
ANHEUSER BUSCH	BUD	3%
WAL MART STORES	WMT	3%
ARCHER DANIELS MDLND	ADM	4%
PEPSICO INC	PEP	3%
UNITEDHEALTH GROUP	UNH	4%
DOMINION RES NEW	D	3%
SAFECO	SAF	4%
SOUTHERN CO	SO	3%
GLAXOSMITHKLINE PLC	GSK	3%
PROGRESSIVE CP	PGR	3%

38% S&P500 Volatility Managed Portfolio

Name	Ticker	Percentage of Funds
S&P500 Index	IVV/SPY	57%
LOCKHEED MARTIN CP	LMT	2%
ABBOTT LABORATORIES	ABT	3%
COLGATE PALMOLIVE	CL	2%
WALGREEN CO	WAG	2%
VALERO	VLO	2%
JOHNSON AND JOHNS DC	JNJ	2%
AFLAC	AFL	3%
PUB ENTRPR GP	PEG	2%
HORMEL	HRL	2%
ANHEUSER BUSCH	BUD	2%
WAL MART STORES	WMT	2%
ARCHER DANIELS MDLND	ADM	3%
PEPSICO INC	PEP	2%
UNITEDHEALTH GROUP	UNH	3%
DOMINION RES NEW	D	2%
SAFECO	SAF	3%
SOUTHERN CO	SO	2%
GLAXOSMITHKLINE PLC	GSK	2%
PROGRESSIVE CP	PGR	2%

57% S&P500 Volatility Managed Portfolio

How have these portfolios performed? In the table below, we show five three-year historical periods, and the performance of these portfolios compared to the return on the S&P500 and market volatility (measured by VIX). The average VIX statistics are

calculated from monthly closing values. Note that high volatility can occur during periods of higher average return for the S&P500 (1996-1998) as well as during periods of lower average returns (1999-2001).

Period	Average Annual Return				Average VIX
	0% S&P500	38% S&P500	57% S&P500	Return on S&P500	
1993-1995	17%	16%	16%	15%	13
1996-1998	28%	27%	27%	26%	22
1999-2001	17%	10%	7%	-1%	24
2002-2004	12%	10%	8%	5%	21
2005-2007	14%	12%	11%	10%	14

Historical Returns vs. VIX for three-year periods

Let us first examine the portfolio of individual stocks, with 0% allocation to the S&P500 index (**0% S&P500** above). During periods of high market returns (1996-1998), this portfolio generates returns slightly better than the S&P500. During the market decline in 1999-2001, this portfolio substantially out-performed the S&P500, generating 17% in average annual return.

As we look at the various mixes of these stocks with an S&P500 index fund (38% S&P500 and 57% S&P500), the broad benefits of this portfolio are maintained at a proportionately diluted level.

Period	Volatility (Annualized Standard Deviation in Return)				Average VIX
	0% S&P500	38% S&P500	57% S&P500	S&P500	
1993-1995	9%	9%	8%	8%	13
1996-1998	16%	16%	16%	16%	22
1999-2001	16%	13%	13%	17%	24
2002-2004	10%	11%	12%	15%	21
2005-2007	5%	5%	5%	8%	14

Historical volatility vs. VIX for three-year periods

The higher returns from the ***Economy Neutral Folio*** and from the portfolios that mix the stocks with an S&P500 index fund are not due to higher volatility (see table above). Note the very close relationship between the volatility of the S&P500 over the three-year periods and the average VIX.

We can also look at the response of this portfolio to VIX by going down to a monthly resolution. The tables below show all months in the period from 1997-2007, sorted by the closing value of VIX for the month. These are compared to an S&P500 index fund, VFINX.

Variable	VIX<15 portfolio	VIX<15 VFINX	15=<VIX<20 portfolio	15=<VIX<20 VFINX	20=<VIX<25 portfolio	20=<VIX<25 VFINX	25=<VIX portfolio	25=<VIX VFINX
# of Months	65	65	40	40	45	45	29	29
Average Monthly Return	1.7%	1.6%	1.5%	1.6%	1.6%	0.7%	0.6%	-1.3%
5th Percentile Monthly Return	-1.8%	-2.4%	-2.3%	-3.3%	-4.6%	-5.6%	-6.7%	-10.2%

0% S&P500 Portfolio (1993-2007)

The majority of months in our 15-year period have VIX at or below 15 (there are 65 months in this period at this level). At these volatility levels, the Economy Neutral Folio (marked as *portfolio* in the table) generated about the same monthly average return as the S&P500. The worst 5% of monthly returns are not as extreme in the Economy Neutral Folio (*portfolio*) as in the index fund (*VFINX*). The same effect is seen at the next higher level of VIX (between 15 and 20). As VIX gets higher, however, the average monthly return of VFINX drops dramatically---becoming negative for VIX levels above 25. The average returns from the Economy Neutral Folio also decline, but manage to remain above zero even in the very high volatility months. Further, the worst 5th percentile of months (the worst 1-in-20) is far less severe in the portfolio of stocks than in the S&P500.

Variable	VIX<15 portfolio	VIX<15 VFINX	15=<VIX<20 portfolio	15=<VIX<20 VFINX	20=<VIX<25 portfolio	20=<VIX<25 VFINX	25=<VIX portfolio	25=<VIX VFINX
# of Months	65	65	40	40	45	45	29	29
Average Monthly Return	1.6%	1.6%	1.6%	1.6%	1.3%	0.7%	-0.1%	-1.3%
5th Percentile Monthly Return	-1.4%	-2.4%	-2.4%	-3.3%	-4.2%	-5.6%	-6.6%	-10.2%

38% S&P500 Portfolio (1993-2007)

Variable	VIX<15 portfolio	VIX<15 VFINX	15=<VIX<20 portfolio	15=<VIX<20 VFINX	20=<VIX<25 portfolio	20=<VIX<25 VFINX	25=<VIX portfolio	25=<VIX VFINX
# of Months	65	65	40	40	45	45	29	29
Average Monthly Return	1.6%	1.6%	1.6%	1.6%	1.1%	0.7%	-0.5%	-1.3%
5th Percentile Monthly Return	-1.6%	-2.4%	-2.7%	-3.3%	-4.4%	-5.6%	-7.3%	-10.2%

57% S&P500 Portfolio (1993-2007)

As the Economy Neutral Folio (*portfolio* in the table above) is blended with the S&P500 index fund, the same effects are present.

The analysis above looks at the historical performance of three asset allocations which combine individual stocks with an index fund. These portfolios have performed notably better than the S&P500 during periods of elevated VIX.

We can do more than just looking backwards, however. Using the past fifteen years of history, we have used a forward-looking Monte Carlo simulation to project future returns

and volatility (*Projected* results are from Monte Carlo and are a forward-looking projection driven by data from 1993-2007):

	1993-2007	
	57% S&P500	100% S&P500
Historical Average Return	14%	11%
Projected Average Annual Return	11%	8%
Historical Standard Deviation	12%	14%
Projected Standard Deviation	13%	15%

Historical and projected performance of S&P500 vs. 57% S&P500 portfolio

The forward-looking model combines historical data from fairly recent periods with long-term projections for the equity risk premium, and the amount of additional return that investors can expect from equities vs. risk-free investments. The projected results are for long-term performance for the period from 2008 and beyond, using the period from 1993-2007 as an input along with other assumptions and statistics. The results may vary depending on the historical period chosen.

The mixed portfolio with 57% in the S&P500 is projected to generate higher returns than the S&P500, with less volatility, consistent with historical performance. The model is projecting that the out-performance of the mixed portfolio is due to superior diversification benefits rather than simply being due to recent out-performance in these asset classes. The projected average returns from both the mixed portfolio and the S&P500 are about 3% per year lower than the historical average returns. The projected average volatilities of both portfolios are higher than the historical average. Readers should understand that expected future return is not what an investor will necessarily receive—it is a projected average of all possible future outcomes. The other mixes (0% S&P500 and 38% S&P500) yield consistent forward-looking performance advantages, with increasing volatility and increasing projected return as the percentage allocation to the S&P500 decreases. Increased concentrations to individual stocks, which occurs as the allocation to the S&P500 decreases, increases an investor’s risk of bankruptcy or major financial problems at a single company (i.e. stock specific risk), and we have not accounted for this source of risk. These statistics are presented for all three portfolios in Appendix A, for side-by-side comparison.

In interpreting any projections, the reader must be aware that all portfolio models that project statistical properties of future performance are highly approximate and rely upon a range of assumptions about the future that may or may not be accurate.

Recall that the three portfolios (the *Economy Neutral Folio*, 38% in the S&P500 index, and 57% in the S&P500 index) have beaten the S&P500 in each of the five three-year periods included in this, as shown earlier. As an additional feature, the degree to which the portfolio of stocks is driven by the market is low and is generally declining over time (see table below).

Period	R ²	Beta	Average VIX
1993-1995	69%	92%	13
1996-1998	77%	86%	22
1999-2001	8%	26%	24
2002-2004	51%	45%	21
2005-2007	5%	15%	14

Historical R² and Beta for stock portfolio (0% in S&P500 index)

Beta is the factor that determines how much a portfolio tends to react to moves in the S&P500. Beta less than 100% means that the portfolio tends to move less than 1% for a 1% moves in the S&P500. Low (positive) Beta means that a portfolio is fairly unresponsive to the S&P500. R² (read *R-squared*) measures the degree to which moves in the S&P500 can explain the moves in the portfolio. If R² is 50%, this means that only 50% of the variability in the portfolio can be explained by moves in the S&P500. These statistics are presented for all the portfolios in Appendix B, for side-by-side comparison.

Conclusion

The Economy Neutral Folio is designed to endure periods of high market volatility without mirroring the losses in the major indexes. This Folio is an example of a set of classic defensive stocks, with the overall portfolio enhanced by selecting components that generated considerable diversification benefit.

About FOLIO^{fn} and Quantext

FOLIO^{fn}'s unique, patented Folio Investing offering (www.folioinvesting.com) represents the next generation in investing, after mutual funds and Exchange Traded Funds (ETFs). Folio Investing enables investors both to create their own Folios, much like creating a personalized ETF or mutual fund, or choose from many Ready-To-Go Folios representing different market indices, sectors, geographies, asset classes and investment strategies. Folios provide significant tax efficiencies, customization, and transparency, while allowing for cost-effective diversification. Folios can hold individual stocks, mutual funds, and ETFs. Folios can be managed or unmanaged and are offered by FOLIO^{fn} Investments, Inc, a registered broker dealer, and are not registered investment companies.

FOLIO^{fn}'s comprehensive, state-of-the-art institutional platform (www.folioadvisor.com) is used by more than 150 registered investment advisory firms, brokerages and financial institutions. FOLIOAdvisor integrates advanced technology and clearing brokerage capabilities and is offered through FOLIO^{fn} Institutional, a division of FOLIO^{fn} Investments, Inc. FOLIOAdvisor utilizes the proprietary and patented FOLIO trading platform in an easy-to-use, Web-based trading system that enables advisors and



institutions to customize portfolios of securities (Folios) that can be bought, modified and sold in a single transaction across thousands of clients and accounts.

Quantext is an independent firm that acts as a strategic adviser to FOLIOfn, Inc.

Appendix A: Historical and Modeled Average Return and Standard Deviation in Return for Model Portfolios

	1993-2007	
	57% S&P500	100% S&P500
Historical Average Return	14%	11%
Projected Average Annual Return	11%	8%
Historical Standard Deviation	12%	14%
Projected Standard Deviation	13%	15%

	1993-2007	
	38% S&P500	100% S&P500
Historical Average Return	15%	11%
Projected Average Annual Return	12%	8%
Historical Standard Deviation	11%	14%
Projected Standard Deviation	13%	15%

	1993-2007	
	0% S&P500	100% S&P500
Historical Average Return	17%	11%
Projected Average Annual Return	15%	8%
Historical Standard Deviation	12%	14%
Projected Standard Deviation	15%	15%

Appendix B: Historical Beta and R-Squared for Model Portfolios

57% in S&P500			
Period	R ²	Beta	Average VIX
1993-1995	93%	96%	13
1996-1998	96%	95%	22
1999-2001	75%	68%	24
2002-2004	95%	77%	21
2005-2007	83%	63%	14

38% in S&P500			
Period	R ²	Beta	Average VIX
1993-1995	86%	95%	13
1996-1998	91%	92%	22
1999-2001	48%	54%	24
2002-2004	86%	66%	21
2005-2007	57%	47%	14

0% in S&P500			
Period	R ²	Beta	Average VIX
1993-1995	69%	92%	13
1996-1998	77%	86%	22
1999-2001	8%	26%	24
2002-2004	51%	45%	21
2005-2007	5%	15%	14