Globalization through Alliances: Portfolio Configuration & Knowledge Positioning

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Motivation

In emerging technological fields

- Firms often need to track, develop and absorb knowledge from many globally dispersed sources.
- Knowledge development is uncertain and dynamic process
- Internationalization of R&D is risky and costly
- Firms need to position themselves to capture and develop knowledge and yet minimize risks and costs.
Alliance Portfolios

• Alliances as a conduit for learning
• Alliances as a way of reaching beyond geographically and technologically local search
• Portfolio of alliances – one of the relevant characteristics – geographic configuration.
• Alliance partners as a conduit of country capabilities
Globalization and Alliances

- Alliance configuration in a globalizing world

- Globalization – common interpretations
  - Greater homogeneity across countries
  - Greater inter-connectedness and dependence
  - Shifts across time

- Countries are themselves part of a network – related and connected.

- Implications for alliance configuration and knowledge access
Research Questions

• How does the geographic configuration of a firm’s international alliance portfolio (taking into account country similarity and connections) affect its positioning in the global alliance network?

• How does a position of knowledge advantage affect the subsequent level of internationalization?
Model Relationships

Portfolio Configuration (t-1): Country Homogeneity (Citation Links)

Portfolio Configuration (t-1): Country Connectedness (Citation Links)

Knowledge Advantage (t) (Freeman’s Centrality Measure Based on Alliances)

Firm Internationalization (Countries in t+3; Foreign Inventors t+3)
Country Homogeneity, Connectedness and Knowledge Advantage

- **Country Homogeneity**: The extent to which countries’ technological trajectories are similar or different.

- **Country Connectedness**: The extent to which knowledge flows across countries.

- **Knowledge Advantage Position**: The centrality of the firm in the overall industry network.
Hypothesis 1: Alliance Portfolio Country Homogeneity

- Complexity of managing and benefiting from international alliances is reduced

- Given different emerging technological trajectories, access to a relevant pool of resources and expertise that can be applied to the technological development and challenges.

- Technological coherence improves knowledge assimilation and increases firm attractiveness
Hypothesis 1: The technological homogeneity of countries spanned by the focal firm’s cross-border alliance portfolio is positively associated with the firm’s centrality in the global alliance network.
Hypothesis 2: Alliance Portfolio Country Connectedness

• Network literature suggests that firms that span unconnected knowledge resources can achieve powerful brokerage positions.

• Signal valuable search capabilities which allow for the identification of countries that are not learning from one another.

• Absence of knowledge flows creates valuable bridging opportunities, and increases firm attractiveness.
Hypothesis 2: Alliance Portfolio Country Connectedness

- Hypothesis 2: The technological connectedness of countries spanned by the focal firm’s cross-border alliance portfolio is negatively associated with the firm’s centrality in the global alliance network.
Hypothesis 3: Rate of Internationalization

• Position in global alliance network permits access to wide knowledge base

• Knowledge advantage stems not only from the direct knowledge flows from partners, but also from partners’ networks that provide channels into other countries

• Knowledge positioning allows for internationalization through networks rather than direct presence
Hypothesis 3: A firm’s centrality is negatively associated with the firm’s level of internationalization in subsequent years.
Empirical Setting

• Emerging fuel cell industry
  – Early stage of development
  – Wide range of designs
  – Several countries – some narrow, others broad
  – No country dominates
  – Firms form several industries
  – Patenting common
  – R&D primarily in home country
  – Alliances – primary mode of knowledge seeking investments
Sample

- Sample comprises 55 firms
- 145 alliance portfolios
- 1984 to 2001 timeframe
- 9 international alliances in 1984,
  89 international alliances in 2001
- Portfolios encompassed 12 countries
- Number of countries in a firm’s portfolio range from 2 to 7
Variables

Country Connectedness : Calculated for fuel cell patents sub-classes and citations across countries.

- Cumulative number of patent citations between each pair of countries in firm’s portfolio divided total possible pairs.

- Country Homogeneity : Calculated for fuel cell patents sub-classes and citations across countries.

  - Herfindahl Index using patent sub-classes, 0 to 1 where 1 indicates complete homogeneity
Variables

- **Knowledge Advantage: Degree Centrality of the firm in the global alliance network**
  - sum of the total direct ties for firm divided by the total number of firms in the global network not including the focal firm in time \( t \).

- **Internationalization: Change in number of countries spanned by firm’s alliance portfolio**
  - Ratio of number of foreign countries in firm’s alliance portfolio in time \( t+3 \), to number of countries in \( t \).
  - Ratio of foreign inventors on patents in time \( t+3 \), to time \( t \).

Controls

• **Firm Controls**
  - technological capability, concentration, age

• **Partner Controls**
  - age, capabilities, equity alliances, multi-party alliances, structural holes, technological distance, ratio of foreign partners, partner’s geographic and technological diversity

• **Country Controls**
  - Home country - Industry associations, corporatism
  - Partner’s countries – political, economic, ideological dispersion
Findings

• All three hypotheses supported

• Firm with alliance portfolios that are spread across technologically similar but less connected countries, obtain centrality in the global alliance network.

• Firms that are central in the alliance network have lower rates of subsequent internationalization.

• Several controls significant.
Discussion

• Alliance portfolios and globalization

• Global reach with local organization?

• Multiple networks

• Acknowledging relationship between countries in international strategy research
Conclusions

- Country configurations matter to firms’ positioning for knowledge advantage.

- Positions of knowledge advantage convey capabilities that increase knowledge assimilation and dissemination.

- Firms’ alliance networks can be a useful way to source and utilize knowledge internationally.