

# ECON 4115/5115

## Chapter 1. Getting Started



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## ➤ Time Series vs. Econometric Models

## ➤ Examples of Time Series Forecasting

- Congressional Budget Office (<https://www.cbo.gov/publication/56442>)
- Presidential Elections (<https://fairmodel.econ.yale.edu/vote2020/index2.htm>)
- MBA Summer project for Black Hills Energy Corp.

## ➤ Five Steps of Forecasting

- Problem definition
- Gather information
- Preliminary exploratory analysis
- Choose and fit models
- Evaluate forecasting model

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## ➤ Notation

- $\{y_t\}_{t=1}^T \equiv$  entire time series
- $y_t \equiv$  random variable at time  $t$
- $\hat{y}_t \equiv$  forecast of  $y_t$
- $f(y_t|I_t) \equiv$  probability distribution for  $y_t$  conditional on information in  $I_t$
- $\hat{y}_{t|t-1} \equiv$  forecast of  $y_t$  based on all information dated time  $t - 1$  and earlier
- $\hat{y}_{T+h|T} \equiv$  forecast of  $y_{T+h}$  based on all information dated time  $T$  and earlier

## ➤ Preliminary exploratory example using $R$ : U.S. Stock Market Index