

Economics 413: Economic Forecast & Analysis

Department of Economics, Finance and Legal Studies

University of Alabama

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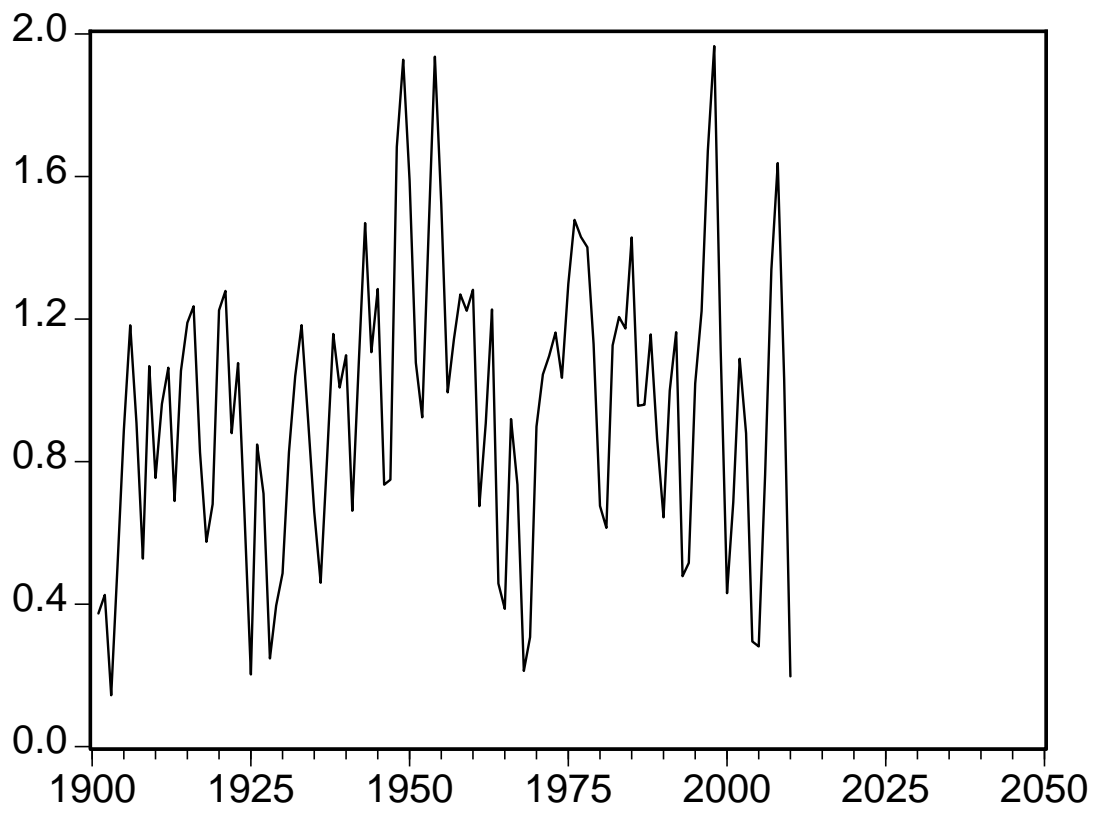
Midterm II

The exam consists of three questions on four pages. Each question is of equal value.

1. Draw a flow chart of the Box-Jenkins methodology. Below the chart write one or two sentences to describe each step.

2. Consider the model $Y_t = \varepsilon_t + \theta_2 \varepsilon_{t-2}$, where $\varepsilon_t \sim WN(0, \sigma_\varepsilon^2)$ is a white noise sequence. Assuming that the parameters of the model are known
- (a) Find the h -step ahead forecast for $h = 1, 2, \dots$
 - (b) Find the h -step ahead forecast error for $h = 1, 2, \dots$
 - (c) Find the h -step ahead forecast error variance for $h = 1, 2, \dots$
 - (d) Find the h -step ahead interval forecast for $h = 1, 2, \dots$
 - (e) Plot parts (a) and (d) in a single figure.

3. Consider the time series plot on the next page generated via $y_t = \mu + \varepsilon_t + \theta \varepsilon_{t-1}$, with $t = 1900, 1901, \dots, 2010$ (note: in this problem you are forecasting 2025 from the year 2010).
- (a) What is the point forecast at year 2025. Draw this on the figure.
 - (b) What is the interval forecast at year 2025. Draw this on the figure.
 - (c) Draw the density forecast at year 2025 (assuming Gaussian distributed errors) on the figure.



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