

# FSA and Valuation: Comments

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# First-Cut Principle in Investment Practice

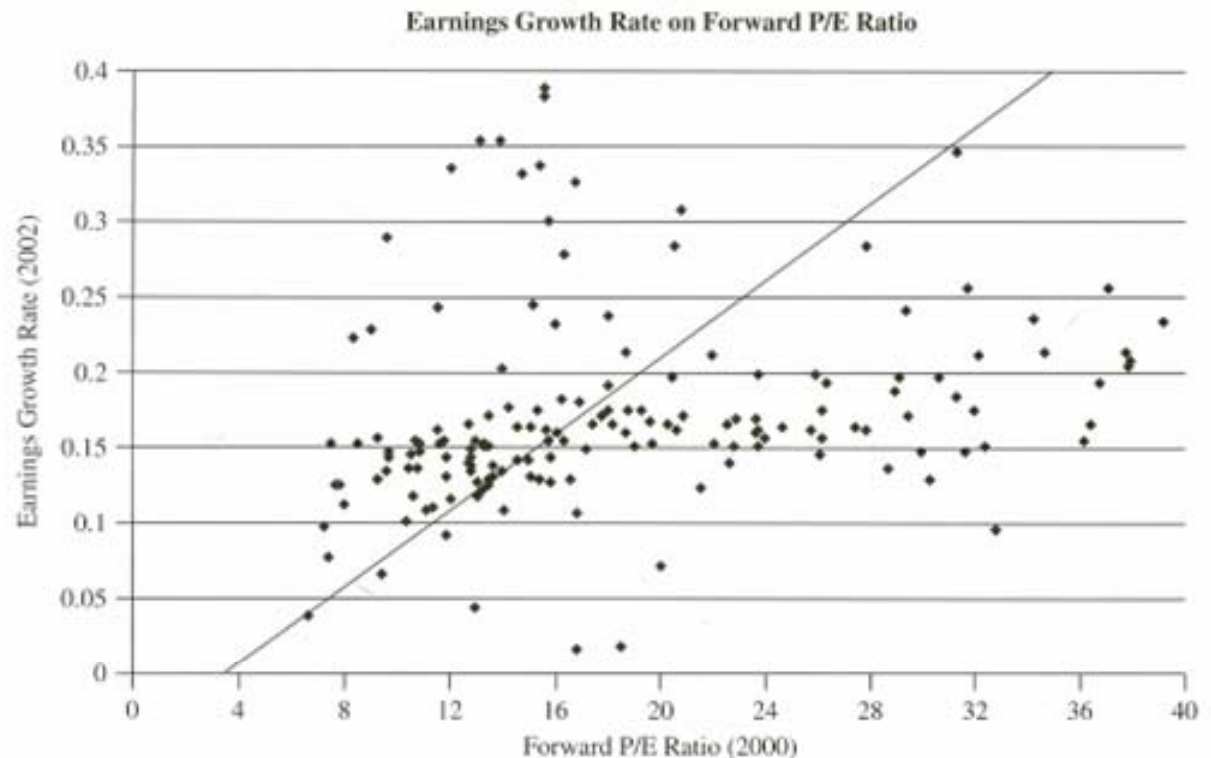
*The price to forward earnings ratio (PFE) increases as the growth in expected earnings increases.*

# Plot of P/E against Growth

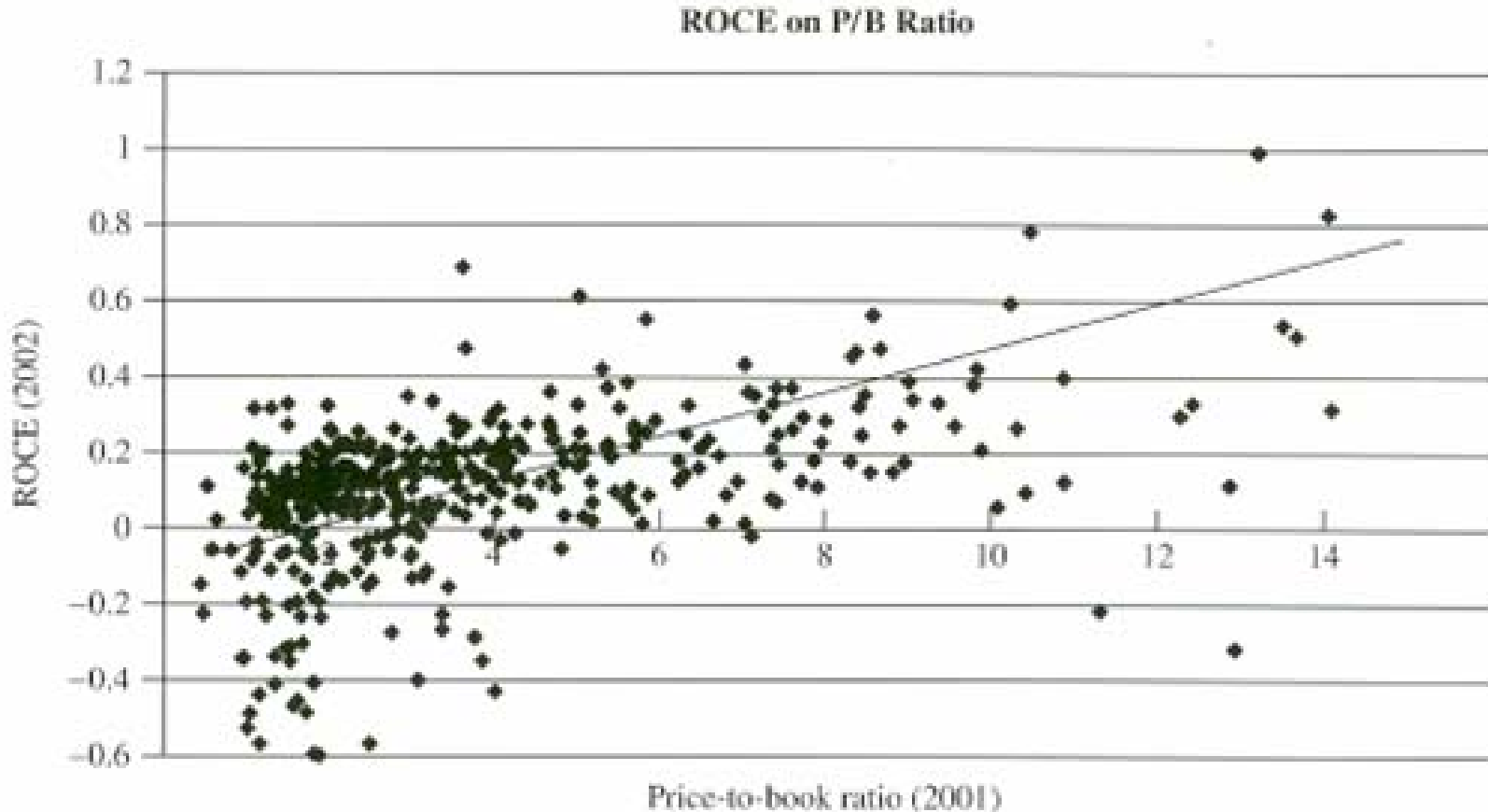
- The Plot is not “perfect” because:

- Risk
- Errors in Expected Earnings
- Long-term growth in Expected Earnings
- “Market Inefficiency”

FIGURE 6.2 The Relationship between Forward P/E Ratios and Subsequent Earnings Growth Rates



# A More Popular Plot



- Motivated by RIV and  
$$P/B = (ROCE_1 - \text{Growth}) / (r - \text{Growth})$$

# Starting Point

$$P_0 = e_1/r,$$

$$e_t = R e_{t-1} - r d_{t-1}.$$

- Two state variables:  $(e_t, d_t)$
- What comes next? Three state variables such that

$$P_0 = e_1/r + x_2,$$

or

$$P_0 = (e_1/r) \cdot x_1,$$

where  $x_1$  and  $x_2$  reflect information about growth in expected earnings.

- What should  $x_1$  or  $x_2$  equal?

# Attempt to Answer

- Consider the dynamics

$$e_{t+1} = e_t + r [e_t - d_t] + z_t$$

$$z_{t+1} = \gamma z_t$$

and any reasonable dividend policy

$$d_{t+1} = f_{t+1}(\text{state variables}) .$$

=> The OJ Model

i.e.,

$$P_0 = \frac{e_1}{r} + \frac{z_1}{R - \gamma},$$

or

$$P_0 = \frac{e_1}{r} \left[ \frac{(e_2 + r \cdot d_t) / e_1 - \gamma}{R - \gamma} \right],$$

where  $(e_2 + r d_{t-1}) / e_1$  is short-term growth, and  $\gamma$  is long-term growth.

# Deriving the Model that Comes after $P_0 = e_1/r$

- Assume

1.  $\partial e_{t+1}/\partial d_t = -r$  ;

2.  $\partial e_{t+1}/\partial e_t = R$  ;

3.  $\partial(e_{t+2} + r \cdot d_{t+1} + e_{t+1})/\partial d_t = -(R^2 - 1)$  ;

4.  $\partial(e_{t+2} + r \cdot d_{t+1} + e_{t+1})/\partial e_t = R^2 + R$ .

=> The OJ Model

- Note: Special Cases of the OJ model

- M/B model

- PEG model

- Constant Growth model

- Free Cash Flows model

# How to Compare Various Models Empirically

- Focus on forecasting analyst earnings revisions