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U.S. STOCK MARKET CYCLE MODEL ASSESSMENT OF REAL-TIME FORECASTS

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S&P 500 Current Bull Market

- The bull market started in March 10, 2009 and the S&P 500 index will begin its tenth year in March.[1]
  - As of January 26, 2018, the S&P 500 is up 325% from the trough of the bear market of March 9, 2009.
  - It is the second largest gain since 1928 after the bull market of 1990-2000 (+415%).
- The S&P 500 index had eighteen periods of decline in the current bull market. Figure 1 (slide 6) and Table 1 (slide 7) show these periods of decline. They are defined as a pullback, minor correction or major correction.[1,2] There has been:
  - five pullbacks: average decline of 4.6% and average duration 22 days;
  - nine minor corrections: average decline of 7.5% and average duration of 31 days;
  - four major corrections: average decline of 15.3% and average duration of 106 days.

1. A pullback is generally defined as a decreased of less than 5%. A minor correction is defined as a decrease of between 5% and less than 10%. A major correction is defined as a decline of between 10% and less than 20%. A bear market is generally defined as a decline of 20% and more over a long period of time. Since 1964, the average decline in a bear market is 29% (calculated with monthly data) and the average duration is 15 months. The bear market of 2007-2009 lasted a total of 18 months and the S&P 500 posted a decline of 57% (based on daily data). This is the most substantial fall since the bear market of 1930-1932 (-83%).
2. Of course, each of the eighteen periods of decline were characterized as a pullback or (minor or major) correction after the S&P 500 index began a recovery and reached the previous peak.

- The last two major corrections of the S&P 500 index were from May 21, 2015 (peak) to August 25, 2015 (trough) and from November 3, 2015 (peak) and February 11, 2016 (trough). Each of the two corrections lasted approximately 100 days with respective decrease of 12.4% and 13.3%.

- These last two major corrections were caused in part by the drastic drop in the price of oil from above US$100 per barrel in July 2014 to less than US$30 per barrel in February 2016, as well as the negative spillover effects to the manufacturing and service sectors of the U.S. economy.

Stock Market Cycle Model

- In the early stage of a decline in the S&P 500 index, fundamental and technical analysis cannot provide a prediction of whether it will be followed by a rebound or whether it will continue into a correction. In addition, fundamental and technical analysis cannot predict or provide an assessment of the risk that a decline becomes a bear market in the near future.[3]

- The purpose of the stock market cycle model is to provide such a risk assessment for a reversal of the S&P 500 index in a bear market in the near future.

3. Revenue, earnings and the P/E ratio cannot forecast a bear market because they are lagging indicators of the stock market cycle and (at best) coincident indicators of the economic cycle. On average over the past fifty years, the cyclical peak of the economic cycle has occurred seven months after the cyclical peak of the stock market. Technical analysis cannot predict bear markets because most technical indicators only take into account the price.

- The stock market cycle model integrates a number of key economic and financial indicators, such as the state of the economy and labour market, interest rates, consumer sentiment and P/E ratio, to determine the probability of reversal in a bear market in the near future.[4]
- The model predicts a reversal of the S&P 500 index in a bear market when the probability is equal to or greater that the usual threshold of 50%.
- The probability is calculated at the beginning of the month and for forecast horizon of two months.[5]

Assessment of Real-Time Forecasts

- The real-time calculation of the probabilities for a reversal of the S&P 500 index in a bear market began in December 2010.
- In Table 1, the fifth column reports the probabilities of reversal in a bear market prior to, at the beginning, and during each period of decline since December 2010. The sixth column gives for each period of decline the forecast for the stock market cycle. The last column indicates if the forecast for each period of decline was true or false.

4. The model and its historical performance is described in a research document. The document is downloadable free from the website: http://www.theforecastingadvisor.com/background-papers.php.
5. The probability is calculated daily or weekly when necessary to provide up-to-date information on the risk of a reversal in a bear market.

- Before, at the beginning and during each of period of decline, the model did not predict a reversal of the S&P 500 index in a bear market as the probabilities never increased to or above the usual threshold of 50% (Table 1, columns 5 and 6). In other words, the model did predict, based on its economic and financial indicators, that there will be no reversal of the stock market cycle and that, therefore, the bull market would remain intact.
- The forecasts proved to be true or accurate as all periods of decline in the S&P 500 index never reached the stage of a bear market (Table 1, column 7).[6]
- Thus, for all periods of decline in the S&P 500 index, the model gave an accurate assessment of the risk of a near-term reversal in a bear market.

6. Indeed, the periods of decline were generally short-lived with the stock market setting new records in the subsequent weeks. On average, the periods of decline lasted 45 days and posted a decrease of 8.4%. Recall that the average duration and decline of a bear market since 1964 are 15 months and 29%, respectively.

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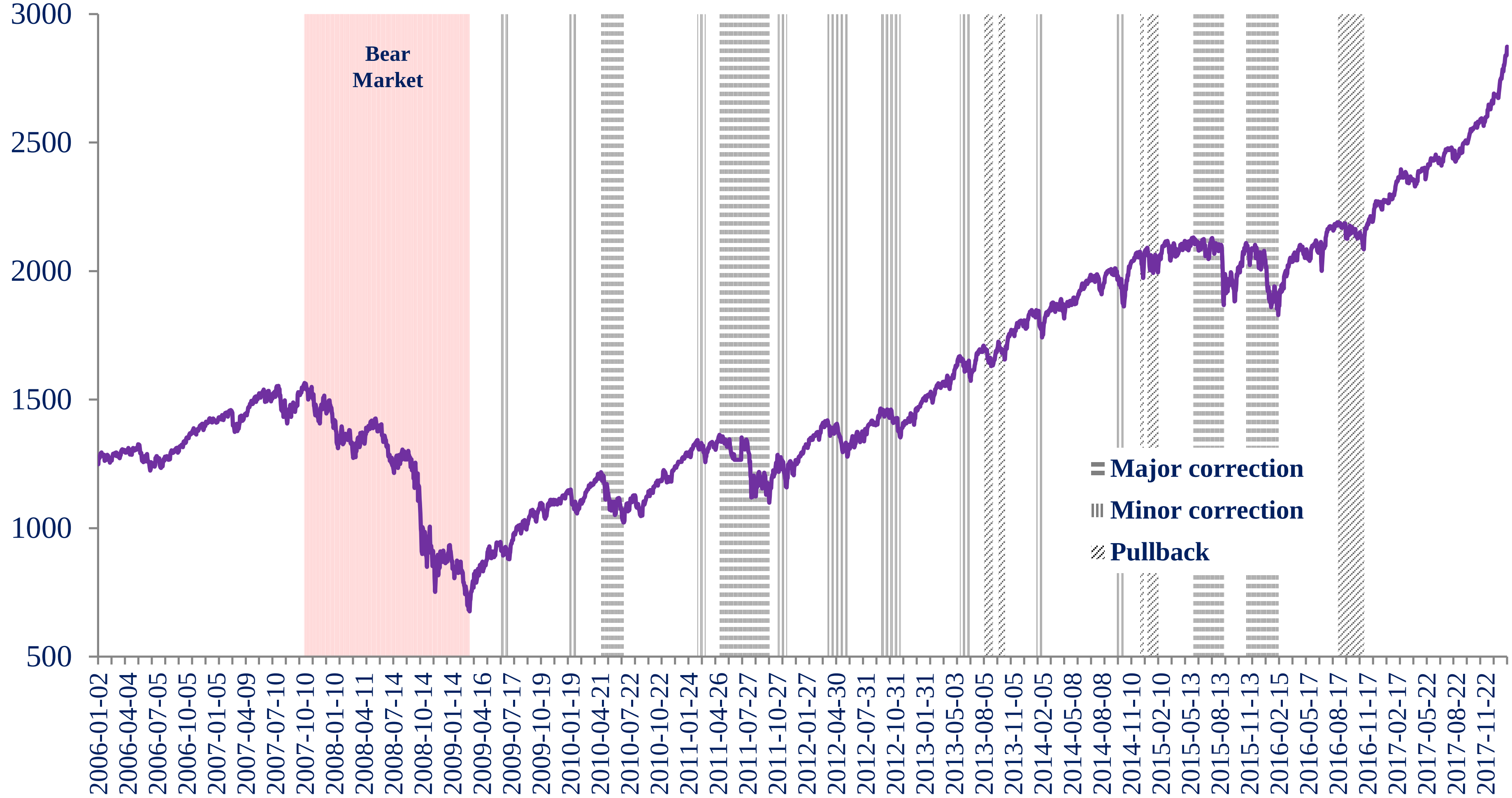
Figure 1: S&P 500 Stock Price Index

(level)



Source: The Forecasting Advisor. Last data point is January 26, 2018.

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Table 1
U.S. Stock Market Cycle Model
Assessment of Real-Time Forecasts

Periods of decline for the S&P 500 in the bull market: pullback and minor and major corrections		Duration	Decline	Probabilities of a reversal in a bear market prior to, at the beginning, and during each period of decline of the S&P 500 index	Forecasts for the stock market cycle	Forecasts assessment
Peak	Trough	in days	in %			
June 12, 2009	July 10, 2009	29	-7.1	The calculation in real-time of the probabilities began in December 2010		
January 14, 2010	February 8, 2010	25	-8.0			
April 23, 2010	July 2, 2010	70	-16.0			
February 18, 2011	March 16, 2011	26	-6.4	0.0% in January to March	Bull market will continue	True
April 29, 2011	October 3, 2011	158	-19.4	0.0% in April to June, , 0.3% in July, 0.0% in August 0.7% in September and 0.0% October	Bull market will continue	True
October 28, 2011	November 25, 2011	28	-9.8	0.0% in October and November	Bull market will continue	True
April 2, 2012	June 1, 2012	60	-9.9	2.2% in March, 11.2% in April, 27.7% in May, 22.4% in June	Bull market will continue	True
September 14, 2012	November 15, 2012	31	-7.7	0.0% in September, 0.1% in October and November	Bull market will continue	True
May 21, 2013	June 24, 2013	34	-5.8	0.0% in April to July	Bull market will continue	True
August 2, 2013	August 30, 2013	28	-4.5	0.0% in July to September	Bull market will continue	True
September 18, 2013	October 8, 2013	20	-4.1	0.0% in September and October	Bull market will continue	True
January 15, 2014	February 3, 2014	19	-5.8	0.0% in December to February	Bull market will continue	True
September 18, 2014	October 15, 2014	27	-7.4	0.0% in September and October	Bull market will continue	True
December 5, 2014	December 16, 2014	11	-4.9	0.0% in December	Bull market will continue	True
December 29, 2014	January 30, 2015	32	-4.6	0.0% in December, 0.1% in January and 0.0% in February	Bull market will continue	True
May 21, 2015	August 25, 2015	95	-12.4	0.0% in May to September	Bull market will continue	True
November 3, 2015	February 11, 2016	99	-13.3	0.0% in October and November, 0.1% in December, 0.2% in January, 0.6% in February	Bull market will continue	True
August 16, 2016	November 4, 2016	19	-4.8	0.0% in August to November	Bull market will continue	True

1. A pullback is a decline of less than 5%. A minor correction is a decline of between 5% and less than 10%. A major correction is a decline of between 10% and less than 20%.

Source: The Forecasting Advisor.