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Industry Panel Discussion

OCC Validation of Credit Rating and Scoring Models Workshop
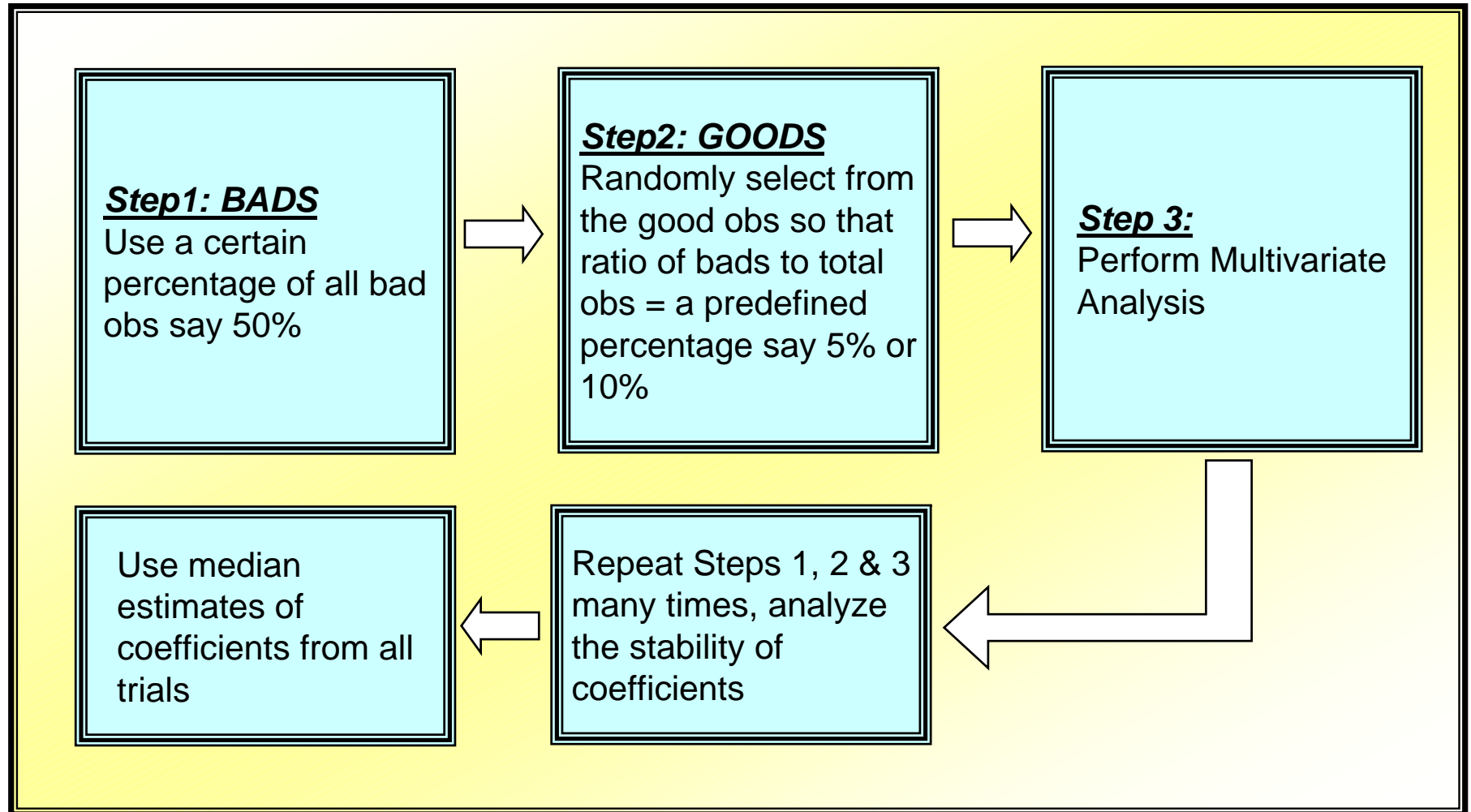# February 3, 2006

Partha Sen

SMALL SAMPLE CONUNDRUM

"It is difficult to create a robust development sample, and you are also asking me to create a validation sample as well !"

The Constraints:

- Defaults are rare, creation of multiple samples is difficult

- Data used for building models should include a long enough time horizon to capture the impact of economic cycle

- A model that works well on one sample may not work well on another

JACK-KNIFING AS AN APPROACH

Step1: BADS
Use a certain percentage of all bad obs say 50%

Step2: GOODS
Randomly select from the good obs so that ratio of bads to total obs = a predefined percentage say 5% or 10%

Step 3:
Perform Multivariate Analysis

Use median estimates of coefficients from all trials

Repeat Steps 1, 2 & 3 many times, analyze the stability of coefficients

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ADVANTAGES OF JACK-KNIFING

- Ensures stability through various cross-sections
- Coefficients are not unduly influenced by outliers.
- Much more robust than a *"development and validation sample"* approach
- Validation and development can be done simultaneously

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REGIME SHIFTING

The irrational exuberance of very good back-testing results can quickly evaporate with regime shifts.

<u>*Some Examples:*</u>

- Sudden change in relationship of a variable on defaults
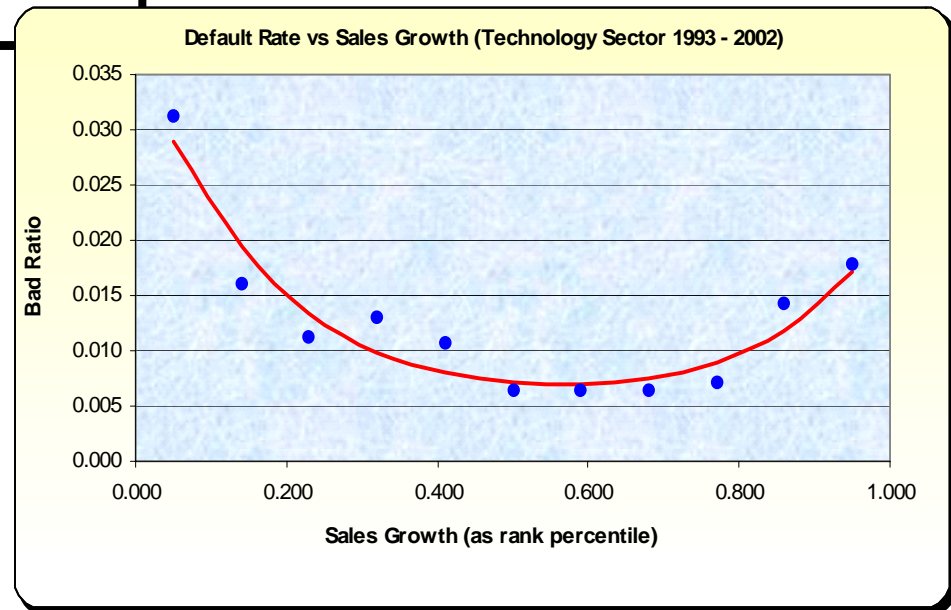
- Use of size measures in a model

- Structural changes

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RELATIONSHIP OF A VARIABLE ON DEFAULTS

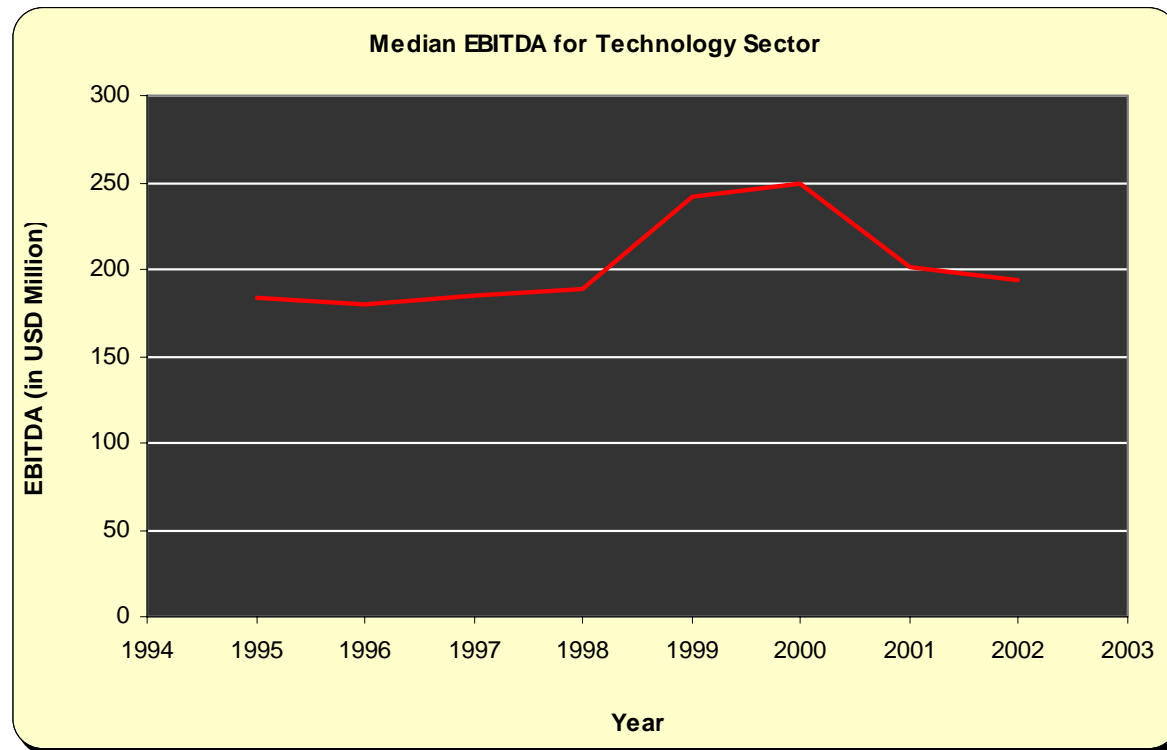**Default Rate vs Sales Growth (Technology Sector 1993-2000)**
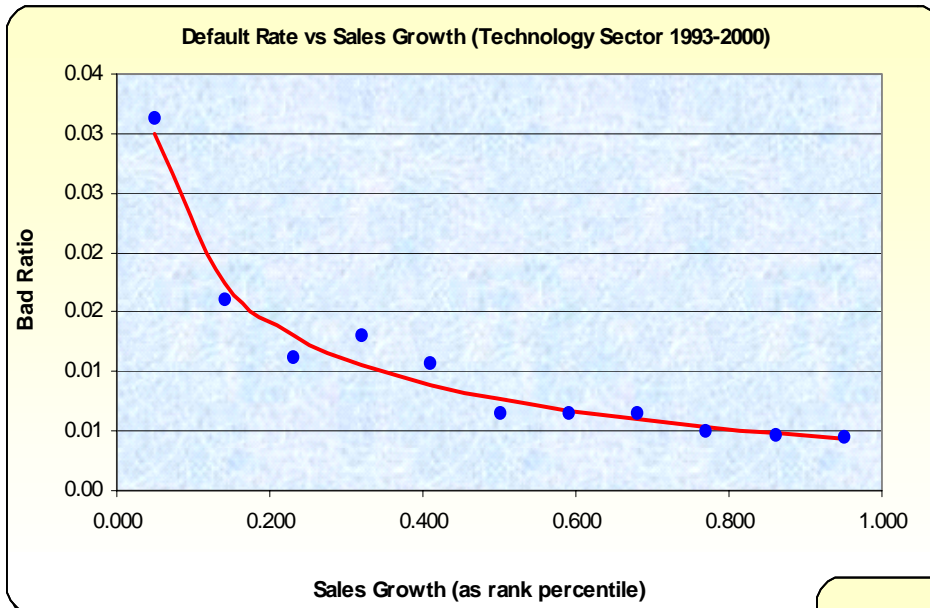
The relationship between a variable and defaults could change quite dramatically with time.

Mitigation:

- Samples spanning over long horizon
- Check for changes in relationship
- Use most recent trends
- Continuous monitoring

Default Rate vs Sales Growth (Technology Sector 1993 - 2002)

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SIZE MEASURES MAY CHANGE

Median EBITDA for Technology Sector

- In many sectors EBITDA has very good predictive power.
- However, if a size measure is used periodic re-calibration is required

STRUCTURAL CHANGES

- Sometimes variables not used in a model can suddenly become important on account of structural changes in an industry or in the whole economy

- Example:
  – Under-funding of pension benefits (Should a portion of such under-funding be included when calculating leverage?)

- Mitigation:
  – Keep our eyes and ears open

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