Econ 219B
Psychology and Economics: Applications
Introduction to Empirical Problem Set

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1 Intro to Problem Set

- Problem set focused on financial markets
- Biases of investors and accountants
- Accounting — Information on company performance
  - accounting books
  - quarterly earnings announcement
- Two main focuses:
– Optimal accounting rules

– Stock price response to profitability information in accounting books
• What is right valuation of company?

  – Crucial to guarantee right allocation of capital
  – Denote $e_{t,k}$ earnings (profits) of company $k$ in year $t$
  – Stock price = Discounted sum of future cash flows:

    $$p_{t,k} = e_{t,k} + \frac{e_{t+1,k}}{1+r} + \frac{e_{t+2,k}}{(1+r)^2} + ...$$

  – Need forecasts of future profitability $e_{t,k}$

• Two main components:

  – Short-run earnings performance
– Long-run performance

– Analysts provide forecasts on both
• Analysts. Process information on companies and make it available (for a fee)
  
  – Sell-side. Work for brokerage firm (investment bank)
  
  – Buy-side. Work for mutual funds
  
  – Sell-side analysts:
    * more likely to have conflict of interest (Inv. Bank selling shares of target company)
    * data widely available (IBES, FirstCall)
• Analysts generate two main outputs:

1. Earning forecasts $\hat{e}_{t,k}$
   - Dollar earning per share of company
   - Quarterly or annual
   - Forecast $h$ years into the future: $h \approx 3, 4$ years

2. Long-term "growth rate" of earnings $g_e$
• Common forecasting model:

\[
\hat{p}_{t,k} = e_{t,k} + \frac{\hat{e}_{t+1,k}}{1+r} + \frac{\hat{e}_{t+2,k}}{(1+r)^2} + \ldots \\
+ \sum_{t=0}^{\infty} \frac{1}{(1+r)^{h+t}} \hat{e}_{t+h,k} \ast ge
\]
Company releases of information

- Each quarter: Announcement of accounting performance
  - Scheduled announcement, conference call
  - Release of accounting indicators
  - Special focus on earnings per share $e_{t,k}$

- Comparison of forecasted and realized earnings

- Measure of new information: earning surprise $e_{t,k} - \hat{e}_{t,k}$.

- Renormalize by price of share: $s_{t,k} = \left( e_{t,k} - \hat{e}_{t,k} \right) / p_{t,k}$
• Investors react to new information by updating stock price $p_{t,k}$.
• Problem set

• Focus on response of stock prices to earning surprise

• Economic significance:
  – Processing of new information
    * Clean measure of information
    * Clean measure of response
  – Timing of release of information by company
• Identify in the data three anomalies:

• Anomaly 1. Post-Earnings Announcement Drift. (Chan, Jegadeesh, and Lakonishok, 1996; Bernard and Thomas, 1989).
  
  – Announcements of good news in earnings $e_{t,k}$ are followed by higher returns over next 2-3 quarters
  
  – Arbitrage should eliminate this
  
  – Interpretation: Investors inattentive initially, news incorporated slowly over time

• Measure new information using earnings surprise $s_{t,k}$
• Follow standard ‘quantile’ procedure: Divide into quantiles based on $s_{t,k}$.
• Plot returns for each quantile

• Focus on light blue line for now (Figure from DellaVigna and Pollet, 2006)
• Anomaly 2. Less Immediate Response and more Drift when More distractions (DellaVigna-Pollet, forthc.; Hirshleifer-Lim-Teoh, 2007)
  – Announcements on Friday (DVP) or with more competing news (HLT):
    * Drift stronger and Immediate response lower
    * Inattention: More distracted investors
• **Anomaly 3.** (Degeorge, Patel, and Zeckhauser, 1999)
  
  – CEOs shift the earnings so as to meet analyst expectations
Figure 6. Histogram of Forecast Error for Earnings Per Share: Exploring the threshold of “meet analysts’ expectations”

\[ \pi(0) = 6.61 \]
• Similar result if earnings compared to earnings 4 quarters ago or compared to zero profits

• Interpretation:
  – Investors have ‘bias’: They penalize significantly companies that fail to meet thresholds
  – Managers cater to this bias by manipulating earnings