

SP500 forecast

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Prepared December 19, 2016

Introduction

The purpose of this analysis is to determine if the SP500 Index (Index) is overpriced, as of August 2015, and complete some forecasting analysis.

A forecast of the Index. The Index data was downloaded from Yahoo Finance in August after it had significant drops. Consumer Price Index data was used to deflate the Index's historical price. This data can be downloaded from [here](#).

In conclusion, it seems that the Index is currently overpriced.

Analysis steps

- The data was downloaded
- Historical data was visualized
- Historical data adjusted by the CPI and then was visualized
- Forecasts were completed

SP500 Open Price by Month

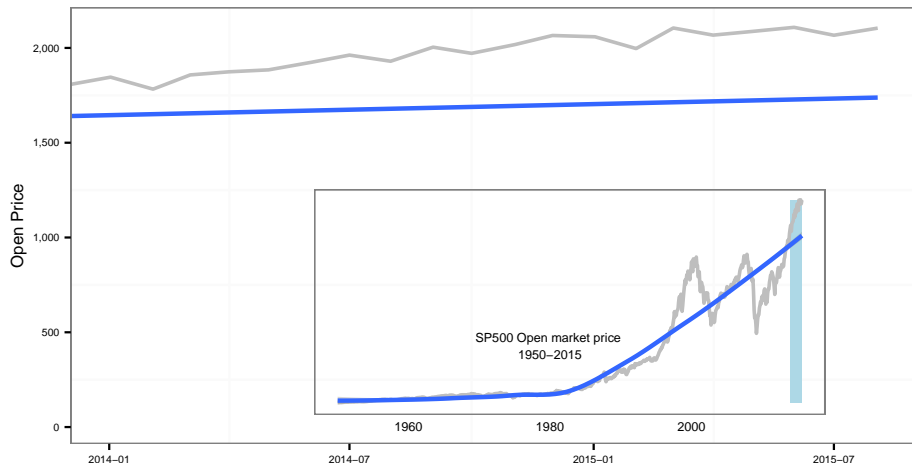


Figure 1: Open market price trend Jan 2014 - Jul 2015

SP500 Open Price adjusted with CPI by Month

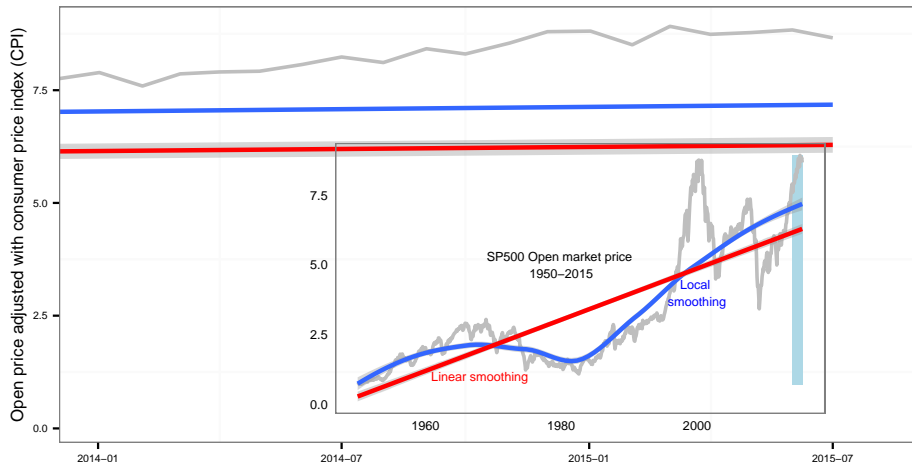


Figure 2: CPI adjusted open market price trend Jan 2014 - Jul 2015

Forecast graphs 1

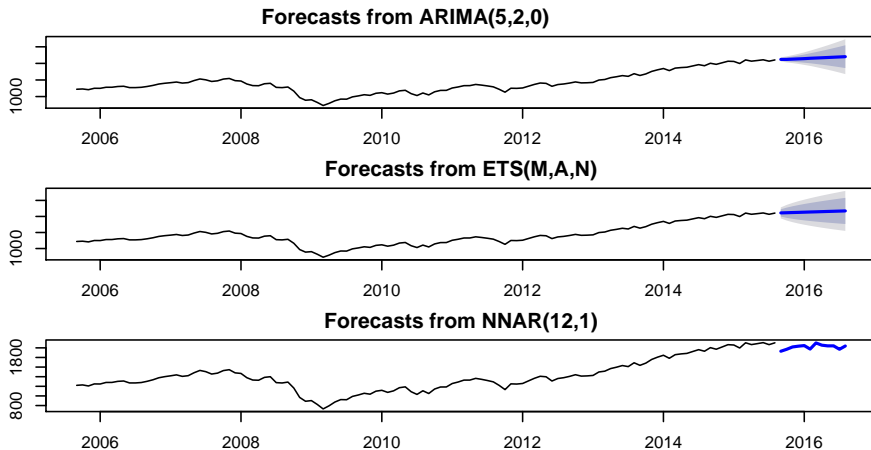
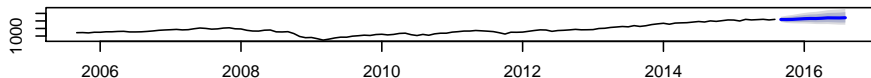


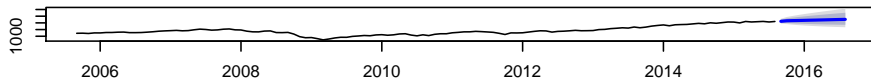
Figure 3:

Forecast graphs 2

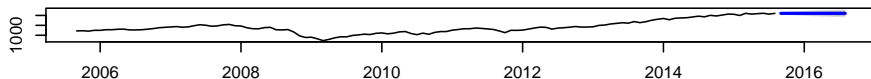
Forecasts from TBATS(0.002, {2,3}, 0.999, {<12,5>})



Forecasts from BATS(0, {0,0}, 1, -)



Forecasts from HoltWinters



Forecasts from Linear regression model

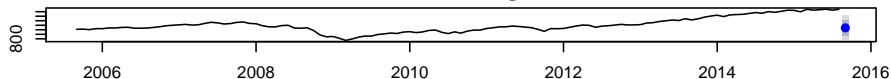


Figure 4: Forecasts

code below is from here

Forecast table

	Model	ME	RMSE	MAE	MPE	MAPE
naive	naive	25.2	202.5	154.2	0.5	11.7
theta	theta	22.3	211.4	153.8	1.0	11.9
exp	exp	14.4	222.4	161.6	-0.0	12.3
arima	arima	23.0	254.9	179.7	1.7	14.2
sts	sts	6.0	287.0	194.1	-0.4	15.1
neural	neural	592.6	2,529.4	735.2	55.1	66.5

Table 1: Measure each model's accuracy

Forecast graphs 3

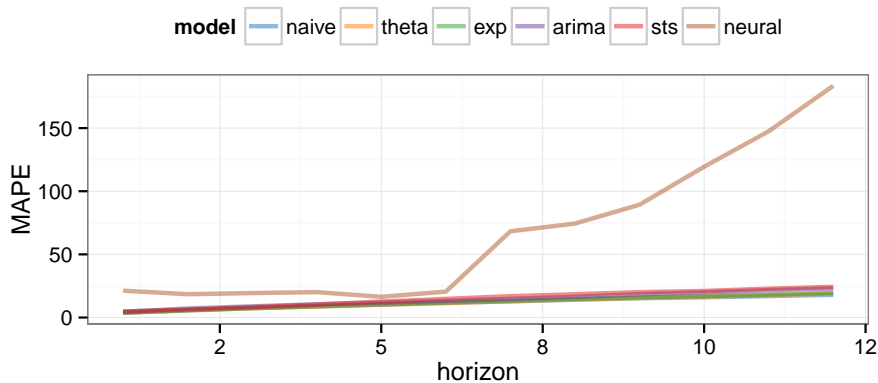


Figure 5:

PresidentialChart 1

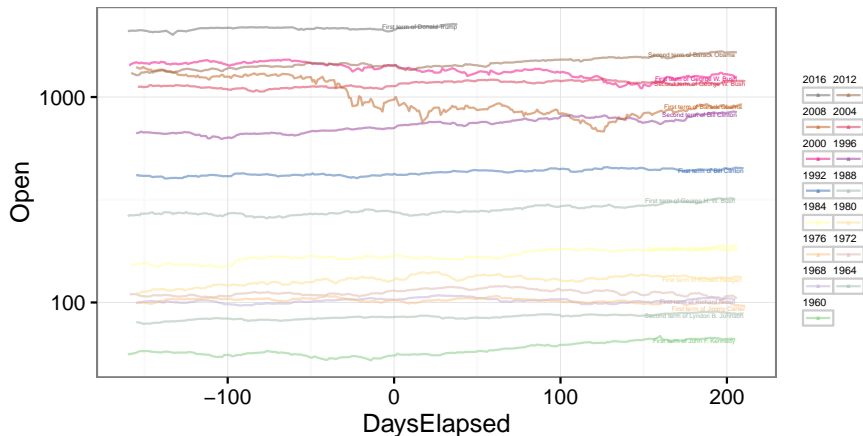


Figure 6: first plot

PresidentialChart 2

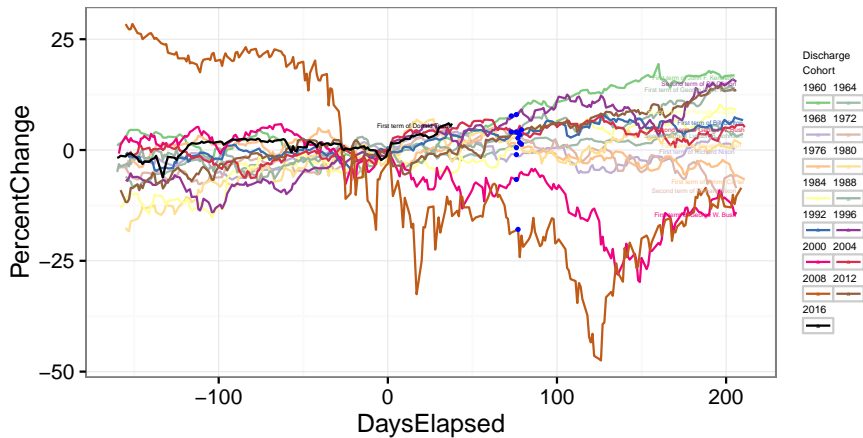


Figure 7: second plot

PresidentialChart 3

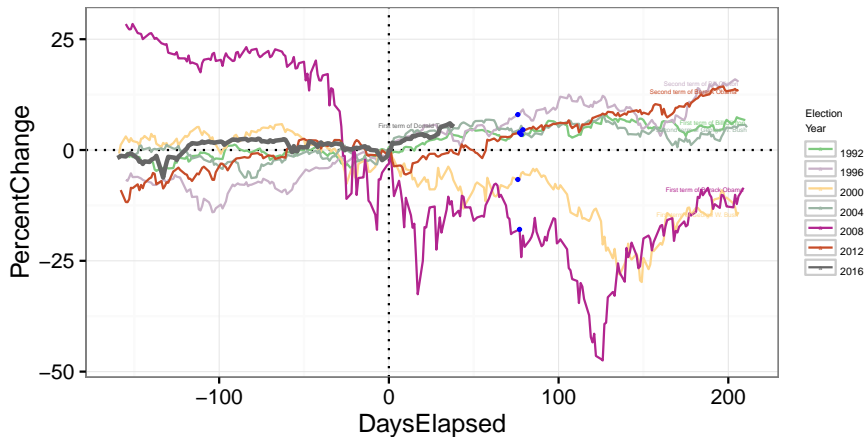


Figure 8: third plot

PresidentialChart 4

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The analysis was completed on Mon Dec 19 9:29:32 AM 2016 in 8 seconds.