

# Q4

## Quarterly Market Review Fourth Quarter 2016



# Quarterly Market Review

Fourth Quarter 2016

This report features world capital market performance and a timeline of events for the past quarter. It begins with a global overview, then features the returns of stock and bond asset classes in the US and international markets.

The report also illustrates the impact of globally diversified portfolios and features a quarterly topic.

## Overview:

Market Summary

World Stock Market Performance

World Asset Classes

US Stocks

International Developed Stocks

Emerging Markets Stocks

Select Country Performance

Select Currency Performance vs. US Dollar

Real Estate Investment Trusts (REITs)

Commodities







Fixed Income

Impact of Diversification

Quarterly Topic: The Power of Markets

# Market Summary

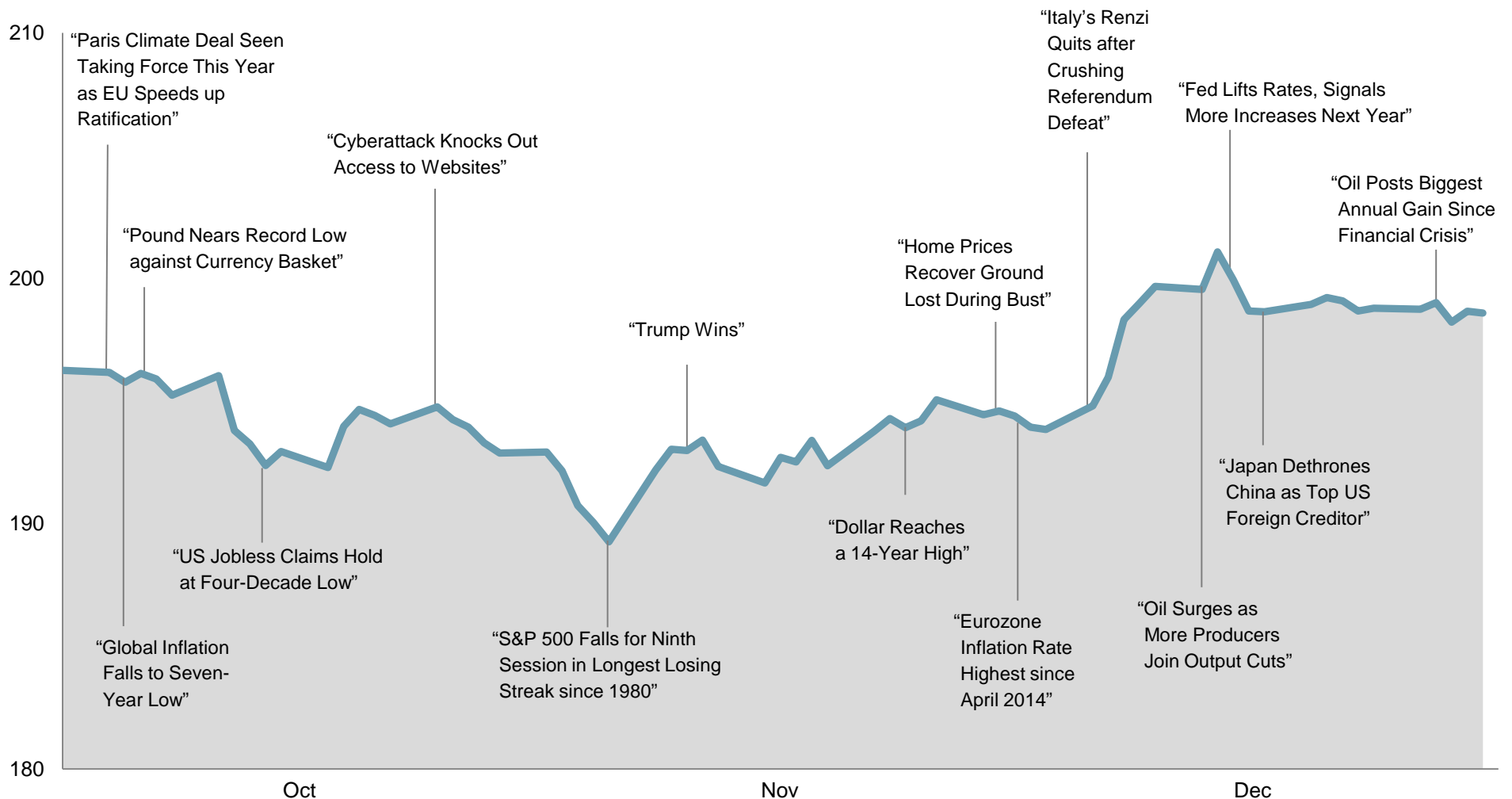
## Index Returns

	US Stock Market	International Developed Stocks	Emerging Markets Stocks	Global Real Estate		US Bond Market	Global Bond Market ex US
<b>4Q 2016</b>	<b>STOCKS</b>					<b>BONDS</b>	
	<b>4.21%</b> 	<b>-0.36%</b> 	<b>-4.16%</b> 	<b>-5.11%</b> 		<b>-2.98%</b> 	<b>-2.21%</b> 
<b>Since Jan. 2001</b>							
Avg. Quarterly Return	1.8%	1.3%	2.9%	2.7%		1.2%	1.1%
Best Quarter	16.8% <b>Q2 2009</b>	25.9% <b>Q2 2009</b>	34.7% <b>Q2 2009</b>	32.3% <b>Q3 2009</b>		4.6% <b>Q3 2001</b>	5.5% <b>Q4 2008</b>
Worst Quarter	-22.8% <b>Q4 2008</b>	-21.2% <b>Q4 2008</b>	-27.6% <b>Q4 2008</b>	-36.1% <b>Q4 2008</b>		-3.0% <b>Q4 2016</b>	-3.2% <b>Q2 2015</b>

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: US Stock Market (Russell 3000 Index), International Developed Stocks (MSCI World ex USA Index [net div.]), Emerging Markets (MSCI Emerging Markets Index [net div.]), Global Real Estate (S&P Global REIT Index [net div.]), US Bond Market (Bloomberg Barclays US Aggregate Bond Index), and Global Bond ex US Market (Citi WGBI ex USA 1-30 Years [Hedged to USD]). The S&P data are provided by Standard & Poor's Index Services Group. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. MSCI data © MSCI 2017, all rights reserved. Bloomberg Barclays data provided by Bloomberg. Citi fixed income indices copyright 2017 by Citigroup.

# World Stock Market Performance

MSCI All Country World Index with selected headlines from Q4 2016

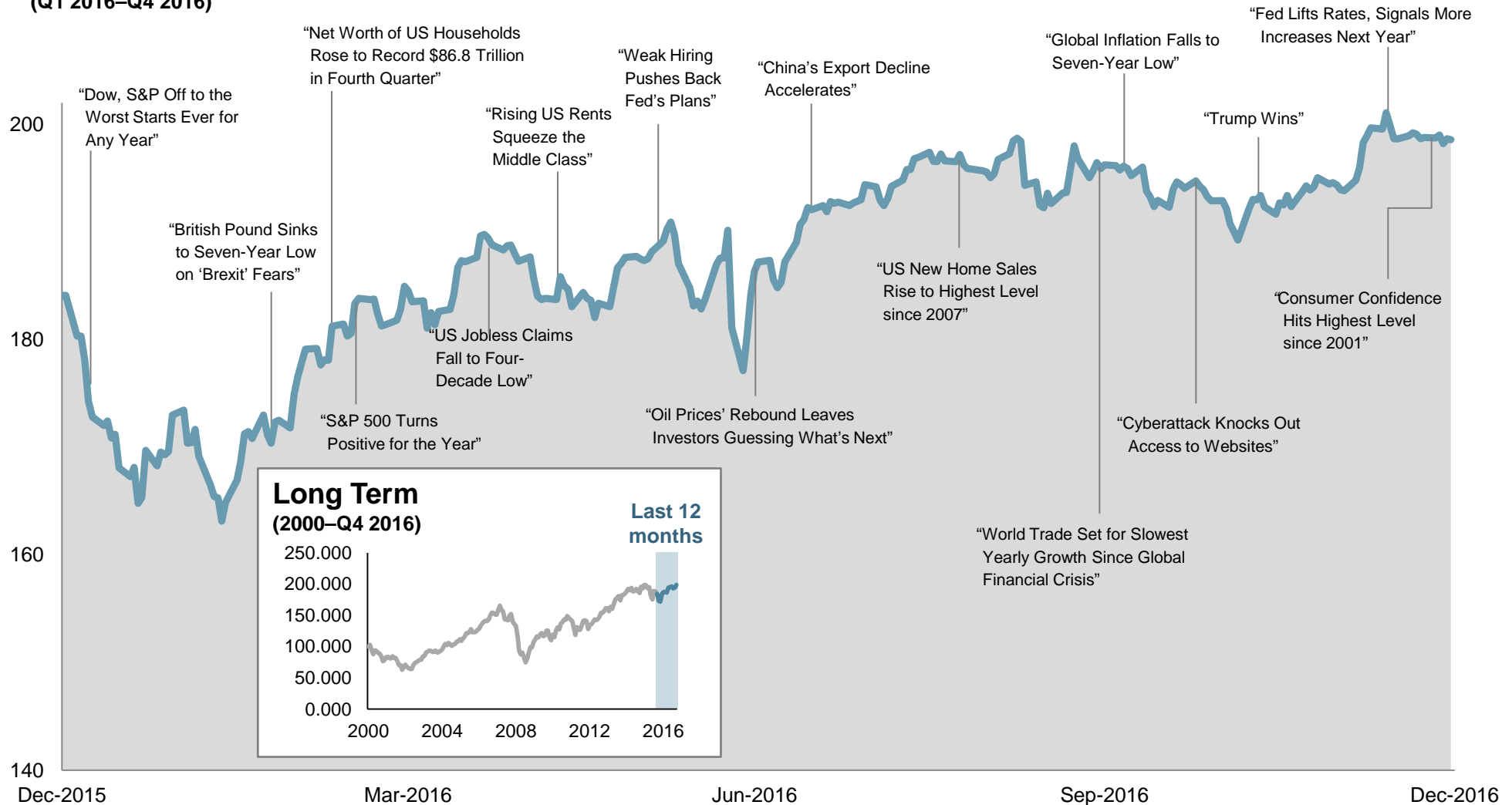


These headlines are not offered to explain market returns. Instead, they serve as a reminder that investors should view daily events from a long-term perspective and avoid making investment decisions based solely on the news.

# World Stock Market Performance

MSCI All Country World Index with selected headlines from past 12 months

## Short Term (Q1 2016–Q4 2016)



These headlines are not offered to explain market returns. Instead, they serve as a reminder that investors should view daily events from a long-term perspective and avoid making investment decisions based solely on the news.

Graph Source: MSCI ACWI Index [net div.]. MSCI data © MSCI 2017, all rights reserved.

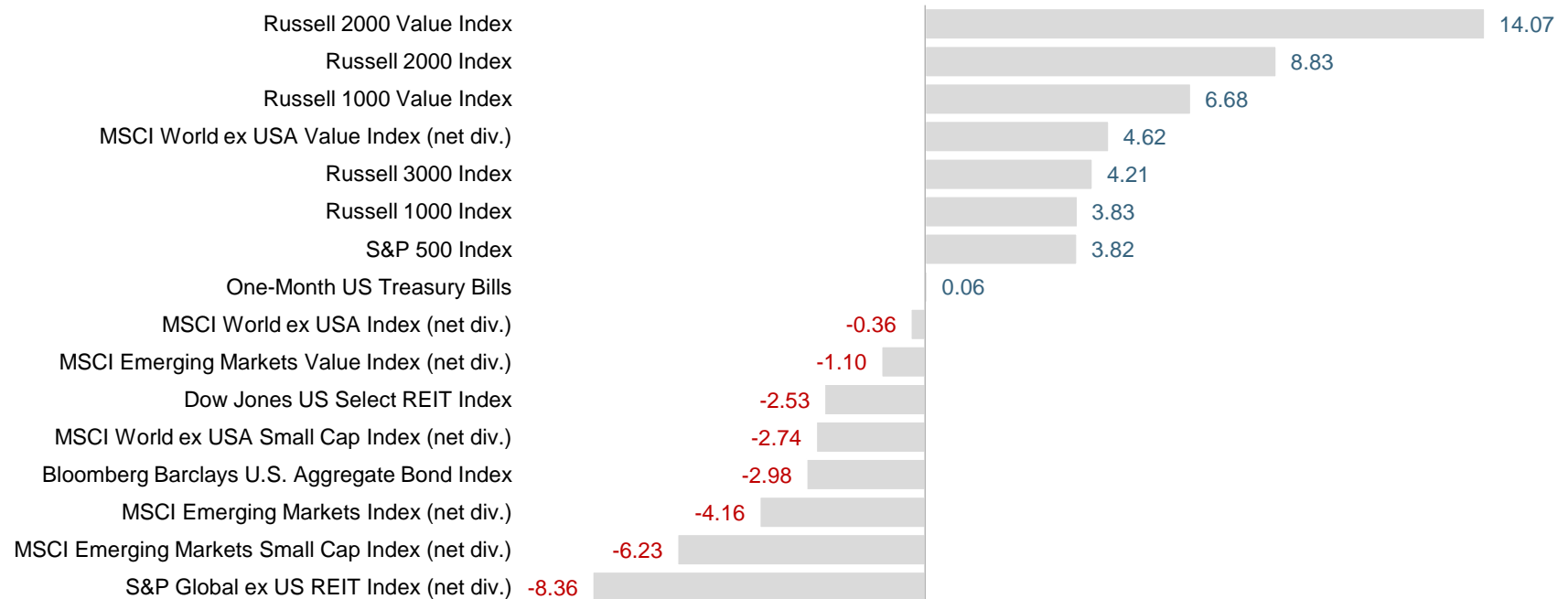
It is not possible to invest directly in an index. Performance does not reflect the expenses associated with management of an actual portfolio. Past performance is not a guarantee of future results.

# World Asset Classes

## Fourth Quarter 2016 Index Returns (%)

Looking at broad market indices, the US outperformed both non-US developed and emerging markets during the quarter. US and non-US real estate investment trusts (REITs) recorded negative returns and lagged the US and non-US equity markets.

The value effect was positive in the US, non-US, and emerging markets. Small caps outperformed large caps in the US and developed markets outside the US but underperformed in emerging markets.



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# US Stocks

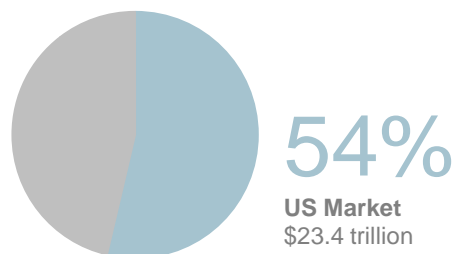
## Fourth Quarter 2016 Index Returns

The broad US equity market recorded positive performance for the quarter.

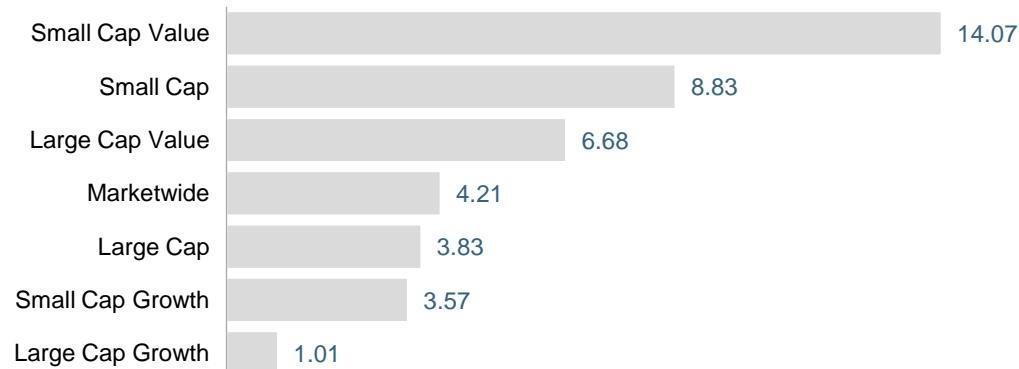
Value indices significantly outperformed growth indices in the US across all size ranges.

Small caps in the US outperformed large caps.

### World Market Capitalization—US



### Ranked Returns for the Quarter (%)



### Period Returns (%)

\* Annualized

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Marketwide	12.74	8.43	14.67	7.07
Large Cap	12.05	8.59	14.69	7.08
Large Cap Value	17.34	8.59	14.80	5.72
Large Cap Growth	7.08	8.55	14.50	8.33
Small Cap	21.31	6.74	14.46	7.07
Small Cap Value	31.74	8.31	15.07	6.26
Small Cap Growth	11.32	5.05	13.74	7.76

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Marketwide (Russell 3000 Index), Large Cap (Russell 1000 Index), Large Cap Value (Russell 1000 Value Index), Large Cap Growth (Russell 1000 Growth Index), Small Cap (Russell 2000 Index), Small Cap Value (Russell 2000 Value Index), and Small Cap Growth (Russell 2000 Growth Index). World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. Russell 3000 Index is used as the proxy for the US market. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. MSCI data © MSCI 2017, all rights reserved.

# International Developed Stocks

## Fourth Quarter 2016 Index Returns

In US dollar terms, non-US developed markets lagged the US equity market but outperformed emerging markets indices during the quarter.

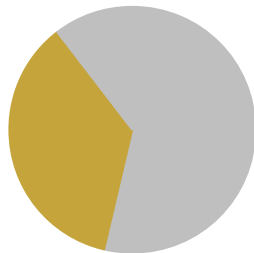
Small caps outperformed large caps.

Looking at broad market indices, the value effect was positive across all size ranges.

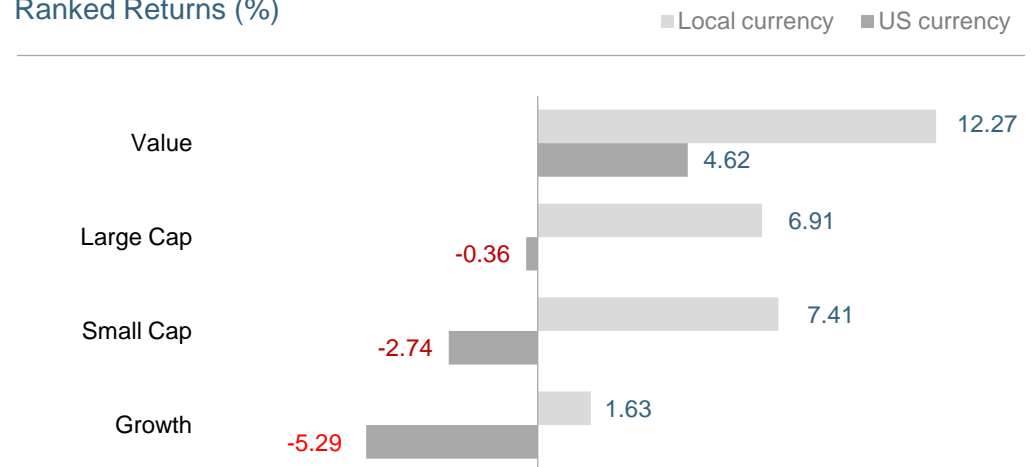
### World Market Capitalization—International Developed

36%

International  
Developed  
Market  
\$15.6 trillion



### Ranked Returns (%)



### Period Returns (%)

\* Annualized

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Large Cap	2.75	-1.59	6.07	0.86
Small Cap	4.32	1.36	8.96	2.69
Value	7.39	-2.12	5.96	0.08
Growth	-1.87	-1.18	6.08	1.56



# Emerging Markets Stocks

## Fourth Quarter 2016 Index Returns

In US dollar terms, emerging markets indices underperformed both the US and developed markets outside the US.

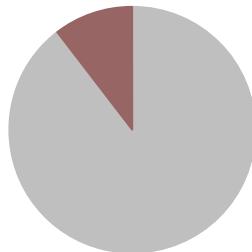
Looking at broad market indices, the value effect was positive across all size ranges.

Small caps underperformed large caps.

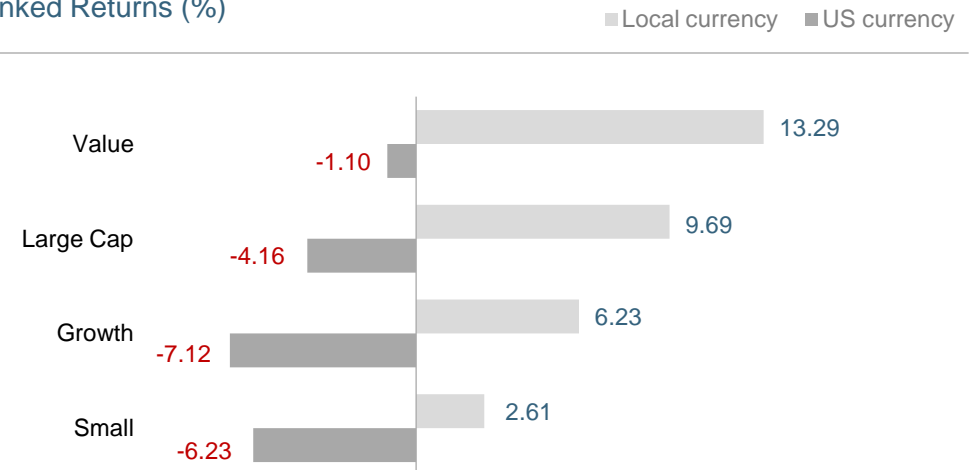
### World Market Capitalization—Emerging Markets

10%

Emerging  
Markets  
\$4.5 trillion



### Ranked Returns (%)



### Period Returns (%)

\* Annualized

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Large Cap	11.19	-2.55	1.28	1.84
Small Cap	2.28	-1.27	3.51	3.41
Value	14.90	-3.54	-0.27	1.97
Growth	7.59	-1.67	2.73	1.63

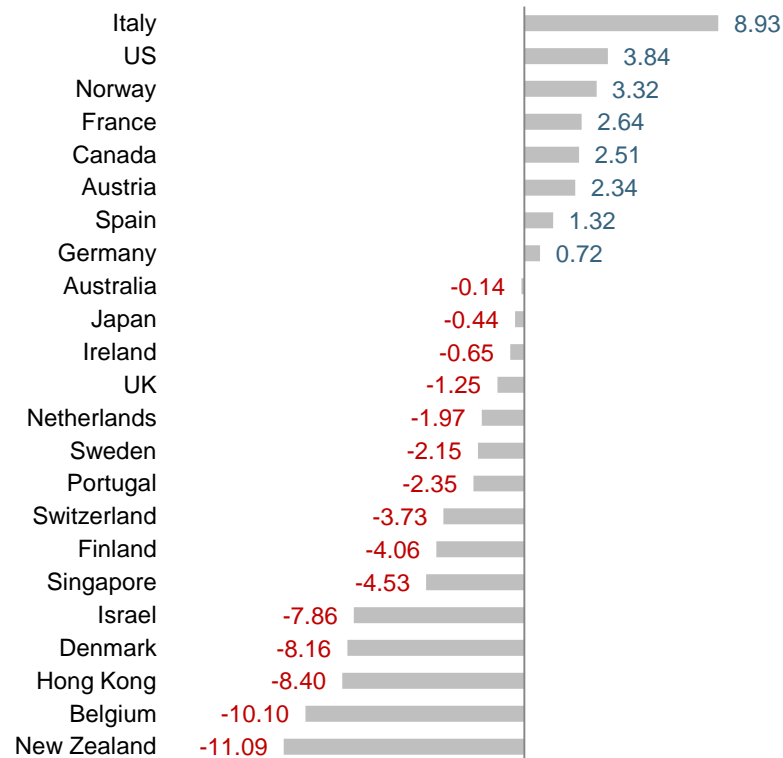
Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Large Cap (MSCI Emerging Markets Index), Small Cap (MSCI Emerging Markets Small Cap Index), Value (MSCI Emerging Markets Value Index), and Growth (MSCI Emerging Markets Growth Index). All index returns are net of withholding tax on dividends. World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. MSCI Emerging Markets IMI Index used as the proxy for the emerging market portion of the market. MSCI data © MSCI 2017, all rights reserved.

# Select Country Performance

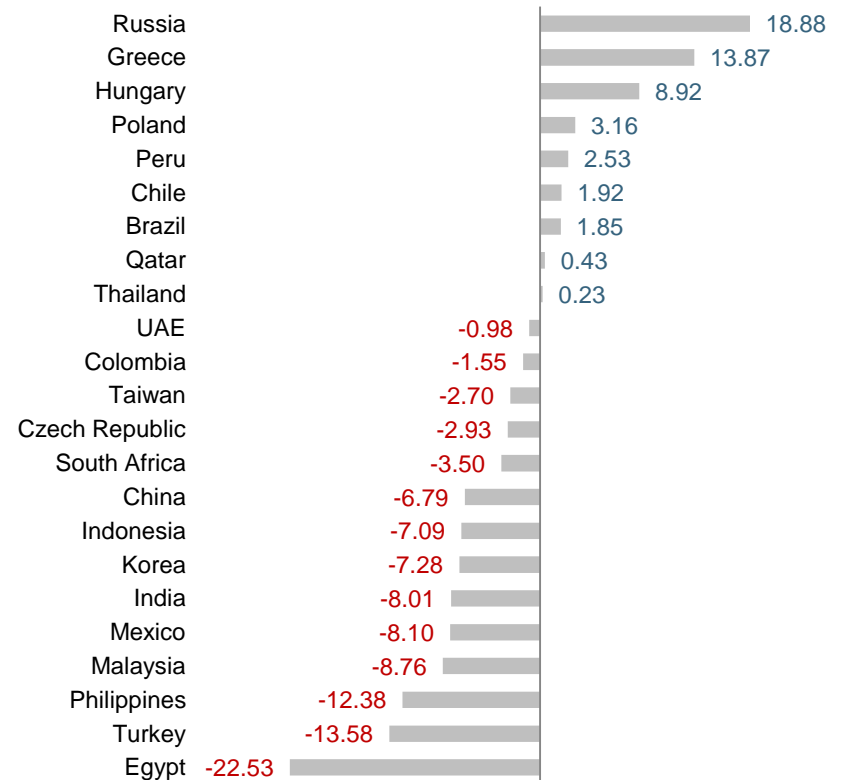
## Fourth Quarter 2016 Index Returns

Italy and the US recorded the highest country performance in developed markets, while Belgium and New Zealand posted the lowest returns for the quarter. In emerging markets, Russia and Greece posted the highest country returns, while Turkey and Egypt recorded the lowest performance.

### Ranked Developed Markets Returns (%)



### Ranked Emerging Markets Returns (%)

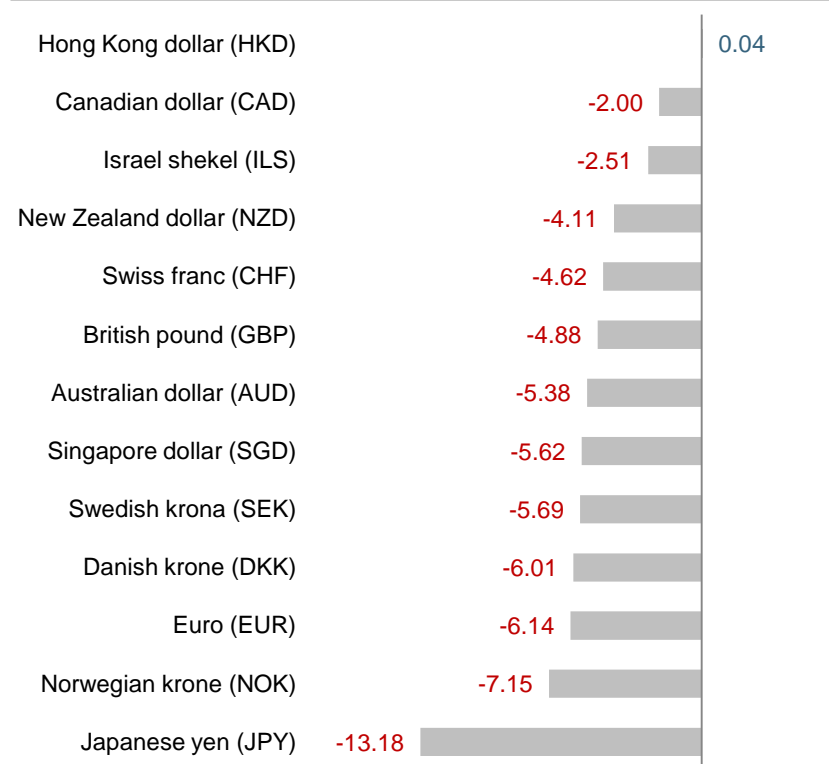


# Select Currency Performance vs. US Dollar

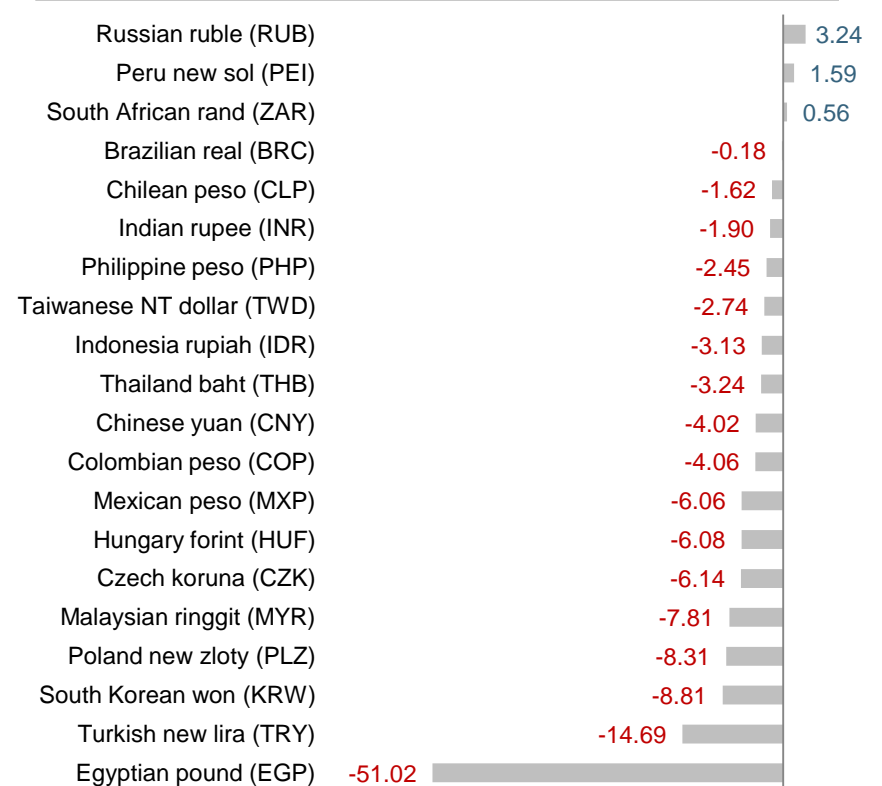
Fourth Quarter 2016

Most non-US developed markets currencies depreciated against the US dollar during the quarter, with the Japanese yen experiencing the most significant decline. In emerging markets, the Egyptian pound declined by nearly 50% relative to the US dollar.

## Ranked Developed Markets (%)



## Ranked Emerging Markets (%)



# Real Estate Investment Trusts (REITs)

## Fourth Quarter 2016 Index Returns

US and non-US REITs had negative performance for the quarter, lagging the broad equity market in both regions.

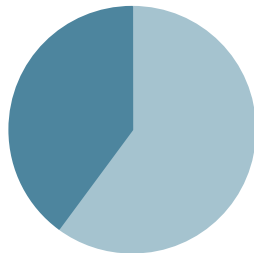
### Ranked Returns (%)



### Total Value of REIT Stocks

40%

World ex US  
\$421 billion  
258 REITs  
(22 other countries)



60%

US  
\$638 billion  
102 REITs

### Period Returns (%)

\* Annualized

Asset Class	1 Year	3 Years*	5 Years*	10 Years*
US REITs	6.68	13.73	11.77	4.63
Global REITs (ex US)	3.12	3.34	8.30	0.00

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Number of REIT stocks and total value based on the two indices. All index returns are net of withholding tax on dividends. Total value of REIT stocks represented by Dow Jones US Select REIT Index and the S&P Global ex US REIT Index. Dow Jones US Select REIT Index used as proxy for the US market, and S&P Global ex US REIT Index used as proxy for the World ex US market. Dow Jones US Select REIT Index data provided by Dow Jones ©. S&P Global ex US REIT Index data provided by Standard and Poor's Index Services Group © 2017.

# Commodities

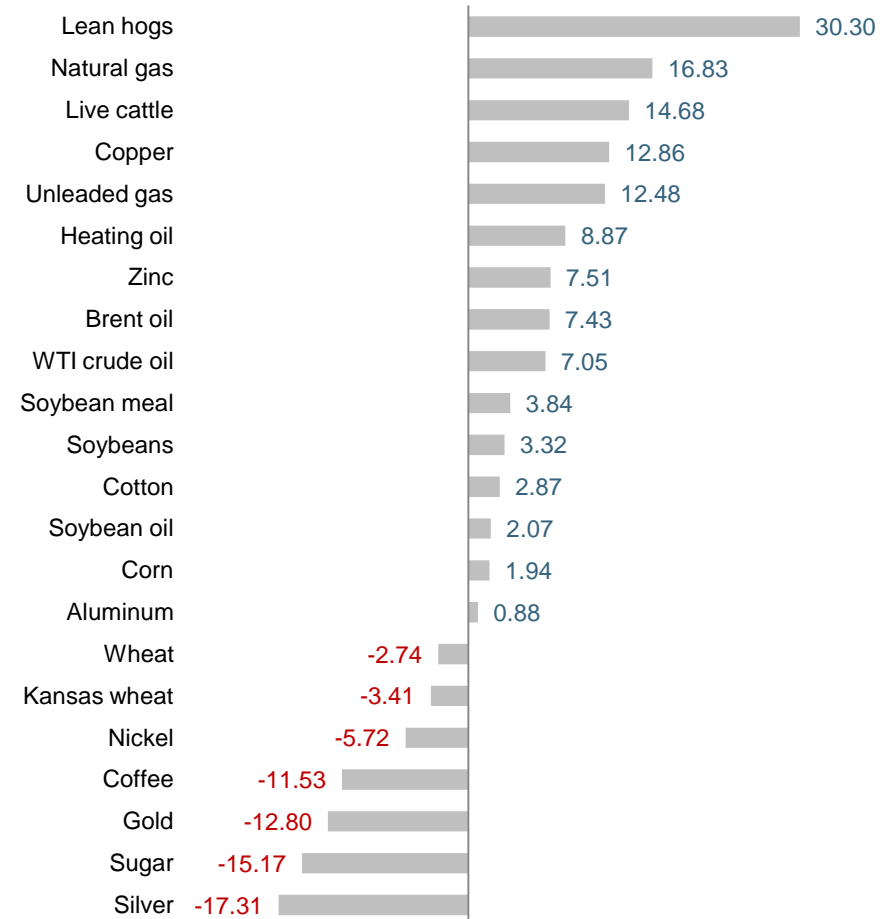
## Fourth Quarter 2016 Index Returns

The Bloomberg Commodity Index Total Return gained 2.66% in the fourth quarter, bringing the total annual return to 11.77%.

The livestock complex led quarterly performance, with lean hogs returning 30.30% and live cattle following with a gain of 14.68%. Precious metals was the worst-performing complex, with silver and gold declining by 17.31% and 12.80%, respectively.

Period Returns (%)		* Annualized		
Asset Class	1 Year	3 Years*	5 Years*	10 Years*
Commodities	11.77	-11.26	-8.95	-5.58

### Ranked Returns for Individual Commodities (%)



# Fixed Income

## Fourth Quarter 2016 Index Returns

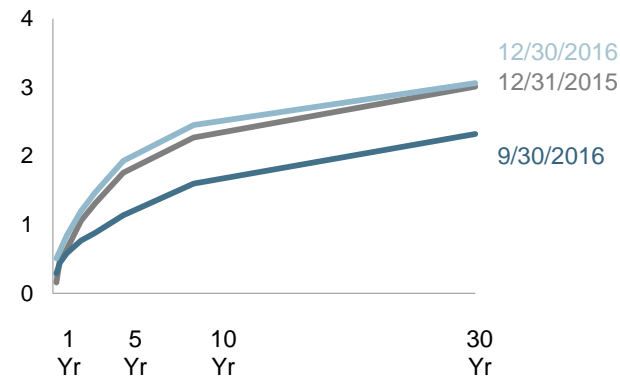
Interest rates increased in the fourth quarter. The yield on the 5-year Treasury note rose 79 basis points (bps), ending at 1.93%. The 10-year T-note yield climbed 85 bps to 2.45%. The 30-year Treasury bond yield added 74 bps to close at 3.06%.

In 2016, the short end of the yield curve saw the greatest rate increases. The 1-year T-bill gained 20 bps to 0.85%, while the 2-year T-note finished at 1.20% after an increase of 14 bps for the year.

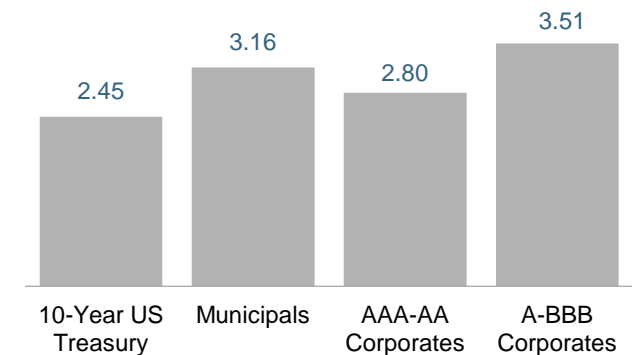
In terms of total returns, short-term corporate bonds declined 0.18% during the quarter but gained 2.36% for the year. Intermediate corporates fell 1.84% during the quarter but rose 4.04% in 2016.

Short-term municipal bonds declined 1.07% for the quarter but increased 0.07% for the year. Intermediate-term municipal bonds fell 3.74% for the quarter and 0.45% for the year. Revenue bonds outperformed general obligation bonds for the year.

US Treasury Yield Curve (%)



Bond Yields across Issuers (%)



Period Returns (%)

Asset Class	* Annualized			
	1 Year	3 Years*	5 Years*	10 Years*
BofA Merrill Lynch 1-Year US Treasury Note Index	0.76	0.36	0.32	1.43
BofA Merrill Lynch Three-Month US Treasury Bill Index	0.33	0.14	0.12	0.80
Citi WGBI 1-5 Years (hedged to USD)	1.49	1.46	1.42	2.64
Bloomberg Barclays Long US Government Bond Index	1.43	7.71	2.57	6.60
Bloomberg Barclays Municipal Bond Index	0.25	4.14	3.28	4.25
Bloomberg Barclays US Aggregate Bond Index	2.65	3.03	2.23	4.34
Bloomberg Barclays US Corporate High Yield Index	17.13	4.66	7.36	7.45
Bloomberg Barclays US TIPS Index	4.68	2.26	0.89	4.36

One basis point equals 0.01%. Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Yield curve data from Federal Reserve. State and local bonds are from the S&P National AMT-Free Municipal Bond Index. AAA-AA Corporates represent the Bank of America Merrill Lynch US Corporates, AA-AAA rated. A-BBB Corporates represent the Bank of America Merrill Lynch US Corporates, BBB-A rated. Bloomberg Barclays data provided by Bloomberg. US long-term bonds, bills, inflation, and fixed income factor data © Stocks, Bonds, Bills, and Inflation (SBBBI) Yearbook™, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefeld). Citi fixed income indices copyright 2017 by Citigroup. The BofA Merrill Lynch Indices are used with permission; © 2017 Merrill Lynch, Pierce, Fenner & Smith Incorporated; all rights reserved. Merrill Lynch, Pierce, Fenner & Smith Incorporated is a wholly owned subsidiary of Bank of America Corporation. The S&P data are provided by Standard & Poor's Index Services Group.



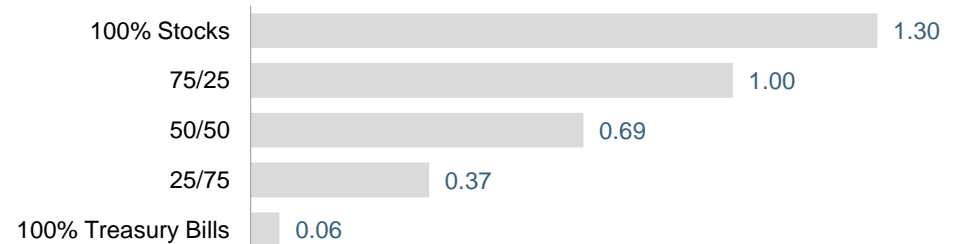
# Impact of Diversification

## Fourth Quarter 2016 Index Returns

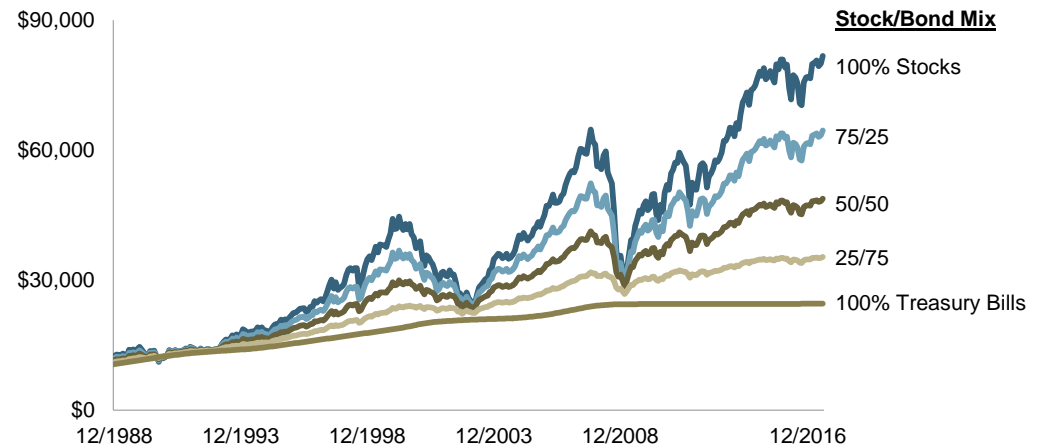
These portfolios illustrate the performance of different global stock/bond mixes. Mixes with larger allocations to stocks are considered riskier but have higher expected returns over time.

Period Returns (%)					* Annualized
Asset Class	1 Year	3 Years*	5 Years*	10 Years*	10-Year STDEV <sup>1</sup>
100% Stocks	8.48	3.69	9.96	4.12	16.99
75/25	6.47	2.90	7.53	3.54	12.74
50/50	4.42	2.03	5.07	2.77	8.49
25/75	2.33	1.09	2.58	1.81	4.24
100% Treasury Bills	0.20	0.08	0.06	0.67	0.41

### Ranked Returns (%)



### Growth of Wealth: The Relationship between Risk and Return



1. STDEV (standard deviation) is a measure of the variation or dispersion of a set of data points. Standard deviations are often used to quantify the historical return volatility of a security or portfolio. Diversification does not eliminate the risk of market loss. Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect expenses associated with the management of an actual portfolio. Asset allocations and the hypothetical index portfolio returns are for illustrative purposes only and do not represent actual performance. Global Stocks represented by MSCI All Country World Index (gross div.) and Treasury Bills represented by US One-Month Treasury Bills. Globally diversified allocations rebalanced monthly, no withdrawals. Data © MSCI 2017, all rights reserved. Treasury bills © Stocks, Bonds, Bills, and Inflation Yearbook™, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefeld).

# The Power of Markets

November 2016

## In 1958, economist Leonard Read published an essay entitled “I, Pencil: My Family Tree as Told to Leonard E. Read.”

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The essay, narrated from the point of view of a pencil, describes the “complex combination of miracles” necessary to create and bring to market the common writing tool that has been used for generations. The narrator argues that no one individual possesses enough ability or know-how to create a pencil on their own. Rather, the mundane pencil—and the ability to buy it for a “trifling” sum—is the result of an extraordinary process driven by the knowledge of market participants and the power of market prices.

### The Importance of Price

Upon observing a pencil, it is tempting to think a single individual could easily make one. After all, it is made up of common items such as wood, paint, graphite, metal, and a rubber eraser. By delving deeper into how these seemingly ordinary components are produced, however, we begin to understand the extraordinary backstory of their synthesis. Take the wood as an example: To produce wood requires a saw, to make the

saw requires steel, to make steel requires iron. That iron must be mined, smelted, and shaped. A truck, train, or boat is needed to transport the wood from the forest to a factory where numerous machines convert it into lumber. The lumber is then transported to another factory where more machines assemble the pencil. Each of the components mentioned above and each step in the process have similarly complex backstories. All require materials that are sourced from far-flung locations, and countless processes are involved in refining them. While the multitude of inputs and processes necessary to create a pencil is impressive, even more impressive are the coordinated actions required by millions of people around the world to bring everything together. There is the direct involvement of farmers, loggers, miners, factory workers, and the providers of capital. There is also the indirect involvement of millions of others—the makers of rails, railroad cars, ships, and so on. Market prices are the unifying force that enables these millions of people to coordinate their actions efficiently.

Workers with specific knowledge about their costs, constraints, and efforts use market prices to leverage the knowledge of others to decide how to direct their own resources and make a

living. Consider the farmer, the logger, and the price of a tree. The farmer will have a deep understanding of the costs, constraints, and efforts required to grow trees. To increase profit, the farmer will seek out the highest price when selling trees to a logger. After purchasing the trees, the logger will convert them to wood and sell that wood to a factory. The logger understands the costs, constraints, and efforts required to do this, so to increase profit, the logger seeks to pay the lowest price possible when buying trees from the farmer. When the farmer and the logger agree to transact, the agreed upon price reflects their combined knowledge of the costs and constraints of both growing and harvesting trees. That knowledge allows them to decide how to efficiently allocate their resources in seeking a profit. Ultimately, it is price that enables this coordination. On a much larger scale, price formation is facilitated by competition between the many farmers that sell trees to loggers and between the many loggers that buy trees from farmers. This market price of trees is observable and can be used by others in the production chain (e.g., the lumber factory mentioned above) to inform how much they can expect to pay for wood and to plan how to allocate their resources accordingly.

*(continues on page 17)*

# The Power of Markets

(continued from page 16)

## The Power of Financial Markets

There is a corollary that can be drawn between this narrative about the market for goods and the financial markets. Generally, markets do a remarkable job of allocating resources, and financial markets allocate a specific resource: financial capital. Financial markets are also made up of millions of participants, and these participants voluntarily agree to buy and sell securities all over the world based upon their own needs and desires. Each day, millions of trades take place, and the vast collective knowledge of all of these participants is pooled together to set security prices.

**Exhibit 1** shows the staggering magnitude of participation in the world equity markets on an average day in 2015.

Any individual trying to outguess the market is competing against the extraordinary collective wisdom of all of these buyers and sellers. Viewed through the lens of Read's allegory, attempting to outguess the market is like trying to create a pencil from scratch rather than going to the store and reaping the fruits of others' willingly supplied labor. In the end, trying to outguess the market is incredibly difficult and expensive, and over the long run, the result will almost assuredly be inferior when compared to a market-based approach. Professor Kenneth French has been quoted as saying, "The market is smarter than we are and no matter how smart we get, the market will always be smarter than we are." One doesn't have to look far for data that supports this. **Exhibit 2** shows that only 17% of US equity mutual funds have survived and outperformed their benchmarks over the past 15 years. *(continues on page 18)*

## Exhibit 1. Embrace Market Pricing

### World Equity Trading in 2015

	Number of Trades	Dollar Volume
Daily Average	98.6 million	\$447.3 billion

In US dollars. Global electronic order book (largest 60 exchanges). Source: World Federation of Exchanges.

## Exhibit 2. Don't Try to Outguess the Market

### US Equity Mutual Fund Performance



Beginning sample includes funds as of the beginning of the 15-year period ending December 31, 2015. Past performance is no guarantee of future results. Source: Dimensional Fund Advisors, "The US Mutual Fund Landscape." See disclosures for more information.

# The Power of Markets

(continued from page 17)

## Conclusion

The beauty of Leonard Read's story is that it provides a glimpse of the incredibly complex tapestry of markets and how prices are formed, what types of information they contain, and how they are used. The story makes it clear that no single individual possesses enough ability or know-how to create a pencil on their own but rather that the pencil's miraculous production is the result of the collective input and effort of countless motivated human beings. In the end, the power of markets benefits all of us. The market allows us to exchange the time we require to earn money for a few milliseconds of each person's time involved in making a pencil. For an investor, we believe the lesson here is that instead of fighting the market, one should pursue an investment strategy that efficiently and effectively harnesses the extraordinary collective power of market prices. That is, an investment strategy that uses market prices and the information they contain in its design and day-to-day management. In doing so, an investor has access to the rewards that financial markets make available to providers of capital.

Leonard Read's essay can be found here: <http://econlib.org/library/Essays/rdPncl1.html>.

Source: Dimensional Fund Advisors LP.

There is no guarantee investment strategies will be successful.

US-domiciled mutual fund data is from the CRSP Survivor-Bias-Free US Mutual Fund Database, provided by the Center for Research in Security Prices, University of Chicago. Certain types of equity funds were excluded from the performance study. Index funds, sector funds, and funds with a narrow investment focus, such as real estate and gold, were excluded.

Funds are identified using Lipper fund classification codes. Correlation coefficients are computed for each fund with respect to diversified benchmark indices using all return data available between January 1, 2001, and December 31, 2015. The index most highly correlated with a fund is assigned as its benchmark. Winner funds are those whose cumulative return over the period exceeded that of their respective benchmark. Loser funds are funds that did not survive the period or whose cumulative return did not exceed their respective benchmark.

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