Price as PDV of Expected Dividends

• If earnings equal dividends and if dividends grow at long-run rate \( g \), then by growing consol model \( P = E/(r-g) \), \( P/E = 1/(r-g) \). (Gordon Model)

• So, efficient markets theory with Gordon model purports to explain why \( P/E \) varies across stocks: different stocks have different \( g \).
Random Walk & AR-1 Models

• Random Walk: $x_t = x_{t-1} + \epsilon_t$

• First-order autoregressive (AR-1) Model: $x_t = 100 + \omega (x_{t-1} - 100) + \epsilon_t$. Mean reverting (to 100), $-1 < \omega < 1$.

• Random walk as approximate implication of unpredictability of returns

• Similarity of both random walk and AR-1 to actual stock prices
Actual US Stock Market and Random Walk with Trend
Actual US Stock Market & AR-1(\(\rho = .98\)) with trend