



Fixed Income

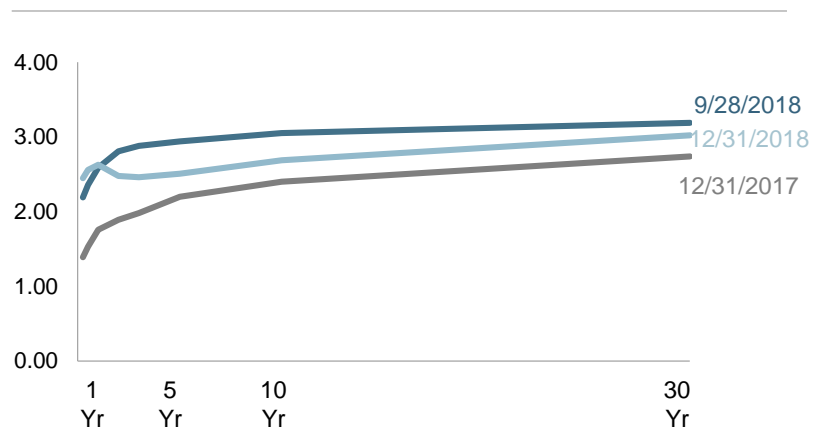
Fourth Quarter 2018 Index Returns

Interest rate changes across the US fixed income market were mixed during the fourth quarter of 2018. The yield on the 5-year Treasury note declined 43 basis points (bps), ending the quarter at 2.51%. The yield on the 10-year Treasury note decreased 36 bps to 2.69%. The 30-year Treasury bond yield decreased 17 bps to finish at 3.02%. For 2018, yields on the 10-year Treasury and 30-year Treasury increased 29 bps and 28 bps, respectively.

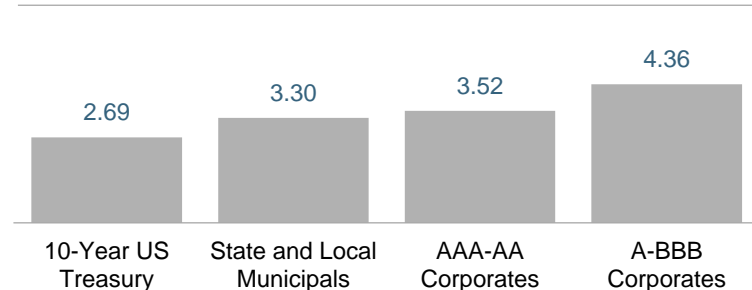
In terms of total returns, short-term corporate bonds increased 0.78% during the quarter. Intermediate-term corporate bonds had a total return of 0.58%.

Total returns for short-term municipal bonds were 1.10% for the quarter. Intermediate-term municipal bonds returned 2.00%.

US Treasury Yield Curve (%)



Bond Yields across Issuers (%)



Period Returns (%)

* Annualized

Asset Class	QTR	1 Year	3 Years*	5 Years*	10 Years*
Bloomberg Barclays US Government Bond Index Long	4.16	-1.79	2.63	5.90	4.15
Bloomberg Barclays Municipal Bond Index	1.69	1.28	2.30	3.82	4.85
Bloomberg Barclays US Aggregate Bond Index	1.64	0.01	2.06	2.52	3.48
FTSE World Government Bond Index 1-5 Years (hedged to USD)	1.53	2.12	1.58	1.53	1.69
FTSE World Government Bond Index 1-5 Years	0.94	-0.76	1.56	-0.82	0.29
ICE BofAML 1-Year US Treasury Note Index	0.78	1.86	1.06	0.70	0.62
ICE BofAML US 3-Month Treasury Bill Index	0.56	1.87	1.02	0.63	0.37
Bloomberg Barclays US TIPS Index	-0.42	-1.26	2.11	1.69	3.64
Bloomberg Barclays US High Yield Corporate Bond Index	-4.53	-2.08	7.23	3.83	11.12

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 ICE BofAML US Corporates, AA-AAA rated. A-BBB Corporates represent the ICE BofAML 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). FTSE fixed income indices © 2019 FTSE Fixed Income LLC, all rights reserved. ICE BofAML index data © 2019 ICE Data Indices, LLC. S&P data © 2019 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved.



Global Fixed Income

Fourth Quarter 2018 Yield Curves

Interest rates in the global developed markets generally decreased during the quarter.

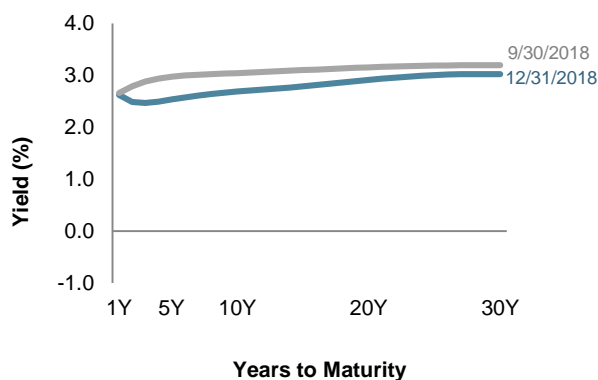
Longer-term bonds generally outperformed shorter-term bonds in the global developed markets.

For the year, longer-term bonds underperformed shorter-term bonds in the US but generally outperformed shorter-term bonds in the non-US developed markets.

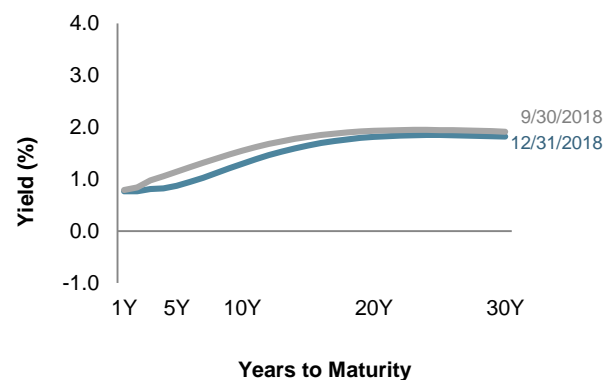
Changes in Yields (bps) since 9/30/2018

	1Y	5Y	10Y	20Y	30Y
US	-4.2	-44.0	-35.5	-24.4	-17.6
UK	-2.3	-26.9	-25.2	-11.6	-9.3
Germany	-15.2	-18.9	-21.8	-18.9	-19.6
Japan	-1.6	-9.3	-14.2	-14.6	-16.3

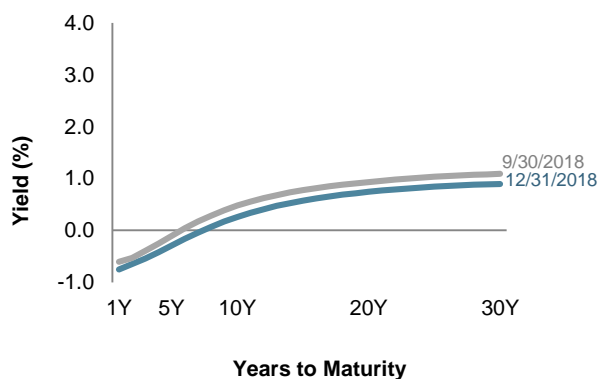
US



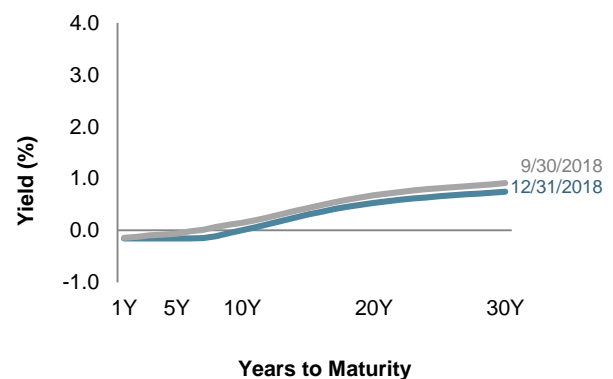
UK



Germany



Japan



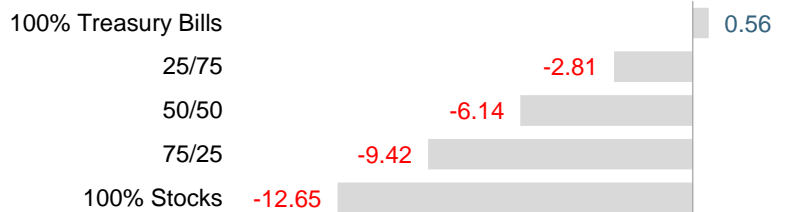


Impact of Diversification

Fourth Quarter 2018 Index Returns

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

Ranked Returns (%)

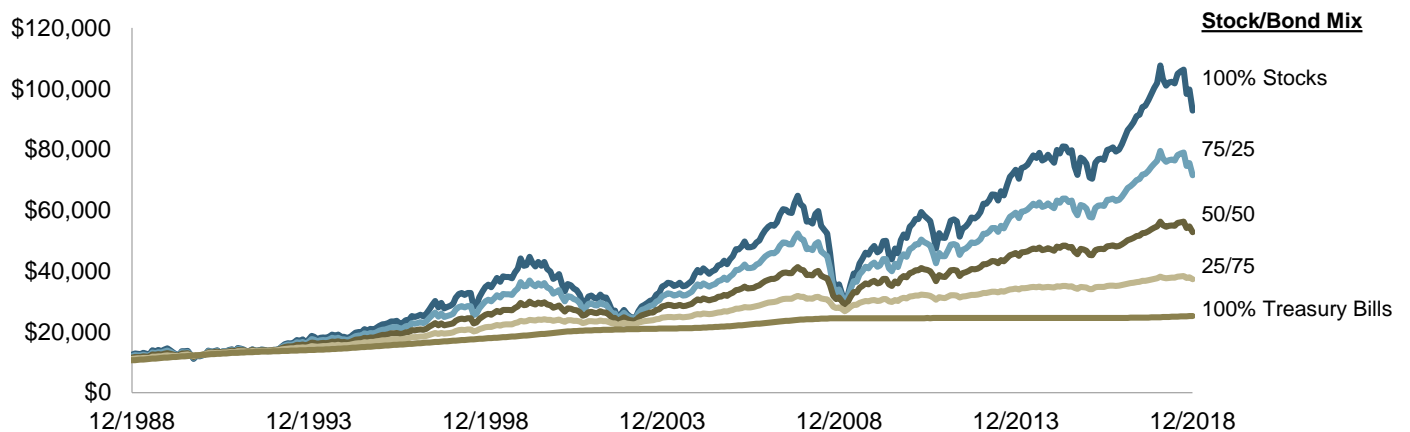


Period Returns (%)

* Annualized

Asset Class	1 Year	3 Years*	5 Years*	10 Years*	10-Year STDEV ¹
100% Treasury Bills	1.81	0.93	0.57	0.32	0.16
25/75	-0.82	2.57	1.73	2.88	3.65
50/50	-3.49	4.16	2.82	5.36	7.32
75/25	-6.19	5.70	3.86	7.75	10.98
100% Stocks	-8.93	7.18	4.82	10.05	14.65

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 2019, 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).



Why Should You Diversify?

Fourth Quarter 2018

As 2019 approaches, and with US stocks outperforming non-US stocks in recent years, some investors have again turned their attention towards the role that global diversification plays in their portfolios

For the five-year period ending October 31, 2018, the S&P 500 Index had an annualized return of 11.34% while the MSCI World ex USA Index returned 1.86%, and the MSCI Emerging Markets Index returned 0.78%. As US stocks have outperformed international and emerging markets stocks over the last several years, some investors might be reconsidering the benefits of investing outside the US.

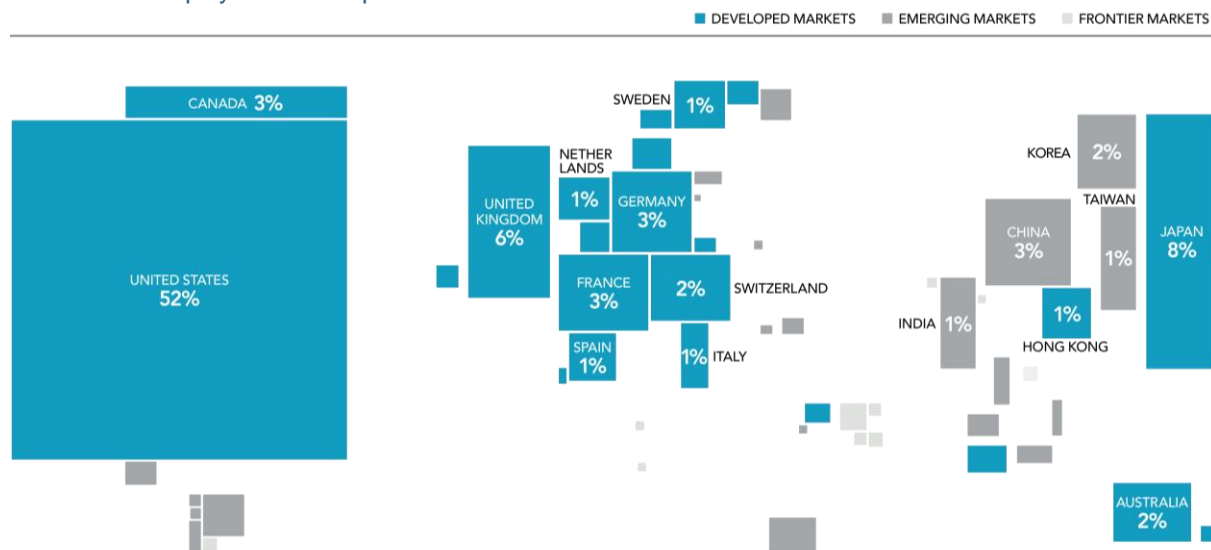
While there are many reasons why a US-based investor may prefer a degree of home bias in their equity allocation, using return differences over a relatively short period as the sole input into this decision may result in missing opportunities that the global markets offer. While international and emerging markets stocks have delivered disappointing returns relative to the US over the last few years, it is important to remember that:

- Non-US stocks help provide valuable diversification benefits.
- Recent performance is not a reliable indicator of future returns.

THERE'S A WORLD OF OPPORTUNITY IN EQUITIES

The global equity market is large and represents a world of investment opportunities. As shown in **Exhibit 1**, nearly half of the investment opportunities in global equity markets lie outside the US. Non-US stocks, including developed and emerging markets, account for 48% of world market capitalization¹ and represent thousands of companies in countries all over the world. A portfolio investing solely within the US would not be exposed to the performance of those markets.

Exhibit 1. World Equity Market Capitalization



As of December 31, 2017. Data provided by Bloomberg. Market cap data is free-float adjusted and meets minimum liquidity and listing requirements. China market capitalization excludes A-shares, which are generally only available to mainland China investors. For educational purposes; should not be used as investment advice.

1. The total market value of a company's outstanding shares, computed as price times shares outstanding.



Why Should You Diversify?

(continued from page 18)

THE LOST DECADE

We can examine the potential opportunity cost associated with failing to diversify globally by reflecting on the period in global markets from 2000–2009. During this period, often called the “lost decade” by US investors, the S&P 500 Index recorded its worst ever 10-year performance with a total cumulative return of –9.1%. However, looking beyond US large cap equities, conditions were more favorable for global equity investors as most equity asset classes outside the US generated positive returns over the course of the decade. (See **Exhibit 2**.)

Expanding beyond this period and looking at performance for each of the 11 decades starting in 1900 and ending in 2010, the US market outperformed the world market in five decades and underperformed in the other six.² This further reinforces why an investor pursuing the equity premium should consider a global allocation. By holding a globally diversified portfolio, investors are positioned to capture returns wherever they occur.

Exhibit 2. Global Index Returns, January 2000–December 2009

	Total Cumulative Return (%)
S&P 500 Index	–9.10
MSCI World ex USA Index (net div.)	17.47
MSCI World ex USA Value Index (net div.)	48.71
MSCI World ex USA Small Cap Index (net div.)	94.33
MSCI Emerging Markets Index (net div.)	154.28
MSCI Emerging Markets Value Index (net div.)	212.72

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PICK A COUNTRY?

Are there systematic ways to identify which countries will outperform others in advance? Exhibit 3 illustrates the randomness in country equity market rankings (from highest to lowest) for 22 different developed market countries over the past 20 years. This graphic conveys how difficult it would be to execute a strategy that relies on picking the best country and the resulting importance of diversification.

In addition, concentrating a portfolio in any one country can expose investors to large variations in returns. The difference between the best- and worst-performing countries can be significant. For example, since 1998, the average return of the best-performing developed market country was approximately 44%, while the average return of the worst-performing country was approximately –16%. Diversification means an investor’s portfolio is unlikely to be the best or worst performing relative to any individual country, but diversification also provides a means to achieve a more consistent outcome and more importantly helps reduce and manage catastrophic losses that can be associated with investing in just a small number of stocks or a single country.

A DIVERSIFIED APPROACH

Over long periods of time, investors may benefit from consistent exposure in their portfolios to both US and non-US equities. While both asset classes offer the potential to earn positive expected returns in the long run, they may perform quite differently over short periods. While the performance of different countries and asset classes will vary over time, there is no reliable evidence that this performance can be predicted in advance. An approach to equity investing that uses the global opportunity set available to investors can provide diversification benefits as well as potentially higher expected returns.

2. Source: Annual country index return data from the Dimson-Marsh-Staunton (DMS) Global Returns Data, provided by Morningstar, Inc.



Why Should You Diversify?

(continued from page 19)

Exhibit 3. Equity Returns of Developed Markets

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
HIGH	Finland 121.6	Finland 152.6	Switzerland 5.9	New Zealand 8.4	New Zealand 24.2	Sweden 64.5	Austria 71.5	Canada 28.3	Spain 49.4	Finland 48.7	Japan -29.2	Norway 87.1	Sweden 33.8	Ireland 13.7	Belgium 39.6	Finland 46.0	USA 12.7	Denmark 23.4	Canada 24.6	Austria 58.3
	Belgium 67.7	Singapore 99.4	Canada 5.3	Australia 1.7	Austria 16.5	Germany 63.8	Norway 53.3	Japan 25.5	Portugal 47.4	Hong Kong 41.2	Switzerland -30.5	Australia 76.4	Denmark 30.7	New Zealand 5.5	Denmark 31.3	Ireland 41.2	New Zealand 7.3	Ireland 16.5	New Zealand 18.4	Hong Kong 36.2
	Italy 52.5	Sweden 79.7	Denmark 3.4	Ireland -2.8	Australia -1.3	58.5	43.5	24.6	46.8	35.2	USA -37.6	74.0	23.2	1.4	31.0	31.8	6.2	12.1	13.3	35.6
	Spain 49.9	Japan 61.5	Norway -0.9	Austria -5.6	Norway -7.3	57.0	43.1	24.5	46.7	31.4	Spain -40.6	64.2	22.1	UK -2.6	30.9	31.4	5.1	9.6	11.4	34.7
	France 41.5	Hong Kong 59.5	Italy -1.3	Belgium -10.9	Italy -7.3	55.4	36.3	24.3	45.1	29.6	France -43.3	60.2	20.5	Canada -6.8	29.3	31.3	4.1	3.5	11.3	32.2
	Ireland 35.3	Canada 53.7	Netherlands -4.1	Spain -11.4	Japan -10.3	Canada 54.6	New Zealand 35.2	Finland 16.7	Sweden 34.4	Singapore 28.4	Canada -45.5	Belgium 57.5	Japan 15.4	Norway -10.0	Hong Kong 28.3	31.3	Singapore 3.0	Italy 2.3	10.9	France 28.7
	USA 30.1	Norway 31.7	France -4.3	Norway -12.2	Switzerland -10.3	Australia 49.5	Italy 32.5	16.3	38.8	28.3	Germany -45.9	56.2	14.8	-10.6	25.9	27.6	2.3	2.0	4.9	28.4
	Germany 29.4	France 29.3	Australia -10.0	USA -12.4	Singapore -11.0	Denmark 30.8	Denmark 30.8	Australia 16.0	Belgium 36.7	Denmark 25.6	Singapore -47.4	50.4	Australia 14.5	-11.0	22.1	27.2	1.5	1.3	4.8	28.3
	Portugal 27.5	USA 21.9	Portugal -10.3	UK -14.0	Canada -13.2	Norway 48.1	Australia 30.3	14.4	36.5	24.0	Denmark -47.6	43.5	11.8	-12.1	22.0	26.6	-0.1	0.9	3.6	27.7
	Switzerland 23.5	Germany 20.0	UK -11.5	Denmark -14.8	Portugal -13.8	43.8	Spain 30.8	Netherlands 13.9	36.0	Spain 24.0	Netherlands -48.2	43.3	10.9	Spain -12.3	21.3	26.3	Finland -0.7	USA 0.7	Germany 2.8	Spain 27.0
	Netherlands 23.2	Australia 17.6	Austria -12.0	Hong Kong -18.6	Belgium -15.0	43.0	25.0	10.3	34.5	20.6	UK -48.3	43.2	10.3	Canada -12.7	20.6	25.2	-3.4	0.4	2.4	24.0
	UK 17.8	New Zealand 12.9	Ireland -12.7	Canada -20.4	UK -15.2	40.2	Portugal 24.7	Germany 9.9	Italy 32.5	France 13.2	-49.9	42.3	Austria 9.9	Finland -14.3	Japan 20.4	24.5	Netherlands -3.5	France -0.1	2.3	Portugal 23.8
	Sweden 14.0	UK 12.5	USA -12.8	Switzerland -21.4	Spain -15.3	38.1	22.3	9.9	31.4	8.9	-50.0	40.4	8.8	-16.0	18.7	20.7	-4.0	-0.5	1.4	22.5
	Denmark 9.0	Denmark 12.1	Finland -14.2	Portugal -22.0	Denmark -16.0	37.8	Canada 22.2	Belgium 9.0	Australia 30.9	UK 8.4	Australia -50.7	36.6	8.4	Denmark -16.0	15.3	20.4	Spain -4.7	Germany -1.9	Sweden 0.6	Finland 22.5
	Australia 6.1	Netherlands 6.9	Hong Kong -14.7	Netherlands -22.1	Hong Kong -17.8	37.6	19.6	8.4	30.6	6.1	Hong Kong -51.2	31.8	8.3	-16.0	15.3	13.4	-5.4	-5.0	-0.1	22.3
	Japan 5.1	Spain 4.8	Germany -15.6	France -22.4	Netherlands -20.8	35.9	France 18.5	7.4	Hong Kong 30.4	USA 5.4	Portugal -52.2	26.6	1.7	-16.9	14.6	New Zealand 11.3	Sweden -7.5	New Zealand -6.3	-1.0	USA 21.2
	Austria 0.4	Italy -0.3	Spain -15.9	Germany -22.4	France -21.2	35.3	16.2	5.1	29.9	5.3	-53.8	26.3	-0.4	-17.9	12.5	11.1	-9.5	-7.6	-4.7	20.6
	Hong Kong -2.9	Switzerland -7.0	Belgium -16.8	Singapore -23.4	USA -23.1	Switzerland 34.1	Japan 15.9	4.4	27.4	Austria 2.2	Finland -55.2	25.3	France -4.1	Germany -18.1	9.1	11.0	France -9.9	Australia -10.0	Switzerland -4.9	Australia 19.9
	Canada -6.1	Portugal -8.9	Sweden -21.3	Italy -26.6	Ireland -26.2	32.1	15.0	1.9	17.8	0.6	-64.2	25.2	-11.3	-23.1	8.2	9.4	-10.4	-15.0	-7.1	18.6
	Singapore -12.9	Austria -9.1	Singapore -27.7	Sweden -27.2	Finland -30.3	USA 28.4	Netherlands 12.2	New Zealand 1.7	New Zealand 16.6	Belgium -2.7	Belgium -66.5	12.3	Italy -15.0	Italy -23.2	5.7	Canada 5.6	Norway -22.0	Spain -15.6	Belgium -7.6	Ireland 18.1
	New Zealand -22.6	Ireland -12.6	Japan -28.2	Japan -29.4	Sweden -30.5	28.1	10.1	-1.9	14.7	-4.2	-68.4	11.1	-18.1	-31.9	3.5	4.2	-29.8	-17.7	-10.5	16.1
LOW	Norway -30.1	Belgium -14.3	New Zealand -33.5	Finland -38.2	Germany -33.2	Finland 19.4	Finland 6.1	Ireland -2.3	6.2	Ireland -20.1	-71.9	6.3	-22.0	36.4	3.0	1.7	-38.2	-24.2	-15.8	11.7

Source: MSCI country indices (net dividends) for each country listed. Does not include Israel, which MSCI classified as an emerging market prior to May 2010. MSCI data © MSCI 2019, all rights reserved. Past performance is no guarantee of future results. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio.

Source: Dimensional Fund Advisors LP.

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There is no guarantee investment strategies will be successful. Investing involves risks, including possible loss of principal. Investors should talk to their financial advisor prior to making any investment decision.

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