

“Business Alliances and Science Parks”

by

Albert N. Link

University of North Carolina at Greensboro

Outline of Presentation

- What is an indicator?
 - R&D indicators – a template?
- Business alliance indicators
 - NCRA
 - Non-governmental sources
 - Answered and unanswered questions
- University research park indicators
 - Non-governmental sources
 - Answered and unanswered questions

What is an Indicator?

- “Indicators are quantitative representations that might reasonably be thought to provide summary information bearing on the scope, quality, and vitality of the science and engineering enterprise. The indicators reported in SEI are intended to contribute to an understanding of the current environment and ***inform the development of future policies*** [emphasis added].”

- *Science and Engineering Indicators*

R&D Spending

- Bush's (1945) report on importance of R&D
- NSF collected industrial R&D data since early 1950s
- Minasian (1962) first to empirically link R&D spending to productivity growth
- Other studies followed, policy initiatives followed, new data initiatives followed

A Possible S&T Indicator Paradigm

Public domain data → empirical analyses →

informed public policy → new data initiatives

→ empirical analyses → etc.

Business Alliance Indicators

Business Alliances (RJVs) Databases

- **MERIT-CATI** (*Cooperative Agreements and Technology Indicators*) – John Hagedoorn – unit of observation is agreement with some member information; source business publications
- **NCRA-RJV** – Nick Vonortas – unit of observation is member; source *Federal Register*
- **CORE** (*COoperative REsearch*) database – AI Link – unit of observation is RJV; source *Federal Register*

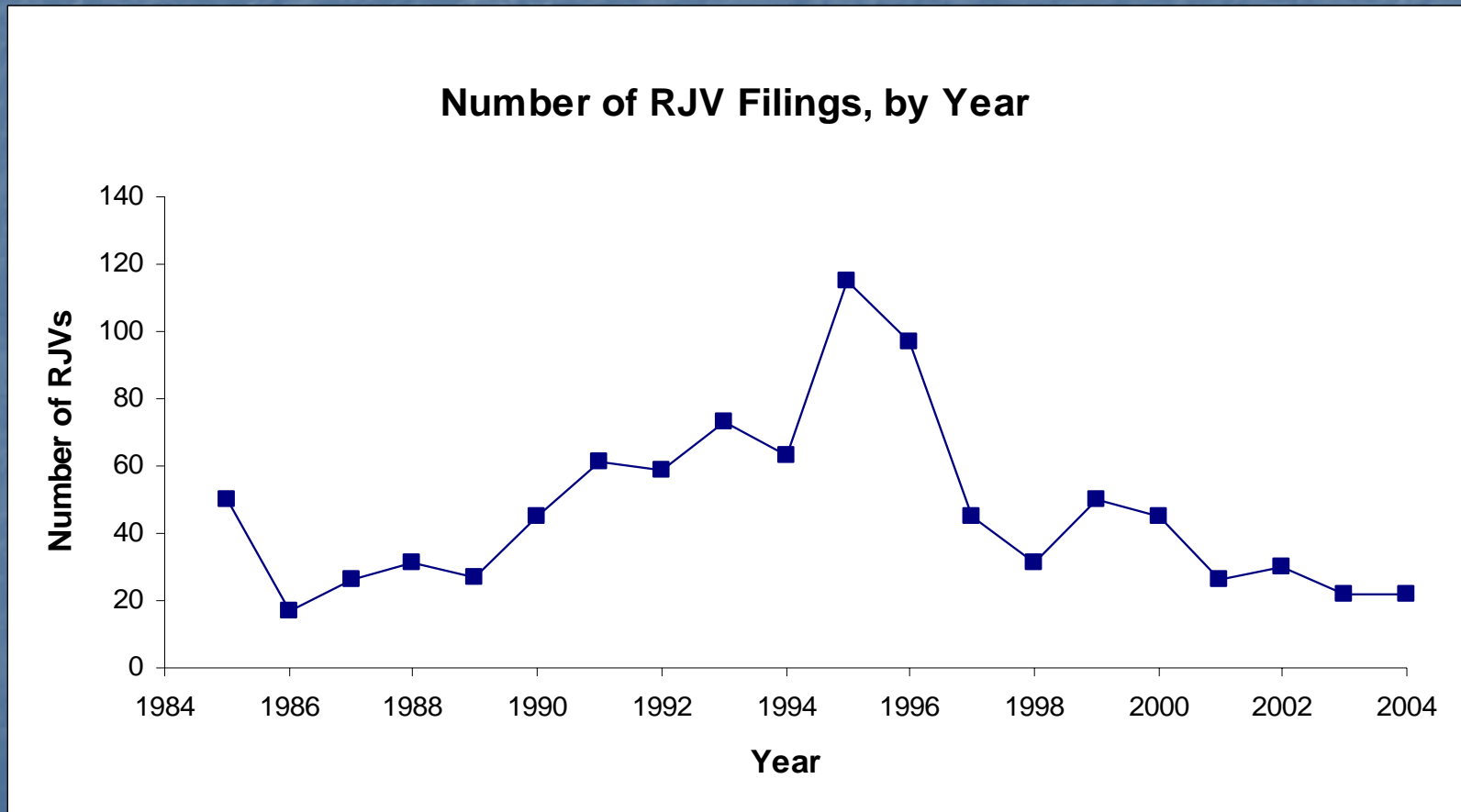
National Cooperation Research Act (NCRA) of 1984

" . . . to promote research and development, encourage innovation, stimulate trade, and make necessary and appropriate modifications in the operation of the antitrust laws."

Indemnification through filing in the *Federal Register*.

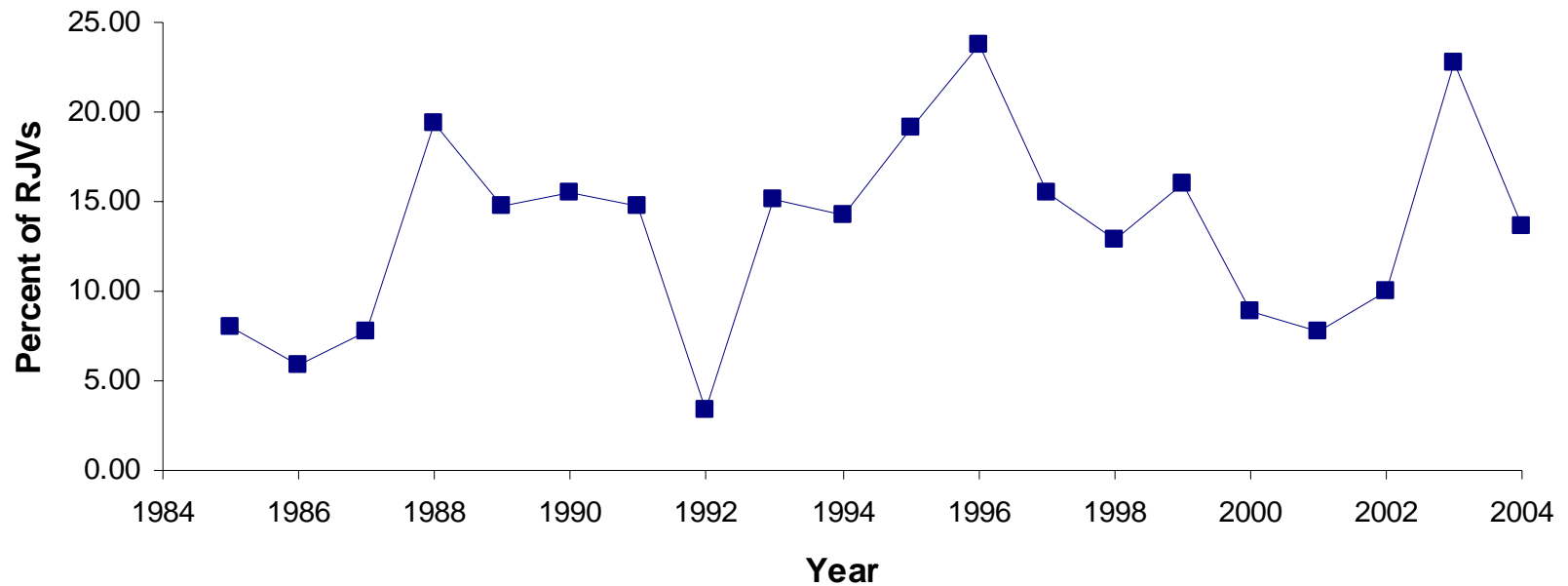
Number of RJVs

(total=935+204 under Standards Development Organization Advancement Act of 2004)



Percent of RJVs with University Partners

Percent of RJVs with U.S. University as Research Member, by Year



Theoretical Conclusions

- RJVs improve efficiency (consistent findings: lower transaction costs, reduce redundancy, spillover benefits to members by increasing economies of scope)
- RJVs increase competition (mixed findings: some find greater output and lower prices and others find greater market power from first mover advantage)

Empirical Conclusions

- Returns to R&D increases among firms involved in RJVs
- Larger RJVs more likely to 'invite' universities to be members

What is an Indicator?

- “Indicators are quantitative representations that might reasonably be thought to provide summary information bearing on the scope, quality, and vitality of the science and engineering enterprise. The indicators reported in SEI are intended to contribute to an understanding of the current environment and ***inform the development of future policies*** [emphasis added].”

- *Science and Engineering Indicators*

(Some) Unanswered Questions

- We know there are economic benefits associated with participation in RJVs, but ...
 - Why do some RJVs fail (e.g., end prematurely)?
 - Do RJVs self-renew?
 - Why the decline in new RJV formations since 1995?

(Some) Unanswered Questions (cont.)

- We know knowledge flows are a measure of spillover benefits associated with RJV membership, but ...
 - Is the probability of firm A licensing from firm B $< = >$ if A and B have been/are members of an RJV?
 - Is the probability of firm A's patents building on firm B's $< = >$ if A and B have been/are members of an RJV?

RJV Paradigm to Date

Theory → analysis of public domain data

→ new data initiatives (e.g., Q13 on RD-1)

NSF's Effort to Formally Collect Data on Collaborative R&D

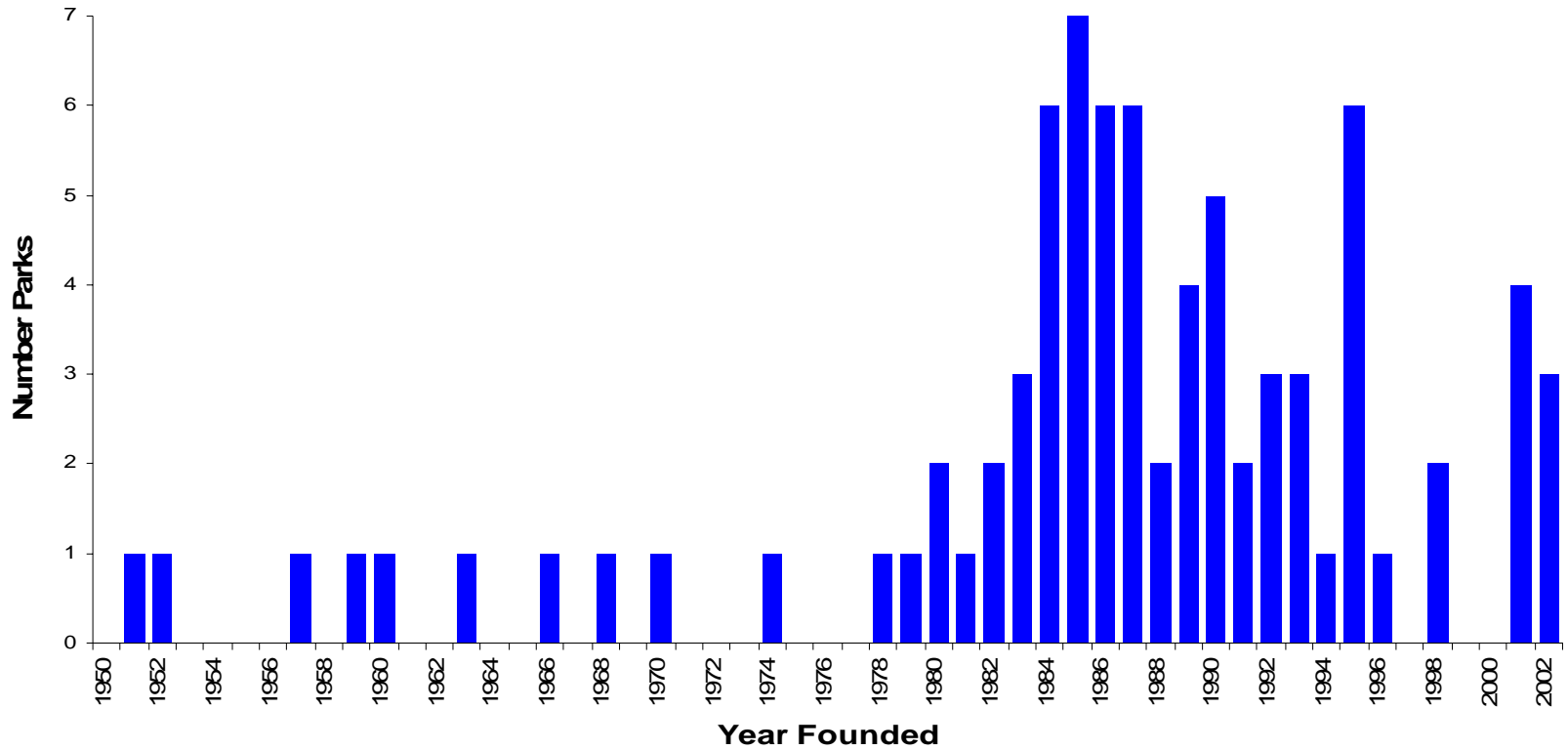
Q13: What was the cost of the R&D performed by your company ... with the type of R&D partner listed below?

- A. For-profit companies
- B. Federal laboratories
- C. Universities or colleges
- D. Other nonprofit organizations
- E. TOTAL

University Research Park Indicators

University Research Parks

(n=81)



Growth in Research Park Starts

- Bayh-Dole Act of 1980
- R&E Tax Credit of 1981
- NCRA of 1984

Theoretical Conclusions

- Research-active and diversified firms are more likely to locate on a university research park

Empirical Conclusions

- Parks closer to their university have faster employment growth
- Parks with incubators have slower employment growth
- 37 percent of parks have technology focus (biotechnology and IT)
- At end of 2002 there were 39 new parks planned, 90 percent at state universities

What is an Indicator?

- “Indicators are quantitative representations that might reasonably be thought to provide summary information bearing on the scope, quality, and vitality of the science and engineering enterprise. The indicators reported in SEI are intended to contribute to an understanding of the current environment and ***inform the development of future policies*** [emphasis added].”

- *Science and Engineering Indicators*

(Some) Unanswered Questions

- Are university research parks part of our national innovation system?
- Are firms in a park more research productive than comparable firms not in a park? Do returns vary by type of park?
- How does activity in a park affect the university's TT activity?
- How does faculty involvement in a park affect the productivity of faculty or the education of students?

Research Park Paradigm to Date

Researchers' collect data → analyses →
genesis of theory → new data initiatives

Conclusions

- If S&T indicators are to contribute to the development of future policies, then we should know/learn why they are being collected.

Conclusions (cont.)

- We know that RJVs enhance R&D and innovation efficiency, thus they (including informal RJVs) should be tracked and encouraged

Conclusions (cont.)

- We don't know – but we should study – about the R&D and innovation efficiency gains to firms in university research parks, yet:
 - Science Park Administration Act of 2004 was introduced as S. 2737 and is now part of the Binghamman - Alexander Innovation Bill (based on the Academy innovation report)
 - States are allocating funds to encourage new park development