

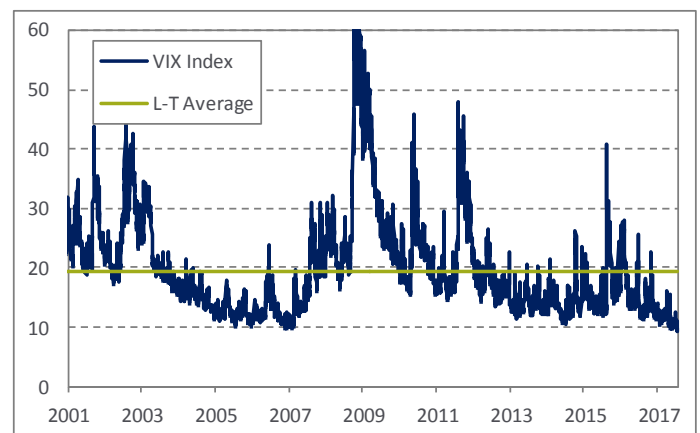
NEPC is an independent, full-service investment consulting firm, providing asset allocation, traditional and alternative asset manager search, performance evaluation and investment policy services to institutional investment programs and private clients. We offer our Market Thoughts to provide insight into recent market conditions, and to assist your interpretation of investment results. We encourage your comments and feedback, as well as any inquiries you may have about our firm or our consulting services.

LOW VOLATILITY DEMYSTIFIED: THE NEXT CHAPTER FOR INVESTORS

Introduction

Equities continued their march forward in the second quarter, undeterred by bickering in the White House, political upheaval across the pond, and unrest in the Middle East. Even the prospect of the Federal Reserve reigning in its crisis-era fueled balance sheet failed to dampen investors' appetite for risk assets. Emerging markets and non-US developed equities returned over 6% for the three months ended June 30, and are up 18% and 14%, respectively, so far this year. At home, the S&P 500 Index moved 3% higher in the second quarter, returning more than 9% for the year. Other risk assets were also in the black: domestic high-yield bonds rallied with credit spreads falling below long-term averages; emerging-market local debt recorded gains of over 10% this year.

Exhibit 1: VIX Index



Source: Bloomberg

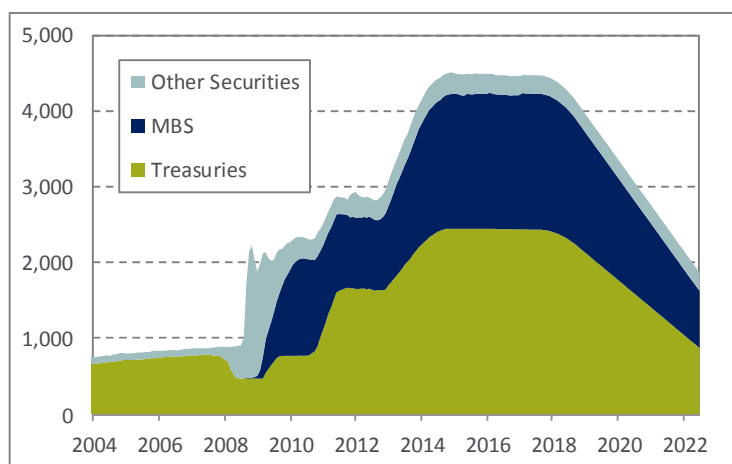
Expanding valuations have been the driver of recent returns in US equities and, with corporate profit margins scaling new heights, we maintain our recommendation for investors to trim gains from domestic stocks should markets continue to rally. We remain constructive on international equities and encourage an overweight to non-US developed stocks as corporate earnings recover in Europe. Emerging market equities are still appealing, notwithstanding their strong run over the past 12 months; we believe fundamentals support an overweight position relative to global index weights.

Within fixed-income markets, we advocate an allocation to Treasury Inflation-Protected Securities, or TIPS, favoring them over core bonds. We suggest reducing exposure to high-yield bonds, given the extent of spread tightening over the last 16 months. Our views underscore our philosophy of reducing exposure to assets that have outperformed expectations.

As risk assets climb new peaks, investors are also emboldened by the markedly low readings of volatility. In the US, the VIX, a prominent bellwether of market volatility, has dipped to new lows (Exhibit 1). Outside of US equities, the markets for other assets—ranging from European stocks and Treasuries, to currencies—are also experiencing historically low levels of volatility. It is a baffling equilibrium for many, including us, who are skeptical of the markets' tranquil outlook.

However, low market volatility may be somewhat explained by the extended US economic cycle, the so-far smooth transition of China's manufacturing economy to a service-oriented one, and the rise of an anti-establishment rookie politician in France who was voted to power by a disenchanting electorate. These events—part of NEPC's key themes for 2017—have provided a market-friendly backdrop for global equities and other risk assets. Adding to the market's complacency is the

Exhibit 2: Projected Federal Reserve Balance Sheet (\$ Billions)



Source: Bloomberg

the market expects the central bank to begin shrinking its balance sheet in the fourth quarter. Based on the Fed’s outline, its holdings would decline to about \$2 trillion over five years (Exhibit 2) but the Fed still holds the option to deviate from its plan to reduce its balance sheet. Nevertheless, it is clear that the vast and unprecedented amounts of global liquidity, which have been a constant since the financial crisis, are on the decline. The withdrawal of this excess from markets, no matter how gradual, does not reconcile with the persistence of today’s subdued market variability and will likely give rise to volatility in the coming years.

Finding investment strategies and approaches to asymmetrically exploit this rising market volatility will be exceedingly challenging. To this end, we emphasize a basic and sound investment concept: arm yourself with a diversified and risk-balanced portfolio to weather the inevitable return of volatility.

Global Equity Markets

Global equities recorded another quarter of gains amid a solid corporate earnings season and generally positive economic data. Similar to the first quarter, growth stocks outperformed value and large-cap stocks bested small-cap equities.

The S&P 500 Index returned 3.1% despite some mixed economic data and political uncertainty around the ability of the White House to push through its policies. Healthcare stocks rallied as the Senate proposed a new industry-friendly plan to reform the nation’s healthcare system.

Non-US developed markets posted gains of 6.1%, according to the MSCI EAFE Index. France and Switzerland led the pack with gains of around 9.0%, while Australia lagged with losses of 1.9%. The euro’s appreciation versus the US dollar remained a tailwind for US dollar-centric investors.

Emerging market equities led the fray with gains of 6.3%, according to the MSCI EM Index. China, Korea and Taiwan were the biggest winners with returns of

Fed, which has been sticking to its measured pace of well-telegraphed rate hikes; this gradual pace of tightening monetary policy is another of our key market themes.

To be sure, periods of subdued volatility have gone hand-in-hand with the Fed’s extraordinary quantitative easing programs that were undertaken in the aftermath of the financial crisis. The current low volatility is reminiscent of the levels seen at the height of the Fed’s accommodative policies. That said, it is puzzling that market volatility has fallen even further following the Fed outlining its plan to reduce its \$4.2 trillion balance sheet holdings of Treasuries and mortgage-backed securities amassed since the crisis. While the Fed is yet to announce a start date, the

Global Equity Market Returns as of 06/30/2017				
Global Equity	Quarter	1 Year	3 Yrs	5 Yrs
MSCI ACWI	4.3%	18.8%	4.8%	10.5%
US Equity	Quarter	1 Year	3 Yrs	5 Yrs
S&P 500	3.1%	17.9%	9.6%	14.6%
Russell 1000 Growth	4.7%	20.4%	11.1%	15.3%
Russell 1000 Value	1.3%	15.5%	7.4%	13.9%
Russell 2000	2.5%	24.6%	7.4%	13.7%
Russell 2000 Growth	4.4%	24.4%	7.6%	14.0%
Russell 2000 Value	0.7%	24.9%	7.0%	13.4%
International Equity	Quarter	1 Year	3 Yrs	5 Yrs
MSCI EAFE	6.1%	20.3%	1.1%	8.7%
MSCI EAFE Hedged USD	2.7%	22.1%	7.0%	12.5%
MSCI EAFE Small Cap	8.1%	23.2%	5.6%	12.9%
MSCI Europe	7.4%	21.1%	-0.2%	8.8%
MSCI Japan	5.2%	19.2%	5.5%	9.6%
MSCI Emerging Markets	6.3%	23.7%	1.1%	4.0%
MSCI Emerging Markets Small Cap	2.6%	17.0%	0.8%	5.1%
Alternative	Quarter	1 Year	3 Yrs	5 Yrs
HFRI Equity Hedge	2.1%	12.3%	3.0%	6.3%
HFRI Emerging Markets	3.3%	14.5%	2.6%	5.1%
HFRI ED: Activist	2.6%	16.5%	6.4%	11.4%
HFRI ED: Merger Arbitrage	2.1%	6.6%	3.2%	3.6%
HFRI Short Bias	-1.0%	-11.9%	-2.3%	-8.2%

10.7%, 10% and 9.2%, respectively; Russia fell behind, losing 9.8%. Within sectors, information technology gained 15.5% and consumer discretionary returned 8.4%; energy lost 4.8% while utilities declined by 1.6%.

In private equity, fundraising remained robust at \$121 billion. While only 12% of buyout deals totaled \$1 billion or more, they accounted for 71% of aggregate value.

Equity strategies within hedge funds posted another strong quarter, gaining 2.1%, according to the HFRI Equity Hedge Index. Emerging markets led performance, returning 3.3%, according to the HFRI Emerging Markets Index. Healthcare and technology sectors contributed significantly to the overall index. Activist strategies finished the quarter at 2.6%, assisted by large-scale mergers and acquisitions activity in the auto and food industries. The HFRI ED: Special Situations Index was up 2.6% as managers looked for opportunities with less systematic risk.

Global Fixed Income Market Returns as of 06/30/2017				
Global Fixed Income	Quarter	1 Year	3 Yrs	5 Yrs
BC Global Aggregate	2.6%	-2.2%	-0.4%	0.8%
BC Global Aggregate (USD Hedged)	1.0%	-0.4%	3.3%	3.3%
JPM EMBI Plus	2.4%	3.7%	4.8%	5.0%
JPM GBI-EM Global Diversified	3.6%	6.4%	-2.8%	-0.7%
Domestic Fixed Income	Quarter	1 Year	3 Yrs	5 Yrs
BC Aggregate Bond	1.4%	-0.3%	2.5%	2.2%
BC Municipal Bond	2.0%	-0.5%	3.3%	3.3%
BC TIPS	-0.4%	-0.6%	0.6%	0.3%
BC US Treasury	1.2%	-2.3%	2.0%	1.3%
BC US Long Treasury	4.0%	-7.2%	5.6%	2.8%
BC MBS	0.9%	-0.1%	2.2%	2.0%
BC US Credit	2.4%	1.8%	3.4%	3.7%
BC US Long Credit	4.7%	3.0%	5.3%	5.3%
BC High Yield	2.2%	12.7%	4.5%	6.9%
BC Muni High Yield	2.0%	1.2%	5.6%	5.2%
S&P LSTA Lev. Loan	0.8%	7.4%	3.4%	4.6%
BC T-Bills	0.2%	0.5%	0.3%	0.2%
Alternative	Quarter	1 Year	3 Yrs	5 Yrs
HFRI Credit Index	1.0%	10.0%	3.1%	5.8%
HFRI ED: Credit Arbitrage	1.0%	11.7%	3.1%	5.3%
HFRI ED: Distressed/Restructuring	0.9%	15.2%	0.8%	5.8%
HFRI Relative Value	0.5%	7.7%	3.1%	5.4%

Global Fixed-Income Markets

Fixed income gained 1.4% in the second quarter, according to the Barclays Aggregate Index, bringing the index's year-to-date performance to 2.3%. High-yield debt outperformed bank loans, returning nearly 5% so far this year compared to 2% for bank loans.

Emerging markets debt in hard currency gained 2.4% in the second quarter; local currency-denominated securities outperformed, up 3.6%, fueled by a boost to emerging market currencies (which returned 1.9% in the quarter), bringing total returns for the JP GBI-EM Index to over 10% in 2017. We remain positive on emerging market debt, especially local-currency denominated issues. We favor leveraged loans to high-yield bonds from a relative value standpoint.

In private debt, fundraising totaled \$16 billion. In private lending, the US core-middle market offers attractive risk-adjusted returns, given the stage of the credit cycle. With European banks still exiting leveraged loans due to regulatory pressures, the manager universe in Europe has become tiered with stronger managers enjoying superior deal flow and performance.

Within hedge funds, relative-value strategies posted moderate gains as rates increased and US yields were little changed. Credit spreads are tight, and while markets remain on a benign trajectory, there are some pockets of opportunity in structured securities. The HFRI Relative Value Index was up 0.5% for the quarter while the HFRI Distressed/Restructuring Index eked out a modest 0.9% as default rates remain stable.

Real Assets

Commodities continued to retreat, declining 3% in the second quarter, according to the Bloomberg Commodity Index. Natural gas fell 9.4% as increased production and cooler than seasonal weather reduced demand for power. Precious metals decreased by 3.2% amid tepid desire for safe haven assets. Industrial metals, down 1.2%, were affected by concerns of slowing demand in China. In agriculture, weather in the Northern US plains supported Kansas City and Chicago wheat, while conditions in Brazil hindered sugar and coffee. Lean hogs led performance in livestock, which gained 11.2%.

Energy fell 9.7%. North American shale production offset the effects of OPEC's extension of production cuts, fueling declines of 9.0% and 9.3%, respectively, in WTI crude and Brent crude. Within energy, our highest-conviction strategies remain in private equity as these managers appear best equipped to invest and manage assets amid what we believe will be a choppy recovery. We still believe asset selection is critical in energy; in the public markets, we favor Master Limited Partnerships, or MLPs, which have exhibited resilient cash flows.

We are constructive on mining over the mid-to-longer-term and are actively seeking infrastructure opportunities; however, the impact of federal legislation remains uncertain. We remain positive on energy, negative on timber, and neutral on agriculture, infrastructure and metals and mining.

In real estate, US core property markets have normalized, but fundamentals remain healthy. Future value appreciation will likely come from income growth as opposed to cap-rate compression, which remains at historical lows. Rising interest rates will place upward pressure on cap rates but we expect growth, although at a slower pace, as capital flows chase income-yielding core assets in the United States. Relative value opportunities remain within non-core US real estate. We favor niche, cash flow-driven strategies, and managers that are attentive to duration risk given the current stage of the expansion cycle. Elsewhere, capital markets constraints and pockets of distress in Europe and emerging markets may be appealing.

Final Thoughts

Typically, volatility is a gauge measuring market risk. The present levels are outside the range of what many would consider normal. While investor complacency and comfort may characterize US markets today, the future is less obvious. It is exceedingly difficult to anticipate changes in market volatility and history shows that low volatility is a phenomenon that can last for many years. With this in mind, we believe commitment to a fundamental outlook is the best course. To this end, we recommend trimming gains in US equities as markets continue to rally; in fixed income, we suggest reducing exposure to high-yield bonds as credit spreads have fallen below long-term averages. Outside the US, we encourage investors to embrace the opportunities available in international stocks and maintain an overweight position in developed and emerging equities. Amidst the calm of global markets, we remind investors that duration exposure remains a critical building block in the asset allocation process and provides exposure to a safe haven in times of market stress. To this end, we prefer US TIPS over core bonds. Additionally, this period of historically low market volatility is an opportune time to emphasize that a risk-balanced approach is the foundation of our investment philosophy and an appropriately diversified portfolio is best equipped to weather increases in market volatility.

Disclaimers and Disclosures

- Past performance is no guarantee of future results.
- The information in this report has been obtained from sources NEPC believes to be reliable. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.
- The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.
- This report contains summary information regarding the investment management approaches described herein but is not a complete description of the investment objectives, portfolio management and research that supports these approaches. This analysis does not constitute a recommendation to implement any of the aforementioned approaches.

Real Asset Returns as of 06/30/2017				
	Quarter	1 Year	3 Yrs	5 Yrs
Bloomberg Commodity	-3.0%	-6.5%	-14.8%	-9.2%
GSCI Commodity	-4.1%	-0.4%	-17.3%	-9.1%
Gold Spot	-0.6%	-6.1%	-2.2%	-4.9%
WTI Crude Oil Spot	-9.0%	-4.7%	-24.1%	-11.5%
BBG Commodity - Agriculture	-0.4%	-13.0%	-10.3%	-8.6%
BBG Commodity - Energy	-9.7%	-14.8%	-31.8%	-17.4%
BBG Commodity - Industrial Metals	-1.2%	17.5%	-5.7%	-4.7%
BBG Commodity - Precious Metals	-3.2%	-8.4%	-4.2%	-6.9%
S&P Global Natural Resource Equities	-1.1%	14.7%	-5.3%	0.0%
NAREIT Composite Index	2.4%	1.5%	8.8%	9.8%
NAREIT Global REIT Ex US	0.6%	-5.8%	1.2%	-
Alerian MLP	-6.4%	0.4%	-11.2%	1.8%