Empiricism in supply chain management research

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Questions / comments

- What is empirical supply chain management research?
  - It is more than just a collection of anecdotes, case studies or consulting projects.

- Is there a lack of empirical supply chain management research?
  - No debate here, we are pathetic.

- Why is there a woeful lack of empirical research?
  - Plenty of excuses:
    - Hard to collect good data/no standardized data sets.
    - Too risky before tenure.
  - We don’t know what we are doing
There is hope…


What do we know, what do we want to know

- Blinder and Maccini (91,92):
  - "... the basic facts to be explained are ... 1) production is more variable than sales".

- More evidence:
  - Sterman (1989); Lee, Padmanabhan and Whang (97); Anderson, Fine, Parker (2000).

- Causes:
  - Caplin (85), Kahn (92), LPW (97)

- Can we find empirical evidence of the bullwhip effect?

- Assuming we find it, what are the driving factors that explain it?

What is the bullwhip effect?

- Quick answer:
  - Bullwhip effect = variance(production) > variance(sales)

- But what variability do you measure?
  - Total variability?
  - Variability after removing a growth trend?
  - Variability after removing growth trend and seasonality?
Wal-Mart quarterly sales and production

Empiricism in s. chain mgtm. research, Cachon, 2004

Wal-Mart quarterly sales and production – first differences of logs

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### Preliminary findings and to-do list

- There is little evidence of the bullwhip effect in retail trade data if you only remove a linear growth trend.
  - After adjusting for seasonality, production is more variable than sales.

- What remains to be done:
  - Look at aggregate wholesale and manufacturing data.
  - Look at firm level data from quarterly filings of publicly traded companies.
  - Get some product level data (e.g., Kellogg cereals)