Do Industry Level Analyses Improve Forecasts of Financial Performance?

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Motivation

• Mean reversion in firm performance well documented
  ◦ e.g., Freeman, Ohlson & Penman (1982)

• Deviations from benchmark temporary

• Simple specification

\[
\text{Performance}_t = \alpha + \beta \times \text{Performance}_{t-1}
\]

0 < \beta < 1 \quad \text{partial mean reversion}
Motivation

- Mean reversion in firm performance helps predict future performance

- Fama and French (2000) advocate that “analysts should exploit the mean reversion in profitability”

- Studies demonstrate that exploiting mean reversion improves profitability forecasts (e.g., Fairfield and Yohn 2001)
Motivation

• But extant evidence based on “pooled” models of mean reversion

• Implicitly assumes that benchmark to which performance mean reverts is common across firms

• Rate of mean reversion assumed constant across firms

• We relax these assumptions
  ◦ Allow benchmark and rate of reversion to vary by industry
Method

- Compare accuracy of out-of-sample forecasts
  - mean reverting models estimated at the pooled, economy-wide (E-W) level
    (hold benchmark and rate of reversion constant)
  - mean-reverting models estimated by industry (I-S)
    (let benchmark and rate of reversion vary by industry)

- Two measures of profitability (ROE, RNOA)

- Three measures of growth (Sales, Book Value, NOA)
Should Industry Matter?

- Why should industry-specific (I-S) models produce better forecasts?

- **Benchmark** may differ across industries
  - Industry characteristics
    - e.g., Barriers to entry, competition
      - Industry concentration and firm profitability positively related (Bain 1951, Mann 1966)
      - Firms in industries with higher risk more profitable (Fama and French 2000)
Should Industry Matter?

• Why should industry-specific (I-S) models produce better forecasts?

  • Rate of mean reversion differs across industries
    • Entry barriers (Kothari 2001, Cheng 2005)
    • Capital intensity (Waring 1996)
    • Accounting practices, e.g., conservative accounting (Cheng 2005)
Should Industry Matter?

• Why should industry-specific (I-S) models produce better forecasts?

• Effect of industry membership on firm performance is widely expected / assumed
  ◦ Textbooks advocate industry comparisons
  ◦ Analysts follow firms in same industry
  ◦ Industry controls pervasive in research
  ◦ Long run rate of return generally assumed to be industry dependent
    • e.g., cost of capital studies
  ◦ Quest for “best” industry definition
Should Industry Matter?

- Why may not I-S models be superior?
- Industry barriers cannot protect abnormal profits
- What drives firm performance has been the subject of debate in the industrial organization and strategy literatures
  - Industry vs. firm characteristics
- Some evidence in accounting and finance studies as well
  - e.g., Brown and Ball (1967), Barber and Lyon (1996)
Should Industry Matter?

- Effect of industry characteristics may differ across performance metrics
  - May be more evident in growth, especially sales
    - Most industry definitions based on commonality in product markets
    - Sales less subject to accounting choices
Should Industry Matter?

- Effect of industry characteristics may differ across performance metrics
  - Industry characteristics may have less impact on firm profitability
    - Usefulness of segment data
      - Kinney (1971), Collins (1976)
    - Correlation between firm and industry performance much lower for profitability
      - Givoly, Hayn and D’Souza (1999)
    - Cost structures of firms differ even in same industry
      - Williams (1995)
Sample

- Out of sample predictions of growth and profitability from 1989-2003
- Industry classification using GICS
- Rolling 10-year estimations (t-10 to t-1) of E-W and I-S models – minimum 100 observations
- Relative accuracy of over 35,000 firm-year-ahead predictions from E-W and I-S models
Results (Year-ahead)

- Only sales growth predictions improve with I-S models
- I-S models no better than E-W models for other measures of growth (BV, NOA)
- I-S models no better than E-W models for both measures of profitability (ROE, RNOA)
Results (5-years-ahead)

- All growth predictions improve with I-S models

- I-S models still no better than E-W models for both measures of profitability (ROE, RNOA)
Robustness (Further Evidence)

• Results consistent across different industry definitions

• Out of nine industries where ROE predictions improve with I-S model top four are:
  ◦ Electric Utilities
  ◦ Gas Utilities
  ◦ Multi Utilities
  ◦ Water Utilities
Robustness (Further Evidence)

- Industry characteristics associated with improved predictions
  - Regulated industries
  - Industries dominated by larger firms
  - High barriers to entry

- Sales I-S model outperforms E-W model for all industry definitions except NAICS
  - NAICS groupings based on “production processes” not product markets
Robustness (Further Evidence)

- Examine analyst forecasts of year-ahead growth and profitability

- Sales growth and ROE forecasts from Value line (about 9000 observations)

- Sales growth forecasts more closely related to I-S model

- ROE forecasts more closely related to E-W model
Robustness (Further Evidence)

We track evolution of firm profitability (ROE) over long horizons

- Compare firm ROE in years t+3, t+6, t+9 and t+12 to E-W and I-S benchmark
  - Benchmark is the median ROE over t-9 to t

- More firms’ ROE closer to E-W benchmark than I-S benchmark over all horizons
Implications

- Industry effects may not be as pronounced as generally presumed

- Effects may vary across performance metrics
  - More apparent for growth than profitability
  - Industry controls may not be as effective for all studies

- Assumed path of long-run profitability may lead to systematic biases
  - e.g., cost of capital estimates will be higher for firms in more profitable industries
Implications

- Lack of strong correlation in firm performance within industries generally attributed to “weak” industry grouping techniques

  - Could it just be that firms in the same industry are inherently not similar (on all dimensions)??