Spin-offs: entry and performance

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Why interest in spin-offs?

- **Spin-offs are widespread form of entrepreneurship**
  - German laser industry: 30 per cent of all entrants were spin-offs from existing laser firms

- **Spin-offs often are distinctive performers**
  - Many well-known firms started as spin-offs (Intel, WalMart, SAP)

- **Spin-offs are interesting for organization theory**
  - Knowledge transfers between organizations
  - Importance of founders for firm performance

- **Spin-offs play important role in industry clustering**
  - Detroit (autos); Silicon Valley
  - After lunch: Spin-offs in Akron tire cluster
1. Types of spin-offs
A typology of spin-offs (1)

- **Firm spin-offs versus university spin-offs**  
  (below: only firm spin-offs considered)

- **Involuntary versus voluntary spin-offs (firm perspective)**
  - Involuntary spin-offs (employee spin-offs; entrepreneurial spin-offs; spin-outs): Founding impetus provided by employee(s), not by parent firm management
  - Voluntary spin-offs (parent spin-offs): Founding impetus comes from parent firm management

- **Opportunity spin-offs versus necessity spin-offs (founder perspective)**
  - Necessity spin-offs: triggered by adverse events in parent firm (e.g., Eastern Europe after 1990)
A typology of spin-offs (2)

Spin-off

from:

Incumbent

by:

Employee

Opportunity

e.g., development of rejected innovation through spin-off (SAP)

Necessity

e.g., spin-off because of parent firm exit (J-Fiber)

University/PRO

Employer

Opportunity

e.g., strategic spin-off to develop new product variant (Smart)

Necessity

e.g., new firm taking over parent firm activities after bankruptcy (LG Laser)
2. The spin-off process
The spin-off process: a conceptual model

Employment in existing firm → Triggering event → spin-off formation → Spin-off management

Learning: Technology; markets, customer needs
Learning: Organizational processes
Learning: Personal skills
Opportunity recognition
(Strategy) disagreement
Adverse event at parent firm
Transfer of technological/market knowledge
Transfer of organizational processes
Use of personal skills

Potential → Trigger → Performance
Theoretical approaches: Learning (1)

- Variety of (verbal) approaches based on employee learning

- Basic idea
  - Incumbent firms serve as (involuntary) training grounds
    → enable employees to acquire firm-specific knowledge
  - Employees (in particular those in R&D, marketing, management)
    - learn about technologies, markets etc.
    - get ideas for innovations
    - acquire management / entrepreneurial skills
    → become potential spin-off founders
Theoretical approaches: Learning (2)

- **Background: individual learning in organizational context**
  - Individual expertise (Simon):
    - Acquisition and use of tacit (non-verbalized) heuristics
  - Observational learning (Bandura, 1986 book)
    - Face-to-face interaction allows for transfer of tacit knowledge (e.g., entrepreneurial skills)

- **Links to organization theory**
  - Capability theories:
    - Heterogeneity of firms due to differences in capabilities
    - Tacit organizational knowledge (routines) may underlie capabilities
    - Limited adaptability of capabilities (absorptive capacity)
  - Organizational learning frees cognitive capacities → enables employees’ experimentation with new products/processes (Penrose, 1950)
Theoretical approaches: Learning (3)

Predictions:

1. Better incumbents have more spin-offs (Intuition: more opportunities for employee learning)
2. Better incumbents have better spin-offs (Intuition: same as (1))
3. Similarities between parents and spin-offs (Intuition: employees apply knowledge acquired at parent firm)
4. Spin-offs perform better than other de novo entrants (Intuition: relevant knowledge not fully accessible to outsiders)
5. Spin-offs of higher-level employees perform better and are more similar to parent firm (Intuition: higher-level employees have better access to the firm’s knowledge base)
6. More spin-offs in industries where relevant knowledge is embodied in employees (Intuition: if knowledge is broadly accessible, spin-offs have no advantages)
Theoretical approaches: Strategy conflicts (1)

- **Basic idea (Klepper and Thompson, unpublished)**
  - Employees start spin-off if they disagree with parent firm strategy
  - Builds on ample empirical evidence of spin-offs triggered by conflicts and employee frustration over rejected innovations

- **Model is also applied to emergence of Detroit automobile cluster (Klepper, MS 2007)**
Theoretical approaches: Strategy conflicts (2)

- **Model of Klepper and Thompson (unpublished):**
  - Bayesian learning of value-maximizing strategy $x$
  - Firm value: $v = A - (x - \theta)^2$ with $\theta$ unknown target
  - Homogeneous founder teams: all decision makers have identical prior beliefs
  - Decision makers receive noisy private signals and form subjective beliefs on $\theta$
  - Firm strategy $\theta$ is weighted average of individual beliefs (objective: $x = \theta$)
  - Individual expectation of firm value depends on difference between own belief and weighted average of others' beliefs
  - Spin-off formed if loss from disagreement outweighs costs of starting new firm
Theoretical approaches: Strategy conflicts (3)

- **Model of Klepper and Thompson (continued):**
  - Disagreement is due to the assumed weighing mechanism:
    - Firms’ decision makers communicate the signals they receive
    - One decision maker has better information or ability to evaluate it
    - This superiority is unknown to the other decision makers
      → only the superior individual takes it into account in weighing (larger weight for own belief)
  - Crucial assumption: capital markets (venture capitalists) are better able to evaluate the ideas of spin-off founders than the parent firm management
    → spin-off formation as outside option
Selected predictions of the Klepper-Thompson (KT) model:

- Better incumbents have more spin-offs (intuition: better individuals form more spin-offs; also enhance performance of parent firm up to spin-off event)
- Better incumbents have better spin-offs (intuition: founders have to be better than peers, who are better in better firms)
- Initially, spin-offs are similar to their parent (Intuition: use same information)
- Spin-offs perform better than their parents (intuition: only superior individuals become founders)
- Spin-off has adverse effect on parent firm performance
- Spin-offs formed by higher-level employees perform better (intuition: higher-level employees need to be even more superior to become founders)
- Acquisitions increase spin-off likelihood (reduce existing management’s impact on strategy)
Comparing the approaches

- Both theories have similar predictions
- Differences in predictions
  - KT model stresses importance of future spin-off founders for parent firm performance, while in learning theory they primarily benefit → post-spin-off performance of parent firms?
- Limitations?
  - Nature of relevant knowledge unspecified in both approaches
  - Learning: no explicit model
  - KT model: crucial role of capital markets in safeguarding spin-off quality
- Complementary models?
  - In KT model, future spin-off founders also learn while at parent firm
  - Spin-off potential / triggering events
  - Spin-off founders born superior or made superior?
Other theoretical approaches

**Agency theories**
- Basic idea: employee exploits “slack” within parent firm to develop own ideas; once idea has been developed, pursuing it within parent firm may be less attractive than starting a spin-off
- However: Empirical record suggests that most spin-off founders tried to pursue their ideas within parent firm; small number of IP-related lawsuits (U.S. lasers)

**Spin-offs due to parent firm inertia**
- Basic idea: Incumbents are slow to introduce new ideas
- Resonates with Klepper-Thompson model
- Does this mean that spin-off parents are inferior (ideas: number vs. pursuit)?
- Incumbents may choose not to pursue all ideas, thus leaving opportunities for spin-off entry (Klepper and Sleeper, MS 2005)
- Agarwal et. al (AoMJ, 2004): Less spin-offs in firms that are both technological leaders and market pioneers (i.e., both generate and apply knowledge)
- Scharfstein et al. (JoF, 2005): More “Fairchild” spin-offs than “Xerox” spin-offs
3. Empirical findings on spin-offs
Evidence on the spin-off process (1)

1. Better (more long-lived) incumbents have more spin-offs
   - Autos (Klepper, ICC 2002)
   - Lasers (Germany) (Buenstorf, RIO 2007)
   - Disk drives (Agarwal et al., AoMJ 2004): Both technological and market knowledge increased spin-off rate, but interaction term decreased it → generation vs. use of knowledge

2. Better incumbents have better spin-offs
   - Autos: Spin-offs of leading firms outperformed diversifiers (Klepper, ICC 2002)
   - Tires: Only spin-offs from top and second-tier firms performed above average (Buenstorf and Klepper, MPI Preprint 2005)

3. Non-monotonous age effect on spin-off likelihood
   - Spin-off rate increases at first, then decreases
Evidence on the spin-off process (2)

4. **Spin-offs seem to draw on specific capabilities**
   - Lasers (U.S. / Germany): Parent firm experience in specific submarket had stronger effect on spin-off rate than general laser experience

5. **Spin-offs may be triggered by parent firm acquisition**
   - Lasers:
     - Firms that exit through acquisition have more spin-offs
     - Spin-offs more likely at time of parent firm exit (Germany)
     → “Necessity spin-offs” / consistent with Klepper-Thompson model
Evidence on spin-off performance (1)

- **Spin-offs among top performers in industry**
  - Autos: Spin-offs outperform other *de novo* entrants; are similar to diversifiers in performance (Klepper, ICC 2002)
  - Lasers (Germany): Spin-offs more successful than university start-ups (Buenstorf, RIO 2007)

- **Higher-level employees are more successful as spin-off founders**
  - Serial entrepreneurs outperformed other spin-offs in German laser industry
  - Broad Danish dataset (Dahl and Reichstein, unpublished): Higher-level founders started more successful spin-offs
  - Qualitative evidence also on U.S. auto and tire industries

- **“Opportunity spin-offs” outperform “necessity spin-offs”**
  - ... in German laser industry as well as in broad Danish dataset
Evidence on spin-off performance (2)

- **Spin-offs outperform their parents (predicted by KT model)**
  - Generally not consistent with the evidence
  - But: may reflect countervailing time-of-entry effect

- **Spin-offs detrimental to parent performance (KT model)**
  - Supported for Silicon Valley law firms

- **More spin-offs in industries where knowledge embodied in employees (predicted by learning theory)**
  - No systematic studies
  - But: consistent with inter-industry differences between founders
    - Auto spin-off founders tended to be higher-level employees than laser spin-off founders
Conclusions: spin-off theories / evidence

- Conceptual model has room for learning *and* strategy conflict
- Important for cluster formation: Both approaches predict “success breeds success” dynamics
- This is consistent with the empirical evidence