**Time series and forecasting**

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**Time Series Plot**



ACF

PACF



Transformation

Lamda is equal -2 that's mean we will use the transformation 1/Z^2







Fitting The Model

**ARIMA Model: C6**

Estimates at each iteration

Iteration SSE Parameters

0 1.34449 0.100 0.100 0.506

1 1.08717 0.250 -0.002 0.469

2 0.86944 0.400 -0.106 0.433

3 0.68899 0.550 -0.210 0.398

4 0.54449 0.700 -0.316 0.363

5 0.43488 0.850 -0.422 0.329

6 0.35926 1.000 -0.527 0.296

7 0.31823 1.150 -0.634 0.263

8 0.30611 1.264 -0.716 0.239

Unable to reduce sum of squares any further

Final Estimates of Parameters

Type Coef SECoef T P

AR 1 1.2637 0.1135 11.14 0.000

AR 2 -0.7160 0.1137 -6.30 0.000

Constant 0.23921 0.01225 19.52 0.000

Mean 0.52891 0.02709

Number of observations: 46

Residuals: SS = 0.296815 (backforecasts excluded)

MS = 0.006903 DF = 43

Modified Box-Pierce (Ljung-Box) Chi-Square statistic

Lag 12 24 36 48

Chi-Square 18.4 31.1 40.4 \*

DF 9 21 33 \*

P-Value 0.031 0.071 0.177 \*

The fitting model is ARIMA(2,0,0)

Zt=1.2637 Z(t-1)+0.7160z(t-2)

Time series for the difference



ACF of Residual



PACF of Residual



Residual Plots

