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Governance Models of R&D Offshoring: Innovation Performance and the moderating role of Absorptive Capacity

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Abstract

State of the art

The ubiquitous globalization of production and value chains led to an increased internationalization of R&D. Studies on its antecedents and performance implications often focused on MNEs and R&D-related FDI (Florida, 1997; Kuemmerle, 1999; Von Zedtwitz & Gassmann, 2002). Simultaneously, firms opened up the boundaries of their innovation system to benefit from cooperation with external partners in domestic markets (Cassiman & Veugelers, 2006). In this context, an inverse U-shaped relationship between the degree of external R&D (including R&D outsourcing) and innovation performance was found (Berchicci, 2013). Literature on R&D offshoring started integrating findings on R&D outsourcing in order to capture the whole range of international R&D activities that are also reflected in, e.g., cross-border flows of capital, and technology exchanges (e.g. Lewin, Massini, & Peeters, 2009). While finding positive effects on innovation performance for both, Nieto and RodrÃ-guez (2011) recently emphasized the distinctive nature of captive offshoring reflected in R&D spending to foreign affiliates and offshore outsourcing reflected in R&D spending to foreign external partners.

Research gap

While research on domestic R&D spending emphasizes curvilinear performance effects for the degree of R&D

outsourcing (e.g. Grimpe & Kaiser, 2010), these are not considered for evaluations of governance models of R&D offshoring. We argue that distinguishing these two governance models, captive offshoring and offshore outsourcing, together with curvilinear effects-as demonstrated for external but not necessarily foreign R&D spending-helps reconciling previous studies' ambiguous results (e.g. Mihalache et al., 2012; Nieto & RodrÃ-guez, 2011).

Theoretical arguments

Tapping into foreign sources of knowledge is a major benefit for firms pursuing captive offshoring and offshore outsourcing (Von Zedtwitz & Gassmann, 2002). However, offshore outsourcing and captive offshoring differently affect firms' innovation output: Benefits of scale and scope in internationalization of R&D can be better realized within firm boundaries (Barney, 1991), through captive offshoring. For offshore outsourcing, these benefits will largely be captured by contractors. Thus, firms pursuing captive offshoring benefit stronger from these advantages. Firms pursuing captive offshoring, however, face additional cost for R&D infrastructure and fixed cost that firms pursuing offshore outsourcing do not face. Thus, the net benefit might be negative at lower degrees of captive offshoring, but turn positive for higher degrees. Further, while captive offshoring keeps the foreign knowledge acquired through affiliates inside firm (group) boundaries, firms pursuing offshore outsourcing face higher risks of losing knowledge to competitors (Feinberg & Gupta, 2004). This can lead to an overall negative performance impact of offshore outsourcing especially at high degrees of offshoring. Moreover, as absorptive capacity leverages efficient internalization of knowledge (Cohen & Levinthal, 1990), absorptive capacity is expected to moderate the impact of offshoring on innovation performance.

Method & data

We use bi-annual firm-level panel data (2005-2011) provided by the Stifterverband. These data underlie Germany's official reporting on research, development and innovation to the EU and the OECD. Our sample includes 2,421 German R&D-active enterprises. Using pooled OLS and tobit estimators and clustering standard errors at the firm level, we regress innovation performance on captive offshoring, offshore outsourcing, and-as moderator-absorptive capacity; the latter approximated through both domestic R&D size and R&D intensity. We control for firm age, size, group ownership, foreign ownership, internal R&D spending, and year and industry fixed effects.

Results

We observe a U-shaped relationship between captive offshoring and innovation performance, but an inverse-U-shaped relationship for offshore outsourcing and innovation performance. R&D intensity, and domestic R&D size moderate the relationship of offshore outsourcing and innovation performance, such that the turning point for offshore outsourcing occurs at a higher performance level. For captive offshoring, domestic R&D size moderates the effect, such that the turning point is reached at a lower performance level and lower degree of captive offshoring. Thus, absorptive capacity is more relevant for explaining positive effects on offshore outsourcing. More generally, our results demonstrate the relevance of both captive offshoring and offshore outsourcing for firms' innovation performance; however, they display qualitatively different curvilinear effects.

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