Macro-Market Prognosis: 2018-Q4

A DRN Financial Special Research Report

Macro-Market Prognosis©

A DRN Financial Special Research Report

Intro

Using proprietary corporate profit and cash valuation models and a host of macroeconomic indicators, DRN Financial™ provides quarterly prognoses of the macroeconomic indicators pertinent in assessing the status of the U.S. stock market. DRN Financial™ Macro-Market Prognosis© is built on the foundation that the U.S. is a consumer-driven economy. Ever since the end of WWII, more than two-thirds of U.S. GDP has come from personal consumption expenditures. The U.S. stock market thus is intimately linked to the fortunes of the U.S. consumer (see Appendix A). As such, indicators that gauge the health of U.S. consumers should provide valuable, at times even leading, indications as to the direction of the U.S. stock market.

Currently, our DRN indexes, corporate profits, and 23 indicators show sign of stretched bull stock market. While these indicators' collective signal value is subject to the usual randomness of the data, we feel that the consensus signals somewhat point to the start of a weakening of one the longest-lasting bull markets.

Our macro indicators are sounding the alarms much more loudly!

The combination of our macro indicators based on year-on-year changes of various consumption, employment, and credit measures point to more conservative tactical allocation for equity.
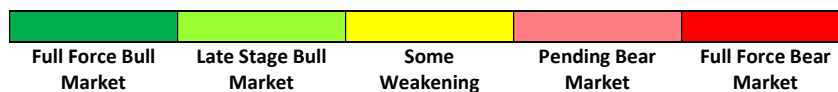
Summary Prognosis

Our quarterly propitiatory indexes (plotted against S&P500) and the ratio of corporate profits to the gross domestic product are as follows:
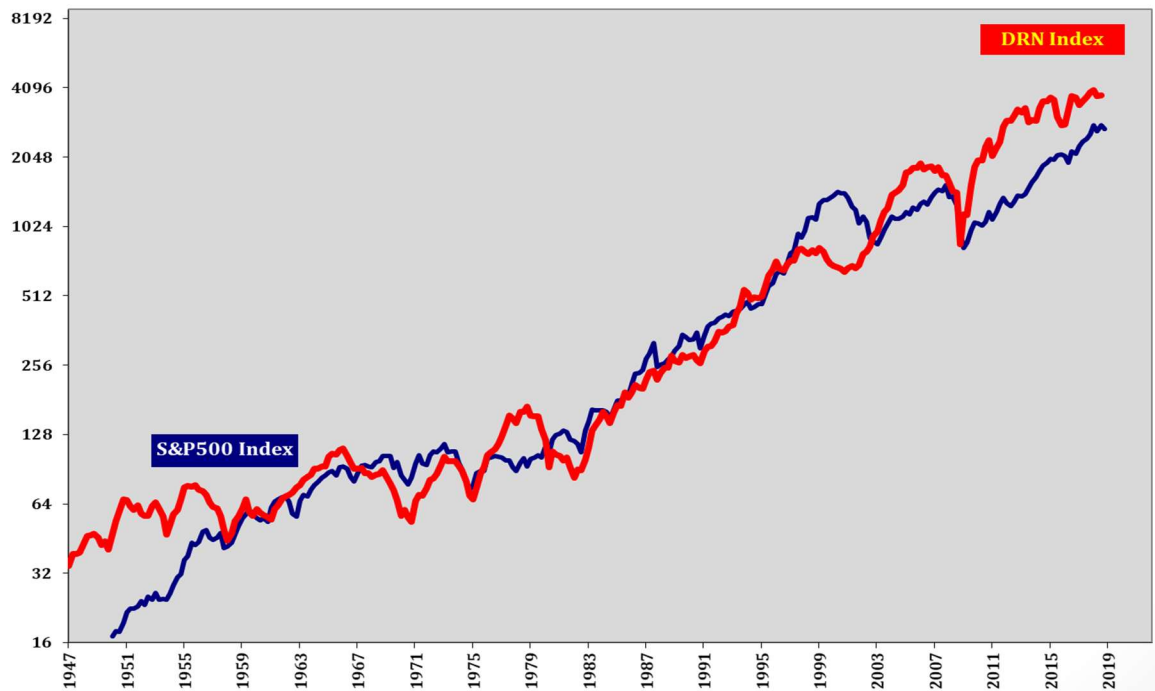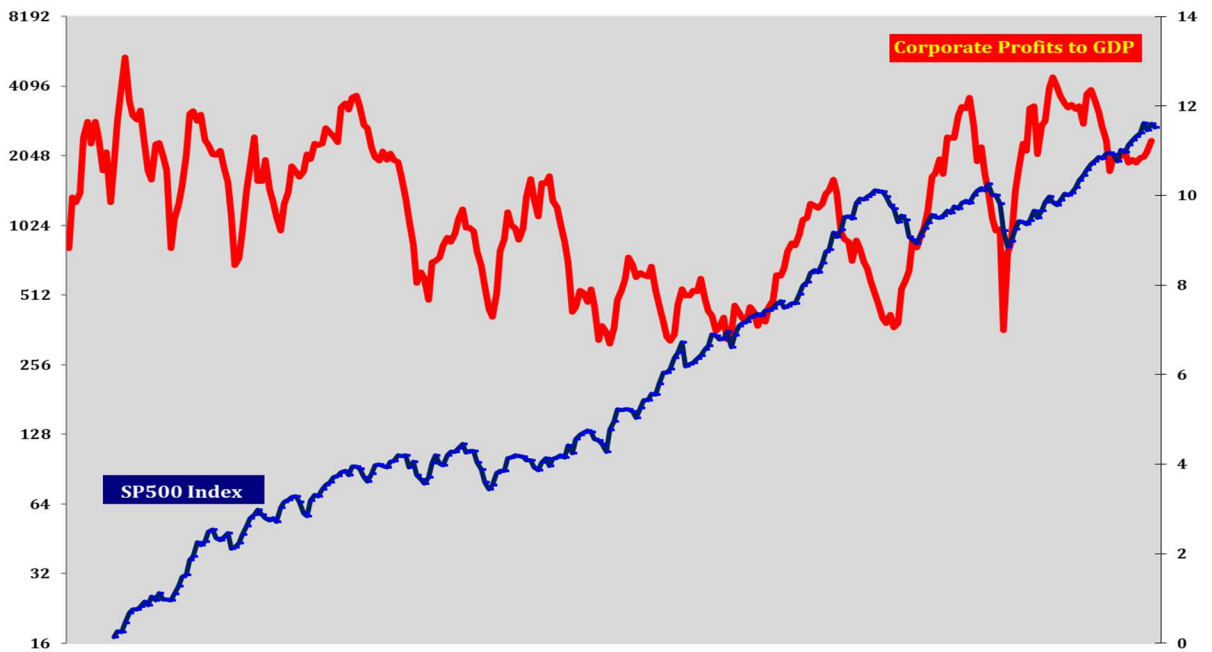
Corporate cash flows as a proportion of the gross domestic product have been historically cyclical (i.e., moving in tandem with stock market). Since the so-called earning recession of 2015, this ratio has been slowly decreasing. While this doesn't call for immediate concern, it points to a structural vulnerability in the underpinning economy: the U.S. economy is too reliant on the cash generation of corporations in order to generate organic growth. Coupled with the sustained weakening of the real wages in the last four decade, this is fundamentally disconcerting. We shall present out assessment of 23 macro indicators from which we derive the conclusion that perhaps final stages of bull market has already begun; albeit ever so slowly.

Our assessment of DRN indexes and the 23 indicators can be visually depicted as:

Macro Indicator	Status	Macro Indicator	Status
DRN Indexes	🟨	Overall Leverage	🟩
Personal Consumption	🟥	Private Leverage	🟨
Non-Durable Goods	🟩	Corporate Leverage	🟨
Durable Goods	🟨	Margin Debt	🟨
Services	🟥	Credit Card Defaults	🟩
Retail Sales	🟩	Mortgage Defaults	🟨
Inflation	🟨	Consumer Loan Defaults	🟨
Unemployment	🟨	C&I Loan Defaults	🟩
Employment	🟥	Leading Index	🟨
Wages	🟩	Consumer Confidence	🟩
Housing Starts	🟨	MZM	🟩
Housing Permits	🟨	MZM Own Rate	🟩

Full Force Bull Market	Late Stage Bull Market	Some Weakening	Pending Bear Market	Full Force Bear Market

Real Personal Consumption Expenditures

As is shown in Figure 1, the year-on-year change in real personal consumption has been on a downtrend ever since the "earning recession" of late 2015. Moreover, the change is uncomfortably close to the critical 2% threshold: almost all past major bear markets were marked by sharp declines in the year-on-year change of real personal consumption below 2%. What makes this picture more alarming is that stock market's own year-on-year performance for the last few months has been declining.
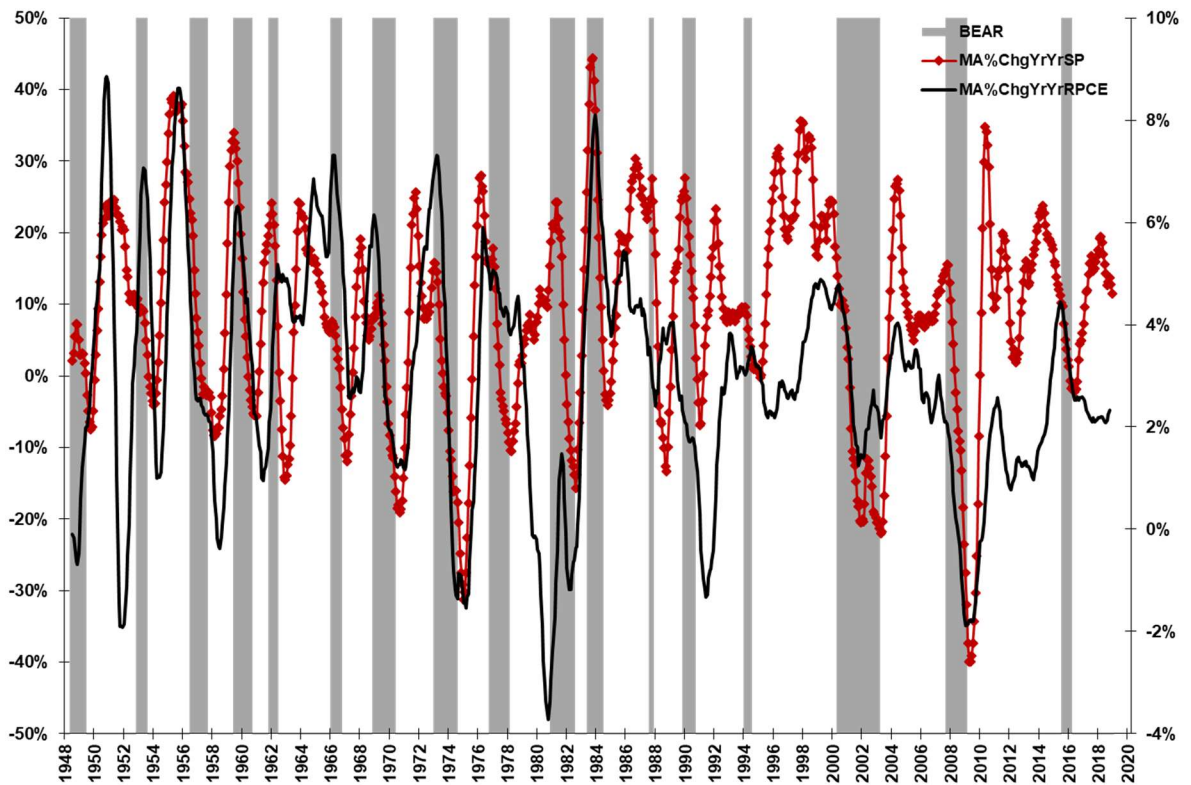

Figure 1. Real Personal Consumption Expenditures (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Real Nondurable Goods Consumption Expenditures

As is shown in Figure 2, the year-on-year change in real nondurable goods consumption has been on an uptrend ever since the earnings recession in late 2015. As seen in Appendix Figure A.2, the share of nondurable consumption has been declining since the end of WWII. However, it is noteworthy that for the majority of the sample period (1948-2017), the year-on-year percentage change (YoY%) in stock prices and real nondurable goods have had highly positive correlations, indicating perhaps why the U.S. stock market has enjoyed stellar appreciation ever since the earnings recession of the late 2015.
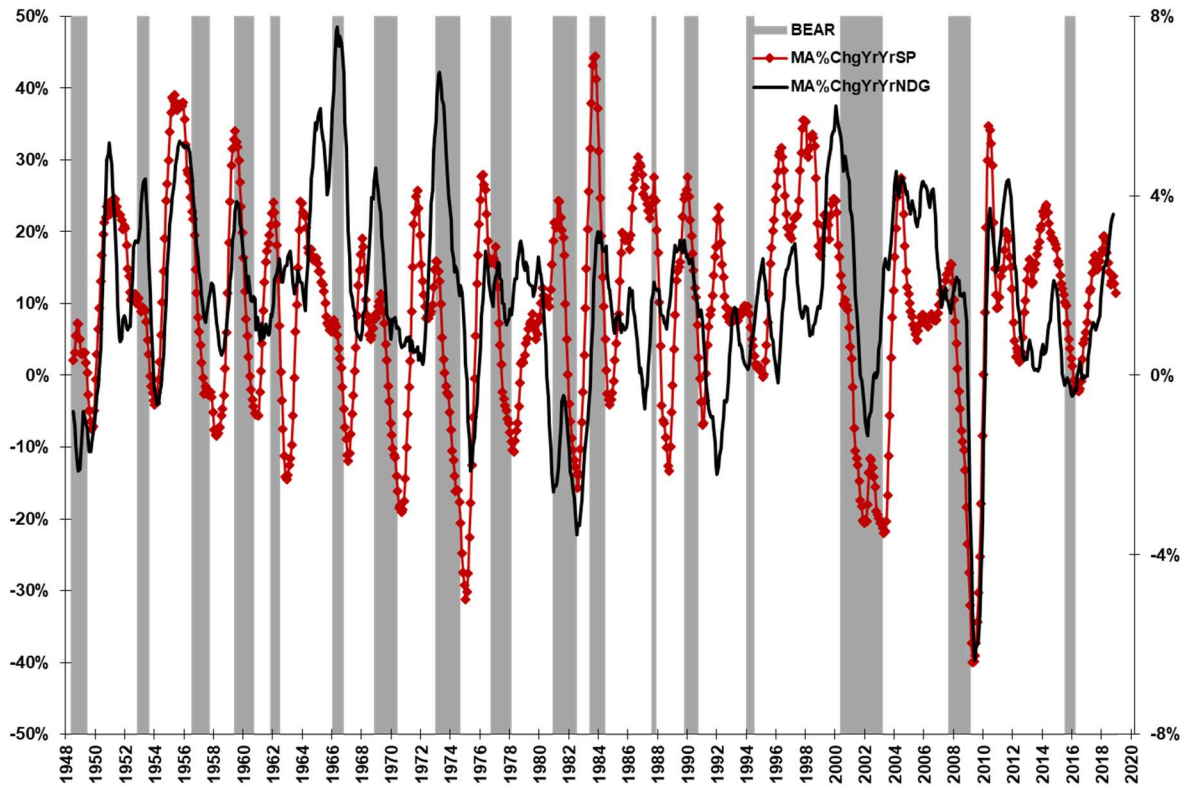

Figure 2. Real Nondurable Goods Consumption Expenditures (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Real Durable Goods Consumption Expenditures

As is shown in Figure 3, the year-on-year change in real durable goods consumption has been on something of a downtrend ever since the earning recession of late 2015. The year-on-year percentage change (YoY%) has been almost flat since late 2016. As seen in Appendix Figure A.2, the share of durable consumption has been fluctuating 10% to 15% of overall personal consumption since the end of WWII.
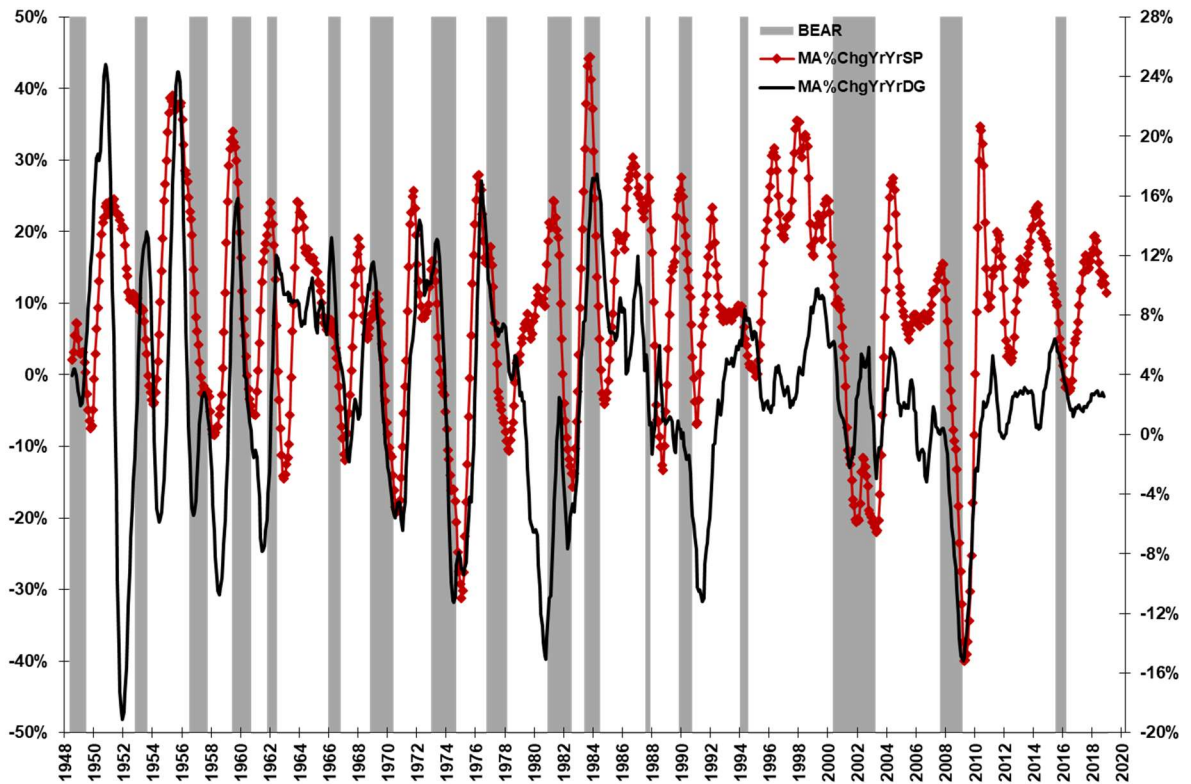

Figure 3. Real Durable Consumption Expenditures (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Real Services' Consumption Expenditures

As is shown in Figure 4, the year-on-year change in real service consumption has been on something of a downtrend ever since the earning recession of late 2015. As seen in Appendix Figure A.2, the share of service consumption has been increasing from roughly 40% to 70% of overall personal consumption since the end of WWII. However, it is noteworthy that for the majority of the sample period (1948-2017), the year-on-year percentage change (YoY%) in stock prices and services have had a positive correlation, indicating perhaps that weakness in services may not bode well for stocks in coming months.
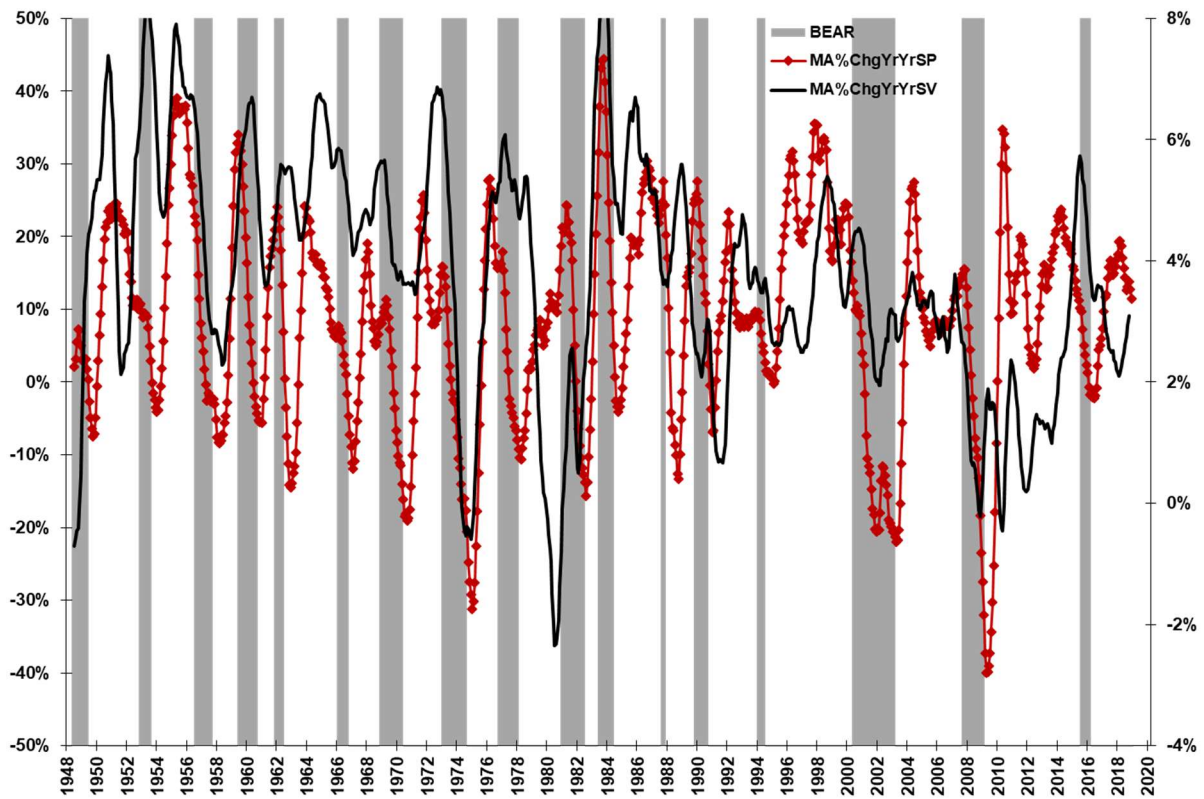

Figure 4. Real Services' Consumption Expenditures (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Retail Sales

As is shown in Figure 5, the year-on-year change in retail sales has been on a path of recovery since the earning recession of late 2015. It is noteworthy that for the majority of the sample period (1948-2017), the year-on-year percentage change (YoY%) in stock prices and retail sales have had a positive correlation, indicating perhaps that the strength of retail sales may be the beginning of a driving force behind rising stock prices since the earning recession.
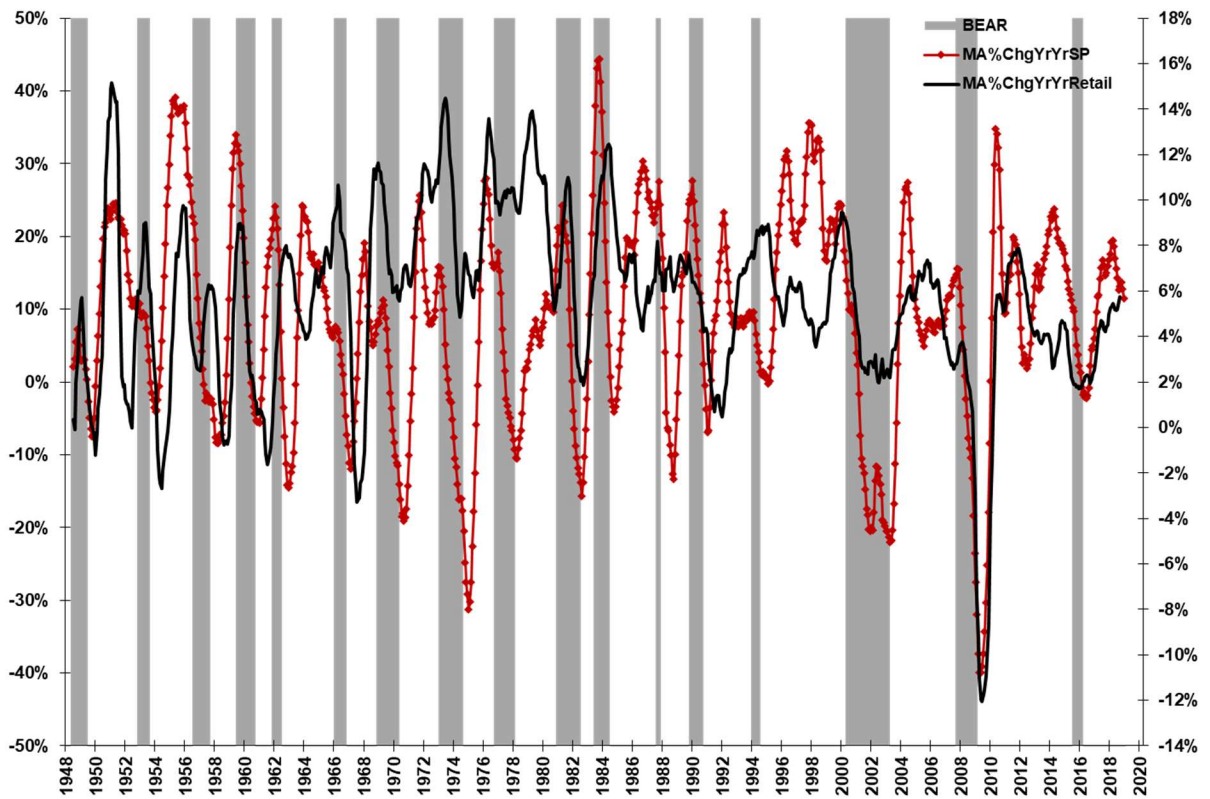

Figure 5. Retail service (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Inflationary Perspectives

As is shown in Figure 6, the year-on-year percentage change (YoY%) in the consumer price index has been positive since the earning recession of late 2015. Historically, rising inflation coincides with periods of stock price depreciation. A continued rise in inflation can lead to a sharp downward turnaround in stock prices.
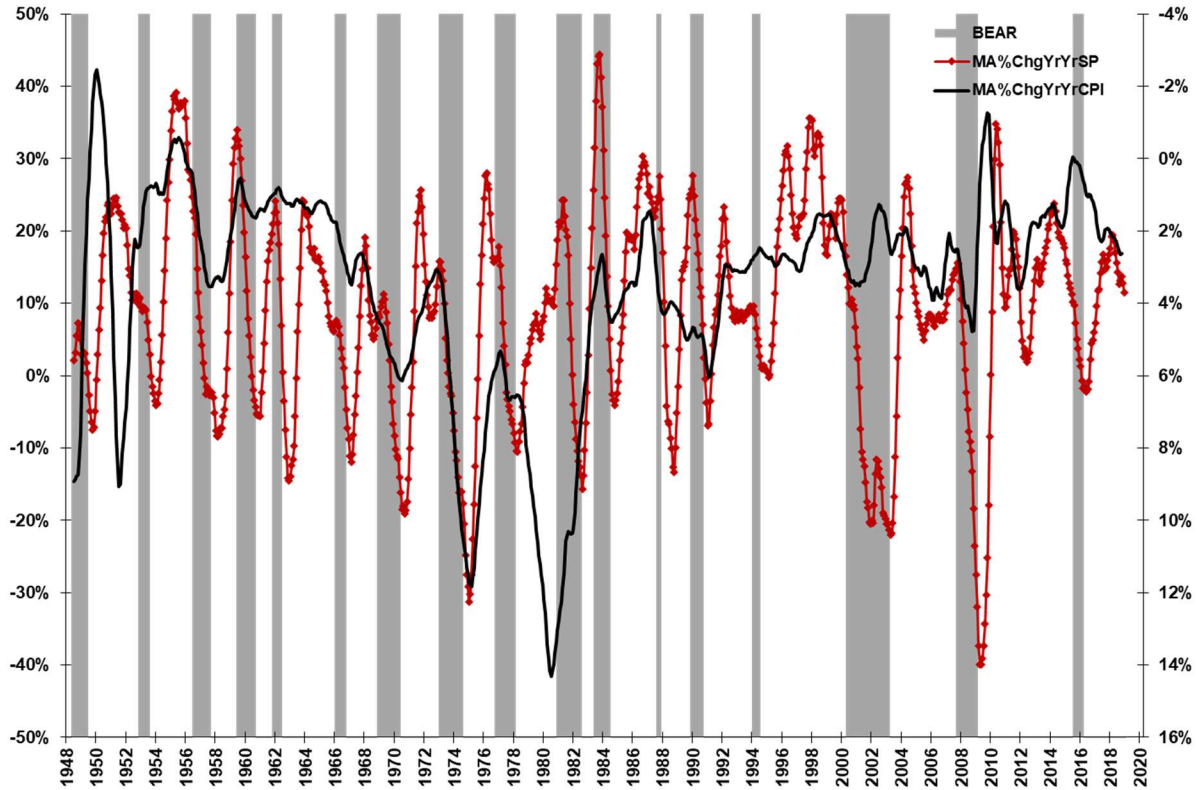

Figure 6. The Inflation Measure—Consumer Prices Index (smoothed YoY%)—is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Yahoo! Finance, and Standard & Poor's Inc.

Unemployment Perspectives

As is shown in Figure 7, the year-on-year percentage change (YoY%) in continued claims of unemployment insurance has been rising as of late 2017. This is despite a retraction since the earning recession of late 2015. Historically, sharply rising unemployment claims coincide with periods of dramatic stock price depreciation. Note that this measure is more valuable as an early indication of an ending bear market.
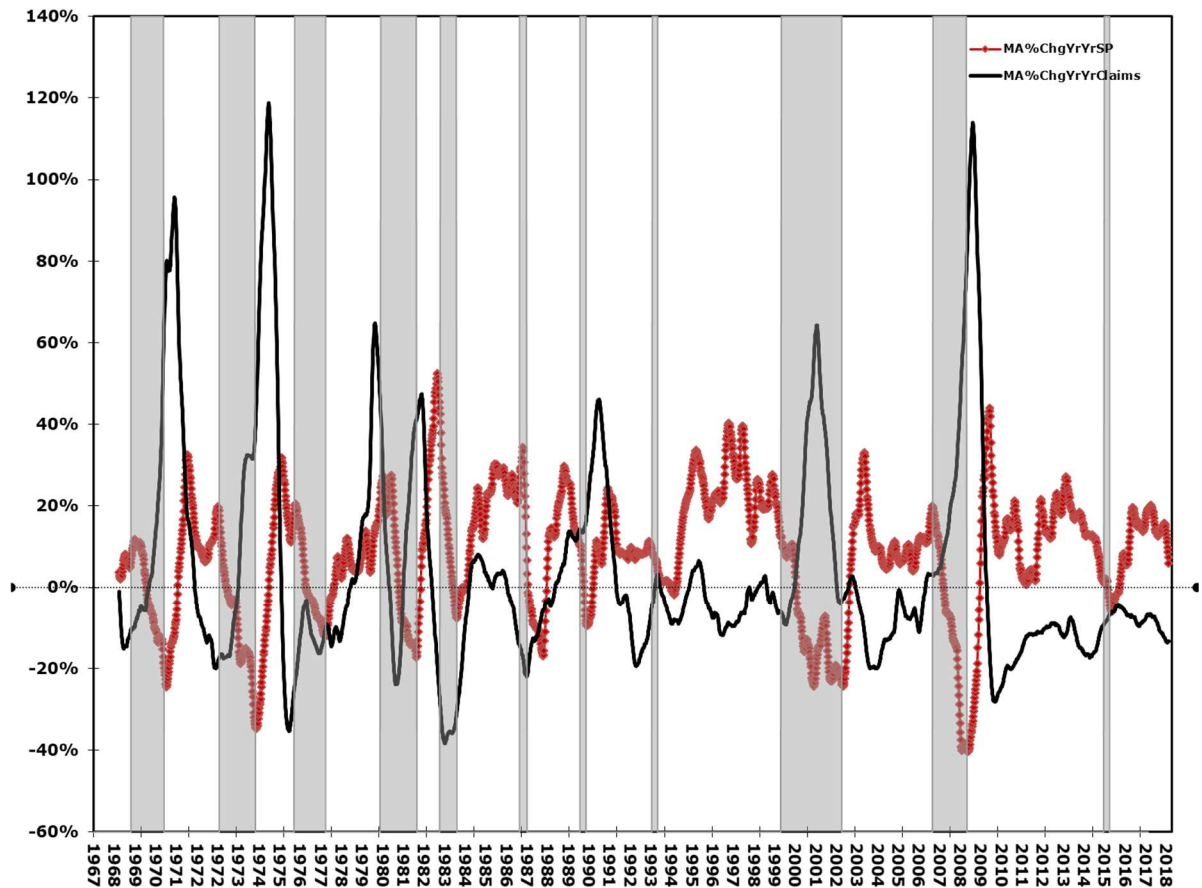

Figure 7. Continued Claims of Unemployment Insurance (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Employment Perspectives

As is shown in Figure 8, the year-on-year percentage change (YoY%) in the nonfarm payroll has been declining since the earning recession of late 2015. Historically, a full cycle of nonfarm payroll almost perfectly maps the entire length of a bull market. The notable peaking of the measure before the earning recession is an uncomfortable signal of a bear market in coming months.
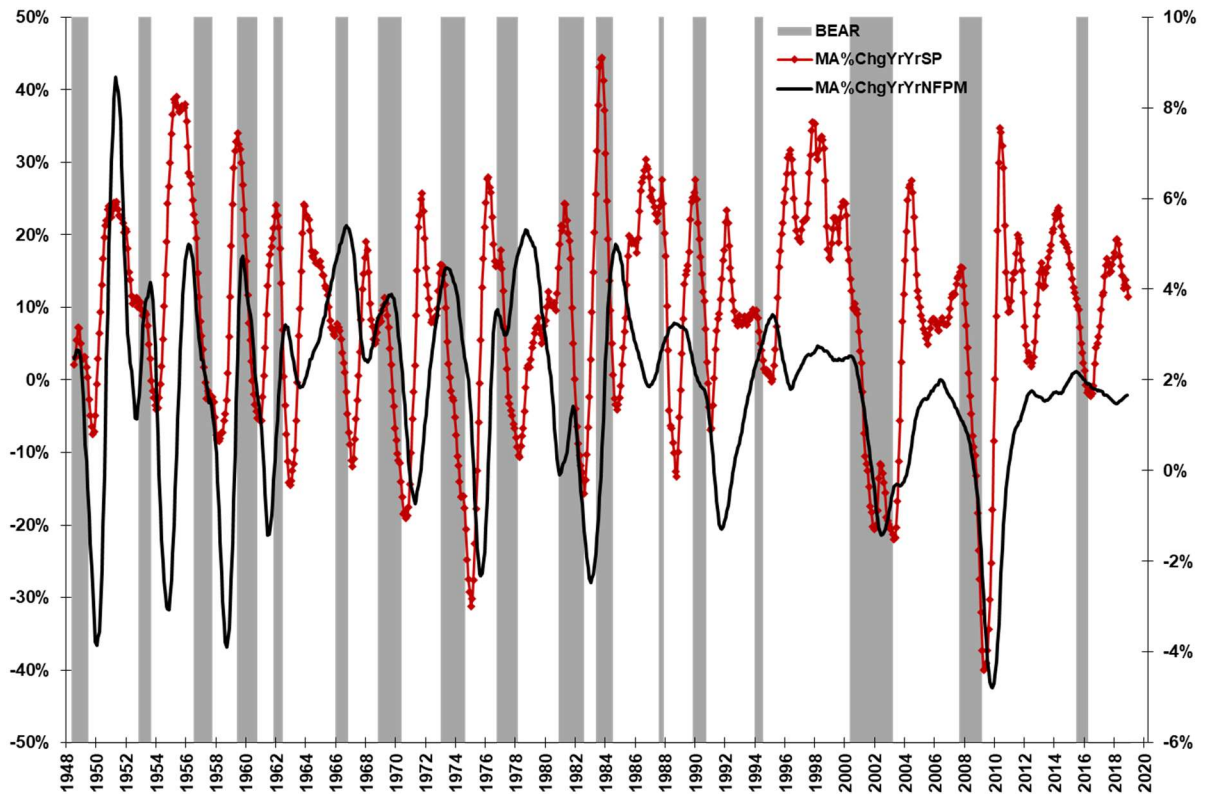

Figure 8. Nonfarm Payroll (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Wage Perspectives

As is shown in Figure 9, the year-on-year percentage change (YoY%) in the real average hourly wage has been declining since the earning recession of late 2015. Historically, protracted periods of decline in wages has preceded or coincided with major stock market corrections. While the notable peaking of the measure at and around the earning recession could be an uncomfortable signal of a bear market, the measure shows signs of moderate reversal in last few months.
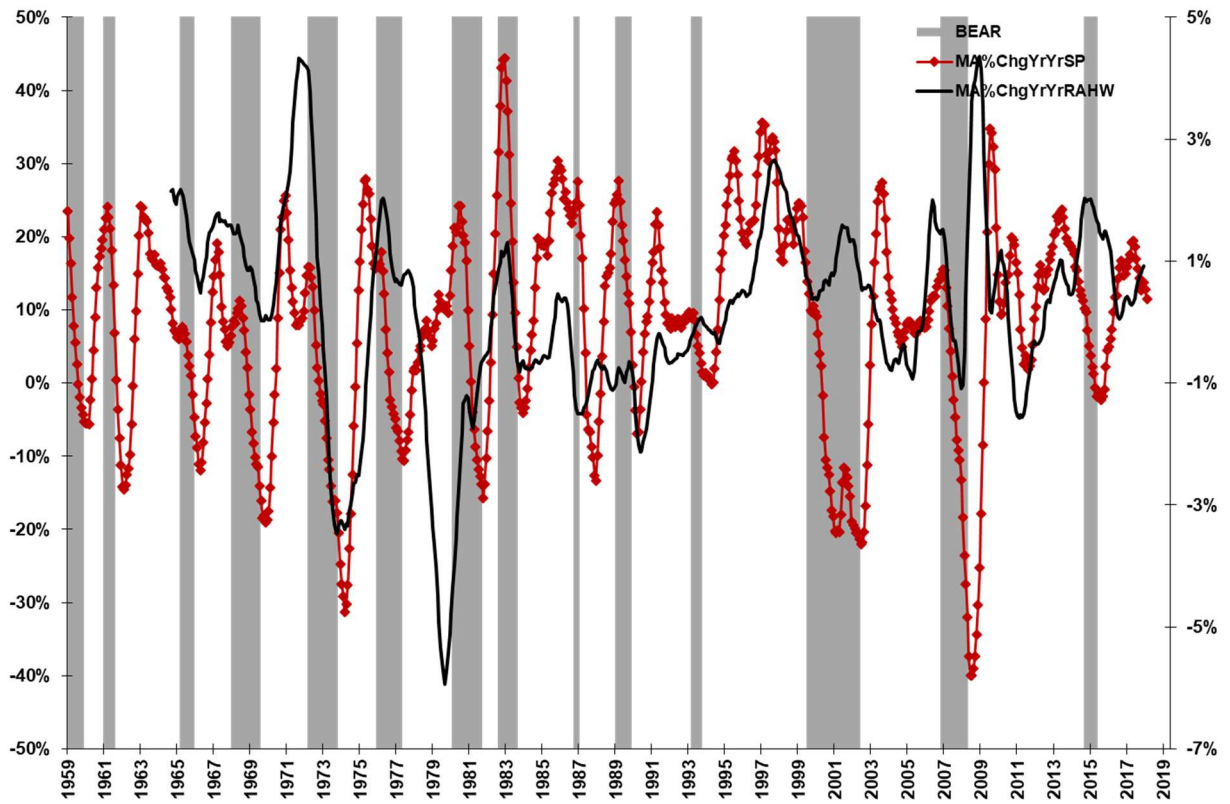

Figure 9.Avergae Hourly Wage (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Housing Starts Perspectives

As is shown in Figure 10, the year-on-year percentage change (YoY%) in housing starts has been declining since 2012. Historically, sharp declines, particularly flowing into negative territory, of year-on-year percentage change (YoY%) in housing starts almost perfectly correlates with a sharp depreciation of stock prices. The measure has been above zero for some time, which provides a small measure of solace.
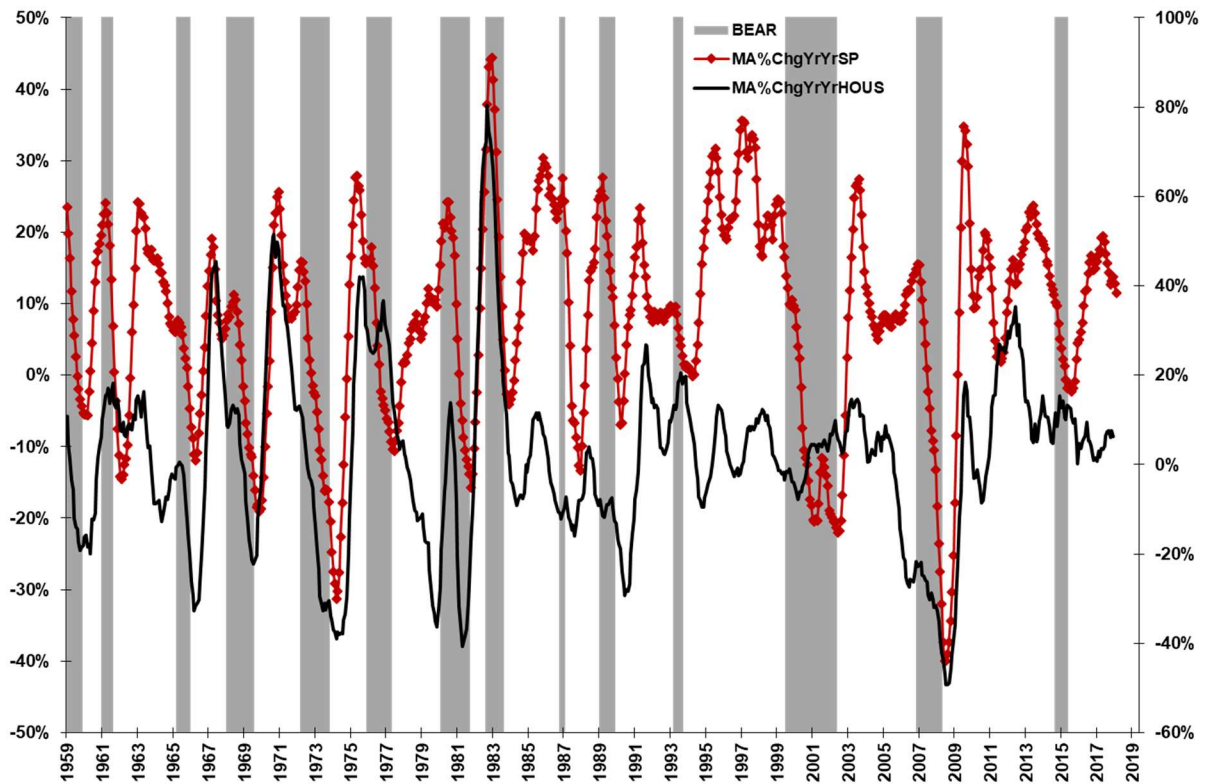

Figure 101. Housing Starts (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

New Housing Permits Perspectives

As is shown in Figure 11, the year-on-year percentage change (YoY%) in housing permits has been declining since 2012. Historically, sharp declines, particularly flowing into negative territory, of year-on-year percentage change (YoY%) in housing permits almost perfectly correlates with a sharp depreciation of stock prices. The measure has been above zero for some time, which provides a small measure of solace.
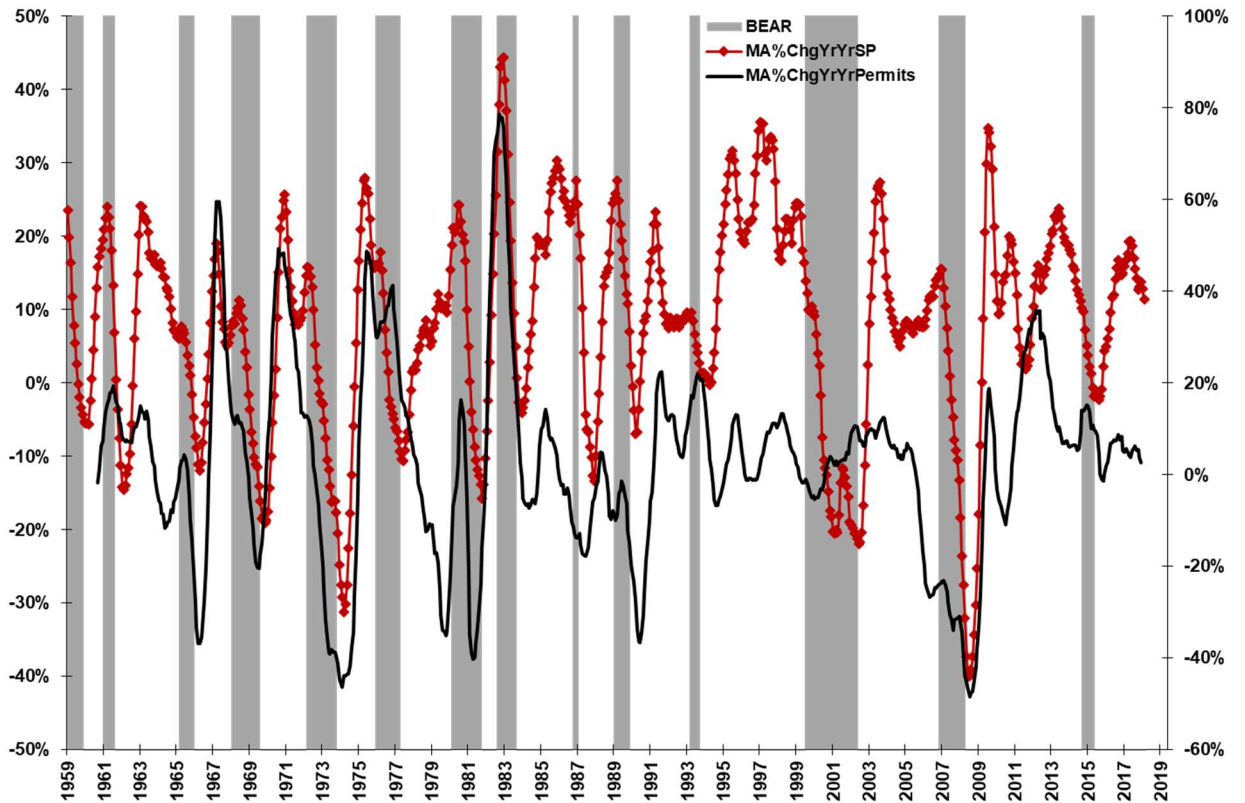

Figure 11. New Housing Permits (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Overall Leverage Perspectives

As is shown in Figure 12, the year-on-year percentage change (YoY%) in overall (total system) leverage has been declining since 2012. Given that total leverage is mechanically related to asset values, a sharp rise in leverage coincides with major periods of asset value depreciation.
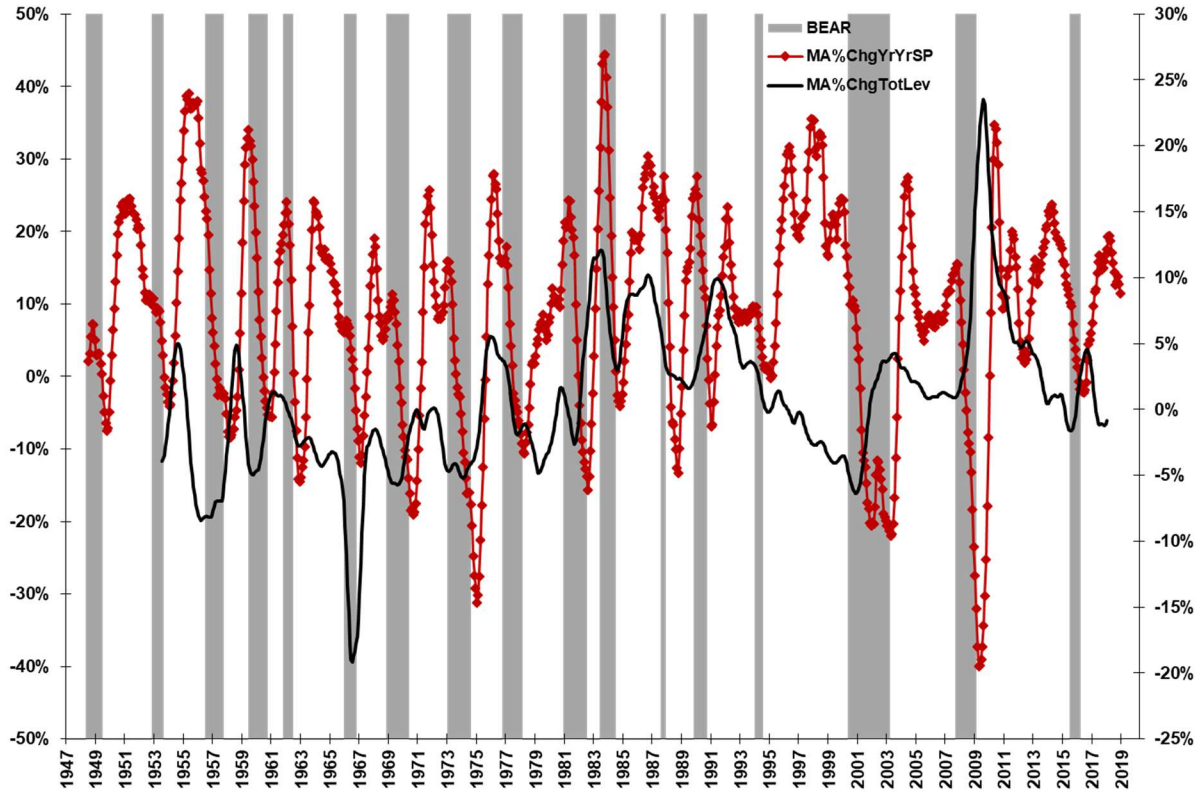

Figure 12. Total System Leverage (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Private Leverage Perspectives

As is shown in Figure 13, the year-on-year percentage change (YoY%) in overall private leveraging has been declining since 2012. Given that leverage is mechanically related to asset values, a sharp rise in leveraging coincides with a major period of asset value depreciation.
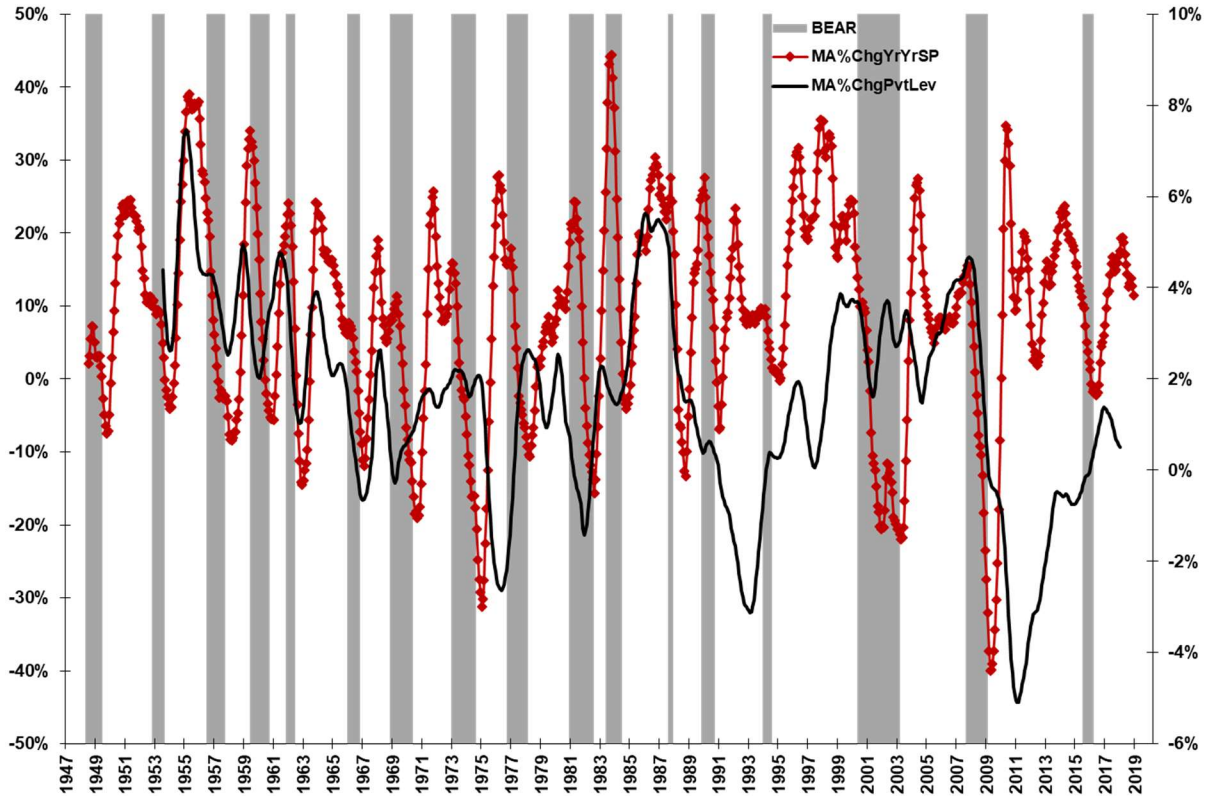

Figure 13. Total Private Leverage (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Corporate Leverage Perspectives

As is shown in Figure 14, the year-on-year percentage change (YoY%) in overall corporate leveraging has been declining since 2012. Given that leverage is mechanically related to asset values, a sharp rise in leveraging coincides with a major period of asset value depreciation.
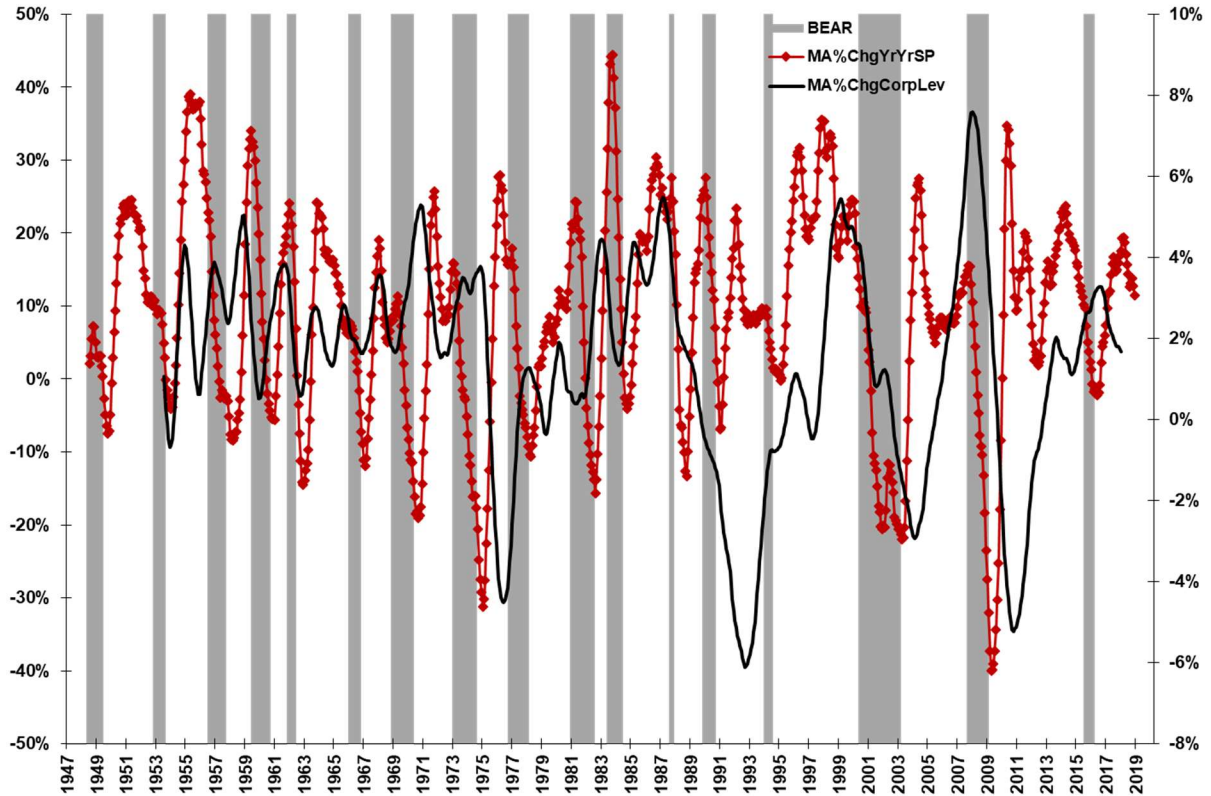

Figure 14. Total Corporate Leveraging (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Margin Debt Perspectives

As is shown in Figure 15, the year-on-year percentage change (YoY%) in the NYSE margin debt has been rising since the earning recession of late 2015. Given that leveraging is mechanically related to asset values, a sharp rise in leveraging coincides with major period of asset value depreciation.
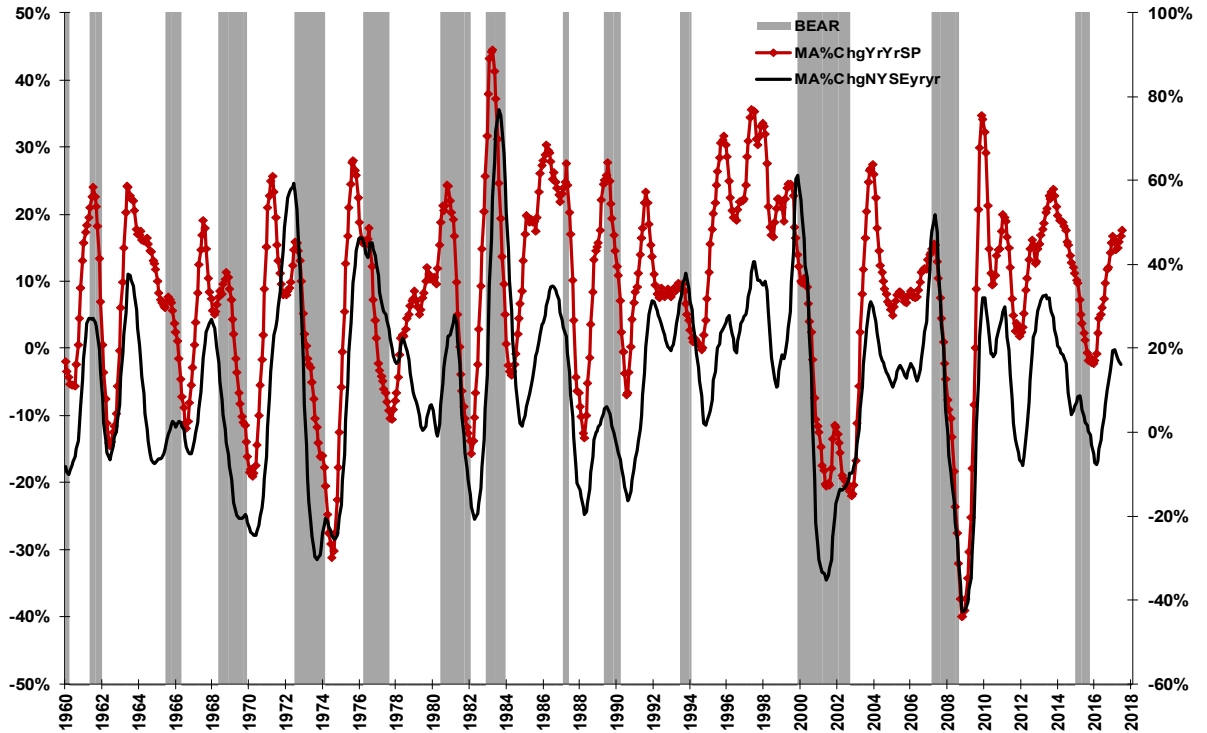

Figure 15. Total Margin Debt Leveraging (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Credit Card Default Perspectives

As is shown in Figure 16, the year-on-year percentage change (YoY%) in total credit card defaults have been gradually rising since the earning recession of late 2015. This measure "peaking" coincides with bear markets, though it has less value as a leading indicator of bear markets.
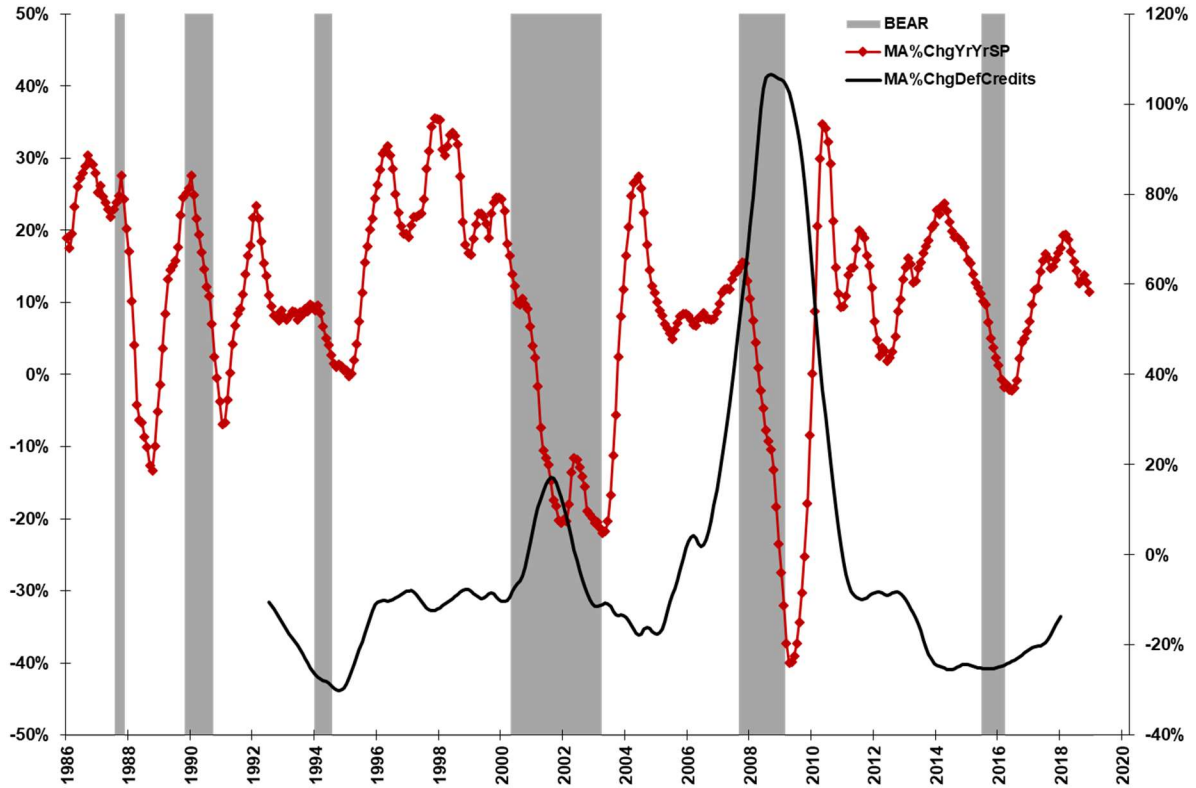

Figure 16. Credit Card Defaults (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Mortgage Debt Default Perspectives

As is shown in Figure 17, the year-on-year percentage change (YoY%) in total mortgage defaults has been gradually rising since the earning recession of late 2015. This measure "peaking" is a lagging indicator of bear markets.
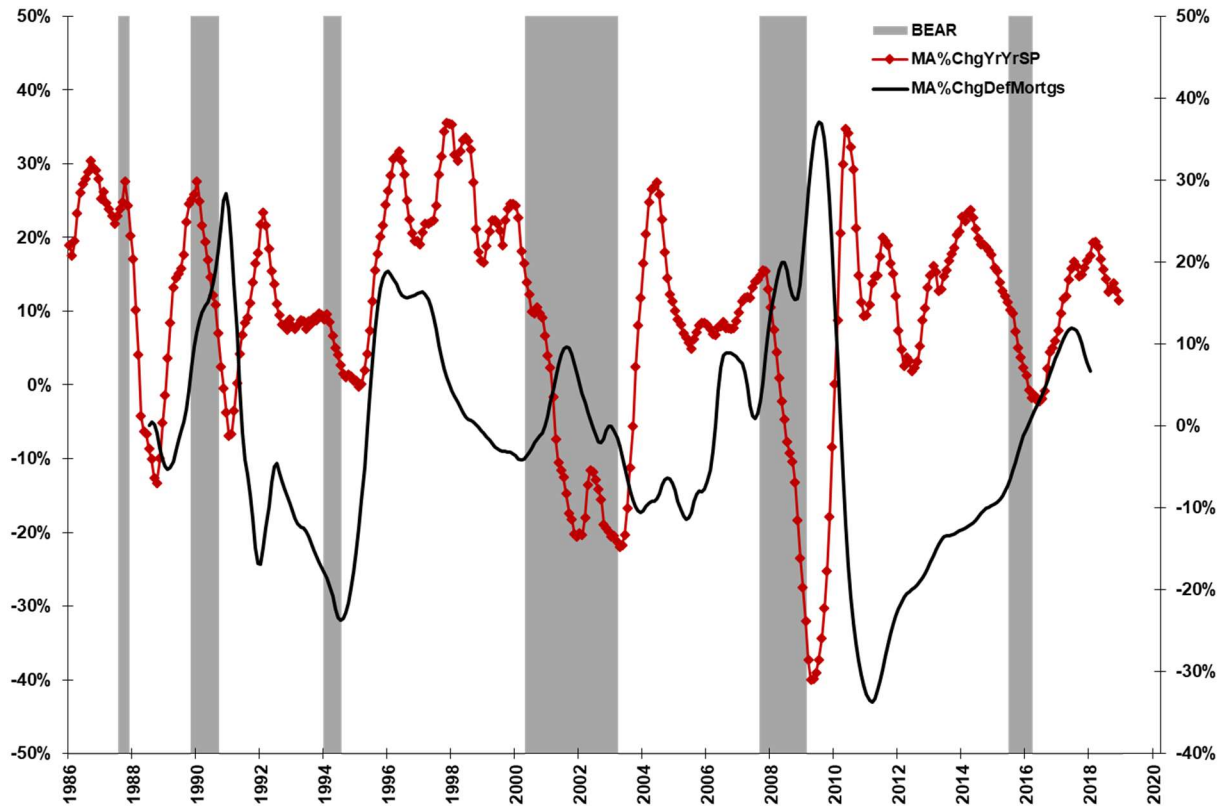

Figure 17. Mortgage Debt Defaults (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Consumer Loan Default Perspectives

As is shown in Figure 18, the year-on-year percentage change (YoY%) in total consumer loan defaults has been gradually rising since the earning recession of late 2015. This measure "peaking" is a lagging indicator of bear markets.
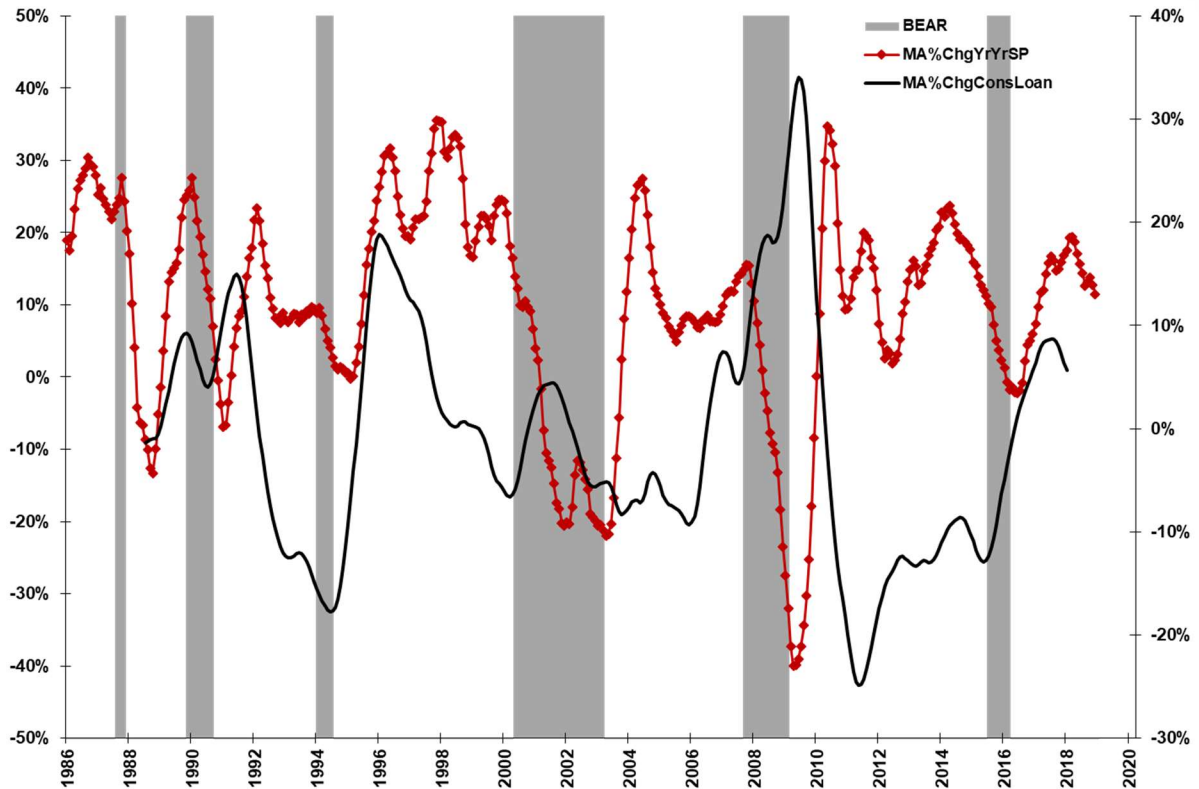

Figure 18. Consumer Loan Defaults (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Commercial/Industrial Loan Default Perspectives

As is shown in Figure 19, the year-on-year percentage change (YoY%) in total commercial/industrial loan defaults has been gradually rising since the earning recession of late 2015. This measure "peaking" is a lagging indicator of bear markets. This measure bodes well for the long-stretched bull market of 2009-2017.
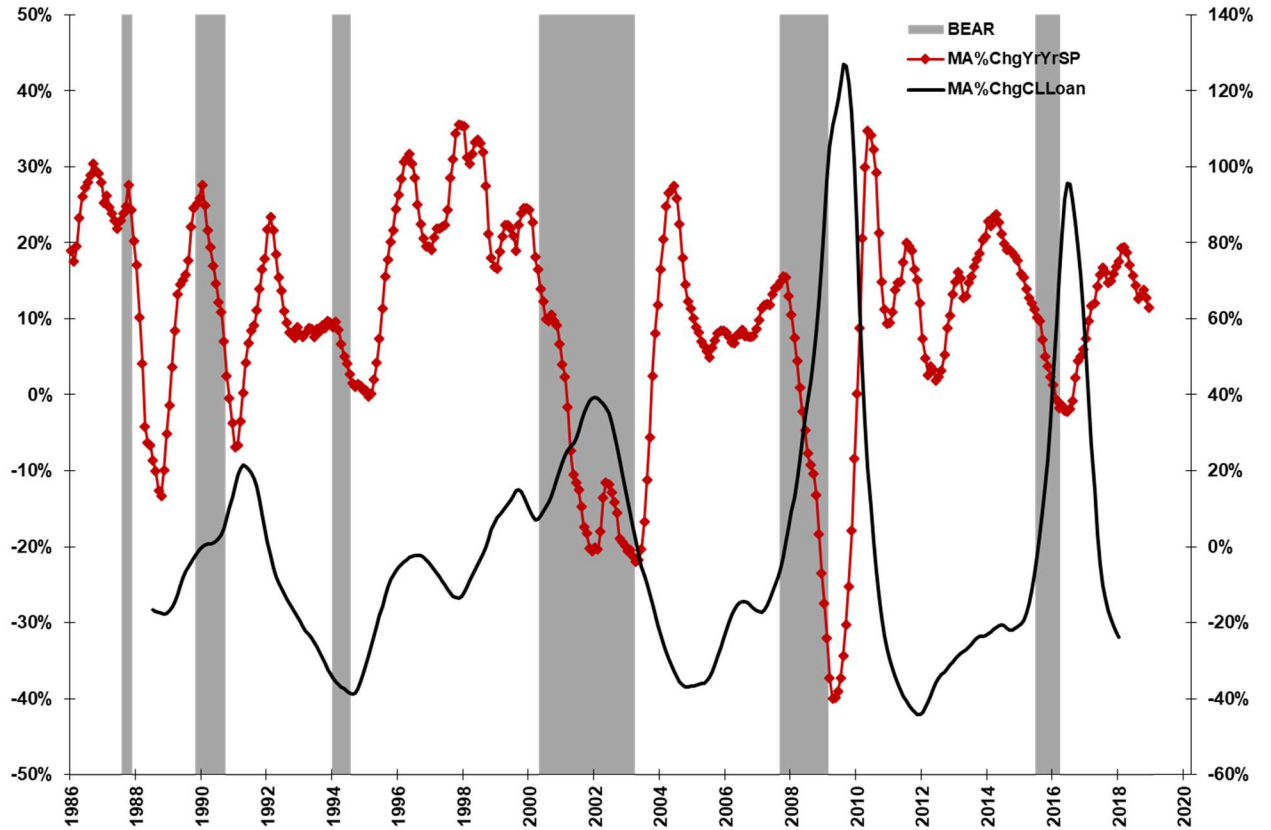

Figure 19. Commercial/Industrial Loan Defaults (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Leading Index

As is shown in Figure 20, the leading index has been on a gradual downward trajectory since before the earning recession of late 2015. Historically, a full cycle of leading index almost perfectly maps the entire length of a bull market. The notable peaking of the measure before the earning recession is an uncomfortable signal of a bear market in coming months.
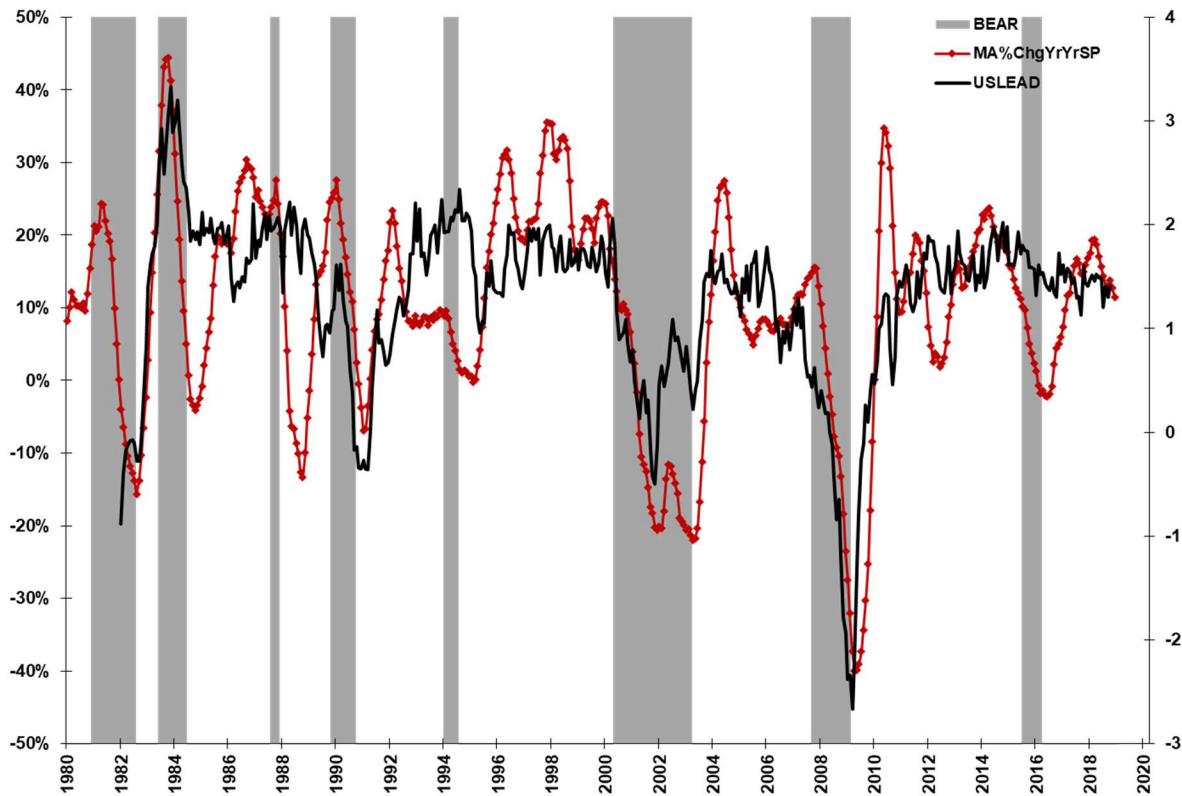

Figure 20. Leading Indicators Index (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

ISM PMI Index

As is shown in Figure 20, the leading index has been on a gradual downward trajectory since before the earning recession of late 2015. Historically, a full cycle of leading index almost perfectly maps the entire length of a bull market. The notable peaking of the measure before the earning recession is an uncomfortable signal of a bear market in coming months.
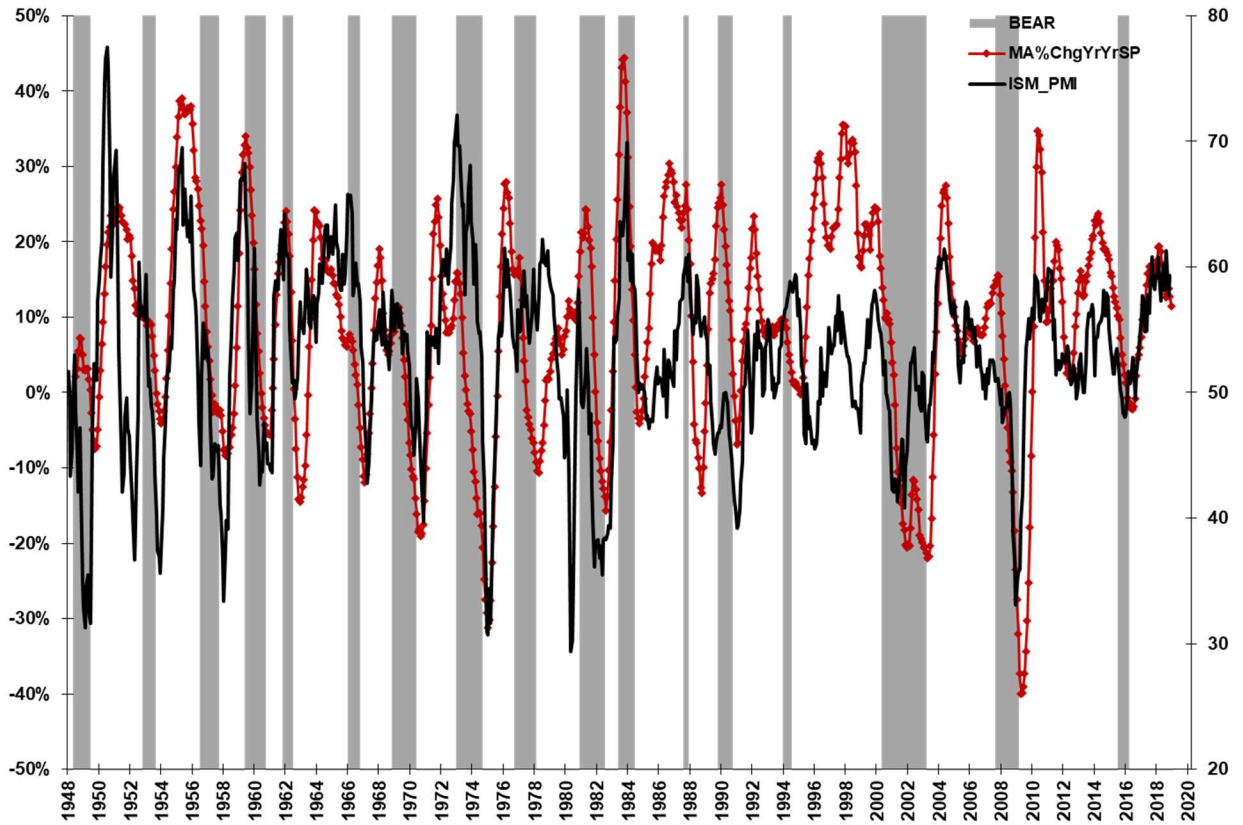

Figure 21. Institute for Supply Management's Purchasing Managers' Index (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from Institute for Supply Management, the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

ISM New Orders Index

As is shown in Figure 20, the leading index has been on a gradual downward trajectory since before the earning recession of late 2015. Historically, a full cycle of leading index almost perfectly maps the entire length of a bull market. The notable peaking of the measure before the earning recession is an uncomfortable signal of a bear market in coming months.
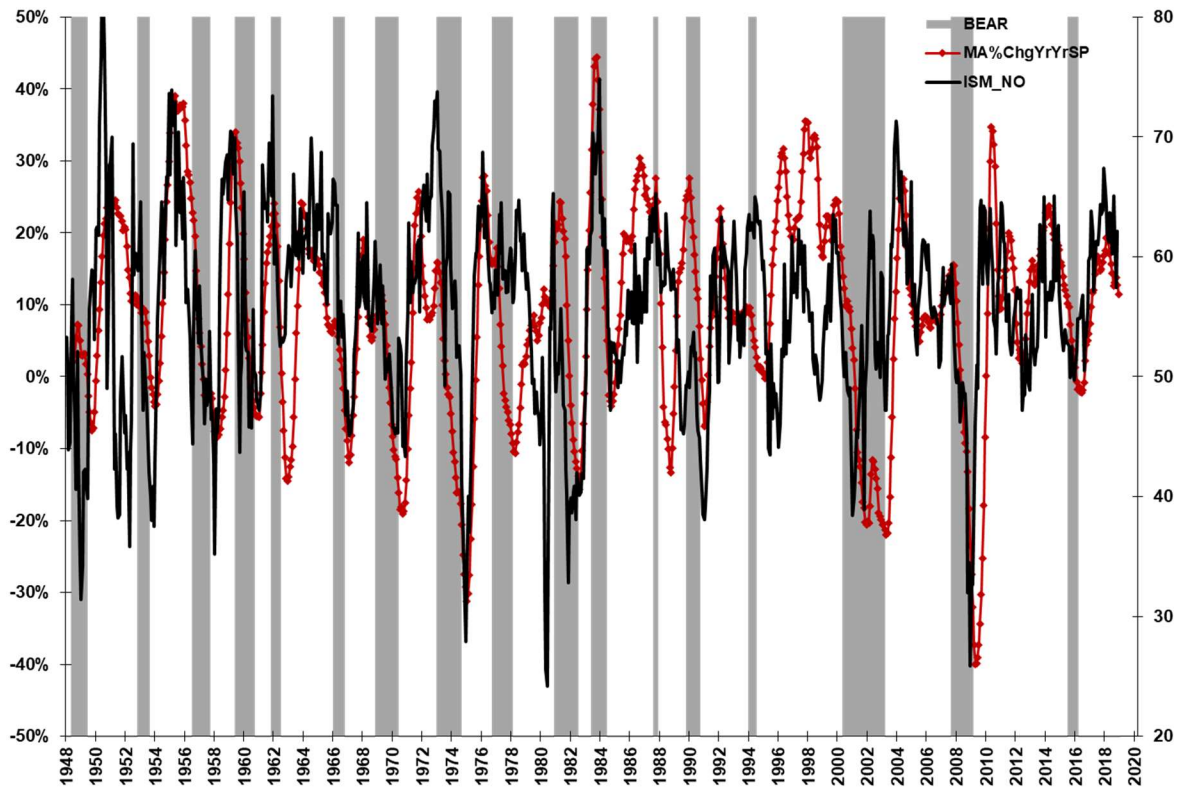

Figure 22. Institute for Supply Management's New Orders Index (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from Institute for Supply Management, the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Consumer Confidence

As is shown in Figure 21, the University of Michigan's Consumer Confidence Index has resumed its upward trajectory after the earning recession of late 2015. Historically, the index has turned sharply negative in early stages of bear markets. There are no signs of such reversal yet.
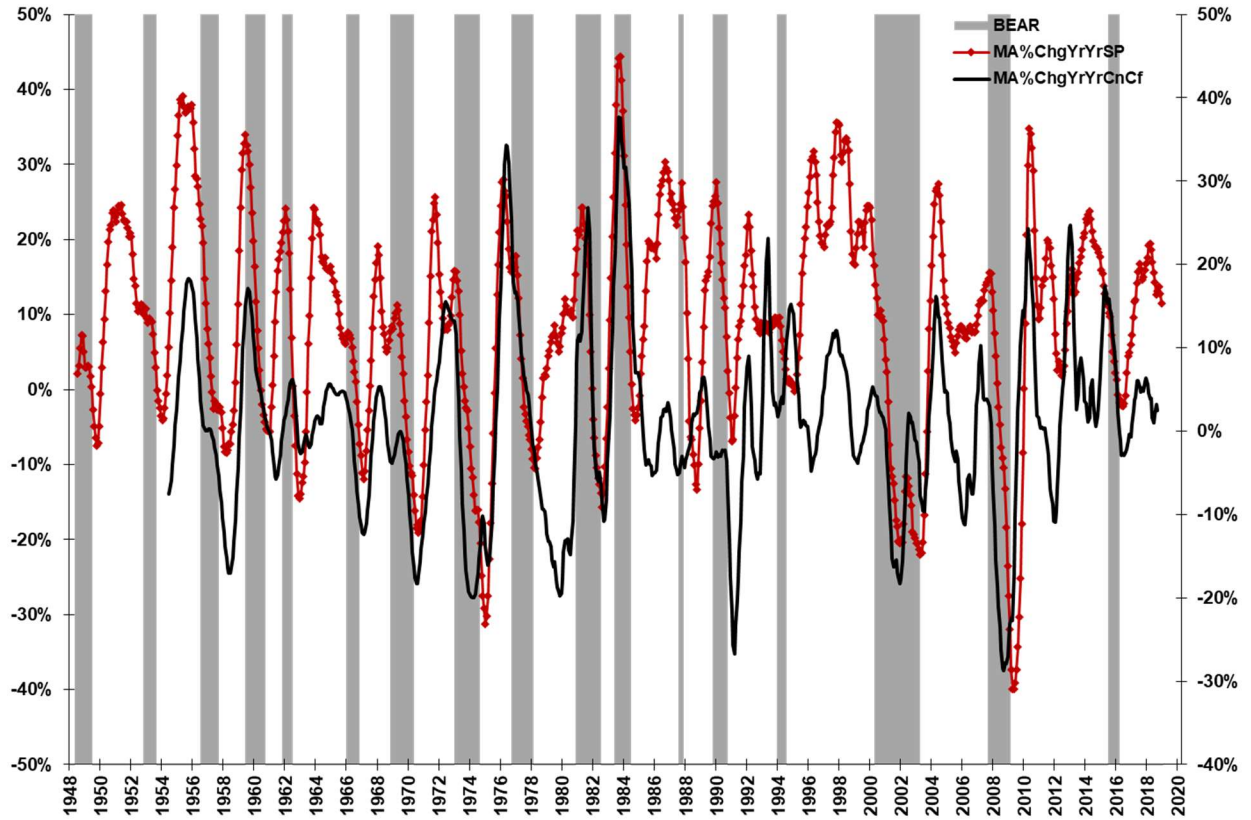
Figure 23. The University of Michigan Consumer Confidence Index (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Monetary MZM

As is shown in Figure 22, the year-on-year percentage change (YoY%) in the MZM monetary measure has been on a gradual downward trajectory since before the earning recession of late 2015. The relationship between MZM (YoY) and the incidence of bear markets has changed since the early 1980s. This period marks a precipitous decline in inflation and Treasury rates. If the confluence of recent monetary and fiscal developments has been a harbinger of another inflationary (or worse stagflationary) period, the recent drop in MZM rate might suggest stock market tumult ahead.
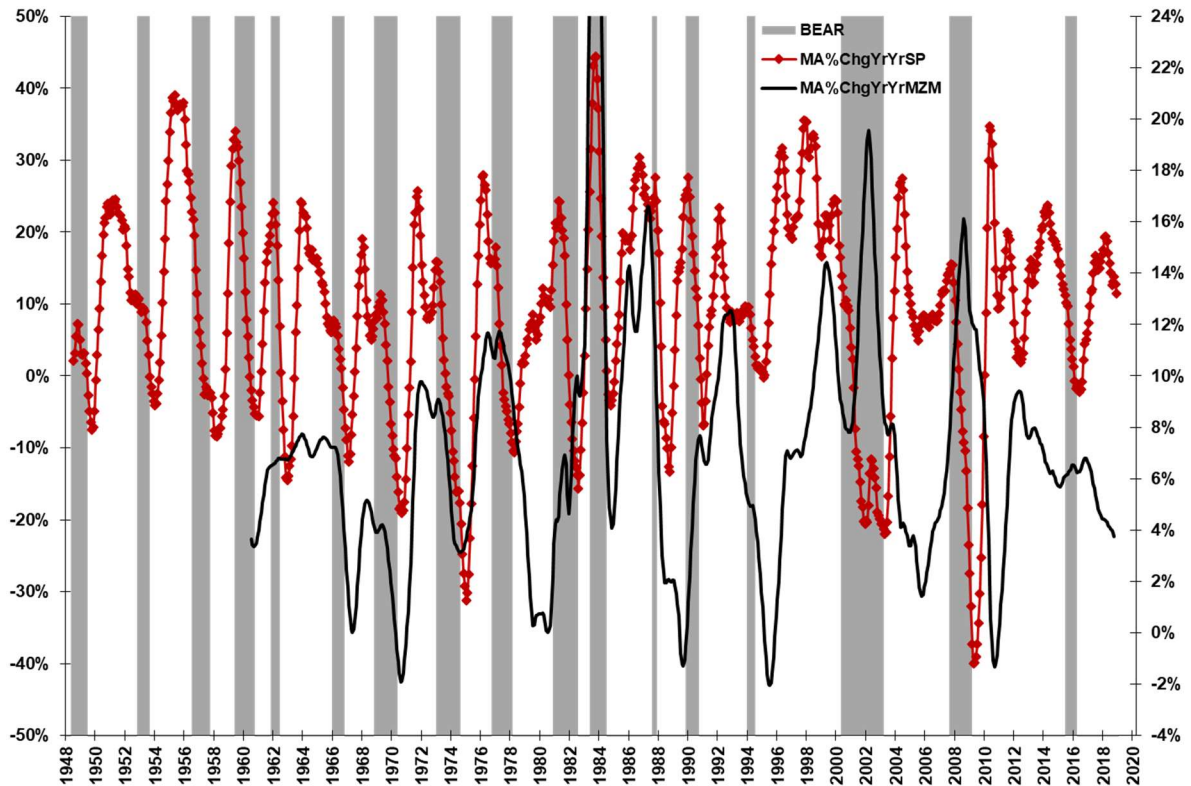

Figure 24. MZM money supply (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Monetary MZM Own Rate

As is shown in Figure 23, the MZM Own Rate has been on a gradual upward trajectory since the earning recession of late 2015. Historically, a full cycle of MZM Own Rate almost perfectly maps the entire length of a bull market. Given that since 2009 (and until late 2015), Fed Fund rates have remained at zero, it is yet to be seen how much more tightening the markets can tolerate before they capitulate.
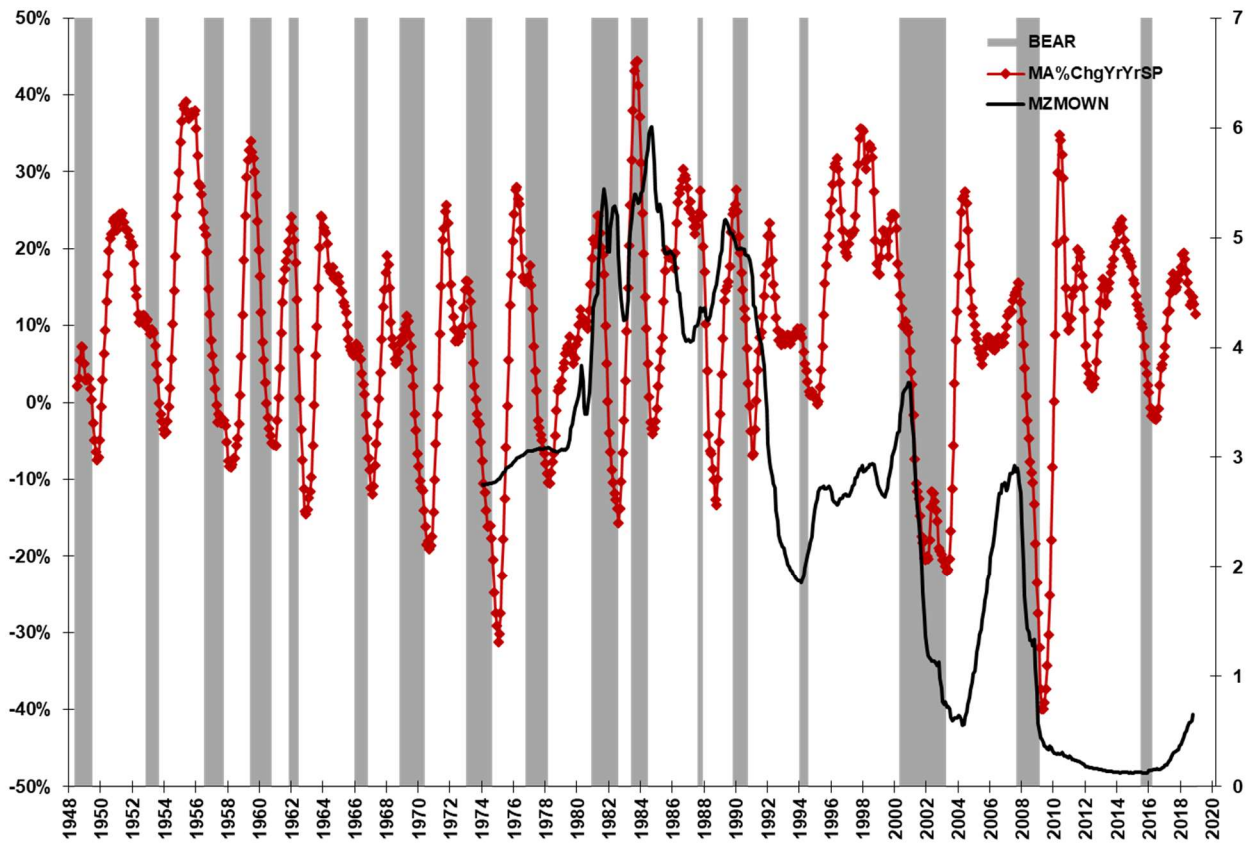

Figure 25. MZM money supply velocity (own rate) (smoothed YoY%) is plotted along with the S&P500 (smoothed YoY%). Gray areas are well-documented bear markets and DRN™ assigned significant moderations (approximately 10% drop from last highest level) in the S&P index level. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Appendix A: The U.S. Consumer-Based Economy

Figure A.1 shows U.S. GDP composition since 1947. It is evident that the U.S. has been a consumer economy for the past 50 years. Since the end of WWII, the lion's share of U.S. GDP, more than 60%, has stemmed from personal consumption. Since the early 1980s, the contribution of personal consumption to overall GDP has been increasing steadily. As of the second quarter of 2017, personal consumption accounts for 67% of total GDP.
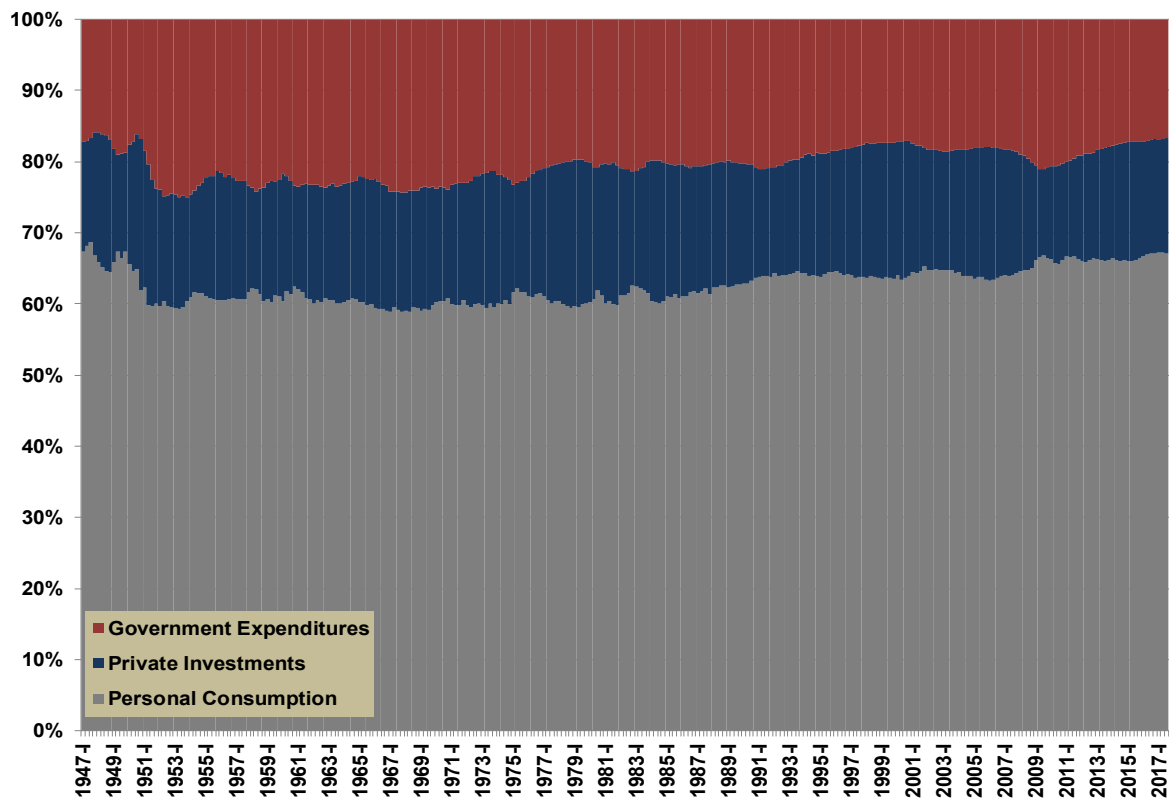

Figure A.1. The composition of U.S. gross domestic product (GDP) since 1947. Data is from the FRED database of the St. Louis Fed and the Census Bureau of the U.S. Department of Commerce.

Figure A.2 shows U.S. GDP composition since 1947. It is evident that the U.S. has been a consumer economy for the past 50 years. Since the end of WWII, the lion's share of U.S. GDP, more than 60%, has stemmed from personal consumption. Since the early 1980s, the contribution of personal consumption to overall GDP has been increasing steadily. As of the second quarter of 2017, personal consumption accounts for 67% of total GDP.
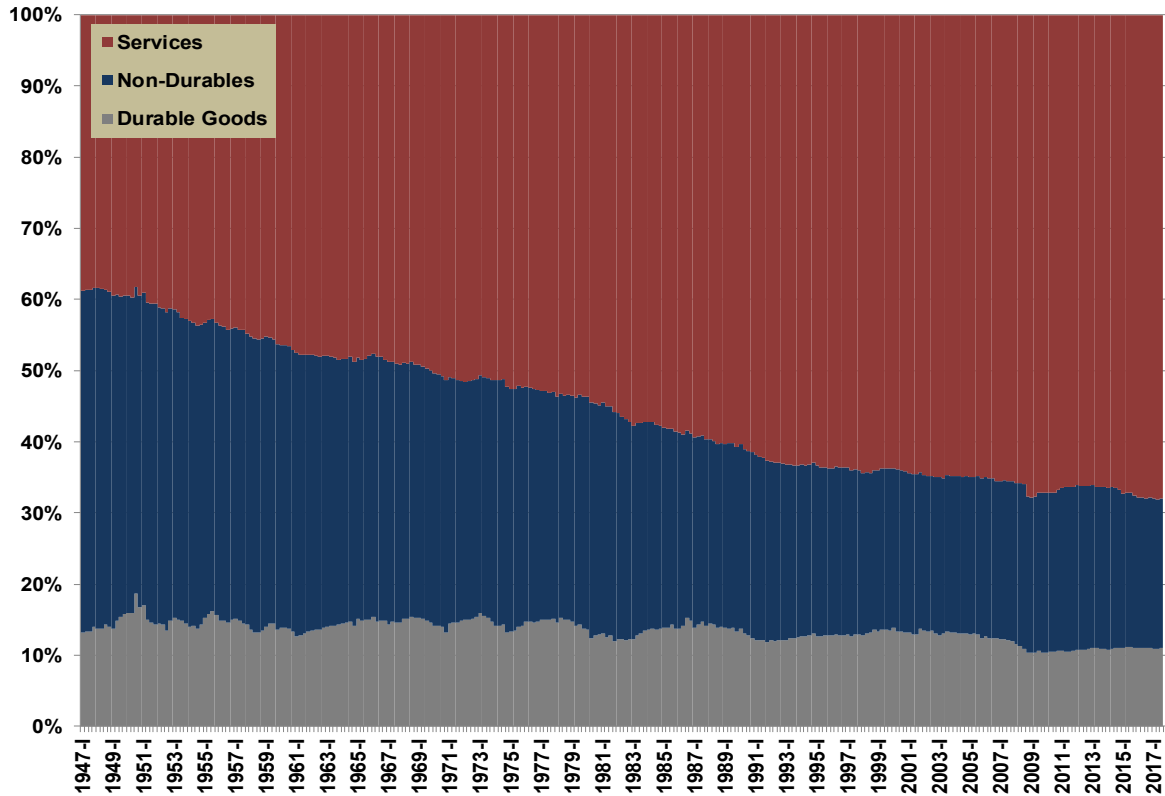
Figure A.2. The composition of the U.S. personal consumption expenditures since 1947. Data is from the FRED database of the St. Louis Fed and the Census Bureau of the U.S. Department of Commerce.

Figure A.3 shows U.S. GDP composition since 1947. It is evident that the U.S. has been a consumer economy for the past 50 years. Since the end of WWII, the lion's share of U.S. GDP, more than 60%, has stemmed from personal consumption. Since the early 1980s, the contribution of personal consumption to overall GDP has been increasing steadily. As of the second quarter of 2017, personal consumption accounts for 67% of total GDP.
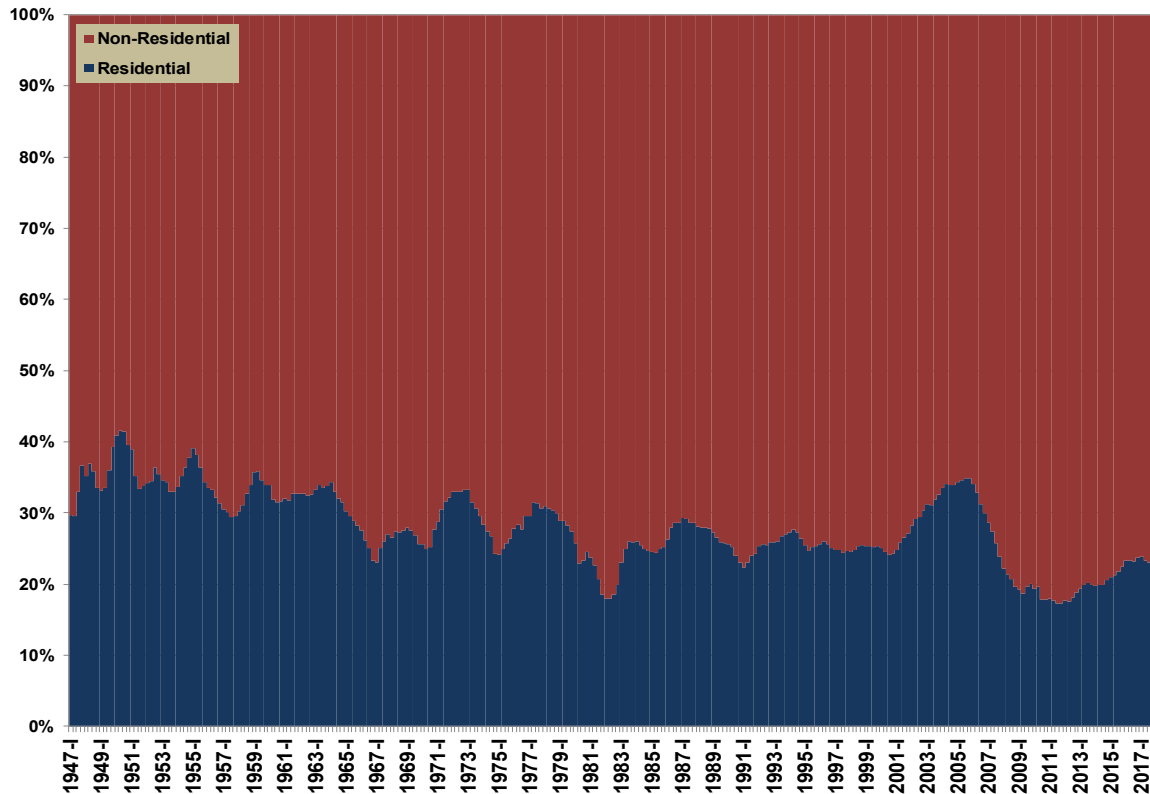

Figure A.3. The composition of the private investments since 1947. Data is from the FRED database of the St. Louis Fed and the Census Bureau of the U.S. Department of Commerce.

Figure A.4 shows U.S. GDP composition since 1947. It is evident that the U.S. has been a consumer economy for the past 50 years. Since the end of WWII, the lion's share of U.S. GDP, more than 60%, has stemmed from personal consumption. Since the early 1980s, the contribution of personal consumption to overall GDP has been increasing steadily. As of the second quarter of 2017, personal consumption accounts for 67% of total GDP.
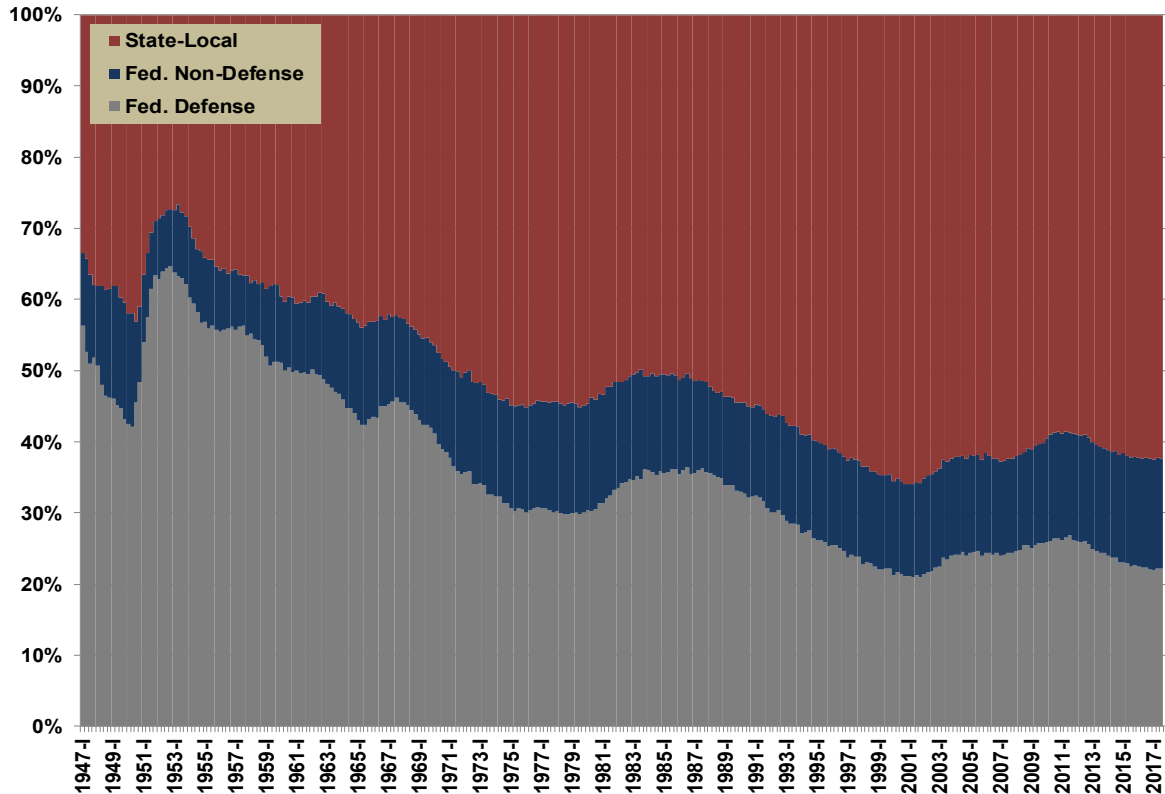

Figure A.4. The composition of the government expenditures since 1947. Data is from FRED database at St. Louis Fed, and Census Bureau of the U.S. Department of Commerce.

Appendix B: Interest Rates

Figure B.1 shows the monthly S&P500 stock index level against the monthly U.S. Treasury spread (the difference between the U.S. Treasury 10-year and 3-year yields) since 1947. The U.S. Treasury spread, particularly the inverted yield curve as denoted by negative spreads, have long been viewed as a leading indicator of recessions and bear markets. While spreads usually peak right after the start of bull markets, they tend to bottom-out right before the beginning of bear markets. The current spreads are still above zero, but the process of inversion has accelerated since the earning recession of 2015.
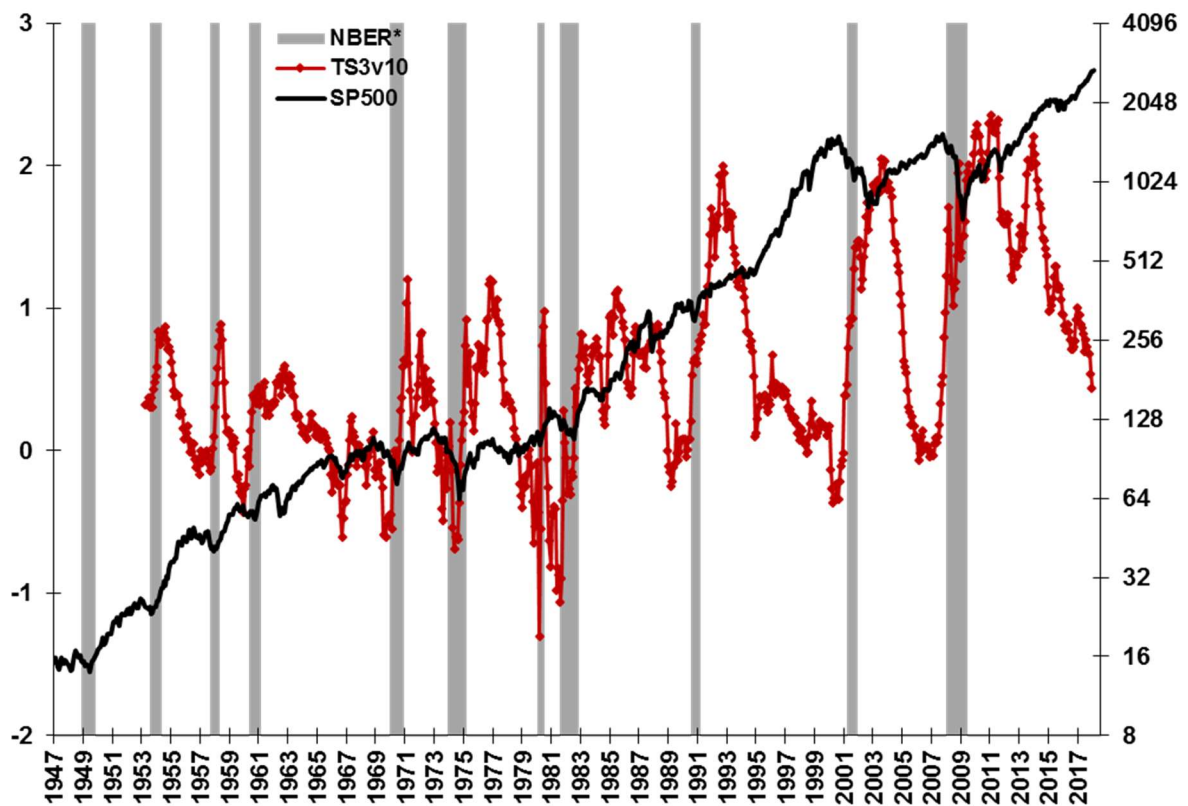

Figure B.1. The monthly S&P500 level against the monthly Treasury spread (U.S. Treasury 10-year yield minus 3-year yield). Gray areas are NBER recessions. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Figure B.2 shows the monthly S&P500 stock index level against the monthly Fed Fund rate since 1947. A rising Fed Fund rate has long been viewed as a leading indicator of monetary tightening policy and an early indicator of recessions. Given that since 2009 (and until late 2015), the Fed Fund rates have remained at zero, it is yet to be seen how much more tightening the markets can tolerate before they capitulate.
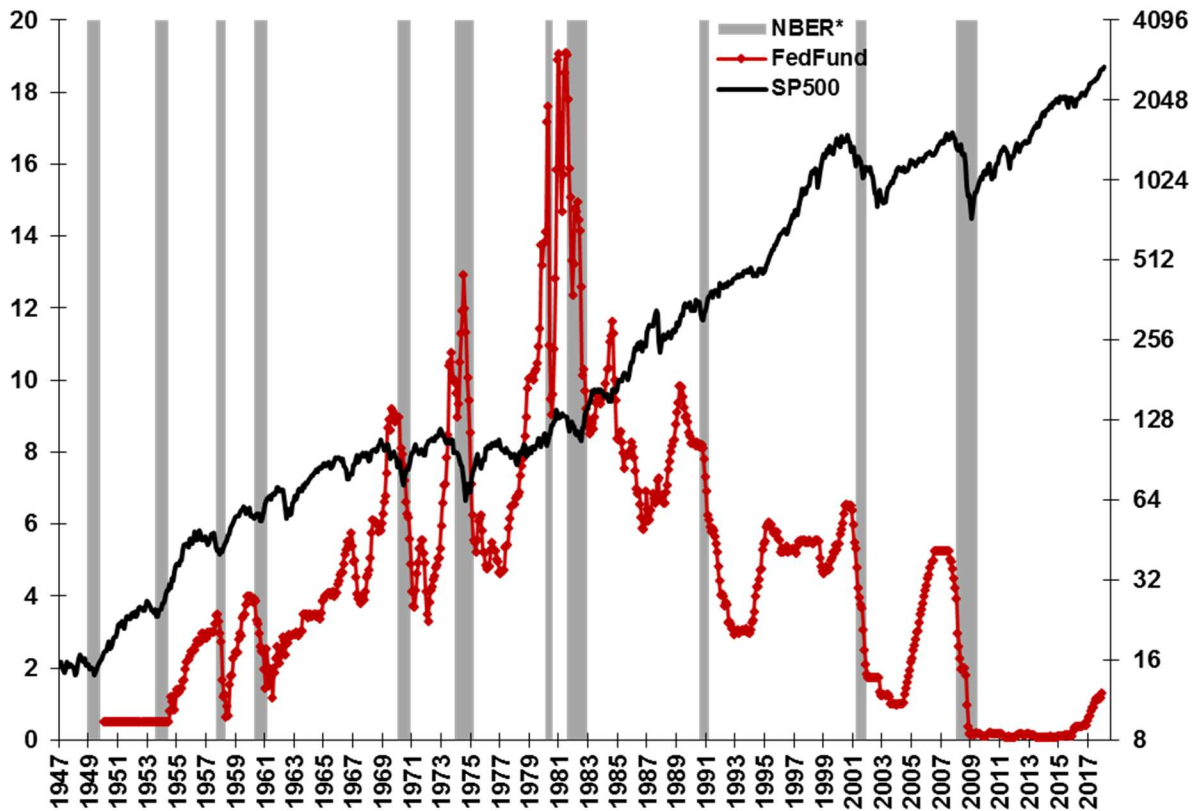

Figure B.2. The S&P500 level against the fed fund rate. Gray areas are NBER recessions. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Figure B.3 shows the weekly S&P500 stock index level against the weekly U.S. Treasury intermediate spread (the difference between the U.S. Treasury 5-year and 3-year yields) since 1967. The U.S. Treasury spread, particularly the inverted yield curve as denoted by negative spreads, have long been viewed as a leading indicator of recessions and bear markets. While spreads usually peak right after the start of bull markets, they tend to bottom-out right before the beginning of bear markets. The current spreads are still above zero, but the process of inversion has accelerated since the earning recession of 2015.
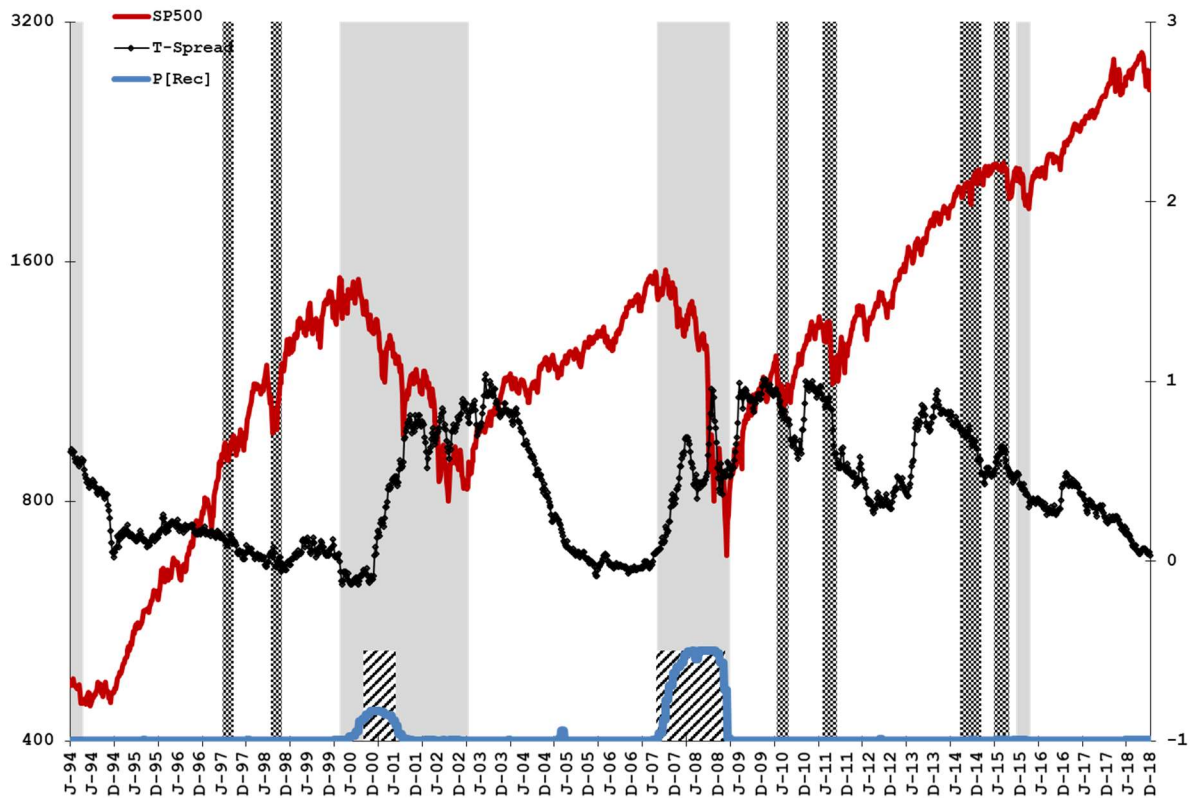

Figure B.3. The weekly S&P500 level against the weekly Treasury spread (U.S. Treasury 5-year yield minus 3-year yield). Gray areas are bear market and crisis periods. Stripped areas are NBER recessions. Smoothed probabilities of recession are in blue. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Figure B.4 shows the weekly S&P500 stock index level against the weekly one-year Treasury bill rate since 1967. A rising Fed Fund rate has long been viewed as a leading indicator of monetary tightening policy and an early indicator of recessions. Given that since 2009 (and until late 2015), the Fed Fund rates have remained at zero, it is yet to be seen how much more tightening the markets can tolerate before they capitulate.
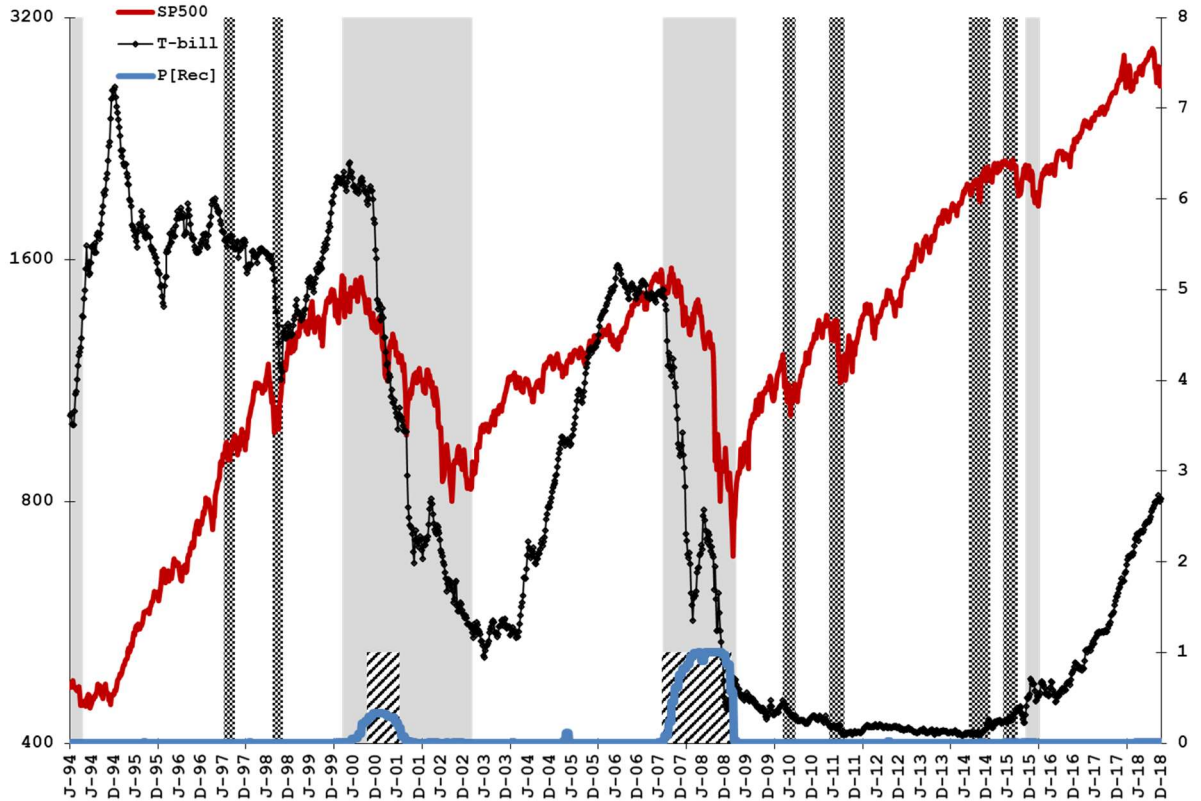

Figure B.4. The weekly S&P500 level against the weekly one-year Treasury bill rate. Gray areas are bear market and crisis periods. Stripped areas are NBER recessions. Smoothed probabilities of recession are in blue. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Appendix C: Volatility

Figure C.1 shows the weekly VIX index level against the weekly U.S. Treasury intermediate spread (the difference between the U.S. Treasury 5-year and 3-year yields) since 1967. The U.S. Treasury spread, particularly the inverted yield curve as denoted by negative spreads, have long been viewed as a leading indicator of recessions and bear markets. While spreads usually peak right after the start of bull markets, they tend to bottom-out right before the beginning of bear markets. The current spreads are still above zero, but the process of inversion has accelerated since the earning recession of 2015.
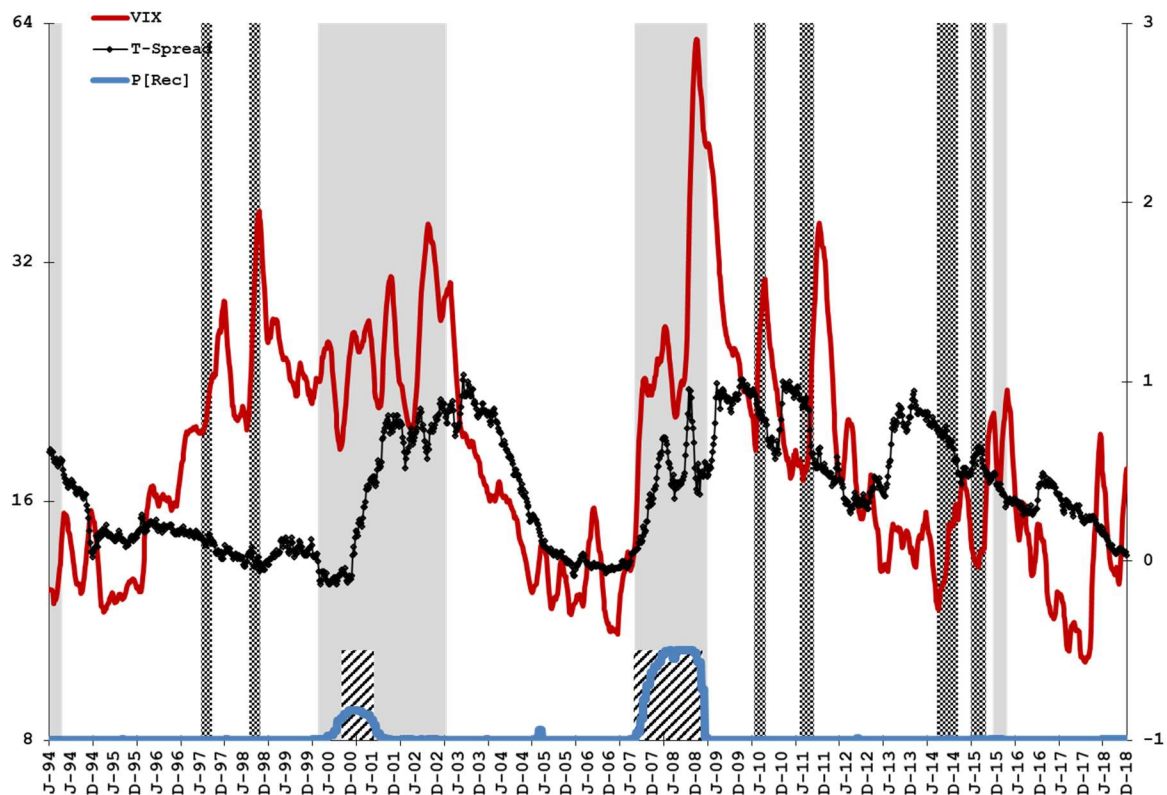

Figure C.1. The weekly VIX level against the weekly Treasury spread (U.S. Treasury 5-year yield minus 3-year yield). Gray areas are bear market and crisis periods. Stripped areas are NBER recessions. Smoothed probabilities of recession are in blue. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

Figure C.2 shows the weekly VIX index level against the weekly one-year Treasury bill rate since 1967. A rising Fed Fund rate has long been viewed as a leading indicator of monetary tightening policy and an early indicator of recessions. Given that since 2009 (and until late 2015), the Fed Fund rates have remained at zero, it is yet to be seen how much more tightening the markets can tolerate before they capitulate.
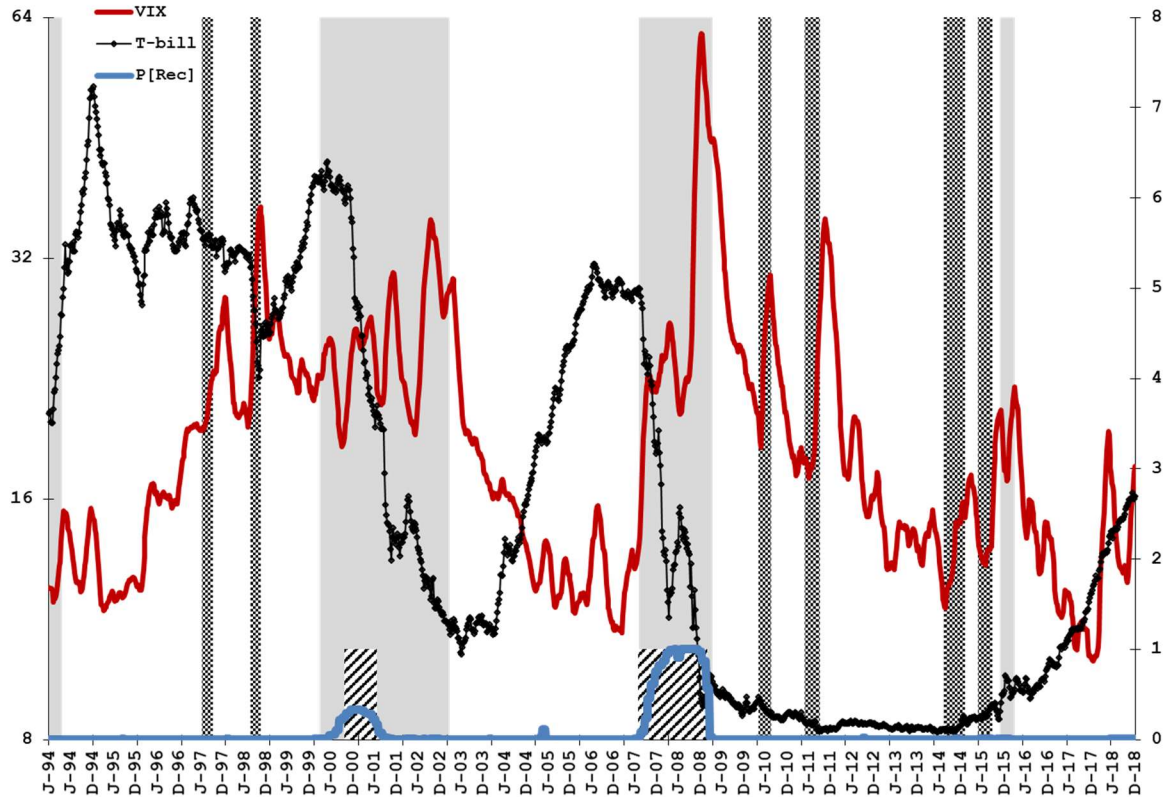

Figure C.2. The weekly VIX level against the weekly one-year Treasury bill rate. Gray areas are bear market and crisis periods. Stripped areas are NBER recessions. Smoothed probabilities of recession are in blue. Data is from the FRED database of the St. Louis Fed, Standard & Poor's Inc., and Yahoo! Finance.

About Us

DRN Financials Inc. is a financial research services company. Our founder, Ali Nejadmalayeri, Ph.D., CFA, is the John A. Guthrie Endowed Chair in Banking and Financial Services at the University of Wyoming. He was previously ONEOK Chair in Finance and Jay and Faynelle Helm Professor in Business at the Spears School of Business of the Oklahoma State University, where he was also the Finance Ph.D. director. He teaches graduate (Doctoral and MBA) and undergraduate courses about investment theory, portfolio management, risk management, financial derivatives, financial markets/institutions, and corporate finance. He has coached OSU's trading team to the Rotman's International Trading Competition in Canada where the team placed first in the sales and trading heat in 2008. Prior to joining Oklahoma State University, he was previously the finance area coordinator and the faculty advisor to student-managed fund at the University of Nevada-Reno. Dr. N has published more than 30 articles in major finance and economics journals. His published research examines the impact of (1) macroeconomic factors (e.g., FOMC announcements), (2) corporate policies (e.g., taxation and advertising), and (3) regulations (e.g., Sarbanes-Oxley Act and GASB 45) on corporate and municipal bond yield spreads. His research has been recognized with numerous awards and accolades including OSU-Tulsa President's 2016 Researcher of the Year Award, Spears' School Poole Research Award 2012, 2013 and 2015, Nevada Alpha Chapter of BETA GAMMA SIGMA 2003 Researcher of the Year Award, and McGraw-Hill/Irwin Distinguished Paper Award MBAA 2005 and 2013. Dr. Nejadmalayeri holds a Ph.D. in Finance from the University of Arizona, an M.B.A. degree from Texas A&M University and, a Bachelor of Science degree in Electrical Engineering from the University of Tehran.