Economics 435
Fall 2021
University of Wisconsin-Madison

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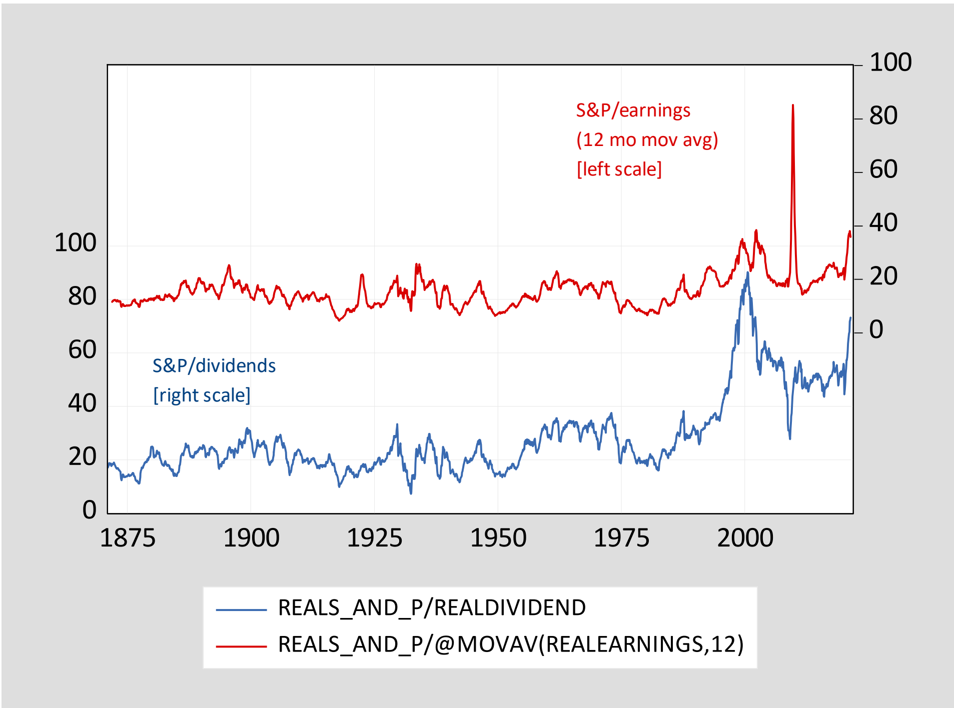
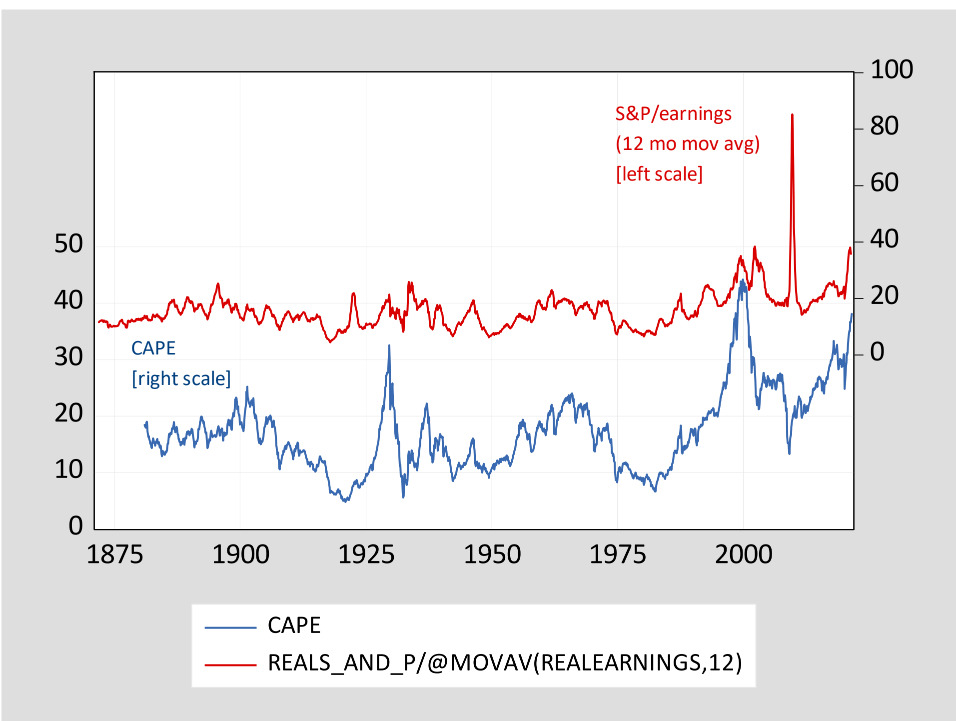
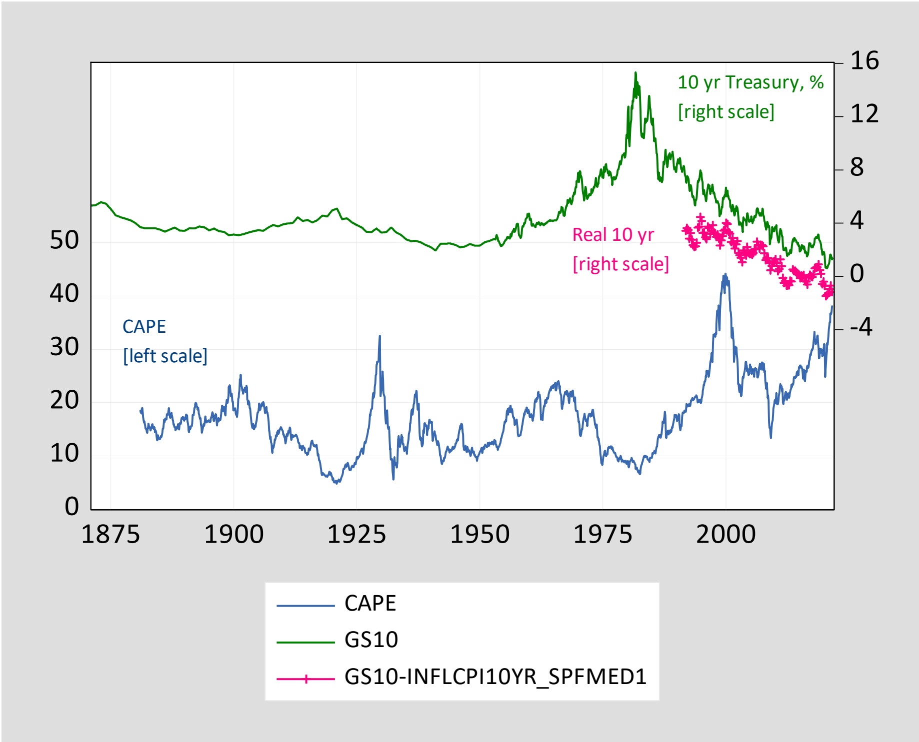
Social Sciences 7418

Current Situation and Bubbles/Fads

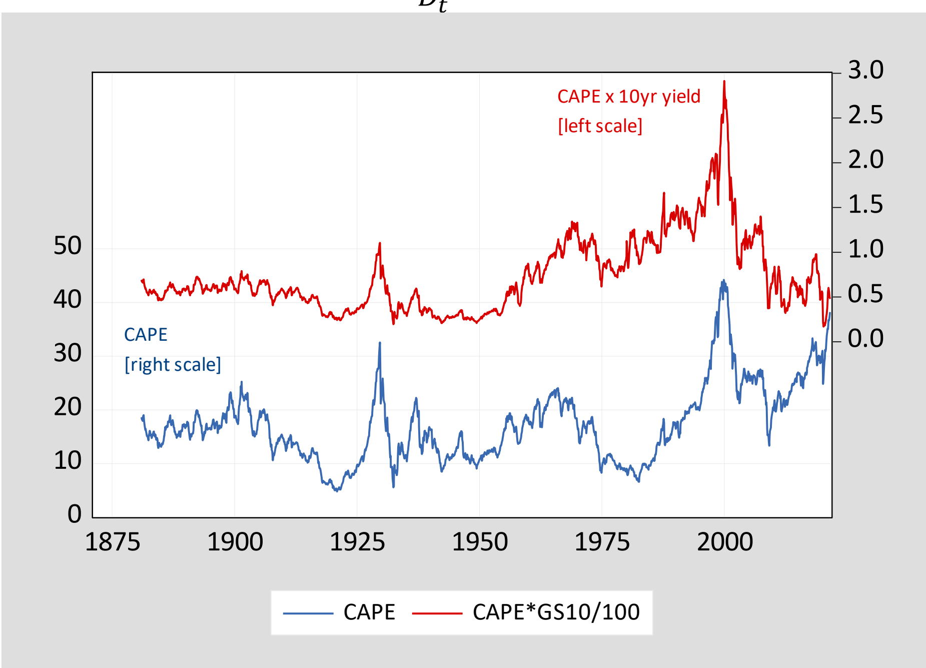






$$\frac{P_t}{D_t} = \left[\frac{(1+g)^1}{(1+i)^1} + \frac{(1+g)^2}{(1+i)^2} + \ldots + \frac{(1+g)^\infty}{(1+i)^\infty}\right] = \frac{1}{(i-g)}$$

$$\frac{P_t}{D_t}(i-g) = 1, \qquad a\ constant$$



Data source: Shiller, http://www.econ.yale.edu/~shiller/data/ie_data.xls

Shiller *American Economic Review* (1981)

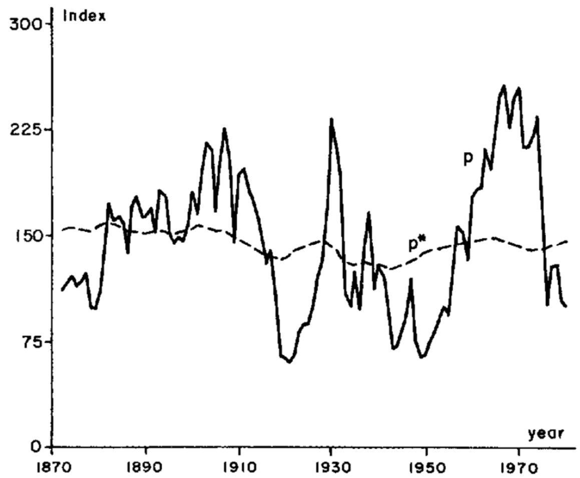


FIGURE 1

Note: Real Standard and Poor's Composite Stock Price Index (solid line p) and *ex post* rational price (dotted line p^*), 1871–1979, both detrended by dividing a long-run exponential growth factor. The variable p^* is the present value of actual subsequent real detrended dividends, subject to an assumption about the present value in 1979 of dividends thereafter. Data are from Data Set 1, Appendix.

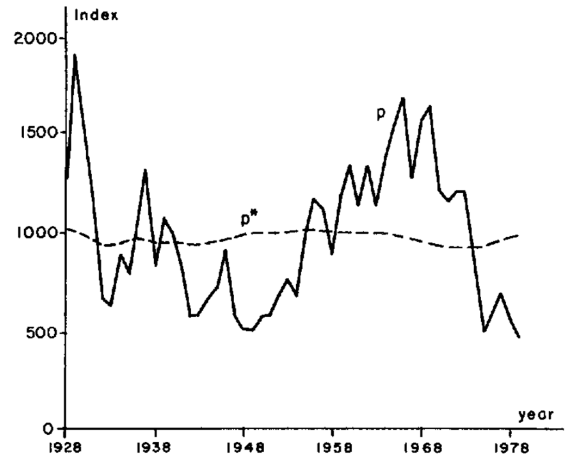


FIGURE 2

Note: Real modified Dow Jones Industrial Average (solid line p) and *ex post* rational price (dotted line p^*), 1928-1979, both detrended by dividing by a long-run exponential growth factor. The variable p^* is the present value of actual subsequent real detrended dividends, subject to an assumption about the present value in 1979 of dividends thereafter Data are from Data Set 2, Appendix.

If one uses the principle from elementary statistics that the variance of the sum of two uncorrelated variables is the sum of their variances, one then has $var(p^*)=var(u)+var(p)$. Since variances cannot be negative, this means $var(p)\leqslant var(p^*)$ or, converting to more easily interpreted standard deviations,

$$(1) \qquad \sigma(p)\leqslant\sigma(p^*)$$

Bottom line: The variance of stock prices should be less than the variance of the implied stock price calculated using ex post dividends.

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17.10.2021