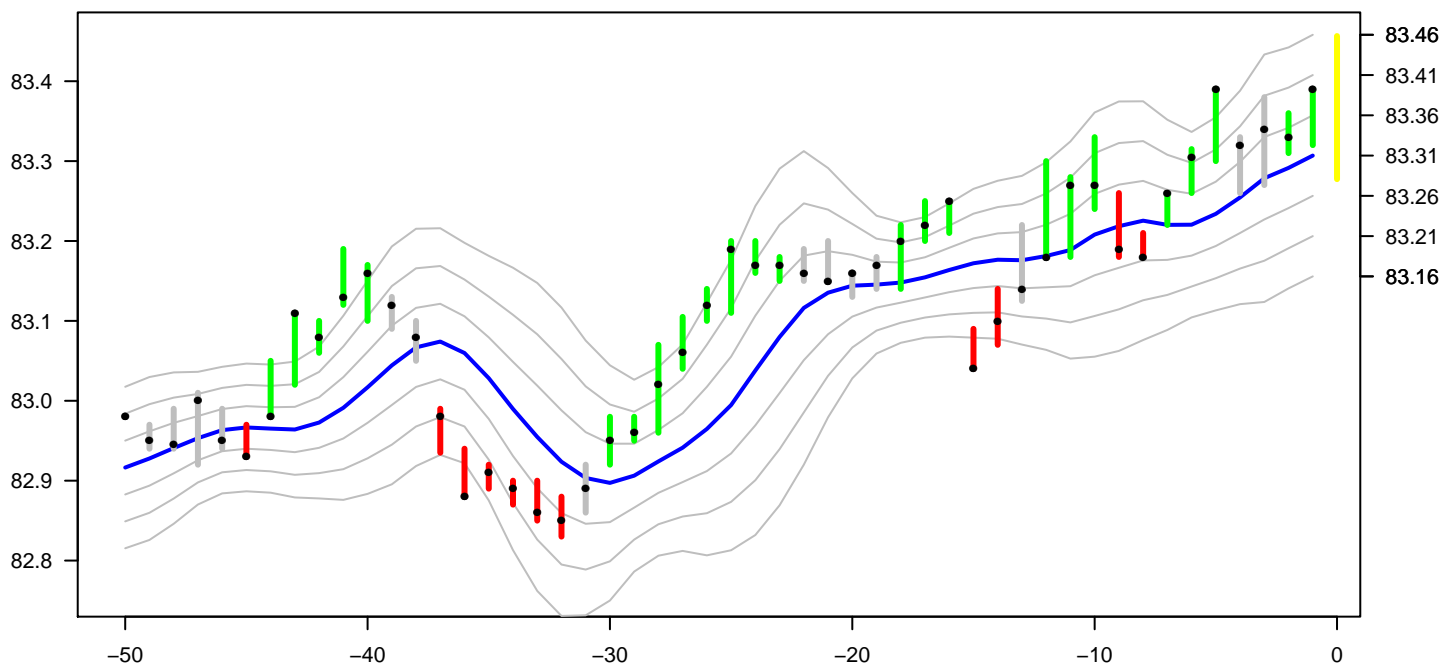
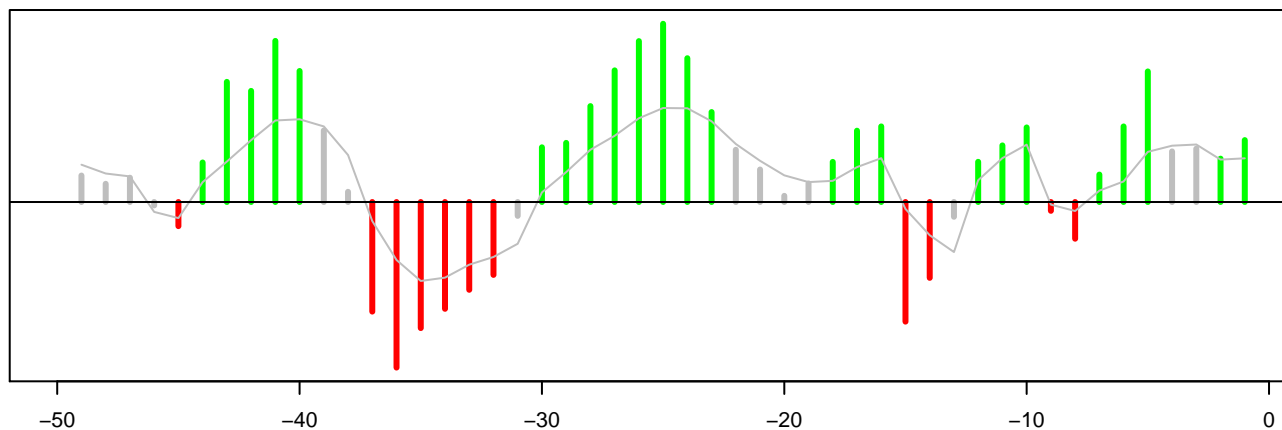


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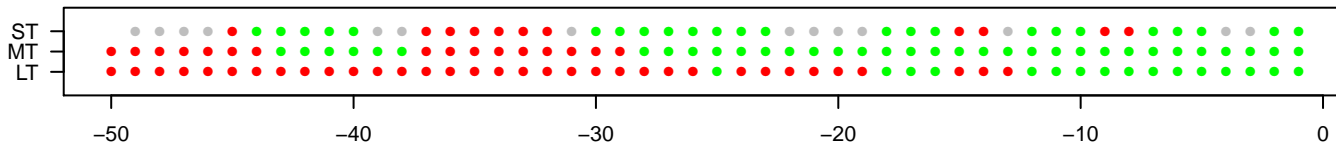
1-3 Year Treasury Bond ETF (SHY) Price and Factor Model Trend Channel.
 Last Price History Date: 21 Dec 2018. Expected region for the next day: Yellow Bar.



Short Term Signal Oscillator. Green: Bullish. Red: Bearish. Grey: Neutral, uncertainty in direction.



Short (ST), Medium (MT) and Long Term (LT) Signals



1-3 Year Treasury Bond ETF (SHY)

The short term signal is green, bullish.

The medium term signal is green, bullish.

The long term signal is green, bullish.

The trend channel is constructed from a factor model that looks at the dynamic relationship between related markets. Among the factors considered in the model are Currencies, U.S. Bonds, Indexes. These weightings can vary through time and are recalculated daily using lasso and ridge regression. The short term signal is obtained from the Signal Oscillator which is calculated using an algorithm on the price movement around the Factor Trend Channel. Signals are also given for the medium and long term trend. A short, medium and long term signal alert is given warning of a possible trend change. A channel alert is given warning that prices may move above or below the trend channel.

The signals are the output of an algorithm on a factor model and price and are not to be taken as investment advice. They must be viewed together with fundamental analysis and breaking news.

Past performance is not indicative of future results.

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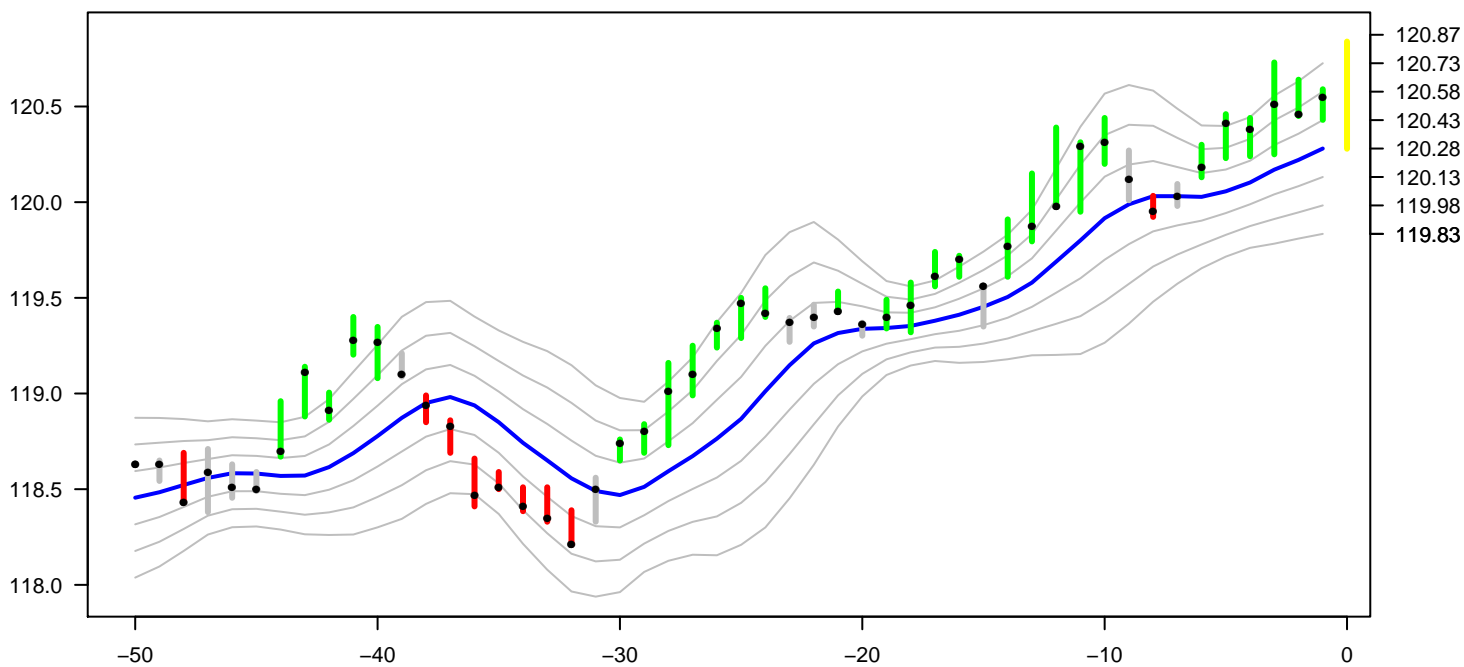
Historical Data may be subject to revision which may affect the signal.

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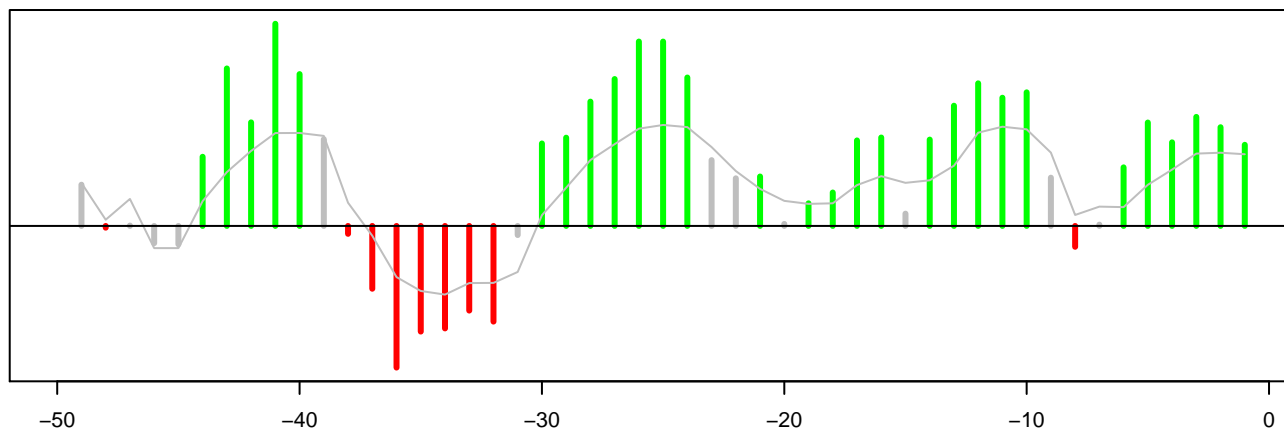


Metal Price Analytics: Bond Report 24-Dec-2018

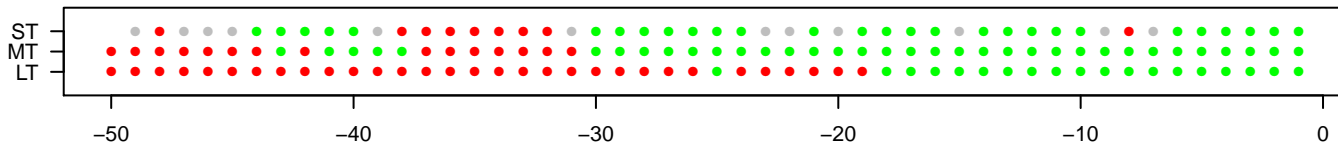
3-7 Year Treasury Bond ETF (IEI) Price and Factor Model Trend Channel.
 Last Price History Date: 21 Dec 2018. Expected region for the next day: Yellow Bar.



Short Term Signal Oscillator. Green: Bullish. Red: Bearish. Grey: Neutral, uncertainty in direction.



Short (ST), Medium (MT) and Long Term (LT) Signals



3-7 Year Treasury Bond ETF (IEI). Channel Alert: The price may move above the upper channel.
 The short term signal is green, bullish.
 The medium term signal is green, bullish.
 The long term signal is green, bullish.

The trend channel is constructed from a factor model that looks at the dynamic relationship between related markets. Among the factors considered in the model are Currencies, U.S. Bonds, Indexes. These weightings can vary through time and are recalculated daily using lasso and ridge regression. The short term signal is obtained from the Signal Oscillator which is calculated using an algorithm on the price movement around the Factor Trend Channel. Signals are also given for the medium and long term trend. A short, medium and long term signal alert is given warning of a possible trend change. A channel alert is given warning that prices may move above or below the trend channel.

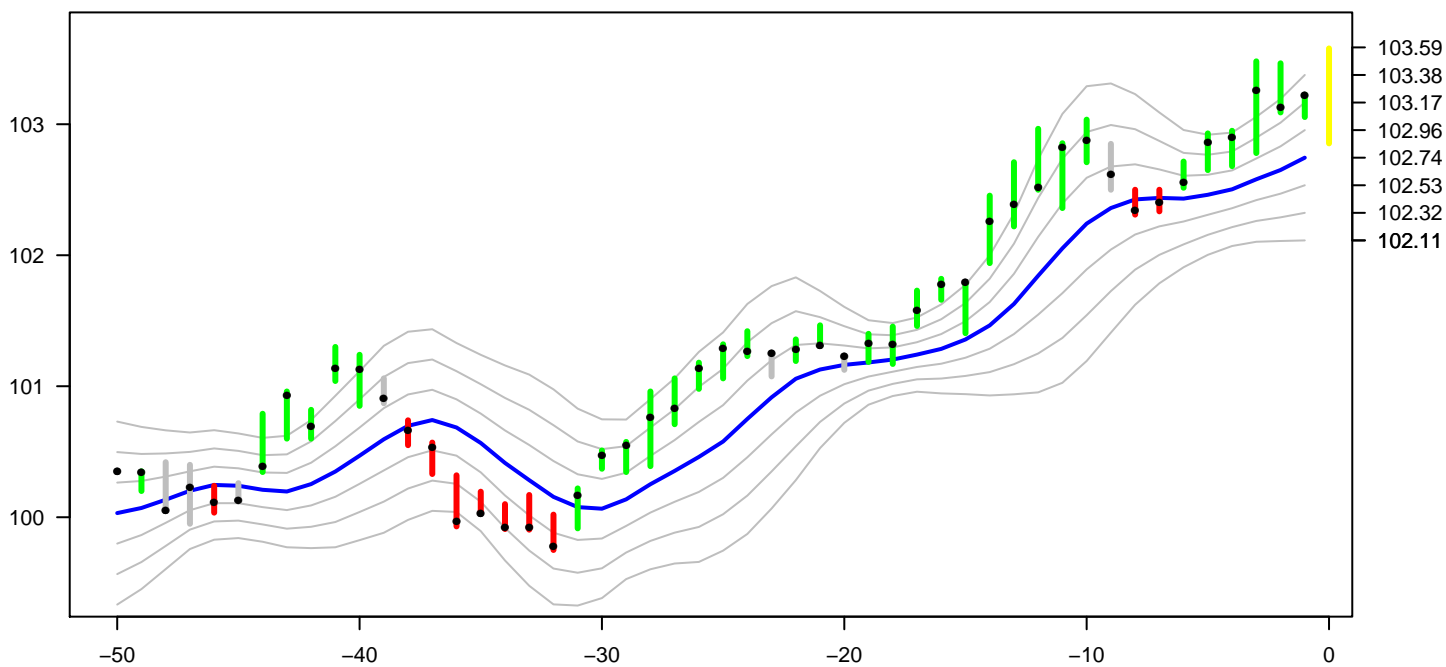
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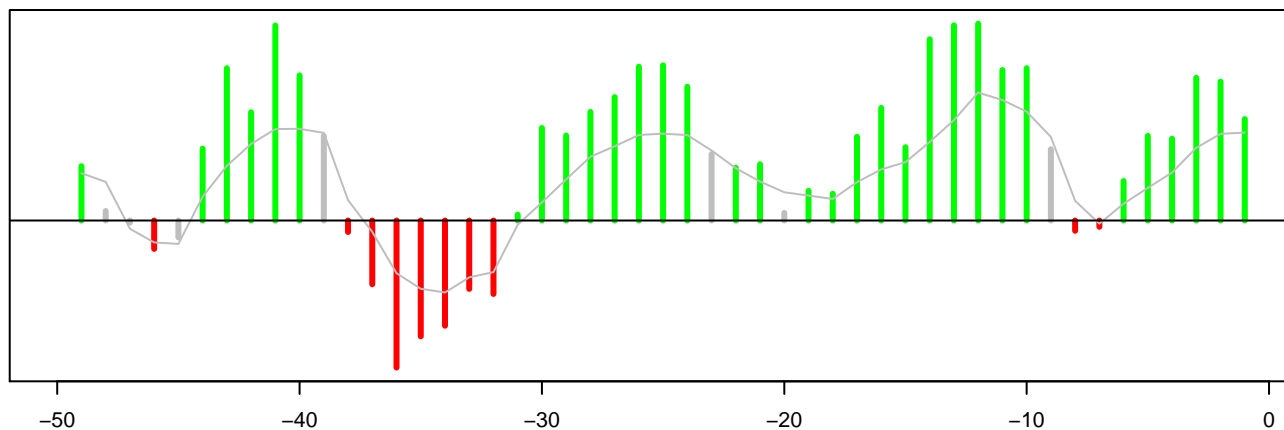


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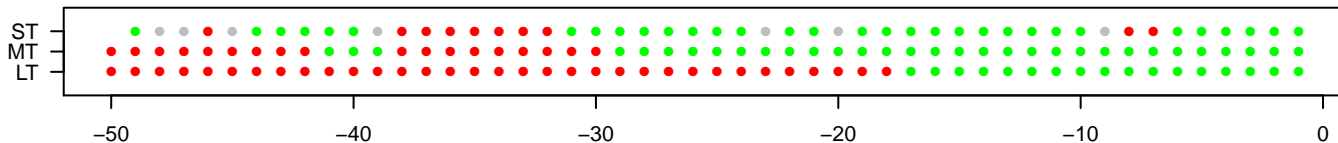
7-10 Year Treasury Bond ETF (IEF) Price and Factor Model Trend Channel.
 Last Price History Date: 21 Dec 2018. Expected region for the next day: Yellow Bar.



Short Term Signal Oscillator. Green: Bullish. Red: Bearish. Grey: Neutral, uncertainty in direction.



Short (ST), Medium (MT) and Long Term (LT) Signals



7-10 Year Treasury Bond ETF (IEF). Channel Alert: The price may move above the upper channel.
 The short term signal is green, bullish.
 The medium term signal is green, bullish.
 The long term signal is green, bullish.

The trend channel is constructed from a factor model that looks at the dynamic relationship between related markets. Among the factors considered in the model are Currencies, U.S. Bonds, Indexes. These weightings can vary through time and are recalculated daily using lasso and ridge regression. The short term signal is obtained from the Signal Oscillator which is calculated using an algorithm on the price movement around the Factor Trend Channel. Signals are also given for the medium and long term trend. A short, medium and long term signal alert is given warning of a possible trend change. A channel alert is given warning that prices may move above or below the trend channel.

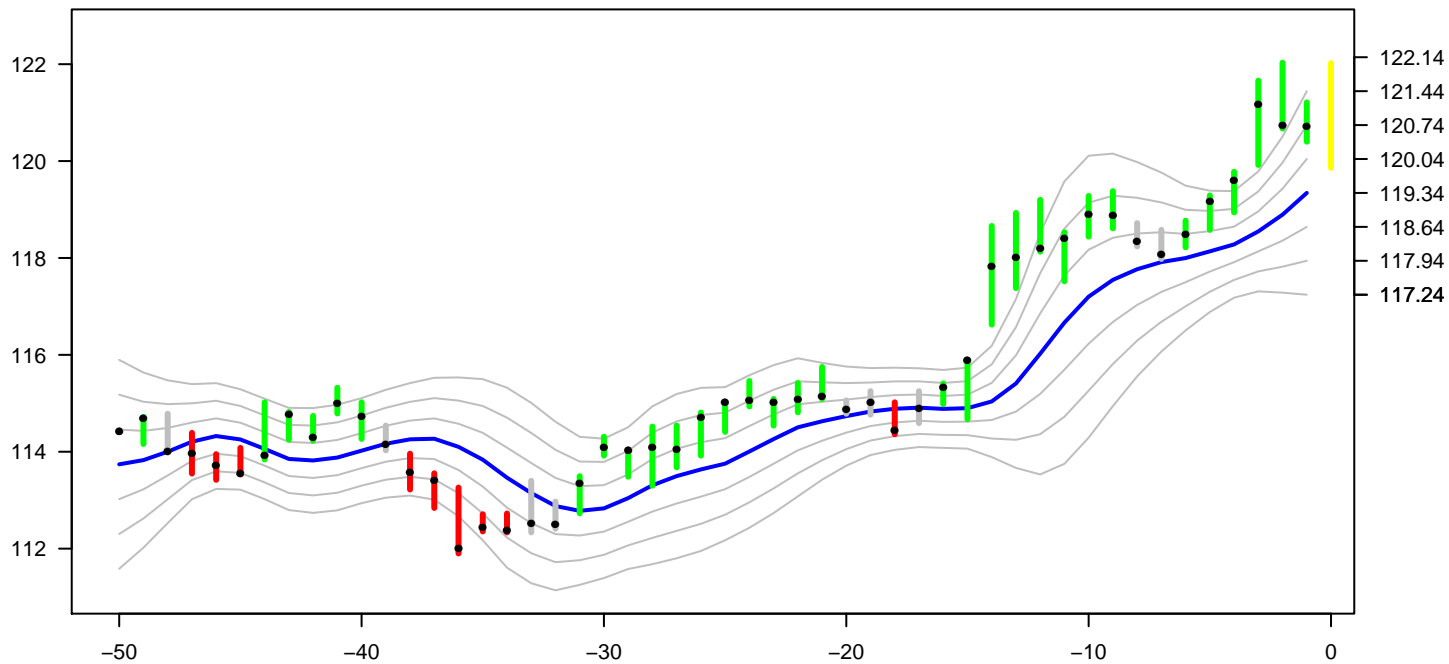
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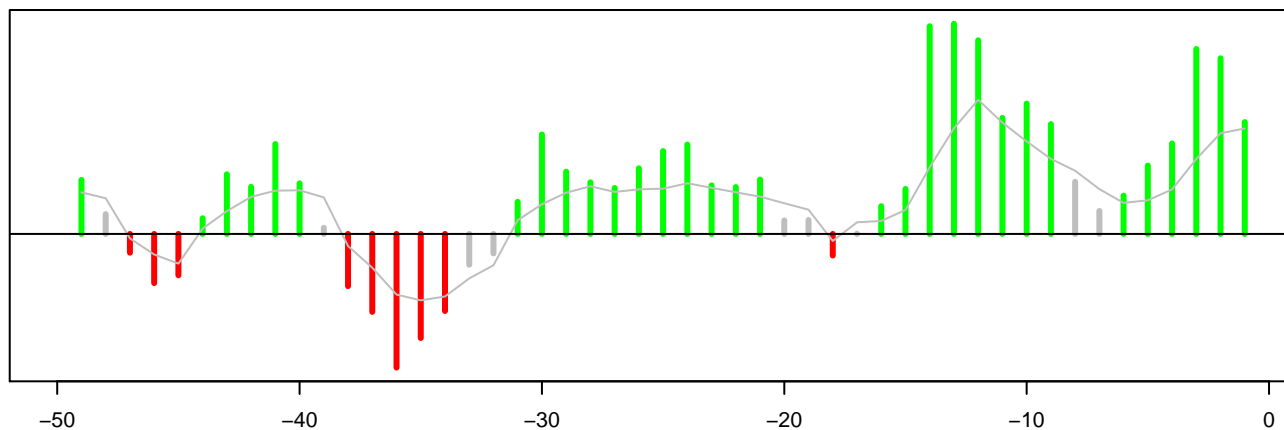


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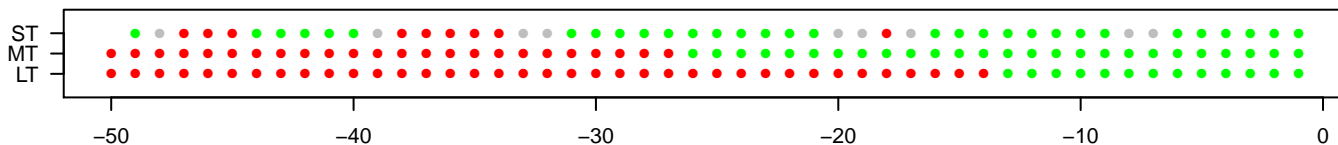
20+ Year Treasury Bond ETF (TLT) Price and Factor Model Trend Channel.
 Last Price History Date: 21 Dec 2018. Expected region for the next day: Yellow Bar.



Short Term Signal Oscillator. Green: Bullish. Red: Bearish. Grey: Neutral, uncertainty in direction.



Short (ST), Medium (MT) and Long Term (LT) Signals



20+ Year Treasury Bond ETF (TLT). Channel Alert: The price may move above the upper channel.
 The short term signal is green, bullish.
 The medium term signal is green, bullish.
 The long term signal is green, bullish.

The trend channel is constructed from a factor model that looks at the dynamic relationship between related markets. Among the factors considered in the model are Currencies, U.S. Bonds, Indexes. These weightings can vary through time and are recalculated daily using lasso and ridge regression. The short term signal is obtained from the Signal Oscillator which is calculated using an algorithm on the price movement around the Factor Trend Channel. Signals are also given for the medium and long term trend. A short, medium and long term signal alert is given warning of a possible trend change. A channel alert is given warning that prices may move above or below the trend channel.

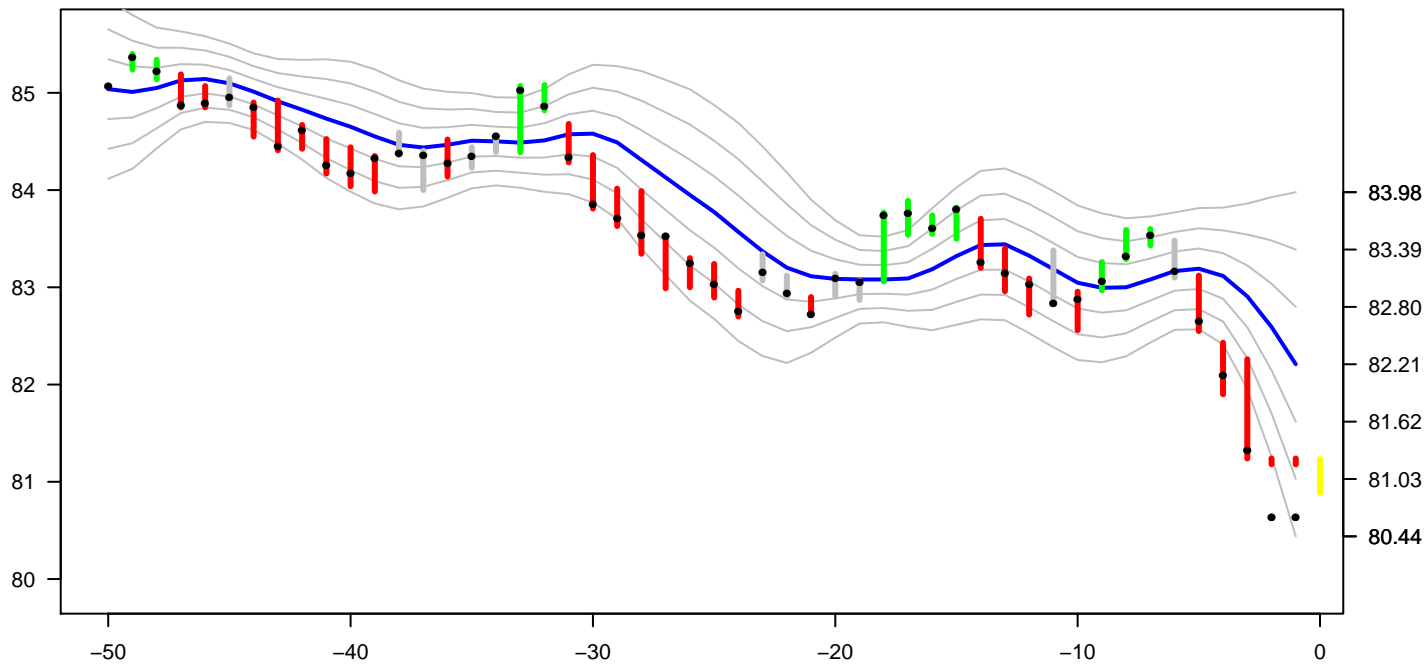
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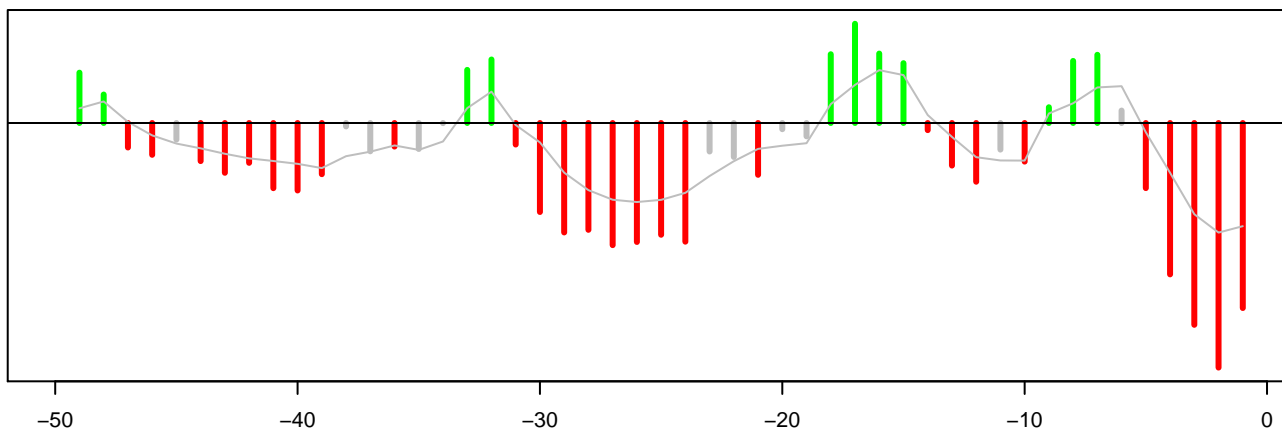


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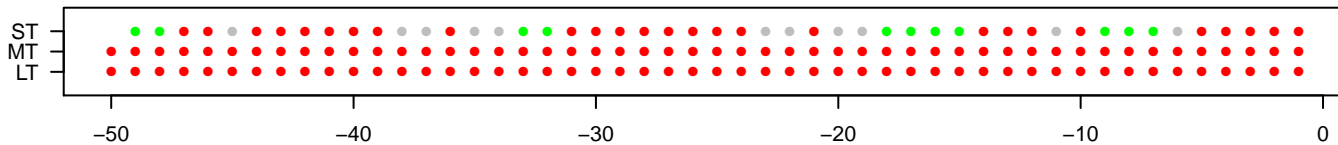
TIPS Bond ETF (TIP) Price and Factor Model Trend Channel.
 Last Price History Date: 21 Dec 2018. Expected region for the next day: Yellow Bar.



Short Term Signal Oscillator. Green: Bullish. Red: Bearish. Grey: Neutral, uncertainty in direction.



Short (ST), Medium (MT) and Long Term (LT) Signals



TIPS Bond ETF (TIP)

The short term signal is red, bearish

The medium term signal is red, bearish

The long term signal is red, bearish

The trend channel is constructed from a factor model that looks at the dynamic relationship between related markets.

Among the factors considered in the model are Currencies, U.S. Bonds, Indexes. These weightings can vary through time and are recalculated daily using lasso and ridge regression. The short term signal is obtained from the Signal Oscillator which is calculated using an algorithm on the price movement around the Factor Trend Channel. Signals are also given for the medium and long term trend. A short, medium and long term signal alert is given warning of a possible trend change. A channel alert is given warning that prices may move above or below the trend channel.

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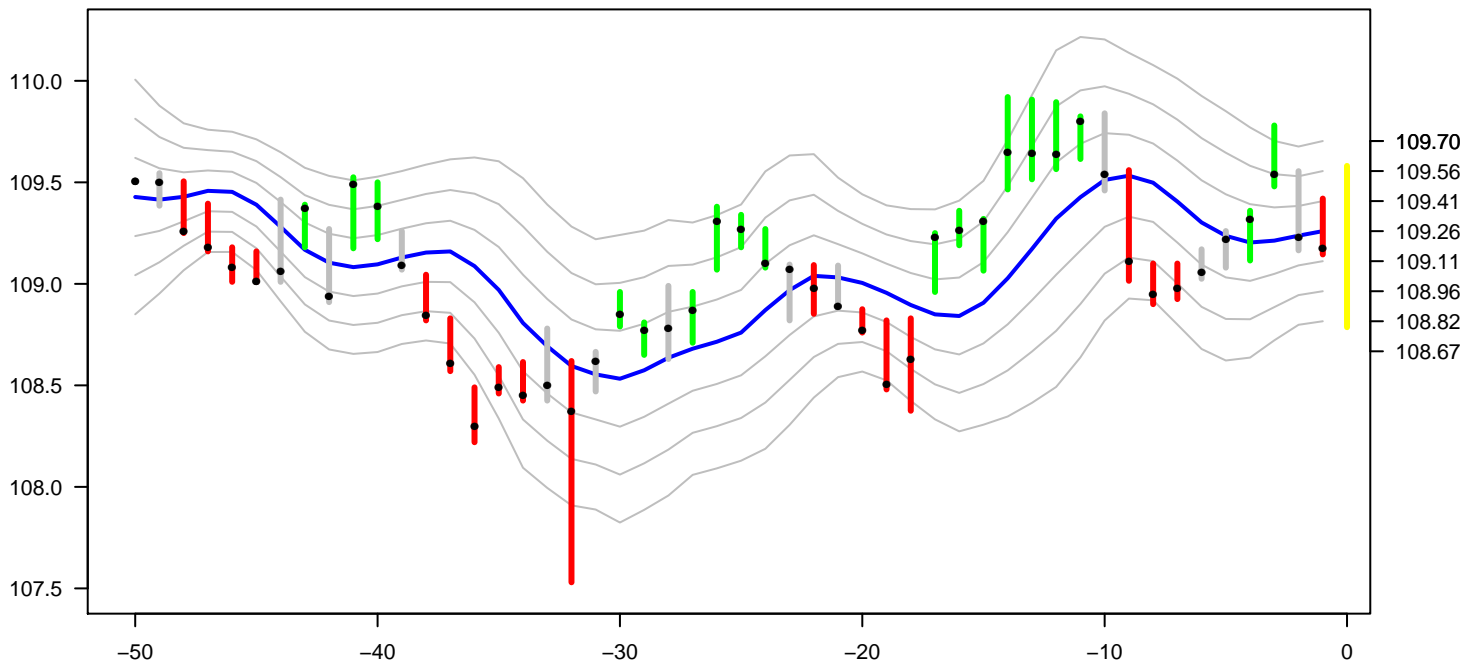
Historical Data may be subject to revision which may affect the signal.

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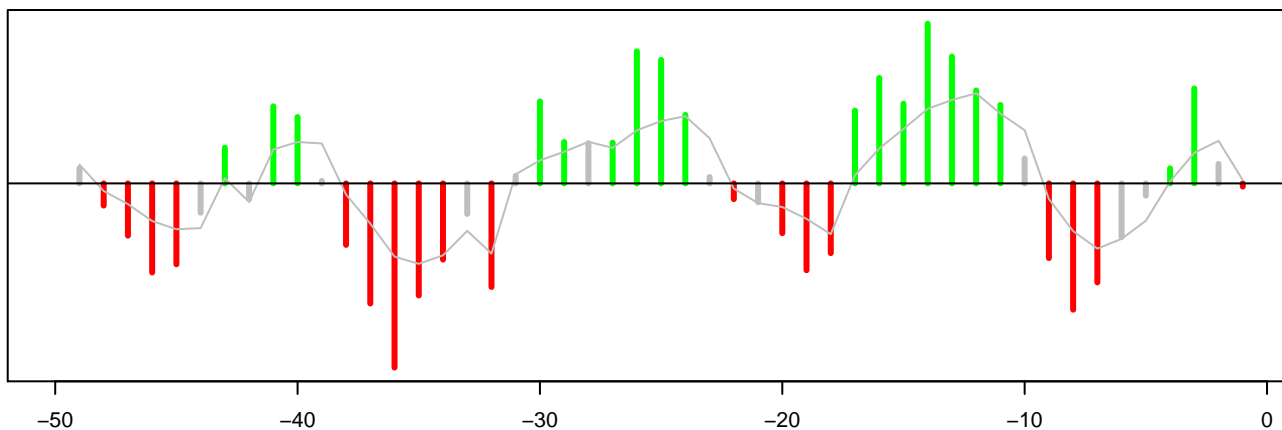


Metal Price Analytics: Bond Report 24-Dec-2018

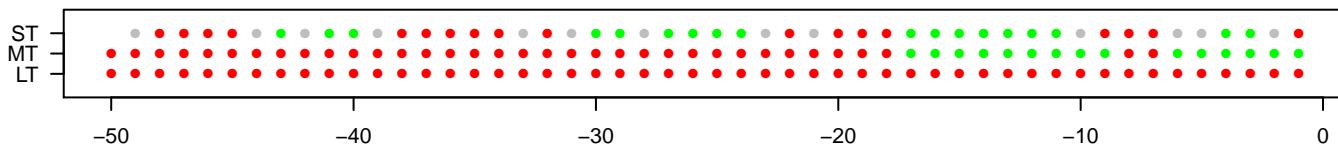
High Yid Corp Bond ETF (HYG) Price and Factor Model Trend Channel.
 Last Price History Date: 21 Dec 2018. Expected region for the next day: Yellow Bar.



Short Term Signal Oscillator. Green: Bullish. Red: Bearish. Grey: Neutral, uncertainty in direction.



Short (ST), Medium (MT) and Long Term (LT) Signals



High Yid Corp Bond ETF (HYG). Channel Alert: The price may move below the lower channel.
 The short term signal is red, bearish Alert: The short term oscillator has turned negative.
 The medium term signal is green, bullish.
 The long term signal is red, bearish

The trend channel is constructed from a factor model that looks at the dynamic relationship between related markets. Among the factors considered in the model are Currencies, U.S. Bonds, Indexes. These weightings can vary through time and are recalculated daily using lasso and ridge regression. The short term signal is obtained from the Signal Oscillator which is calculated using an algorithm on the price movement around the Factor Trend Channel. Signals are also given for the medium and long term trend. A short, medium and long term signal alert is given warning of a possible trend change. A channel alert is given warning that prices may move above or below the trend channel.

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