Ball and Brown (1968) After Five Decades

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Summary

- Background observations
- Principal research design choices
- Results
- Replication: US 1971-2017 and 16 other countries
- Strengths, weaknesses, outcomes
Background to the Research: The Accounting Literature in 1967

- Largely verbal and polemical theorizing
- Little systematic empirical work, poorly done
  - Rudimentary analysis of severely selected data (e.g., failed firms, miscreants)
  - Confirmation bias: tendency to select cases supporting the researcher’s views
  - Theories not subjected to rigorous systematic testing
- Received theories categorically rejected the existing accounting regime
  - A single *universal accounting method* is not used to measure Income Statement and Balance Sheet items
  - So all accounting numbers are *meaningless aggregations*
Background to the Research: The Culture at Chicago

- The ideas of Frank Knight, F. A. Hayek, Milton Friedman, Ronald Coase, George Stigler, Gene Fama, Harry Markowitz and other Chicago notables were in the air.

- An important premise/belief:
  - Unrestricted markets create relentless pressure toward more efficient economic institutions.
  - In the absence of imposed restrictions, inefficiency does not survive.

- The culture was one of challenging ideas with (1) other ideas and (2) evidence.

- The school crackled with energy.
Background to the Research: The Culture at Chicago

- Against this background, the prevailing views in accounting now seemed nonsensical to us:
  - Why would so many resources be put into financial reporting (and into analysis of it), if it is so useless?
  - Are other aggregations of heterogeneous measures – such as course grades, GPAs, SAT scores, and IQ scores – really meaningless?

- So we decided to put these views to a market test
  - Do investors – trading voluntarily – really act as if accounting numbers are meaningless?
  - Does the market ignore accounting earnings?
Background to the Research: Earnings and Returns

- Earnings and returns might seem like completely different concepts
  - But they are closely related economic variables
  - Much more so than commonly appreciated
- Over a company’s life, both earnings and returns equal:
  Cash distributed to shareholders less cash received from them
- Earnings and returns differ in *when* they incorporate cash flow news
  - Returns incorporate considerable (all?) information about expected cash flows
  - Earnings incorporate:
    - (a) Realized *ex post* cash flow when it arrives
    - (b) Some revisions to expected cash flows accountants “recognize” via accruals
- Returns therefore lead earnings
- But they converge in the long run
  - Ultimately, the only way a firm adds value is by generating earnings
This graph irreversibly changed our perception of stock markets. It was

1. The first visual depiction of a seemingly-rational price response function (“efficiency”)
2. A validation of Fama’s (1965) framing of price behavior in terms of response to information;
   ... which provided a foundation for both behavioral and rationalist viewpoints

The FFJR event study design gave BB68 a natural template we could adapt to study price behavior before, at, and after earnings announcements
Principal Research Design Choices

- Defined the information event as “unexpected” earnings – now known as “news” or “surprise” – measured two ways
  - Earnings changes, due to serial correlation in earnings levels. (Subsequent research validated this “naïve” random walk assumption)
  - Prediction errors from a “one factor” market model in earnings, as for returns

- Collected earnings announcement dates

- Employed non-parametric statistics due to
  - Shape of the return distribution
  - Likely non-linearity in the returns-earnings relation

- Studied a tiny sample by modern standards, but enormous by historical standards
  - 2340 firm/year observations over 1957-65
  - Carefully checked the data

- Calculations performed on an IBM 7040/7094 machine.
BB68 Reporting Lag, by Year

- Quartile 1
- Median
- Quartile 3
Key

variable 1: Net Income (Mkt Model)
variable 2: EPS (Mkt Model)
variable 3: EPS (RW model)

Source: Ball & Brown (1968)
Replication: USA, Daily Returns 1971-2017*

Major Results

- **“Value relevance”**
  - An association between the signs of annual earnings changes and annual returns
  - Annual earnings and annual returns incorporate overlapping information

- **Low timeliness:** Prices lead earnings

- **Small “blips” at the announcement:** Only a minor part of the annual earnings-return relation occurs around day 0

- **“Post Earnings Announcement Drift” (PEAD):** Prices continue to move in the direction of earnings surprises after the public announcement
  - the first reported “anomaly”

Recent fall in the 99th percentile due to pressure on laggards?
No trend in the median lag for the whole sample
But the lag is ↓’g in adjacent years for a constant sample
Newly listed stocks tend to be slower announcers
AI/NI, USA 1972-2017: Declining Value Relevance?

AI: Value of perfect foreknowledge at day -360 of the earnings surprise sign
NI: Value of perfect foreknowledge at day -360 of price on day 0 (earnings announcement)
✓ Parametric OLS equivalent of AI/NI is the annual earnings-returns r-squared.

- AUS, CAN, CHN, DEU, FRA, GBR, HKG, IDN, JPN, KOR, MYS, NZL, PHL, SGP, THA, TWN

- Results replicate well, and are compelling evidence of robustness

  1. *Pre-event* good/bad return separation is positive and statistically significant in all 16 countries
     ✓ usually about 15-25% p.a.

  2. *Event day* separation is positive in all countries, and significant in 14 of 16
     ✓ though the magnitude is small

  3. *PEAD* is positive in all 16 countries, and significant in 15 of 16
     ✓ does not look like data mining
     ✓ was not traded out of the market when our results were published over 50 years ago
Strategy Long in Good News ($\Delta$EPS > 0) and Short in Bad News ($\Delta$EPS < 0) Stocks

<table>
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<tr>
<th>Country</th>
<th>N(Good)</th>
<th>N(Bad)</th>
<th>Pre-event [-360:-1]</th>
<th>Event [Day 0]</th>
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Replication: Australia and Japan, 1989-2017
Replication: Korea and Malaysia, 1989-2017
Strengths

- Documented the mapping of $\Delta MVE$ (returns) into $\Delta BVE$ (earnings) over the year
  - Revealing important properties of earnings: “value relevance” and timeliness
  - Accounting earnings was not treated as simply another information signal
- Provided a view of accounting information in markets that was new to both investors and to the accounting literature
- Used data to test theories of optimal accounting regimes (then a novel idea)
  - a.k.a “evidence-based policy research”
- The results consistently replicated
- Acknowledged PEAD (the first “anomaly”)
- Short, and carefully written
- Opened avenues for other research
Weaknesses

- Tiny sample (by current standards)
  - 2,340 firm/year observations
  - Compares with current sample sizes > 100,000
- Survivor bias: Compustat file + our data requirements
- Monthly data
- Cross-sectional correlation ignored
- Market component of earnings not studied (a strength?)
- Simple binary specification of the earnings surprise variable
  - The not-so-“naïve” random walk expectations model
- Simple test statistics
- This research design would not pass muster today
- *It pays to have the first word, not the last*
Outcomes: Academic

- The Accounting Review
  - At the time, *the* international research journal in accounting
  - Rejected the paper out of hand

- Journal of Accounting Research
  - New journal (started 1963 at Chicago)
  - New editor (Nick Dopuch) published it without any refereeing

- Eventually, the results spoke for themselves, and drew the interest of
  - Academics
  - Regulators
  - Investors

- Still heavily cited by accounting literature standards

- The literature on earnings and prices is larger and longer-lived than we expected

- Asset pricing researchers are beginning (after 5 decades) to understand and delve more deeply into accounting issues?
Outcomes: Investment

- Difficult to measure impact (correlation vs causation)
- Knowing the relation between earnings and prices helps active investors frame their thinking about investment ideas
- The result that prices anticipate public information has led investors to be more skeptical of their ability to beat the market
  - e.g., you have to forecast earnings better than the market
  - This result – and many others that followed in the same vein – underpins the secular move to passive investing
- There is now a mini industry reporting consensus forecasts and “earnings surprises.” (The term we introduced for that was “unexpected earnings”)
- Some quant managers tilt their portfolios toward earnings yield variables
- “Anomaly chasing” abounds
We were younger then (Ray 23, Phil 28)