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Institutional ownership and technological relatedness: A test of endogeneity

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ABSTRACT

Building on the previous literature on corporate diversification, institutional ownership and firm innovation, this study proposes an endogenous relationship between institutional ownership and corporate technological relatedness. Technological relatedness is the degree to which a set of industries in which a firm operates its businesses demand similar technological knowledge. A Vector Autoregressive analysis of data from U.S. manufacturing firms shows that firms enhancing technological relatedness attract more institutional investors and as predicted, this pattern is particularly strong for pension fund ownership. In contrast, the analysis fails to show that institutional investors cause a firm's business portfolio to increase in technological relatedness.

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1. Introduction

This article examines how institutional ownership both affects and is affected by technological relatedness defined as the degree to which a set of industries in which a firm operates its businesses demand similar technological knowledge. In the diversification literature, greater relatedness within a firm's business portfolio has been theorized to increase corporate performance (e.g., Miller, 2004; Robins & Wiersema, 1995; Silverman, 1999; Tanriverdi & Venkatraman, 2005; Teece, 1980). Scholars have also proposed that institutional investors equipped with strong information-processing capacity and voting power can motivate top managers to achieve a high level of resource relatedness through divestitures or acquisitions (Amihud & Lev, 1999; Berger & Ofek, 1999; Hill & Snell, 1989; John & Ofek, 1995). Building upon this literature, this article explores the dynamic relationship between institutional ownership and technological relatedness.

This article contributes in three ways to the literature on the relationship between institutional ownership and a firm's business portfolio. First, although the extant literature has emphasized institutional ownership as an antecedent of corporate strategies, ownership structure can also react to shifting corporate strategies (Goranova, Alessandri, Brandes, & Dharwadkar, 2007). Therefore, this article examines the important yet less examined question of endogeneity—that is, how institutional ownership may change in response to the degree of resource relatedness in a firm's business portfolio.

Second, the existing literature has often failed to distinguish between types of underlying resources when examining effects of relatedness. This omission is important because different types of resource

relatedness could have very different performance effects (Miller, 2006). Based on insight from knowledge-based view that synergy from technological resources powerfully influences changes in a firm's business portfolio and profitability (Robins & Wiersema, 1995), this article focuses on conceptualizing and measuring relatedness with respect to technological resources.

Third, although different types of institutional investors may have different attitudes toward corporate strategies (Kochhar & David, 1996), few studies have examined the effect of different institutional investors on a firm's business portfolio. Therefore, this article explores the possibility that pension fund ownership may have a different cause-and-effect relationship with technological relatedness than non-pension fund ownership.

2. Theory and hypotheses

Empirical studies have shown that corporate performance improves when a firm increases technological relatedness in its business portfolio (e.g., Miller, 2004; Robins & Wiersema, 1995; Silverman, 1999). A firm can increase technological relatedness by modifying the composition of its business portfolio through acquisitions (divestitures) of businesses to which the current technological capabilities are more (less) applicable (Amihud & Lev, 1999). Technologically related business units are likely to have a high level of absorptive capacity to learn from each other (Cohen & Levinthal, 1990; Ritter & Gemunden, 2004) and thus, can extend technological capabilities based on each other's knowledge with less difficulty (Gupta & Govindarajan, 2000; Song & Shin, 2008). In addition, the R&D function can be centralized at the corporate level when different business units require similar technological knowledge. Synergies arising from such centralization will make R&D investment more efficient and allow R&D workers to locate expertise and share ideas with less difficulty (Bunderson, 2003). Moreover, firms can avoid business unit

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managers' short-term-oriented risk preference by centralizing the R&D function at the corporate level (Hoskisson & Hitt, 1988).

Because technological knowledge is often subject to market failure, it is a particularly important driver of diversification (Oxley & Sampson, 2004; Teece, 1980). Firms can pursue economies of scope by licensing or joint ventures and avoid bureaucratic costs associated with diversification (Argyres, 1996; Si & Bruton, 2005). Therefore, economies of scope alone cannot explain why firms diversify. Rather diversification becomes a particularly attractive option when resources cannot be transferred to third parties through a market mechanism.

Despite their positive implications for firm performance and shareholders' wealth, there are several reasons why corporate strategies to enhance technological relatedness may not be a priority for top managers. Realizing economies of scope based on technological knowledge is not without difficulties (Gary, 2005; Tanriverdi & Venkatraman, 2005) and the extent to which firms can actually exploit technological relatedness critically depends on the degree of the top managers' long-term commitment (Hoskisson & Hitt, 1988). In order to realize expected synergies from a new business portfolio, top managers must orchestrate interdependence among business units and make adjustments in decision-making authority and incentive systems for business-level managers (Argyres, 1996; Michel & Hambrick, 1992). Thus, simple recomposition of the business portfolio may not be sufficient to enhance firm performance; top managers must embrace a long-term perspective and commit to organizational restructuring.

According to agency theory (Jensen & Meckling, 1976), however, to maximize their own personal wealth, top managers may allocate corporate resources to increase immediate payoffs but impair firm value over the long run. Top managers have a strong motivation to reduce firm-specific risks because their human capital is invested in a single firm (Hill & Snell, 1989; Wright & Ferris, 1997; Wu & Tu, 2007). In particular, self-serving top managers would implement risk-reducing strategies such as unrelated diversification instead of value-enhancing firm strategies such as corporate refocusing (Hoskisson, Johnson, & Moesel, 1994) or R&D investments (Hoskisson & Johnson, 1992). In contrast, shareholders appreciate risky but value-maximizing strategies because they can hedge firm-specific risks by diversifying their own stock portfolios (John & Ofek, 1995).

The ownership literature has featured two competing perspectives on the effect of institutional ownership on top managers' decision making and specifically, their time horizons: the myopic-trader's argument vs. the active-investor's argument (Graves, 1988; Kochhar & David, 1996). According to the myopic-trader's argument (Graves, 1988; Marciukaityte & Varma, 2007), institutional owners evaluate firm strategies under a short-term investment horizon. Institutional fund managers receive quarterly evaluations on returns produced from investment portfolio management (Hansen & Hill, 1991; Hoskisson, Hitt, Johnson, & Grossman, 2002). In order to meet short-term investment goals, these fund managers prefer to use the firms' current earnings as the criterion for stock trading since such a financial index gives a clear sign of immediate payoffs. Therefore, according to this argument, institutional owners discourage top managers from making strategic decisions that do not pay off immediately.

In contrast, the active-investor's view suggests that institutional owners embrace a long-term investment horizon. A short-term buy-and-sell strategy is not likely to increase returns for institutional holders because selling a large quantity of stocks reduces their price, and finding a better investment alternative is difficult in the competitive stock market (Davis & Thompson, 1994). Therefore, equipped with voting power and information-processing capacity (Hansen & Hill, 1991), institutional investors choose to maximize returns over the long run by promoting firm strategies such as corporate refocusing or R&D investment to top managers who would otherwise focus on near-term earnings for self-serving purposes (Useem, 1996).

Although there are exceptions (e.g., Graves, 1988; Kim, Kim, & Lee, 2008), the active-investor's view has received more empirical support than the myopic-trader's view (e.g., Amihud & Lev, 1999; Baysinger, Kosnik, & Turk, 1991; Bushee, 1998; Eng & Shackell, 2001; Hansen & Hill, 1991; Hill & Snell, 1989; Samuel, 2000). For instance, Berger and Ofek (1999) find that pressures from institutional shareholders triggered corporate refocusing. Hill and Snell (1989) show that increased shareholders' power from stock concentration led to reduced unrelated diversification. The presence of institutional ownership does not necessarily reduce the rate of new product development (Kochhar & David, 1996) and instead, increased R&D inputs (David, Hitt, & Gimeno, 2001). According to Aghion, Van Reenen, and Zingales (2009), the active-investor's argument is more plausible in the U.S. economy due to the reduced information asymmetry between managers and owners and regulatory changes in the 1990s in favor of institutional investors' activism. These studies show that institutional ownership promotes long-term oriented corporate strategies rather than strategies aimed at immediate payoffs.

If the active-investor's argument is correct, institutional ownership should positively affect technological relatedness because recomposition of the business portfolio aimed at higher resource relatedness leads to greater shareholder wealth and firm market value in the long term (Comment & Jarrell, 1995; Markides & Williamson, 1994). Institutional investors with a long-term investment horizon will employ their voting powers and monitoring capacities to ensure managers commit to the prolonged period of organizational restructuring required to obtain those payoffs (Boyd, Gove, & Hitt, 2005; Kane & Velury, 2004; Khan, Dharwadkar, & Brandes, 2005; Mitra & Hossain, 2007). Thus,

Hypothesis 1. Institutional ownership is positively associated with subsequent changes in the degree of corporate technological relatedness.

Not all institutional owners may be equally enthusiastic about long-term oriented corporate strategies. Recent studies on the relationship between institutional ownership and R&D investment show that some types of institutional owners are more likely to hold long-term investment horizons than others and influence top managers to allocate resources supporting long-term oriented strategies (e.g., Eng & Shackell, 2001; Kochhar & David, 1996; Le, Walters, & Kroll, 2006).

In particular, pension fund investors make investment decisions under the performance evaluation schemes that allow them to implement a buy-and-hold strategy. In addition, they are not likely to be resource-dependent on the invested firms unlike banks and insurance companies (Kochhar & David, 1996). Hence, the hypothesized positive effect of institutional ownership on technological relatedness should be especially strong for pension fund ownership than for other types of institutional investors.

Hypothesis 2. The positive effect of institutional ownership on subsequent corporate technological relatedness is stronger for pension fund ownership than for non-pension fund ownership.

As noted, past studies have emphasized the role of institutional ownership in controlling and guiding corporate strategies (e.g., Berger & Ofek, 1999; Boyd et al., 2005). However, ownership variables not only influence but are also affected by corporate strategies (Demsetz & Lehn, 1985). For instance, although top managers owning a significant number of shares may avoid corporate diversification that reduces firm value, corporate diversification may also increase ownership by top managers who desire to reduce personal risks or who seek to signal their optimism about a diversification strategy to shareholders (Goranova et al., 2007). These studies propose a possibility of a dynamic relationship between corporate policies and ownership variables in which the latter not only proactively influence but also react to the former. If institutional investors favor a business portfolio with a high level of technological relatedness, they may

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