

Stocks in developed markets turned in positive results for the first week of November. Domestic investors reacted positively to mid-term elections as Democrats took control of the House of Representatives and Republicans retained control of the Senate. U.S. large cap stocks delivered the strongest returns and value stocks outperformed growth stocks for the week. Yields on U.S. Treasuries were mixed last week as short term yields increased and yields on longer dated issues decreased slightly. Year-to-date, yields are up across the yield curve; however, the short end of the curve has experienced the biggest increases in response to multiple rate hikes by the Federal Reserve.

Against the backdrop of rising rates, the U.S. housing market has garnered more attention as interest rates on mortgages reached an eight-year high. This uptick in rates is responsible for a decrease in consumers refinancing their mortgages, mortgage applications reaching an eight-year low, and an increase in housing inventories. The Q3 2018 U.S. corporate earnings season has been one of the strongest in recent memory. With 90% of the companies in the S&P 500 index reporting their quarterly results, 78% of the reporting companies reported positive earnings-per-share (EPS) surprises and 61% reported positive sales surprises. Parsing through conference call transcripts, the number of companies citing tariffs declined by 5%, perhaps signaling a decreased concern about widespread impacts from tariffs through the economy.

Internationally, China surprised investors with strong export growth against the back drop of a trade battle with the U.S. Oil prices declined with the U.S. issuing temporary sanction waivers to eight countries easing fears of supply shortages.

Reports, Speeches and Market Movers:

Mon: U.S. Veterans Day
 Tue: U.K. Labour Market Report
 Wed: U.S. CPI, U.S. Core CPI, China Industrial Production
 Thu: U.S. Retail Sales, U.S. Jobless Claims
 Fri: U.S. Industrial Production, U.S. Capacity Utilization
 Sat: Japan Merchandise Trade

| Index Returns (%) | | | | | | |
|--|--------|--------|--------|--------|---------|---------|
| Returns are as of 11/9/2018 | 1Wk | 1Mo | QTD | 3Mo | YTD | 1Yr |
| S&P 500 | 2.21 | (3.31) | (4.37) | (2.05) | 5.74 | 9.73 |
| Dow Jones Industrial Average | 3.00 | (1.48) | (1.53) | 2.48 | 7.17 | 13.33 |
| Russell 2000 | 0.12 | (4.39) | (8.58) | (8.07) | 1.95 | 6.40 |
| MSCI EAFE | 0.23 | (3.19) | (6.62) | (6.87) | (7.96) | (5.55) |
| MSCI Emerging Markets | (2.04) | (1.72) | (6.75) | (9.08) | (13.91) | (11.81) |
| BBG Barclays U.S. Agg. Bond | 0.25 | (0.03) | (0.82) | (1.00) | (2.41) | (2.19) |
| BBG Barclays U.S. Corporate 10+ Yr | 1.18 | (1.01) | (2.90) | (3.11) | (8.27) | (6.04) |
| BBG Barclays U.S. Corporate High Yield | 0.11 | (0.62) | (1.31) | (0.43) | 1.23 | 2.05 |
| NASDAQ Composite | 0.74 | (4.20) | (7.85) | (5.86) | 8.26 | 10.93 |

| Yields (%) | | | |
|-----------------------------------|-----------|---------|---------|
| | 11/9/2018 | YE 2017 | 1Yr Ago |
| 2-Yr Treasury | 2.92 | 1.88 | 1.63 |
| 10-Yr Treasury | 3.18 | 2.41 | 2.34 |
| BBG Barclays U.S. Corp High Yield | 6.81 | 5.72 | 5.74 |
| BBG Barclays U.S. Aggregate Bond | 3.64 | 2.71 | 2.62 |

| Currencies | | | |
|------------|-----------|---------|---------|
| | 11/9/2018 | YE 2017 | 1Yr Ago |
| EUR : USD | 1.13 | 1.20 | 1.16 |
| GBP : USD | 1.30 | 1.35 | 1.31 |
| USD : Yen | 113.83 | 112.69 | 113.47 |
| USD : CAD | 1.32 | 1.26 | 1.27 |

USD - U.S. Dollar, EUR - Euro, GBP - British Pound, JPY - Japanese Yen, CAD - Canadian Dollar

| Commodities (\$) | | | |
|------------------|-----------|----------|----------|
| | 11/9/2018 | YE 2017 | 1Yr Ago |
| Gold | 1,209.65 | 1,302.80 | 1,275.07 |
| Silver | 14.16 | 16.94 | 16.88 |
| Natural Gas | 3.72 | 2.95 | 3.21 |
| WTI | 60.19 | 60.42 | 56.74 |
| Copper | 268.45 | 330.05 | 307.60 |
| Corn | 369.75 | 350.75 | 343.50 |

Past Performance is No Guarantee of Future Results

Investors should consider an investment option's objectives, risks, fees and expenses carefully before investing. This and other information can be found in the applicable prospectus or summary prospectuses for the products indicated, which are available from MassMutual at www.massmutual.com/product-performance/product-performance-listing-page or by calling 1-866-444-2601. Please read them carefully before investing. Past performance is no guarantee of future results.

Indexes are unmanaged, do not incur fees or expenses, do not reflect any deduction for taxes, and cannot be purchased directly by investors.

(1) Price-weighted average of 30 actively traded Blue Chip stocks, primarily industrials, but also including other service-oriented firms; may be used as a benchmark for large cap stocks. (2) Widely recognized, unmanaged index representative of common stocks of larger capitalized U.S. companies. (3) Broad-based index of over 5000 companies, which measure all domestic, and non-U.S. based common stocks listed on the NASDAQ Stock Market, Inc. (4) Unmanaged index representing the performance of small-cap U.S. stocks. (5) Unmanaged index consisting of approximately 1,200 stocks in developed market countries outside of North and South America, and represents approximately 85 percent of the total market capitalization in those countries. (6) Unmanaged index of fixed rate investment grade securities with at least one year to maturity combining the Bloomberg Barclays U.S. Treasury Bond Index, the Bloomberg Barclays U.S. Government-Related Bond Index, the Bloomberg Barclays U.S. Corporate Bond Index, and the Bloomberg Barclays U.S. Securitized Bond Index.

The Bloomberg Barclays U.S. Aggregate Bond Index is an unmanaged index of fixed-rate investment-grade securities with at least one year to maturity, combining the Bloomberg Barclays U.S. Treasury Bond Index, the Bloomberg Barclays U.S. Government-Related Bond Index, the Bloomberg Barclays U.S. Corporate Bond Index, and the Bloomberg Barclays U.S. Securitized Bond Index.

The Bloomberg Barclays U.S. Corporate High-Yield Bond Index covers the universe of fixed rate, non-investment-grade debt from corporate sectors.

The S&P 500® Index is a widely recognized, unmanaged index representative of common stocks of larger capitalized U.S. companies.

The Russell 2000 Index is a widely recognized, unmanaged index representative of common stocks of smaller capitalized U.S. companies.

The MSCI EAFE Index is a widely recognized, unmanaged index representative of equity securities in developed markets, excluding the U.S. and Canada.

The MSCI Emerging Markets (EM) Index is an unmanaged market capitalization-weighted index of equity securities of companies domiciled in various countries.

The Index is designed to represent the performance of emerging stock markets throughout the world and excludes certain market segments unavailable to U.S.-based investors.

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