

ALY 6050 Project 3

Problem 1

The Excel workbook Honeywell.xlsx contains the historical stock prices of the Honeywell International Incorporated, an American multinational company that produces a variety of commercial and consumer products, engineering services and aerospace systems for a wide variety of customers, from private consumers to major corporations and governments from 10/15/2017 to 4/15/2018 (courtesy of Yahoo Finance).

- A. Perform exponential smoothing forecasts on the Honeywell stock prices to forecast the price for 4/16/2018. Use successive values of 0.15, 0.35, 0.55, and 0.75 for the smoothing parameter α . Calculate the MSE of each forecast, Use the MSEs of your forecasts to determine the value of α that has provided the most accurate forecast. Describe qualitatively as to why such a value of α has yielded the most accurate forecast.
- B. Use your exponential smoothing forecast with $\alpha=0.75$, and perform adjusted exponential smoothing forecasts on the Honeywell stock prices to forecast the price for 4/16/2018. Use successive values of 0.15, 0.25, 0.45, and 0.85 for the trend parameter β . Use the MSEs of your forecasts to determine the value of β that has provided the most accurate forecast. Describe qualitatively as to why such a value of β has yielded the most accurate forecast.

Problem 2

The Helicopter Division of Aerospatiale is studying assembly costs at its Marseilles plant. Past data indicates the following labor hours per helicopter:

Helicopter Number	Labor Hours
1	2,000
2	1,400
3	1,238
4	1,142
5	1,075
6	1,029
7	985
8	957

Using these data, apply simple linear regression, and examine the residual plot. What do you conclude? Construct a scatter chart and use the Excel Trendline feature to identify the best type of trendline that maximizes R^2 .

Problem 3

Develop a multiple regression model with categorical variables that incorporate seasonality for forecasting sales using the last three years of data in the Excel file *New Car Sales*. Perform regression analysis.

Hint: Make sure all your p values are acceptably small by consecutively removing the months with high p value and repeating the analysis.