FINANCIAL PERSPECTIVES

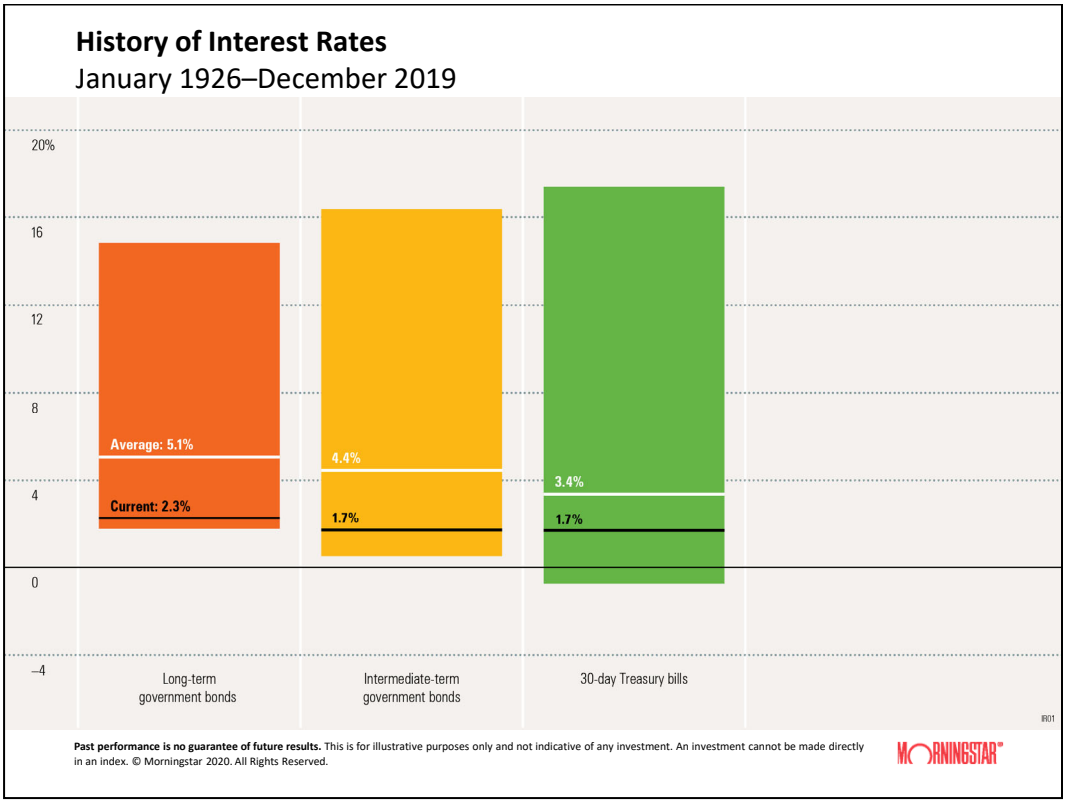
FINANCIAL MANAGEMENT ASSOCIATES, LLC
P.O. BOX 957 ■ ANDOVER, MA 01810-0016 ■ 978-687-2867

Investing in a Rising Interest Rate Environment

March 18, 2021

FINANCIAL MANAGEMENT ASSOCIATES, LLC

Investing in a Rising-Interest-Rate Environment



History of Interest Rates

This image illustrates the historical characteristics of long-, intermediate-, and short-term interest rates as represented by long-term government bonds, intermediate-term government bonds, and 30-day Treasury bills. Among all three instruments, on average, long-term government bonds delivered the highest yield of 5.1%, while intermediate-term government bonds and 30-day Treasury bills provided average yields of 4.4% and 3.4%, respectively.

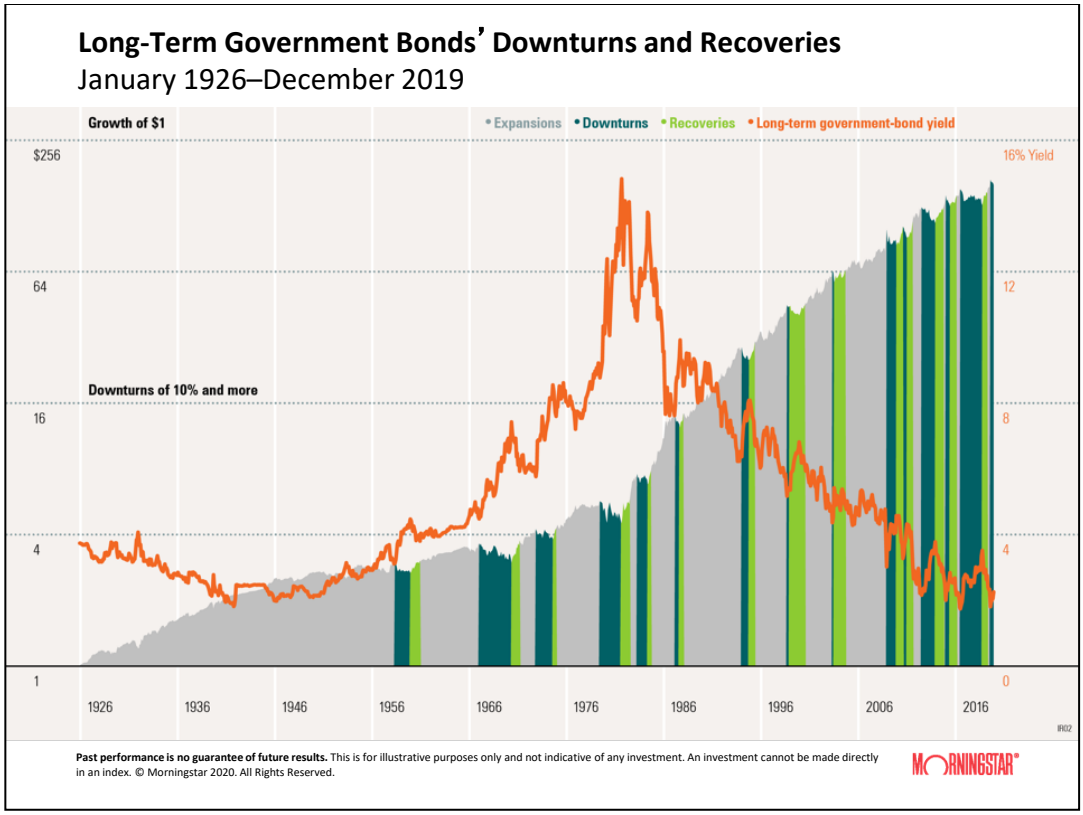
More importantly, the most recent interest rates seem to be positioned at relatively low levels, significantly trailing their respective historical averages. As of December 2019, the yields for long-, intermediate-, and short-term Treasuries were 2.3%, 1.7%, and 1.7%, respectively. Long-term government bonds, while having the longest maturity of all three securities, had the narrowest yield oscillation ranging from 1.7% to 14.8% over the entire period. Thirty-day Treasury bills, on the other hand, had the widest yield range, spanning from negative 0.7% to 17.4%. The graph shows that in rare instances, short-term yields can turn negative for brief periods of time, signifying that investors are occasionally willing to pay the U.S. government to guard their investments during turbulent market environments.

Under normal economic circumstances, longer-maturity government bonds should offer higher yields than short-term bills because of inflation expectations and maturity risk. In certain periods, however, when future inflation is expected to decrease substantially and investors' confidence plummets causing a drop in demand for short-term borrowing, Treasury bills can offer yields much larger than those of long-term government bonds. This was the case between 1980 and 1981.

Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. U.S. government bonds may be exempt from state taxes, and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government. In general, the price of a debt security tends to fall when interest rates rise and to rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the data

The long-term government-bond yield is represented by the monthly Ibbotson SBBI U.S. Long-Term Government-Bond Yield Index. The intermediate-term government-bond yield is represented by the monthly Ibbotson SBBI U.S. Intermediate-Term Government-Bond Yield Index. The 30-day Treasury bill yield uses the annualized monthly Ibbotson SBBI U.S. 30-Day Treasury Bill Total Return Index.



Long-Term Government Bonds' Downturns and Recoveries

Because of their longer maturity and, thus, longer duration, long-term government bonds tend to be highly sensitive to fluctuations in interest rates. The image illustrates the growth of $1 invested in long-term government bonds since January 1926, along with various periods of downturns and recoveries. A downturn in this chart is defined as the index closing at least 10% down from its previous high close. Its duration is the period from the previous high to the lowest close reached after it has fallen 10% or more. A recovery is measured from the lowest close reached after the index has fallen 10% or more until it recovers all its lost value. An expansion is measured from the recovery point until the next high.

This definition of a downturn for long-term government bonds (a drop of 10% or more) was chosen in order to display most of the significant drops in value that occurred over the time period analyzed. In general, for long-term government bonds, 10% is considered a significant loss of value. There have been 14 such downturns since January 1926. A lower threshold for the definition (5%, for example), would have produced 27 downturns, while a threshold of 15% would have produced only four. Therefore, a definition of a downturn of 10% was decided upon as a reasonable basis for illustrating long-term government bond downturns and recoveries in this chart. The most recent downturn began in September 2019 and is still going on. In general, longer-maturity fixed-income instruments tend to have more interest-rate risk than their shorter-term equivalents. With that being said, despite all the volatility and the numerous periods of declining prices, long-term government bonds were still able to deliver positive returns over a longer investment horizon.

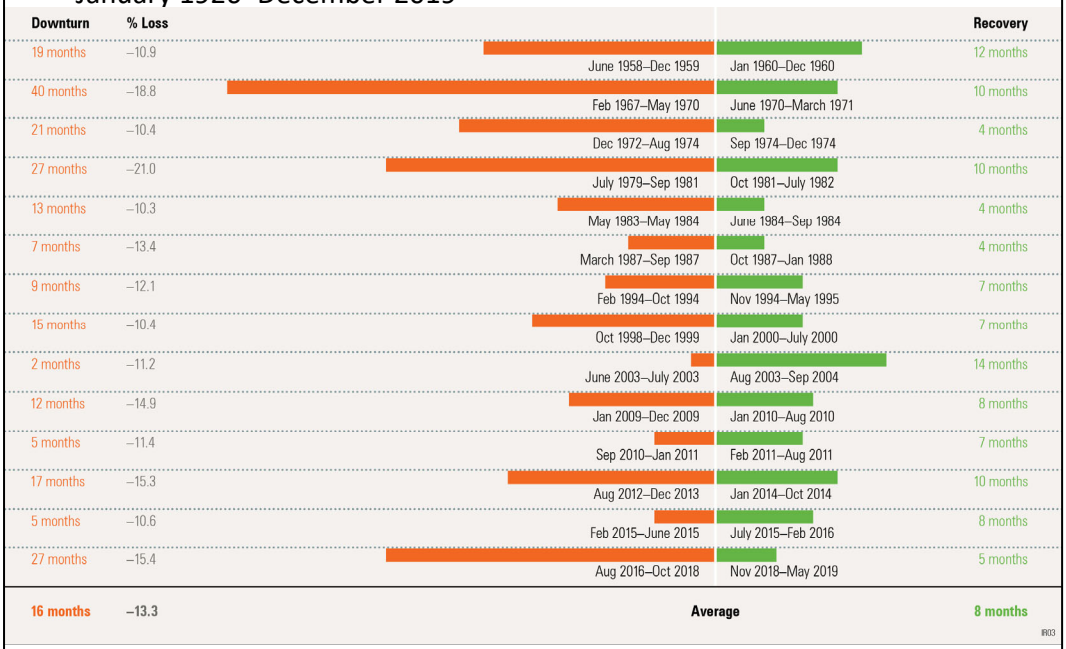
Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. U.S. government bonds may be exempt from state taxes, and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government. Debt securities have varying levels of sensitivity to changes in interest rates. In general, the price of a debt security tends to fall when interest rates rise and to rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the Data

The growth of long-term government bonds is represented by the Ibbotson SBBI U.S. Long-Term Government-Bond Total Return Index. The analysis of downturns and recoveries is based on past downturns (January 1926–December 2019) of 10% or more. The long-term government-bond yield is represented by the Ibbotson SBBI U.S. Long-Term Government-Bond Yield Index.

Long-Term Government Bonds' Downturns and Recoveries

January 1926–December 2019



Long-Term Government Bonds' Downturns and Recoveries

A specific account of past long-term government-bond market downturns and recoveries can present a better picture of potential market performance in the face of rising interest rates. A downturn in this chart is defined as the index closing at least 10% down from its previous high close. Its duration is the period from the previous high to the lowest close reached after it has fallen 10% or more. A recovery is measured from the lowest close reached after the index has fallen 10% or more until it recovers all its lost value. An expansion is measured from the recovery point until the next high.

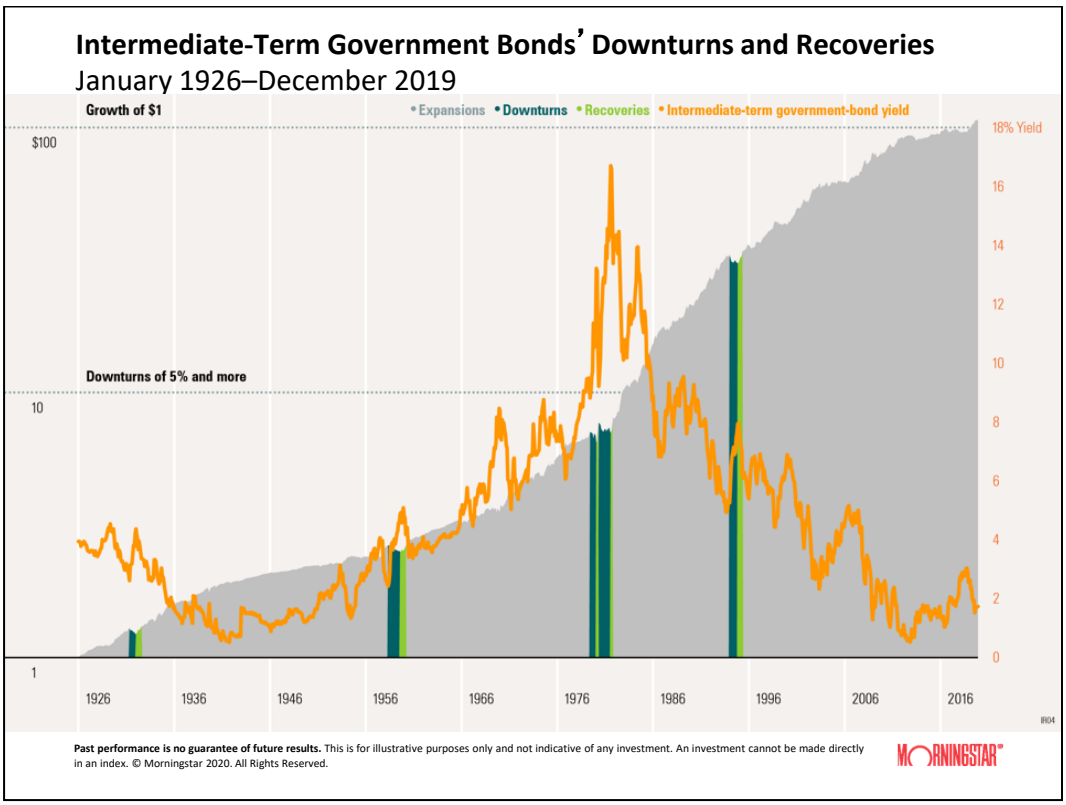
This definition of a downturn for long-term government bonds (a drop of 10% or more) was chosen in order to display most of the significant drops in value that occurred over the time period analyzed. In general, for long-term government bonds, 10% is considered a significant loss of value. There have been 15 such downturns since January 1926 – however, the most recent downturn (September 2019-present) is not shown here because the downturn hasn't finished nor has the recovery for it happened. A lower threshold for the definition (5%, for example), would have produced 27 downturns, while a threshold of 15% would have produced only four. Therefore, a definition of a downturn of 10% was decided upon as a reasonable basis for illustrating long-term government bonds downturns and recoveries in this chart.

The most severe downturn occurred between July 1979 and September 1981 when long-term government-bond prices plummeted 21%, and it took the market 27 months to reach its trough. Following the downturn, the recovery period lasted 10 months. Based on the 14 largest downturns, on average, the long-term government-bond market declined 13.3% and the average decline length was just about 16 months. The severe downturns, however, were usually followed by a period of robust and quick recovery that, on average, occurred within eight months.

Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. U.S. government bonds may be exempt from state taxes and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government. Debt securities have varying levels of sensitivity to changes in interest rates. In general, the price of a debt security tends to fall when interest rates rise and rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the data

Long-term government bonds are represented by the Ibbotson SBBI U.S. Long-Term Government Bond Total Return Index. The analysis of downturns and recoveries is based on past downturns (January 1926–December 2019) of 10% or more.



Intermediate-Term Government Bonds' Downturns and Recoveries

Because of their shorter maturity and, thus, less sensitivity to changes in interest rates, intermediate-term government bonds tend to be much less volatile than long-term government bonds. A downturn in this chart is defined as the index closing at least 5% down from its previous high close. Its duration is the period from the previous high to the lowest close reached after it has fallen 5% or more. A recovery is measured from the lowest close reached after the index has fallen 5% or more until it recovers all its lost value. An expansion is measured from the recovery point until the next high.

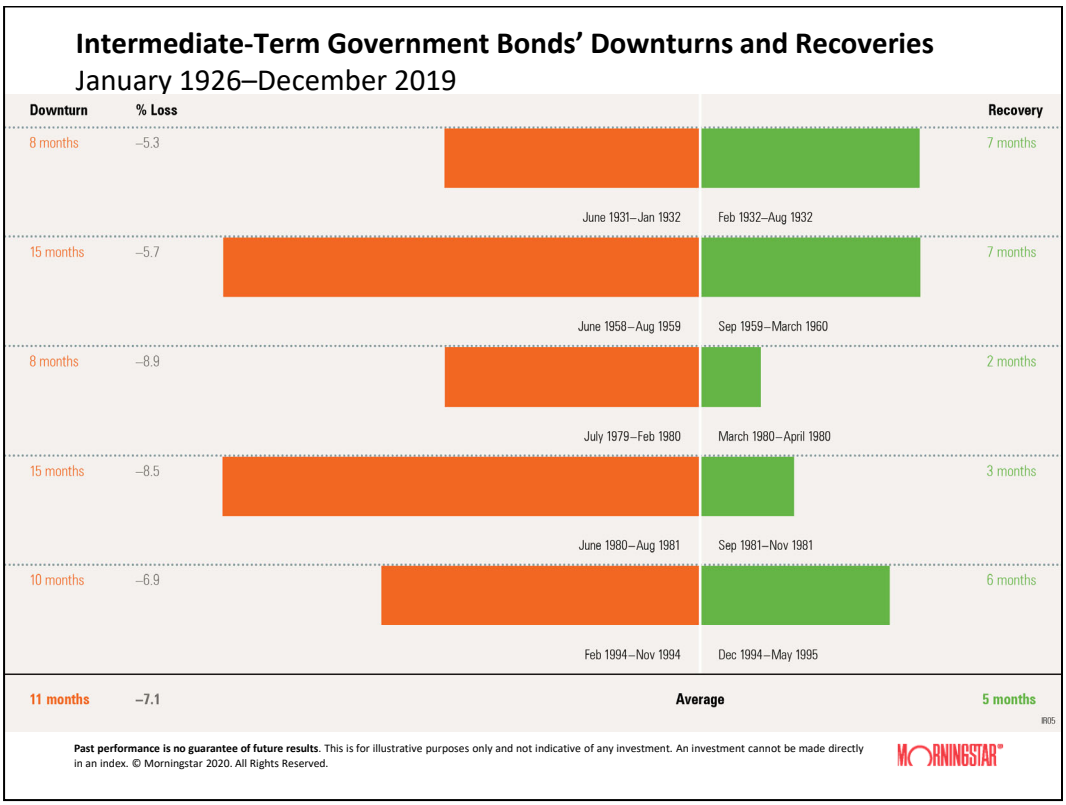
This definition of a downturn for intermediate-term government bonds (a drop of 5% or more) was chosen in order to display most of the significant drops in value that occurred over the time period analyzed. As opposed to long-term government bonds, intermediate-term government bonds did not experience any downturns of 10% or more. Therefore, for purposes of this chart, the downturn definition needed to be changed in order to capture the intermediate-term government downturns that did occur. A lower threshold for the definition (5%) produced five downturns for intermediate-term government bonds, which are illustrated in the chart that shows the growth of $1 invested in intermediate-term government bonds in January 1926.

Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. U.S. government bonds may be exempt from state taxes, and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government. Debt securities have varying levels of sensitivity to changes in interest rates. In general, the price of a debt security tends to fall when interest rates rise and rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the Data

The growth of intermediate-term government bonds is represented by the Ibbotson SBBI U.S. Intermediate-Term Government-Bond Total Return Index. The analysis of downturns and recoveries is based on past downturns (January 1926–December 2019) of 5% or more. The intermediate-term government-bond yield is represented by the Ibbotson SBBI U.S. Intermediate-Term Government-Bond Yield Index.

MORNINGSTAR®



Intermediate-Term Government Bonds' Downturns and Recoveries

Compared with long-term government bonds, the historical account of the past downturns and recoveries of intermediate-term government-bond prices appears to indicate major differences between these two markets. First, there were only five downturns of 5% or more in the intermediate-term government-bond market since 1926. Unlike long-term government bonds, the prices of intermediates have never declined by more than 9%. The most severe downturn occurred between July 1979 and February 1980, when intermediate-term government-bond prices declined 8.9%. Based on the past five most severe downturns, on average, intermediate-term government bonds declined 7.1%, and the average decline length was just about 11 months. Following the downturns, the complete recoveries occurred within two to seven months.

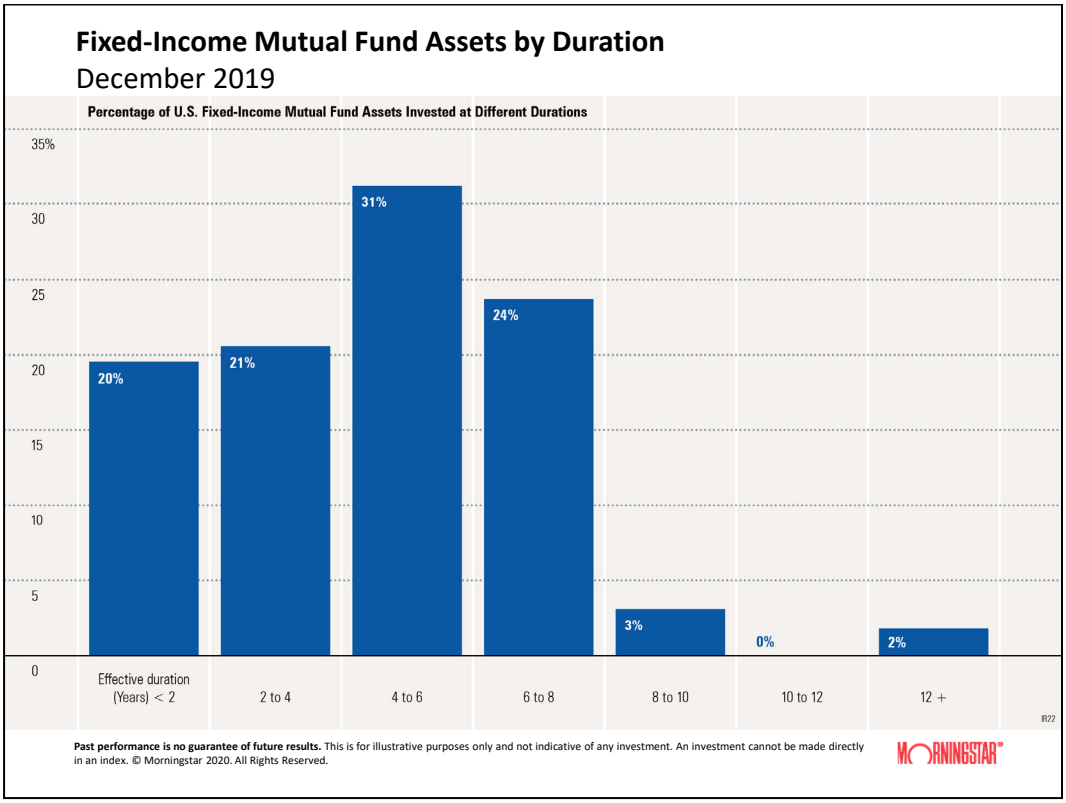
A downturn in this chart is defined as the index closing at least 5% down from its previous high close. Its duration is the period from the previous high to the lowest close reached after it has fallen 5% or more. A recovery is measured from the lowest close reached after the index has fallen 5% or more until it recovers all its lost value. An expansion is measured from the recovery point until the next high.

This definition of a downturn for intermediate-term government bonds (a drop of 5% or more) was chosen in order to display most of the significant drops in value that occurred over the time period analyzed. As opposed to long-term government bonds, intermediate-term government bonds did not experience any downturns of 10% or more. Therefore, for purposes of this chart, the downturn definition needed to be changed in order to capture the intermediate-term government downturns that did occur. A lower threshold for the definition (5%) produced five downturns for intermediate-term government bonds, which are illustrated in the chart.

Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. U.S. government bonds may be exempt from state taxes and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government. Debt securities have varying levels of sensitivity to changes in interest rates. In general, the price of a debt security tends to fall when interest rates rise and to rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the data

Intermediate-term government bonds are represented by the Ibbotson SBBI U.S. Long-Term Government Bond Total Return Index. The analysis of downturns and recoveries is based on past downturns (January 1926–December 2019) of 5% or more.



Fixed-Income Mutual Fund Assets by Duration

Long-duration bonds tend to be more sensitive to changes in interest rates than short-duration bonds. One reason for this is that investors want to be compensated for the higher risk and uncertainty that come with longer-term investments. Also, when interest rates start rising, bonds already on the market have to compete with newer bonds that pay higher coupon rates. A bond with a longer length of time left to maturity would be less attractive to investors, because of these lower coupon payments, than a bond with only a short time left until it matures. Duration is a measure of the sensitivity of bond prices to changes in interest rates. Duration can be used to estimate the impact of rising or falling interest rates on your bond fund. For example, a fund with a duration of five years will lose approximately 5% if interest rates rise 1%.

As illustrated by the image, investors are aware of all this. As of December 2019, 72% of fixed-income assets were invested in funds with a duration less then six years. The highest concentration of assets can be found in funds with a duration of four to six years, which is approximately the average duration of the intermediate-term bond Morningstar Category. Funds with a duration greater than eight years attract fewer assets, which appears to indicate that most investors are risk-averse and avoid placing too large a share of their assets in long-term (more volatile) bonds.

Debt securities have varying levels of sensitivity to changes in interest rates. In general, the price of a debt security tends to fall when interest rates rise and to rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. U.S. government bonds may be exempt from state taxes and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government.

About the Data

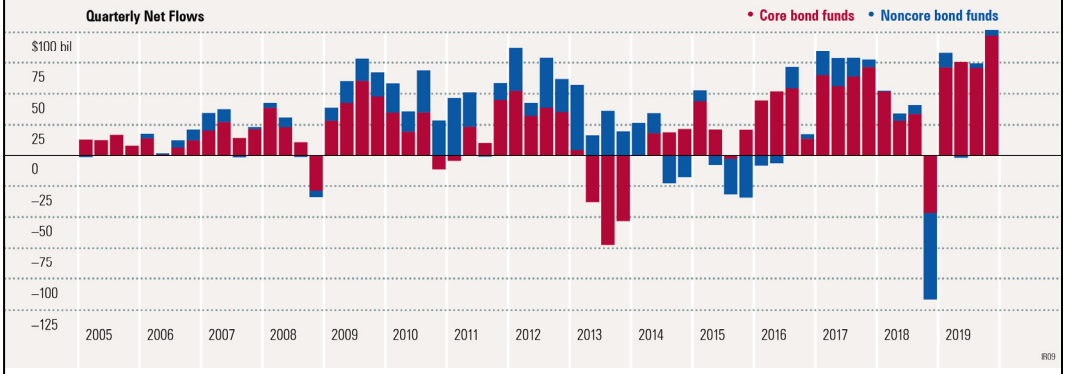
Data comes from Morningstar Direct mutual fund database. All open-end mutual funds with current assets and duration statistics were included in the calculations. If a fund did not have a current assets or duration available it was excluded from this analysis. Percentages may be off due to rounding.

Core Versus Noncore Fixed Income

January 2005–December 2019 (quarterly)

Core Bond Categories	Correlation S&P 500	Correlation Barclays Aggregate Bond
Intermediate-term bond	0.34	0.87
Intermediate-term-plus bond	0.37	0.85
Intermediate government	–0.12	0.95
Inflation-protected bond	0.28	0.73
Corporate bond	0.44	0.77
Long-term bond	0.27	0.89
Long government	–0.29	0.84
World bond	0.50	0.63
World bond–USD hedged	0.39	0.79

Noncore Bond Categories	Correlation S&P 500	Correlation Barclays Aggregate Bond
High-yield bond	0.74	0.20
Multisector bond	0.71	0.44
Bank loan	0.59	–0.01
Nontraditional bond	0.70	0.19
Emerging-markets bond	0.65	0.45
Emerging-markets local-currency	0.61	0.37
Preferred stock	0.61	0.34



MORNINGSTAR®

Core Versus Noncore Fixed Income

A very attractive characteristic of fixed-income instruments is the income they pay. However, because of the low-interest-rate environment in the past few years, investors haven't been seeing much income from traditional bonds. The search for higher yields led to more-aggressive allocations and increased flows into emerging-markets and high-yield bonds in 2010, 2011, and 2012.

Another important feature of fixed-income securities is the diversification benefits. After the 2008 financial crisis, bond flows have increased considerably as investors sought to diversify their portfolios after suffering the effects of the Great Recession. In addition, investors also began allocating a larger amount of their assets to noncore bond categories in order to further diversify their fixed-income portfolios.

Since 2011 until recently, noncore bond funds gained popularity because of the typically higher yields offered in the current low-interest-rate environment. Those funds became even more popular in 2013, as investors fled traditional core bond categories in anticipation of the Federal Reserve tapering its bond purchases. What investors might not realize is that noncore bond funds are highly correlated with equity funds and carry a significant amount of credit risk. This, overall, makes them less efficient portfolio diversifiers, especially for portfolios that already hold large stock allocations. However, because of rising interest rates and investors wanting to cut credit risk, both core and noncore bond funds saw heavy outflows in the fourth quarter of 2018, their greatest outflows since 2013 and 2015, respectively. Things have since returned to normal in 2019.

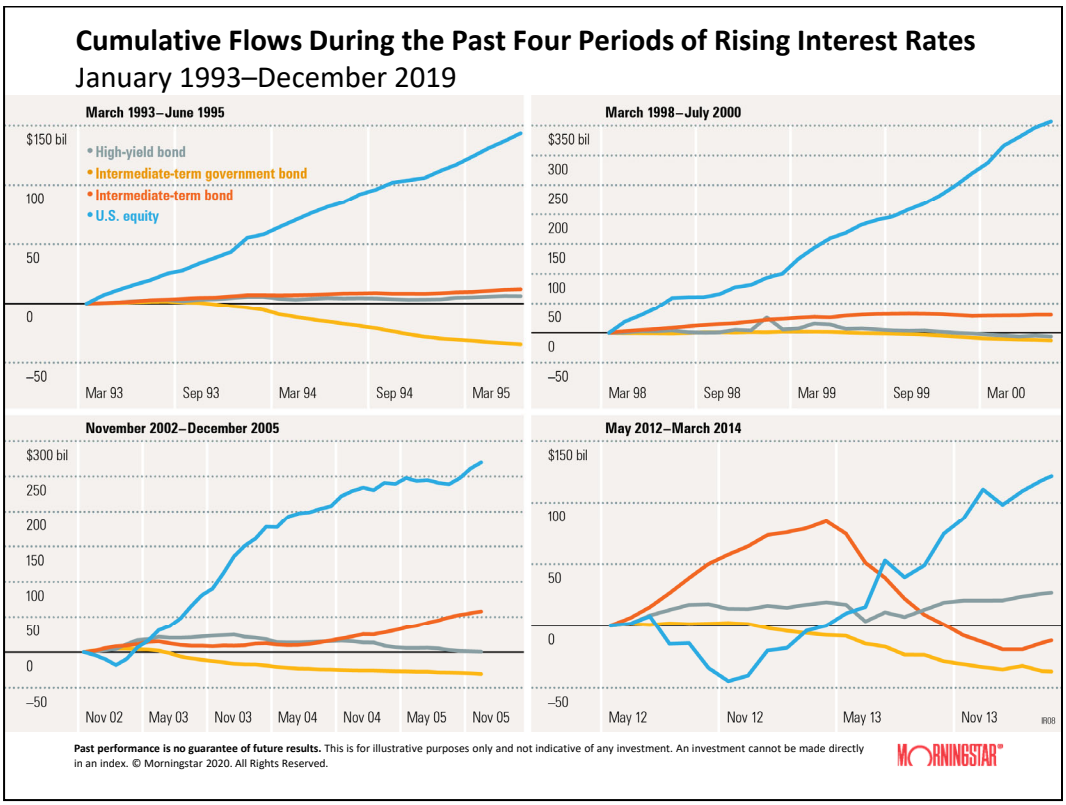
Nontraditional bond funds use a variety of strategies that are normally off limits to traditional funds aimed at profiting from the differences in price movements among bonds. These funds, as well as bank-loan funds, attracted considerable investor assets in 2013. However, it should be noted that nontraditional bond funds are a new category without significant performance history, and it is difficult to predict how they will perform in a rising-interest-rate environment. International bonds are not guaranteed. With international bonds, the investor is a creditor of a foreign government or corporation. International investments involve special risks such as fluctuations in currency, foreign taxation, economic and political risks, liquidity risks, and differences in accounting and financial standards. Emerging-markets investments are more risky than developed-markets investments. High-yield corporate bonds exhibit significantly more risk of default than investment-grade corporate bonds.

Bank loans and senior loans are affected by the risks associated with fixed income in general, including interest-rate risk and default risk. They are often non-investment-grade; therefore, the risk of default is high. These securities are also relatively illiquid. Managed products that invest in bank loans/senior debt are often highly leveraged, producing a high risk of return volatility. Nontraditional bond funds are riskier than a traditional bond fund but less risky than an equity fund and can utilize riskier investment strategies in order to achieve their investment objective.

MORNINGSTAR®

About the Data
The data is based on estimated net flows using Morningstar asset flows analysis from Morningstar's database. The analysis includes U.S. open-end mutual funds and exchange-traded funds but excludes money market funds and funds of funds.

Data is as of December 2019.



Cumulative Flows During the Past Four Periods of Rising Interest Rates

Bonds tend to perform poorly in times of rising interest rates, leading investors to reposition the fixed-income portions of their portfolios. Examining where investors placed their money during periods when interest rates rose in the past may provide some insight about which asset classes investors favor in such an environment.

During all four periods examined, U.S. equity funds attracted the highest cumulative flows, indicating that investors tend to turn to stocks when bond returns are diminished by rising interest rates. Among the fixed-income categories, intermediate-term government-bond funds fared the worst. Investors consistently withdrew money from these funds, resulting in a negative cumulative flow.

High-yield bonds tend to have less sensitivity to rising rates because of higher yields, so normally this category would be expected to receive investor money when interest rates rise. Surprisingly, however, cumulative flows into high-yield bond funds were generally almost flat, suggesting that investors may be more sensitive to the high credit risk of high-yield bonds than to their low interest-rate sensitivity.

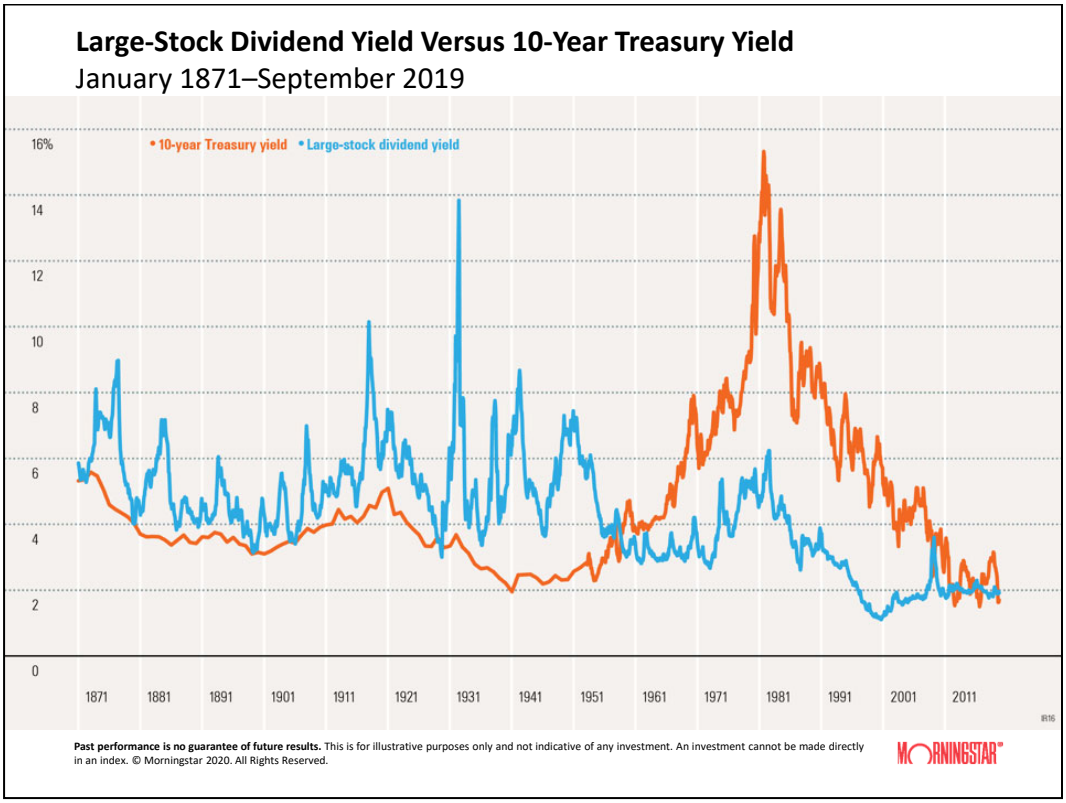
Diversification does not eliminate the risk of experiencing investment losses. Government bonds are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest, while stocks are not guaranteed and have been more volatile than the other asset classes. High-yield corporate bonds exhibit significantly more risk of default than investment-grade corporate bonds.

Debt securities are subject to credit/default risk, which is the risk associated with the issuer failing to meet its contractual obligations either through a default or credit downgrade. Debt securities have varying levels of sensitivity to changes in interest rates. In general, the price of a debt security tends to fall when interest rates rise and to rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the Data

The interest rate is measured by the yield on a five-year constant-maturity U.S. government bond. Periods of rising rates are identified by a 2.5% or higher increase in the five-year government-bond yield. **Cumulative flows:** U.S.-domiciled fund flows from Morningstar Direct. The start date of 1993 is determined by data availability. The analysis includes U.S. open-end mutual funds and exchange-traded funds but excludes money-market funds and funds of funds.

MORNINGSTAR



Large-Stock Dividend Yield Versus 10-Year Treasury Yield
The image illustrates the historical relationship between 10-year Treasury yields and large-stock dividend yields since 1871. Before 1957, stock dividend yields were much higher than 10-year government-bond yields. This can be explained by the fact that investors preferred dividend payouts back then as a way of compensation for the additional risk of investing in stocks.

In the more modern period, this relationship has changed, as stock buybacks became a more common way to distribute corporate earnings. Dividend yields decreased substantially, and capital appreciation became a bigger driver of stocks' performance. During this time, between 1957 and 2008, 10-year Treasury yields were significantly higher than large-stock dividend yields. As a result, bonds become the main engine for steady income generation. After 10-year Treasury rates significantly declined following the 2008 financial crisis, stocks yielded more than 10-year Treasury bonds for the first time since 1957. Recent rising interest rates, however, have pushed government yields above stock dividends.

Stocks are not guaranteed and have been more volatile than the other asset classes. Dividends are not guaranteed and are paid solely at the discretion of the stock-issuing company. Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. U.S. government bonds may be exempt from state taxes and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government. In general, the price of a debt security tends to fall when interest rates rise and to rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the Data
The large-stock dividend yield is represented by the monthly S&P Composite Index. The 10-Year Treasury yield is based on the monthly yield of 10-year government bonds. Both indexes are from the Robert J. Shiller Data Library (http://www.econ.yale.edu/~shiller/data.htm). These indexes were chosen in order to provide maximum historical data coverage from 1871 through September 2019.

Monetary Policy Classification System

The following slides examine periods of *expansive*, *restrictive*, or *indeterminate* monetary policy:

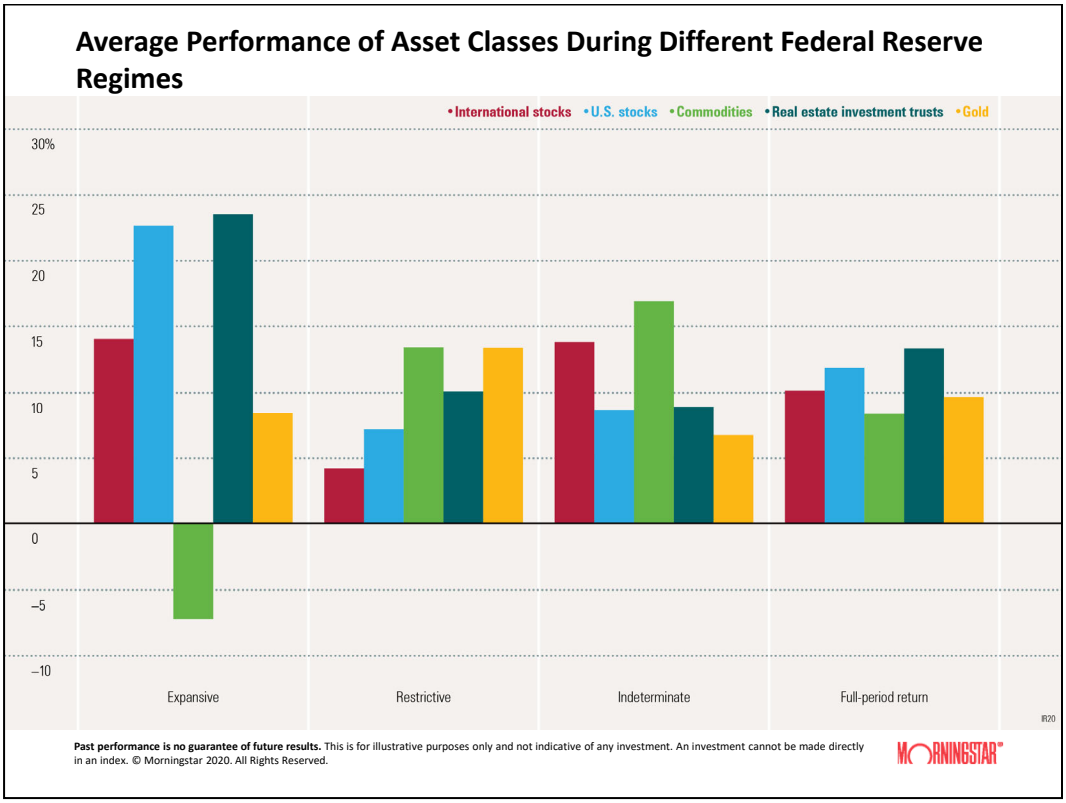
- *Expansive:* A period when the Federal Reserve decreased the discount rate and followed it up with actions that resulted in decreases in the federal-funds rate. Since 1955, Fed policy has followed an unconstrained or expansive policy approximately 30% of the time.
- *Restrictive:* A period when the Federal Reserve increased the discount rate and followed it up with actions that resulted in increases in the federal-funds rate. Since 1955, Fed policy has followed a constrained or restrictive policy approximately 33% of the time.
- *Indeterminate:* A period when the discount rate and the federal-funds rate are moving in opposite directions. The Federal Reserve's intentions can't be clearly determined. This classification captures the remaining 37% of months.

Source: Johnson, R., Jensen, G., & Garcia-Feijoo, L. 2015. *Invest With the Fed: Maximizing Portfolio Performance by Following Federal Reserve Policy.* (New York: McGraw-Hill Education).

IR18

MORNINGSTAR®

MORNINGSTAR®



Average Performance of Asset Classes During Different Federal Reserve Regimes
The actions of the Federal Reserve have a large impact on asset-class returns. The chart shows how different asset classes performed during the three different Fed regimes: expansive, restrictive, and indeterminate.

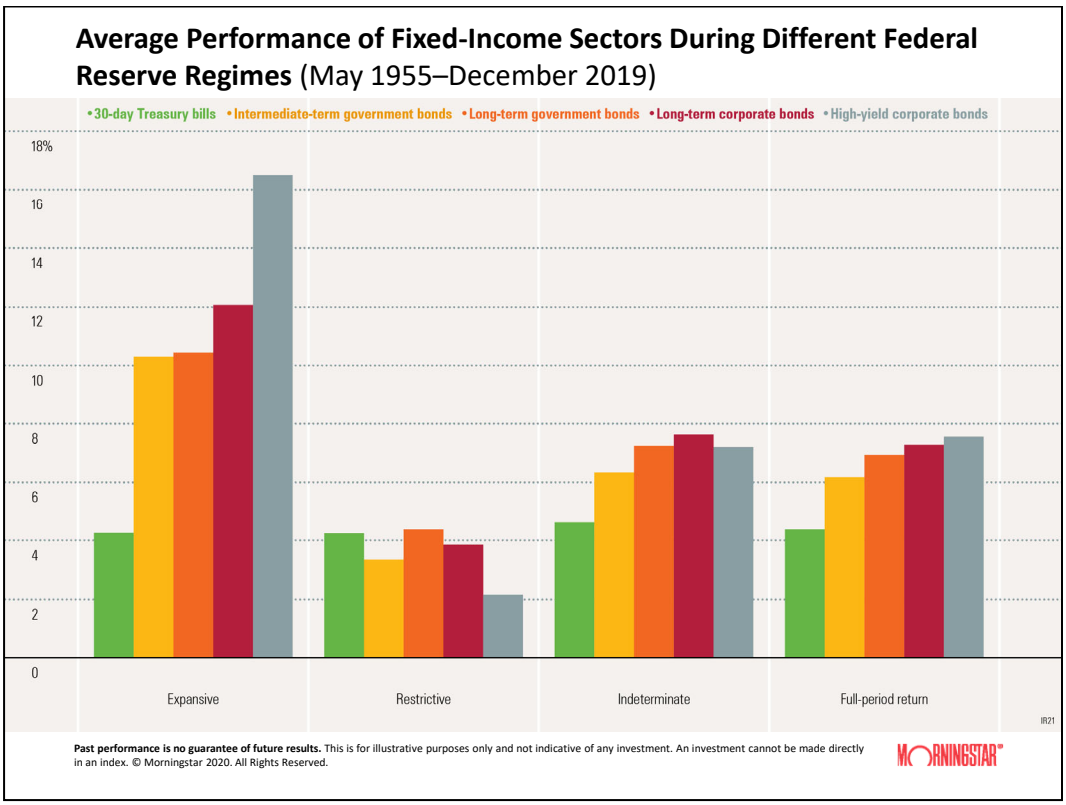
An expansive monetary policy is associated with weak economic growth and declining interest rates. REITs likely perform the best because they distribute income and when interest rates are declining, and REIT income becomes more attractive than fixed-income securities. The Federal Reserve employs an expansive policy to get the economy jump-started. Low interest rates encourage consumers to spend. This stimulates the economy and improves corporate earnings, which translates into higher stock prices. Commodity returns are highly correlated with inflation rates, and when economic growth is weak and interest rates are going down, inflation is typically below average.

A restrictive monetary policy is associated with an overheating economy and rising interest rates. Commodities and gold perform the best because inflation is typically above average in this period. Periods of rising rates usually occur in the later half of an equity bull market. The data shows that the weakest stock returns are in the later stages of a bull market. Returns and principal invested in stocks are not guaranteed. International investments involve special risks such as fluctuations in currency, foreign taxation, economic and political risks, liquidity risks, and differences in accounting and financial standards. Gold/commodity investments will be subject to the risks of investing in physical commodities, including regulatory, economic and political developments, weather events, natural disasters, and market disruptions. Exposure to the commodities markets may subject the investment to greater volatility than investments in more traditional securities, such as stocks and bonds.

About the Data
U.S. stocks are represented by the Ibbotson Large Company Stock Index. International stocks are represented by the MSCI EAFE Index. Commodities are represented by the S&P GSCI Index. Real estate investment trusts are represented by the FTSE NAREIT Equity REITs Index. Gold is represented by London Gold AM Index. The chart starts in February 1972 because that is when we have data on the discount rate and the federal-funds rate. The data assumes reinvestment of all income and does not account for taxes or transaction costs.

Definitions of the three Federal Reserve regimes:

- **Expansive:** A period when the Federal Reserve decreased the discount rate and followed it up with actions that resulted in decreases in the federal-funds rate. Since February 1972, Fed policy has followed an unconstrained or expansive policy approximately 30% of the time.
- **Restrictive:** A period when the Federal Reserve increased the discount rate and followed it up with actions that resulted in increases in the federal-funds rate. Since February 1972, approximately 33% of months are classified as constrained or restrictive policy months.
- **Indeterminate:** A period where the discount rate and the federal-funds rate are moving in opposite directions. The Federal Reserve's intentions can't be clearly determined. This classification captures the remaining 37% of the time when the Fed's policy intentions cannot be clearly classified.



Average Performance of Fixed-Income Sectors During Different Federal Reserve Regimes

The actions of the Federal Reserve have a large impact on fixed-income returns. The chart shows how different fixed-income categories performed during the three different Fed regimes: expansive, restrictive, and indeterminate.

An expansive monetary policy is associated with weak economic growth and declining interest rates. All fixed-income categories post strong returns during an expansive period. This is because fixed-income prices are inversely related to interest rates. It is interesting that high yield performs the best because it typically does poorly in a weak economy because of high credit risk. This is true, but the Federal Reserve historically keeps an expansive policy in place for many months after the stock market has bottomed. While there may be a few months of poor returns during the stock market downturn, the positive returns in the recovery counteract the earlier negative results.

A restrictive monetary policy is associated with an overheating economy and rising interest rates. All fixed-income categories perform poorly in a restrictive period. Restrictive periods are usually near the end of an economic expansion. In these late stages, credit spreads (the difference in yield between a risky bond and a safe U.S. government bond) tend to rise. High-yield bonds that have high credit risk tend to perform poorly when credit spreads rise.

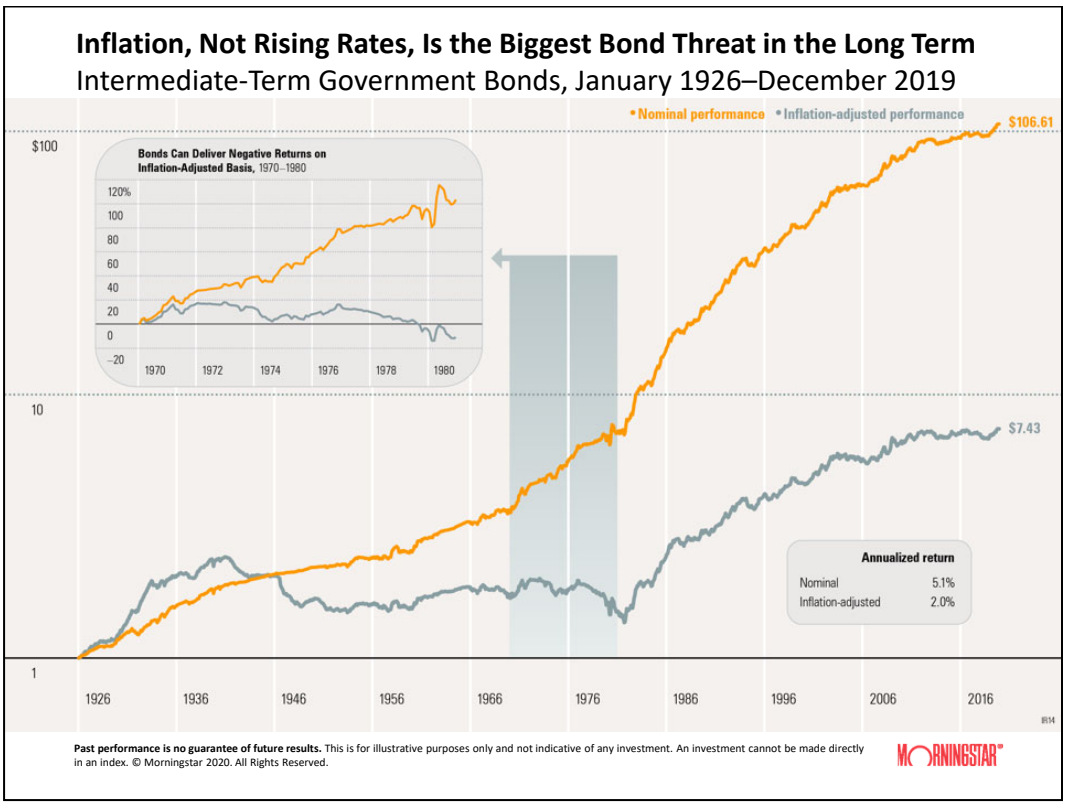
Debt securities are subject to credit/default risk, which is the risk associated with the issuer failing to meet its contractual obligations either through a default or credit downgrade. Government bonds and Treasury bills are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest. Bonds in a portfolio are typically intended to provide income and/or diversification. U.S. government bonds may be exempt from state taxes, and income is taxed as ordinary income in the year received. With government bonds, the investor is a creditor of the government. High-yield corporate bonds exhibit significantly more risk of default than investment-grade corporate bonds. Debt securities have varying levels of sensitivity to changes in interest rates. In general, the price of a debt security tends to fall when interest rates rise and to rise when interest rates fall. Securities with longer maturities and mortgage securities can be more sensitive to interest-rate changes.

About the Data

The chart starts in May 1955 because that is when we have data on the discount rate and the federal-funds rate. The data assumes reinvestment of all income and does not account for taxes or transaction costs.

Definitions of the three Federal Reserve regimes:

- **Expansive:** A period when the Federal Reserve decreased the discount rate and followed it up with actions that resulted in decreases in the federal-funds rate. Since February 1972, Fed policy has followed an unconstrained or expansive policy approximately 30% of the time.
- **Restrictive:** A period when the Federal Reserve increased the discount rate and followed it up with actions that resulted in increases in the federal-funds rate. Since February 1972, approximately 33% of months are classified as constrained or restrictive policy months.
- **Indeterminate:** A period where the discount rate and the federal-funds rate are moving in opposite directions. The Federal Reserve's intentions can't be clearly determined. This classification captures the remaining 37% of the time when the Fed's policy intentions cannot be clearly classified.



Inflation, not Rising Rates, Is the Biggest Bond Threat in the Long Term

With the Federal Reserve likely to raise interest rates in the near future, investors have been concerned about a potential decline in bond performance. In general, bonds tend to perform poorly in times of rising interest rates, but by worrying about rates, investors may lose sight of an even bigger long-term threat: inflation.

Over the long term (since 1926), investors have lost 3.1% (the difference between 5.1% nominal and 2.0% inflation-adjusted) in return every year to inflation. Compounded over 90 years, the difference in ending wealth values is astounding: A $98 nominal value becomes only $7 when adjusted for inflation.

Over certain shorter time periods, inflation-adjusted return can even be negative, as illustrated in the inset chart. Annual inflation averaged 7.8% between 1970 and 1980. Because of such high inflation, investors who may have thought they had achieved a decent cumulative return (103%) had actually lost 11% on an inflation-adjusted basis.

Government bonds are guaranteed by the full faith and credit of the U.S. government as to the timely payment of principal and interest.

About the data

Nominal performance of intermediate-term government bonds—Ibbotson SBBI U.S. Intermediate-Term Government-Bond Index, total return. Inflation-adjusted performance of intermediate-term government bonds—Ibbotson SBBI U.S. Intermediate-Term Government-Bond Index, inflation-adjusted return. Inflation—Consumer Price Index. The 1970–80 time period was chosen to provide an example of how bonds can be adversely affected by high inflation. An investment cannot be made directly in an index. The data assumes reinvestment of all income and does not account for taxes or transaction costs.

MORNINGSTAR®