E&G, Ch. 19: Earnings Estimation

Valuation Models are based on earnings growth forecasts.
Need to understand:
what earnings are, *their importance*, & *how to forecast*.

I. What are Earnings?

A. Economist Definition:

Earnings = Cash Flow + Change in Mkt Value of Asset.

For Financial Asset: (interest earned) + (Δmkt value);
For Physical Asset: (earnings) + (Δmkt value of asset).

- easy (?) to determine (Δmkt value) for financials,
- more difficult for physical assets.

Point: Should recognize all cash flow (income) earned on assets, but should also recognize changes in the mkt value of assets owned.

B. Accountant's Problem:

How to measure change in Mkt Value of Assets?

Accounting Earnings = some mixture of (income earned) + an attempt to measure some part of (Δmkt value of asset).

1. Accounting efforts to measure (Δmkt value of asset) tend to be related more to the allocation or using up of *historical costs*, than they are to (Δ*mkt value*).

2. Lack of consistency in defining components of earnings.

Table 19.1

II. Importance of Earnings.

A. Changes in Earnings.

Despite problems with Accounting Earnings,
The market uses this information to value stocks.

1. Mkt is especially responsive to *changes in* E_t.
2. Stocks with largest increase in price
often experience the largest change in Earnings.
3. Thus, Earnings are important determinant of P_t.

B. Ability to Predict Earnings.

1. Since the mkt responds to Earnings changes,
important to predict future Earnings changes!

C. Ability to Predict Changes in *Expectations*.

1. Earnings Forecast ERRORS affect stock prices.
2. Firms with Earnings > Forecast have bigger $P_t \uparrow$;
Firms with Earnings < Forecast have bigger $P_t \downarrow$.
3. While it is profitable to forecast Earnings,
it is more profitable to forecast the CHANGE
in *expectations* about future Earnings.
4. Example: strategy to buy high growth funds
not likely to be too successful, since
high growth funds should be expensive!.

   Better to find high growth stocks
   that mkt thought would be low growth stocks!

D. Even information with little accuracy is good.

1. Superior forecasts of Earnings can lead to excess returns.
But, how much better must your forecasts be?

2. Table 19.3. Shows excess return that can be earned
if analyst is able to pick firms with Earnings < forecast.

III. How to Forecast Earnings.

A. Influence of Economy and Industry.

1. *Stock returns* depend on conditions in the market and the industry the company is in, because *Earnings* depend on mkt & industry!
2. Table 19.4 shows evidence.
3. If Mkt & Industry Earnings affect Firm Earnings, want to *forecast* Mkt & Industry Earnings!
   a. Should try to forecast mkt & industry earnings to help forecast firm earnings.
   b. To work, Mkt & Industry Earnings must be ***stable***, and ***easier to forecast than Firm Earnings***.
   - No evidence of this – need further research.
4. Model: $E_i = a + b\,E_E + c\,E_I + \varepsilon_i$

where E_i = firm i earnings; E_E = economy earnings; E_I = industry earnings.

5. Table 19.4.

B. Two Issues: Past Earnings and Future Earnings.

1. Does past growth in Earnings predict future growth?

Evidence is mixed.

a. The term, 'growth stock,' refers to firms that have experienced high growth – expect more growth?
   Now – AOL, Amazon.com, …
   10 years ago – Microsoft, Intel, …
   30 years ago – IBM, Xerox, …

b. High growth in Earnings one year does **not** predict high growth in subsequent years.

c. Are current Earnings independent of past E_t?

   Yes – economy competitive; but has uncertainty;
   E_t subject to economic uncertainty;
   out of control of mgt, cannot predict.

   No - what about monopolies?
   brand name; patent rights; superior mgt;
   should sustain high growth over time.

d. Note: Independence in stock prices not same as Independence in Earnings.

   Stock prices determined by *expectations*;
   Earnings determined by *physical (economic) forces*.

   - *expectations* cannot likely be predicted (mkt eff.)
   - *physical (economic) forces* may be predicted easier.
   - NOT EASY TO DO EITHER.

2. Normal Earnings -- average E_t over time.

a. Concept –
Assume: *zero growth in E_t, & independence*.
Then, suppose *average* E_t = \$1.00;
Then, if E_t > avg E_t, expect E_{t+1} to ↑;
If E_t < avg E_t, expect E_{t+1} to ↓.

b. Extreme observations on E_t would
tend to be followed by obs. closer to the mean;
This would introduce negative correlation
in successive observations on Earnings.

c. Called "mean-reverting" behavior,
if Earnings tend to revert to "Normal Earnings."

d. Mean-Reverting is different from Random Walk!
Random Walk implies E_{t+1} independent of E_t.

Important Issue! Mean-Reverting or Random Walk?

If Earnings are Mean-Reverting, then
starting point to forecast E_{t+1} is "Normal Earnings."

If Earnings follow Random Walk, then
starting point to forecast E_{t+1} is E_t.

e. Consider assumption of zero *growth in* E_t.
Same concept applies if there is growth in E_t.

If Earnings are Mean-Reverting, then
starting forecast of E_{t+1} is ["Normal Earnings" + *growth*].

If Earnings follow Random Walk, then
starting forecast of E_{t+1} is [E_t + *growth*].

f. Consider assumption of *independence of* E_t & E_{t+1}.

If there is positive correlation between E_t & E_{t+1},
should mitigate the - correlation, if E_t is Mean-Reverting;
should cause + pos. correlation, if E_t follows Random Walk.

g. Evidence.

Much research. Inconclusive.
For many firms, basing forecast on "Normal Earnings" better;
For other firms, basing forecast on past Earnings is better.

C. Forecasting Earnings with More Historical Data.

1. Other firm data may help predict future Earnings.
   a. Change in Sales, R&D, New Investment, …

2. E&G studied this possibility.
   a. estimated cross-sectional regression model:

      $\Delta E_j = a_0 + a_1 \Delta Sales_j + a_2 R\&D_j + a_3 I_j + \ldots + \varepsilon_j$

   b. E&G did this across firms within an industry.
      Found forecasts were worse than those
      based on past Earnings alone!

   c. E&G tried another way, estimating this
      across small groups of 10 firms each,
      that had similar Earnings growth patterns;
      maybe these groups had similar influences at work.

      Found now these forecasts did better than those
      based on past Earnings alone.

   Suggests firm information other than past Earnings
   may be useful in predicting future Earnings.