

# SP500 forecast

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# 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

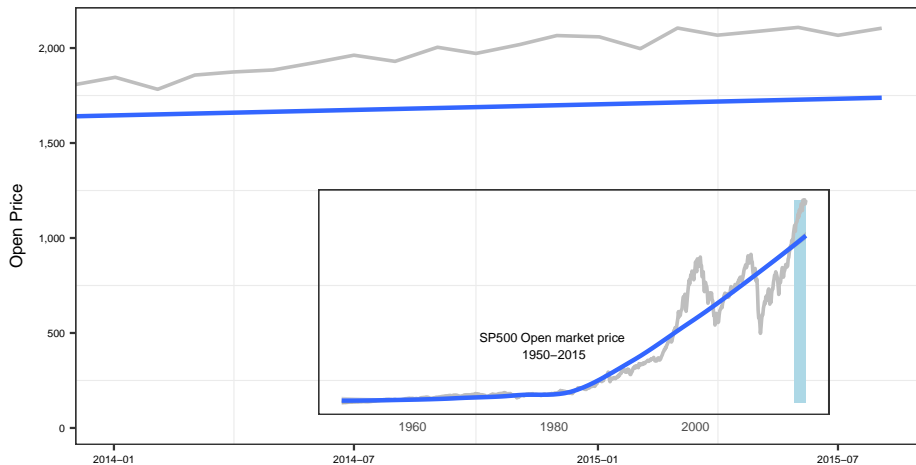


Figure 1: Open market price trend Jan 2014 - Jul 2015

# SP500 Open Price adjusted with CPI by Month

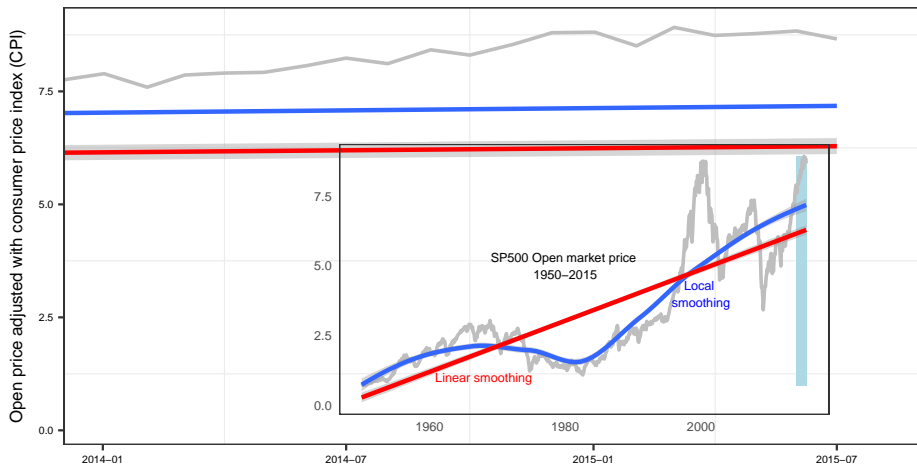


Figure 2: CPI adjusted open market price trend Jan 2014 - Jul 2015

# Forecast graphs 1

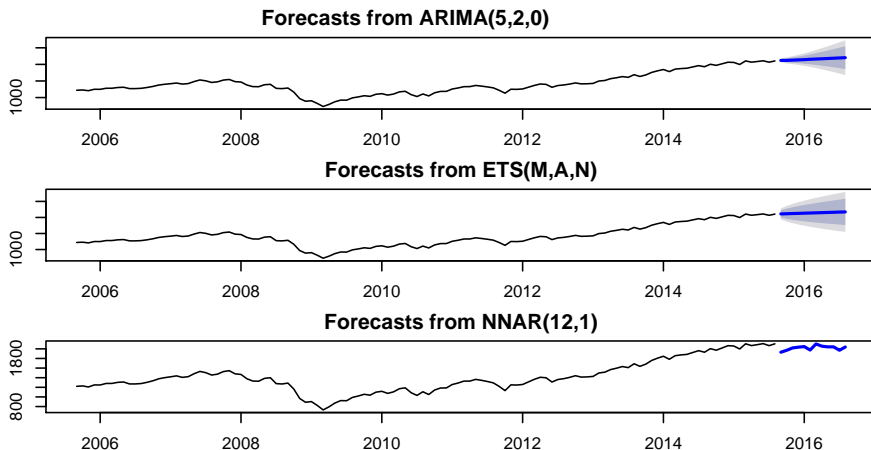
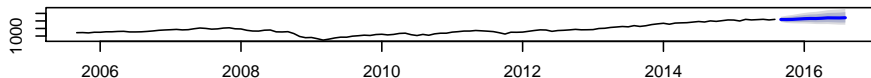


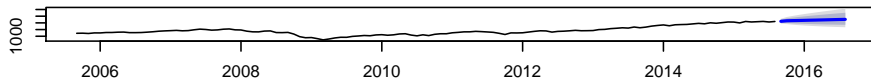
Figure 3:

## Forecast graphs 2

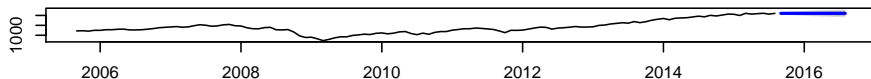
**Forecasts from TBATS(0.002, {2,3}, 0.999, {<12,5>})**



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



**Forecasts from HoltWinters**



**Forecasts from Linear regression model**

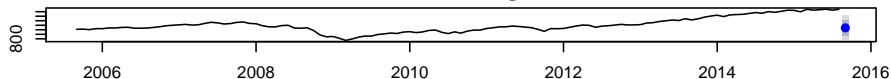


Figure 4: Forecasts

*# code below is from here*

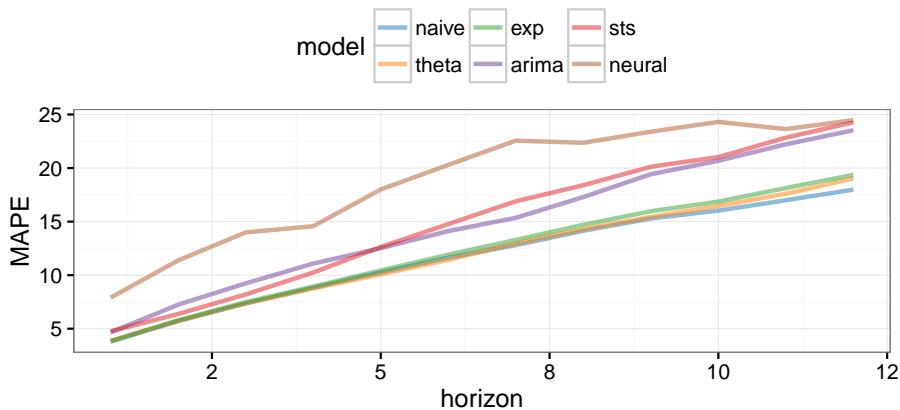
## Forecast table

	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	11.3	222.1	161.1	-0.3	12.2
arima	arima	15.9	260.0	187.3	0.7	14.8
sts	sts	6.0	287.0	194.1	-0.4	15.1
neural	neural	48.4	331.6	246.7	2.1	18.9

Table 1: Measure each model's accuracy



# Forecast graphs 3



# PresidentialChart 1

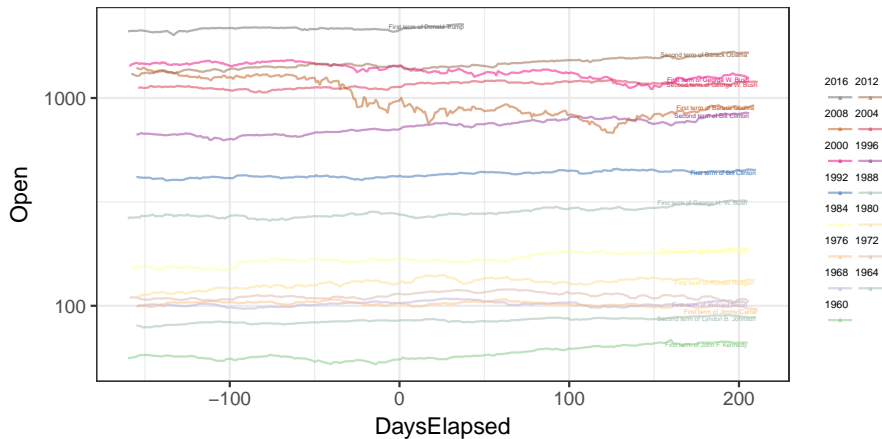
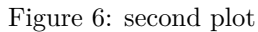


Figure 5: first plot



# PresidentialChart 3

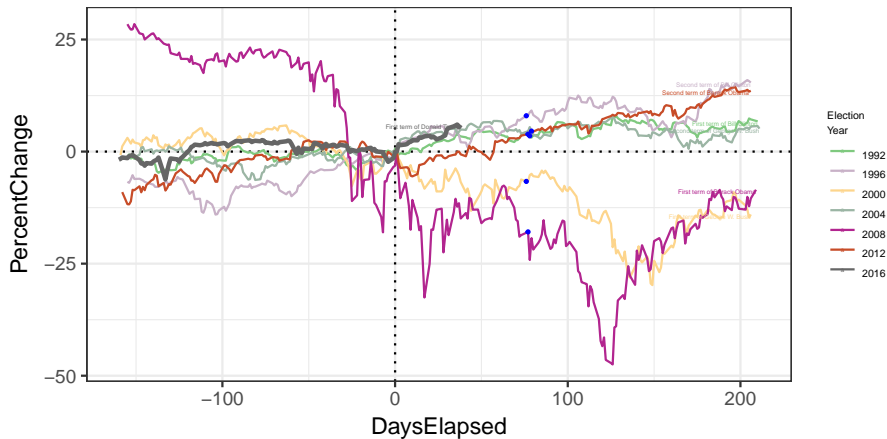


Figure 7: third plot

# PresidentialChart 4

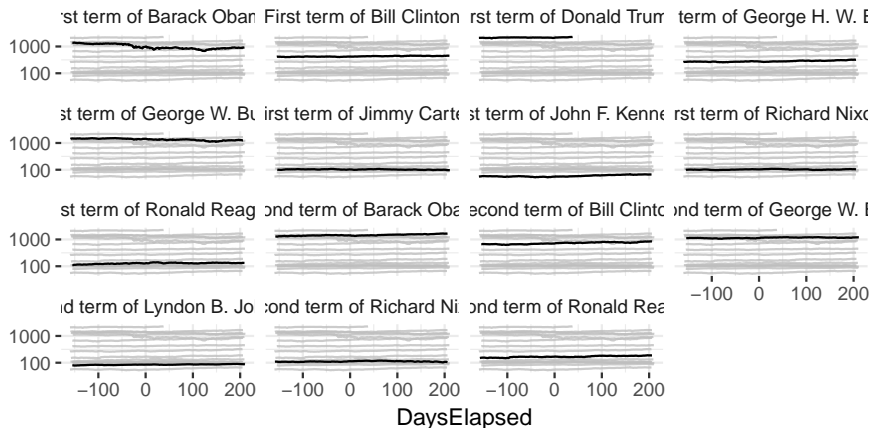


Figure 8: last plot

# Last Page

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The analysis was completed on Mon Dec 19 3:23:28 PM 2016 in 48 seconds.