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

$$Performance_t = \propto + \beta * Performance_{t-1}$$

$0 < \beta < 1 \longrightarrow$ 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?

- <u>Benchmark</u> 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

  (Bain 1951, Mann 1966, King 1966, Demsetz 1973, Schmalensee 1985, Waring 1996; Meyers 1973, Mills and Schumann 1985, Cubbin and Geroski 1987, Lippman et al. 1991, Rumelt 1991, Williams 1995, Mauri and Michaels 1998, Mueller and Raunig 1999, Spanos et al. 2004, Mackay and Phillips 2005)

- 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)??