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Discussion of *"Using earnings forecasts to simultaneously estimate firm-specific cost of equity and long-term growth"*

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$E_0[r]$ and $E_0[g]$ are Important

- Businesses are institutional arrangements in which people combine their resources (e.g., cash, intellectual capital, time, effort, etc.) in order to improve their welfare – i.e., to create value.

- Value is a function of both expected risks (i.e., $E_0[r]$) and expected payoffs (i.e., $E_0[g]$).

- **N&O [2010] address important issues, they make a contribution, and I like their study.**

Issue One: No Well-accepted Theory

- At present, there is no well-accepted, theoretical asset-pricing model. Possible reasons include:

  - Nondescript theories – e.g., the CAPM may be too simple.
  - Statistical issues:
    - Factors are difficult to estimate – e.g., the CAPM may be descriptive but **estimates** of beta may be poor.
    - The news component in realized returns may swamp the expected return component so standard asset-pricing tests may have insufficient power.

Issue Two: Most Popular Model is *Ad Hoc* and Imprecise

- The Fama-French four-factor model is *de rigueur* but:

  - It is *ad hoc*:
    - Three of the four factors originally entered the literature under the guise of anomalies.
    - Cochrane [2001] *"We would like to understand the real, macroeconomic, aggregate, nondiversifiable risk that is proxied by the returns of the HML and SMB portfolios."*

  - It yields imprecise estimates:
    - Fama and French [1997] *"Estimates of cost of equity for industries are imprecise. ... Estimates of the cost of equity for firms and projects are surely even less precise."*

Accounting-based Approaches have become Popular

- $E_0[r]$ is imputed from price (or the price-to-book ratio) and contemporaneous forecasts of future payoffs.

N&O
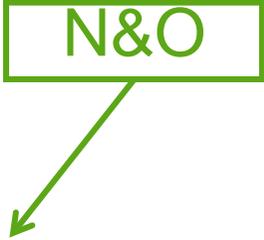
- Assumptions:

1. Forecasts equal the expectations embedded in price.

2. The terminal value assumptions made by the researcher equal the terminal value assumptions embedded in price.

3. $E_0[r]$ is constant over the forecast horizon. This does not imply $E_0[r] = E_1[r]$.

4. If $E_0[r]$ is considered the implied cost of capital, the researcher is implicitly assuming market efficiency.

N&O's Contribution

- N&O modify the approach used by ETSS [2002]:

1. ETSS assume a random-coefficients model whereas N&O assume the coefficients vary with firm-level characteristics (i.e., beta, size, book-to-market, and momentum).
   - This is very nicely done.

2. ETSS implicitly assume that analysts' forecasts of earnings reflect investors' expectations whereas N&O use the approach developed by Gode and Mohanram [2010] to purge predictable errors from analysts' forecasts.

Questions

- Are the modifications made by N&O improvements?

- If so, which modification has the greatest impact?

- To answer these questions, N&O evaluate:

  1. The relation between r_{SE} and firm-level characteristics.
  2. The relation between future, portfolio-level stock returns and portfolio-level r_{SE}.
  3. The relation between future, firm-level stock returns and firm-level r_{SE}.

r_{SE} and Firm-level Characteristics

- Adjusted r_{SE} has a positive (negative) relation with leverage, book-to-market, and past stock returns (beta and size).

  1. r_{SE} is a linear function of four of these variables.
  2. Four of these variables are characteristics not factors.
  3. Are we to believe that investors **seek** exposure to market risk?
  4. **Logical inconsistency**: **If we don't understand the properties of firm-level variables and/or we can't measure them well, how can we use them as benchmarks for evaluating reliability?**

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Portfolio-level Realized Returns

- Extreme portfolios formed on the basis of r_{SE} have larger differences in *ex post* realized returns than extreme portfolios formed on the basis of other proxies.

- Adjusted r's outperform unadjusted r's substantially.

  ➔ Adjusting analysts' forecasts is important.

- **Implicit assumption**: news that is manifest in realized returns is randomly distributed across portfolios.

  - **If this is true, why not just use portfolio-level realized returns? This won't work for all applications but it will work for many.**

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Issue Three: *Ex Post* News is neither Mean Zero nor Random

- Evidence suggests that *ex post*

  - News is not mean zero: Elton [1999] "*The use of average realized returns as a proxy for expected returns relies on a belief that information surprises tend to cancel out over the period of a study and realized returns are therefore an unbiased estimate of expected returns. However, I believe there is ample evidence that this belief is misplaced.*"

  - News is not random: Fama and French [2003] "*…the high average return for 1951 to 2000 is due to a decline in discount rates that produces a large unexpected capital gain. … The average stock return of the last half century is a lot higher than expected.*"

Comments Regarding Issue Three

- Issue three does **not** necessarily imply market inefficiency.

  - Market efficiency is an *ex ante* concept with respect to information (i.e., investors are assumed to be rational not clairvoyant).

- Issue three implies that *ex post* news may be correlated with $E_0[r]$.

  - If market risk is priced, stocks that had high (low) *ex ante* correlations with market risk will exhibit a stronger (weaker) association with *ex post* shocks to the equity premium.

Issue Three Implies We Need to Control for News

$$r_{it} = \alpha_0 + \alpha_1 \times ERR\_P_{it} + \alpha_2 \times CN\_P_{it} + \alpha_3 \times \left(-1 \times RN\_P_{it}\right) + \varepsilon_{it}$$

- Intuition: upwards revisions in expectations about cash flows (discount rates) lead to unexpected price increases (decreases)

- **No** assumptions about market efficiency, investor rationality, market equilibrium, etc.

- The main assumptions are:

  1. $R_{it} = (\Delta P_{it} + DIV_{it})/P_{it-1}$
  2. $ROE_{it} = (\Delta B_{it} + DIV_{it})/B_{it-1}$ (i.e., clean surplus).
  3. The book-to-market ratio asymptotes to a finite number.

Issue Four: Bias in α_1 is Complex

$$r_{i,t} = \alpha_0 + \alpha_1 \times ERR\_P_{i,t} + \alpha_2 \times CN\_P_{i,t} + \alpha_3 \times \left(-1 \times RN\_P_{i,t}\right) + \varepsilon_{i,t}$$

- N&O show that the α_1 on **adjusted** r_{SE} is positive and significant but the α_1 on **unadjusted** r_{SE} is negative.

  - Adjusting for predictable forecasts errors is important.

- **Issue: If <u>any</u> of the three regressors shown above is measured with error, α_1 is biased; and, the sign of the bias is unknown.**

  ➔ It is possible that ERR_P is measured perfectly and $\alpha_1 \neq 1$.
  ➔ It is possible that ERR_P is measured with error and $\alpha_1 = 1$.

Rank Proxies on Basis of Relative Measurement Error Variances

$$MNV = \sigma^2(ME\_ERR)$$

$$- \sigma\left(\frac{\overbrace{True\ Values}}{ERR.(CN + RN)}\right)$$

$$- \sigma\left(ME\_ERR.\left(\frac{\overbrace{True\ Values}}{CN + RN}\right)\right)$$

Variable of Interest

Constant Across Proxies

Arguably Trivial
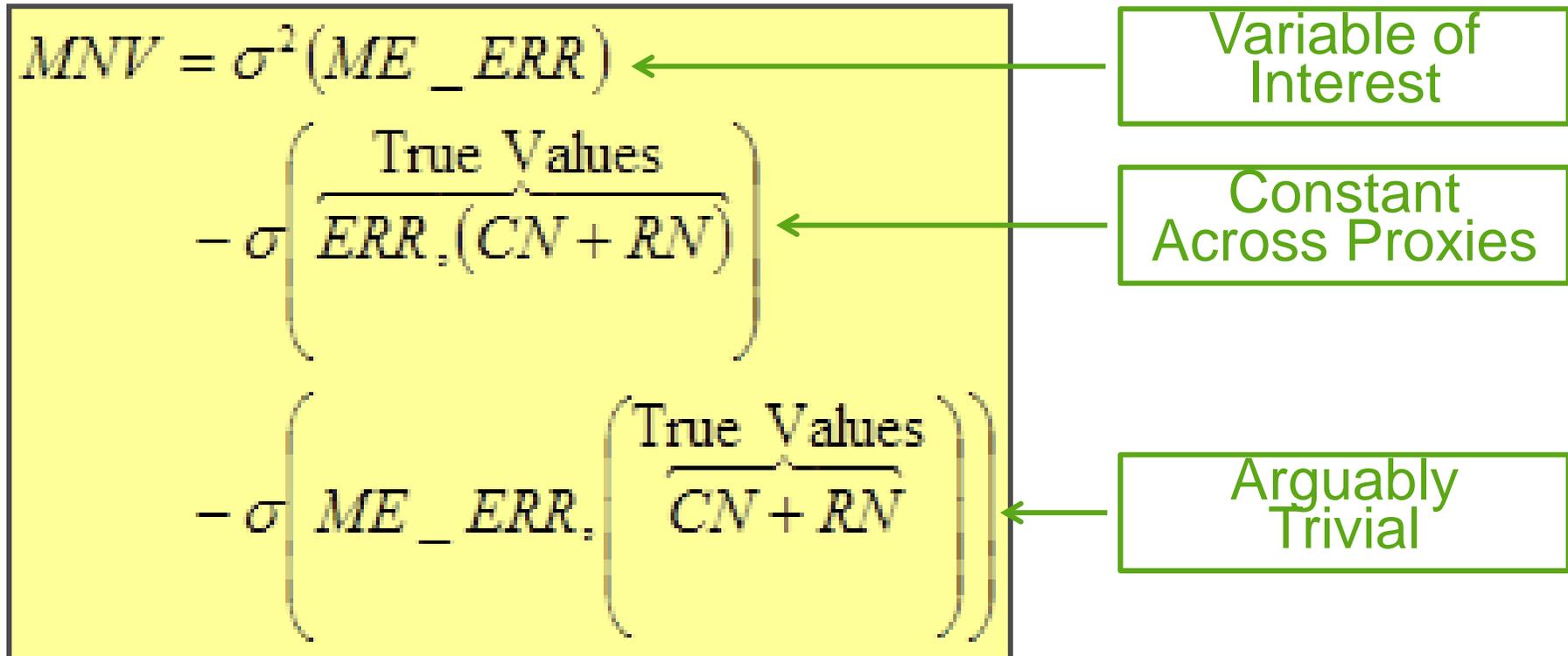
Issue Five: Only Relative Comparisons are Possible

- N&O show that adjusted r_{SE} has the smallest measurement error variance

  - Again, adjusting for predictable forecast errors seems important (e.g., MNV for r_{SE} changes by -250%)

- **Issue: Is r_{SE} just the best of a bad lot?**

  - r_{SE} is not much better than r_{zero}, which is a fairly naïve, proxy at the firm level.

  - It would be interesting to consider other "straw men."

Summary

- N&O clearly contribute by: (1) thoughtfully modifying the approach used by ETSS; and, (2) thoroughly evaluating the reliability of their proxy.

- Their analyses of reliability are limited **but this issue is not unique to their study and, at present, it is unavoidable**.

  1. Associations between r_{SE} and beta, size, book-to-market, leverage, and momentum do not yield meaningful inferences.
  2. Realized returns appear to be biased and noisy even at the portfolio level. So portfolio-level results are not clear cut.
  3. Extant methods for controlling for news are no panacea and only shed light on relative reliability.

Summary cont.

- Accounting-based proxies potentially allow us to address some interesting, important questions.

- **If the questions are interesting and important, so are the answers.**

- "Good" answers require good proxies.

- The reliability of accounting-based proxies is not obvious.

➔ Fundamental research like that done by N&O is valuable.

➔ Fortunately, there is still a lot of interesting things left to do.

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