



Unemployment
Trends

Group 4

Outline

Initial Plots

Differencing
ACF & PACF

Model
Comparisons

Overview
Seasonal Models
Seasonally Adjusted
Models

US Unemployment Trends

Initial Model Selection

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STAT 626: Time Series Analysis



Outline

Unemployment
Trends

Group 4

Outline

Initial Plots

Differencing
ACF & PACF

Model
Comparisons

Overview
Seasonal Models
Seasonally Adjusted
Models

1 Initial Plots

- Differencing
- ACF & PACF

2 Model Comparisons

- Overview
- Seasonal Models
- Seasonally Adjusted Models



Second differences with and without seasonal adjustments

Unemployment Trends

Group 4

Outline

Initial Plots

Differencing

ACF & PACF

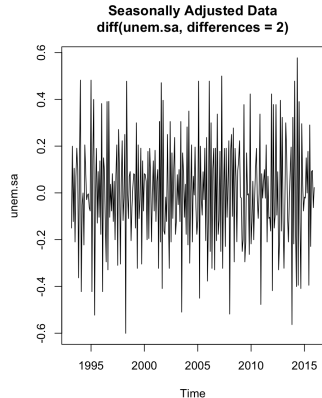
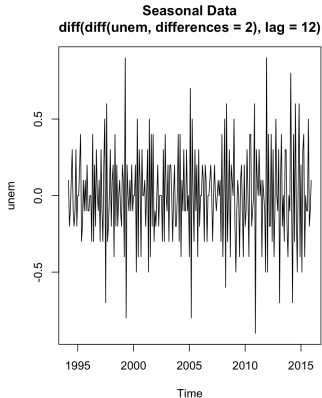
Model

Comparisons

Overview

Seasonal Models

Seasonally Adjusted Models





ACF & PACF Plots

Unemployment
Trends

Group 4

Outline

Initial Plots

Differencing

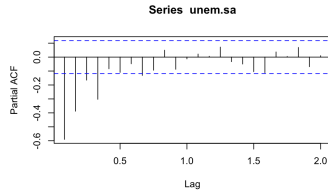
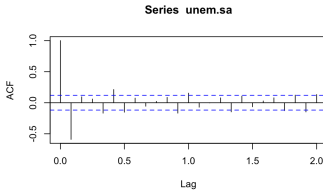
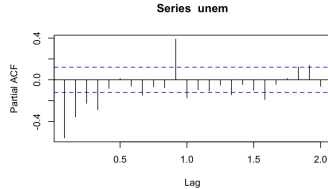
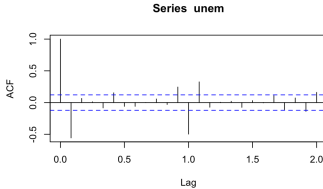
ACF & PACF

Model
Comparisons

Overview

Seasonal Models

Seasonally Adjusted
Models





Models Considered

Unemployment
Trends

Group 4

Outline

Initial Plots

Differencing
ACF & PACF

Model
Comparisons

Overview
Seasonal Models
Seasonally Adjusted
Models

Table: Model Summaries

#	Data	Order	Seasonal Order	XRegs	AIC	BIC
1	Unem	0,2,1	1,1,0	N	-2.27	-3.23
2	Unem	0,2,1	3,1,0	N	-2.44	-3.37
3	Unem	4,2,1	3,1,0	N	-2.44	-3.32
4	Unem.sa	0,2,1	1,0,0	N	-2.61	-3.58
5	Unem.sa	1,2,1		N	-2.63	-3.60
6	Unem.sa	0,2,1	1,0,0	Y	-2.58	-3.49
7	Unem.sa	1,2,1		Y	-2.60	-3.49



Model 1: SARIMA(0, 2, 1) \times (1, 1, 0)₁₂

Unemployment
Trends

Group 4

Outline

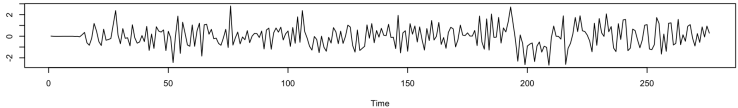
Initial Plots

Differencing
ACF & PACF

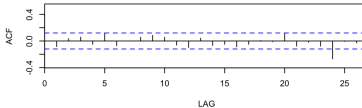
Model
Comparisons

Overview
Seasonal Models
Seasonally Adjusted
Models

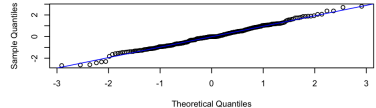
Standardized Residuals



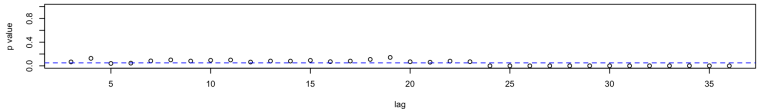
ACF of Residuals



Normal Q-Q Plot of Std Residuals



p values for Ljung-Box statistic





Model 2: SARIMA(0, 2, 1) \times (3, 1, 0)₁₂

Unemployment
Trends

Group 4

Outline

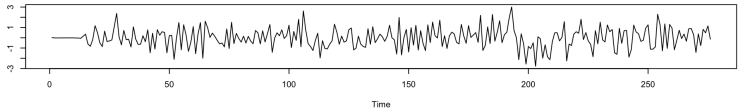
Initial Plots

Differencing
ACF & PACF

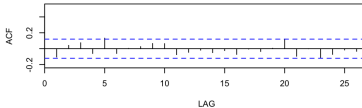
Model
Comparisons

Overview
Seasonal Models
Seasonally Adjusted
Models

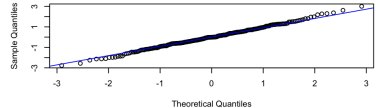
Standardized Residuals



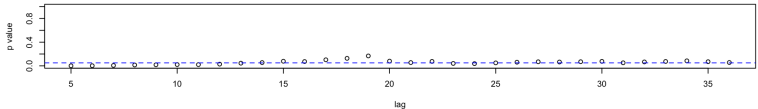
ACF of Residuals



Normal Q-Q Plot of Std Residuals



p values for Ljung-Box statistic





Model 3: SARIMA(4, 2, 1) \times (3, 1, 0)₁₂

Unemployment
Trends

Group 4

Outline

Initial Plots

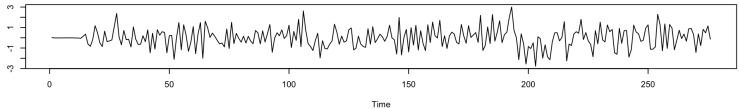
Differencing
ACF & PACF

Model
Comparisons

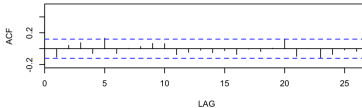
Overview

Seasonal Models
Seasonally Adjusted
Models

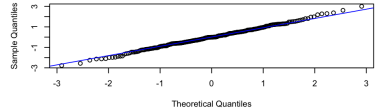
Standardized Residuals



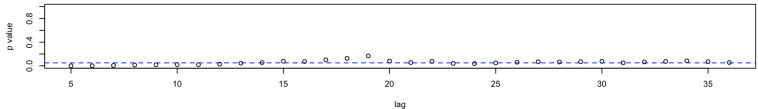
ACF of Residuals



Normal Q-Q Plot of Std Residuals



p values for Ljung-Box statistic





Model 4: SARIMA(0, 2, 1) \times (1, 0, 0)₁₂

Unemployment
Trends

Group 4

Outline

Initial Plots

Differencing

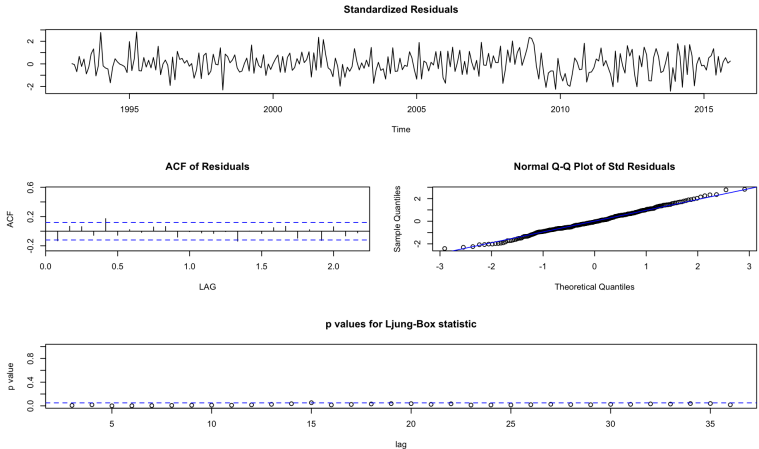
ACF & PACF

Model
Comparisons

Overview

Seasonal Models

Seasonally Adjusted
Models





Model 5: ARIMA(1, 2, 1)

Unemployment
Trends

Group 4

Outline

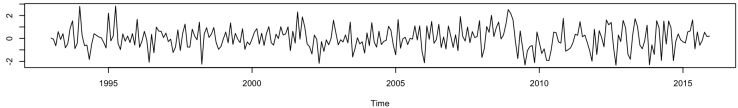
Initial Plots

Differencing
ACF & PACF

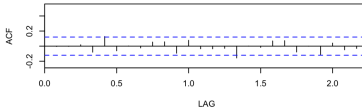
Model
Comparisons

Overview
Seasonal Models
Seasonally Adjusted
Models

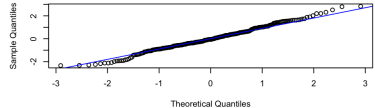
Standardized Residuals



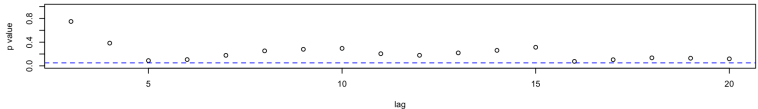
ACF of Residuals



Normal Q-Q Plot of Std Residuals



p values for Ljung-Box statistic





Model 6: SARIMA(0, 2, 1) \times (1, 0, 0)₁₂ with Regressors

Unemployment
Trends

Group 4

Outline

Initial Plots

Differencing

ACF & PACF

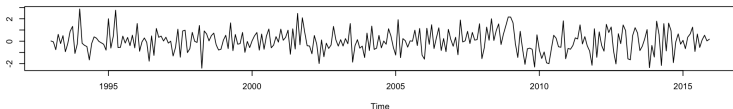
Model
Comparisons

Overview

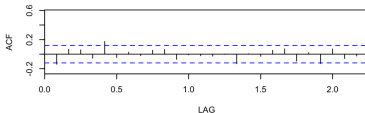
Seasonal Models

Seasonally Adjusted
Models

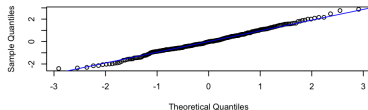
Standardized Residuals



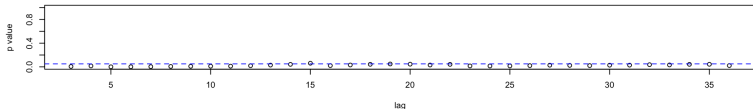
ACF of Residuals



Normal Q-Q Plot of Std Residuals



p values for Ljung-Box statistic





Model 7: ARIMA(1, 2, 1) with Regressors

Unemployment
Trends

Group 4

Outline

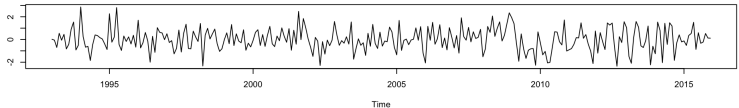
Initial Plots

Differencing
ACF & PACF

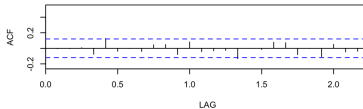
Model
Comparisons

Overview
Seasonal Models
Seasonally Adjusted
Models

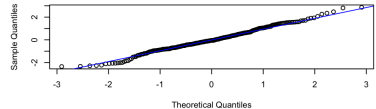
Standardized Residuals



ACF of Residuals



Normal Q-Q Plot of Std Residuals



p values for Ljung-Box statistic

