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**Institutions and foreign subsidiary growth in transition economies:
The role of intangible assets and capabilities**

ABSTRACT

Although transition economies experience significant institutional transformations that vary in their degree and pace, scholarly knowledge of what distinguishes more successful foreign subsidiaries from less successful ones in such environments is limited and inconsistent. We enhance the understanding of this subject by examining how variations in the institutional development of transition economies influence the usefulness of a subsidiary's *intangible assets* and *capabilities* and, in turn, their effectiveness in enhancing its growth. Prior research assumes that foreign subsidiaries that operate in any given environment are always better off when they possess strong intangible assets and capabilities. Our analysis of more than 33,000 observations in 14 transition economies challenges this view and enables us to explain why some subsidiaries grow more quickly in less-developed institutional environments, whereas others more quickly in countries with institutions that are more developed. More specifically, we show that although a subsidiary's intangible assets enhance its growth in transition economies with stronger institutions, these effects are particularly weak or insignificant in transition countries with less developed institutional environments. Conversely, a completely different pattern emerges for subsidiary capabilities, with their marginal effects on subsidiary growth being significantly higher in countries that are institutionally less developed than in transition countries with more developed institutions.

Keywords: capabilities, institutions, performance, resources, subsidiary growth, transition economies

INTRODUCTION

The study of the determinants of foreign subsidiary growth and performance is one of the most fundamental topics in international business and management research. Although this literature initially focused on developed countries, recent work emphasizes the theoretical value and managerial importance of examining emerging countries (Hoskisson *et al.*, 2013; Wright *et al.*, 2005; Xu and Meyer, 2013), particularly transition economies in Central and Eastern Europe (CEE) (Meyer and Peng, 2005; Shinkle and Kriauciunas, 2010). Even among emerging countries, transition economies are special because of their radical switch from a socialist system to a market-based economy (Hoskisson *et al.*, 2000; Wright *et al.*, 2005). Because this transition is characterized by the transformation of various institutions and occurs at different rates across countries, transition economies provide a unique context for examining the predictive power of existing and new theories (Danis *et al.*, 2010; Peng, 2003).

Prior research on subsidiary growth and performance has examined inter-firm variations by using two distinct theoretical lenses, namely, the resource-based view and institutional theory. The first explanation hinges upon the use and internalization of firm-specific intangible resources (Barney, 1991; Dixon *et al.*, 2010; Peng, 2001; Teece *et al.*, 1997). The literature broadly defines intangible resources to include both *intangible assets* and *capabilities* (Hall, 1992, 1993). *Intangible assets* are a firm's identifiable soft assets, including intellectual property, technology, licenses and other reputational assets (Denekamp, 1995; Hall, 1992, 1993; Roberts and Dowling, 2002). They are part of a firm's resource set that in combination with other external assets can lead to a stream of products, services and advantages (Amit and Schoemaker, 1993). *Capabilities*, however, cannot be easily identified. They hinge upon the overall efficiency with which a firm deploys and allocates its assets to achieve certain outcomes (Amit and Schoemaker, 1993; Huesch, 2013). Therefore, capabilities can be conceptualized as the firm's ability to convert or transform inputs (assets) into desired outputs (Dutta *et al.*, 2005)—i.e., the primary function of capabilities is to increase the effects or productivity of other assets possessed by the firm (Makadok, 2001). Building on these concepts, prior studies suggest that intangible assets and firm capabilities involve high levels of specificity, enabling the subsidiaries of multinational enterprises (MNEs) to

compensate for their liability of foreignness and to compete successfully in host countries. According to this view, therefore, MNEs enter and expand into new markets because they can transfer, internalize, combine and exploit valuable assets and capabilities in their subsidiaries (Buckley and Casson, 1976; Delios and Beamish, 2001).

The second conceptualization suggests that performance outcomes are primarily determined by the development of institutions — defined as regulative, normative, and cognitive structures and processes — in the host country (North, 1990; Scott, 1995). Both formal and informal constraints and the development of institutional frameworks can have a profound effect on a firm's behavior and expansion (Henisz and Swaminathan, 2008; Meyer and Peng, 2005, p. 613; North, 1990; Peng, 2004; Peng *et al.*, 2008, p. 923; Williamson, 2000). Foreign subsidiaries must respond to institutional pressures in the host country given that institutional settings create incentive-constraint structures within which firms operate. Therefore, because institutional development changes the rules of the game (North, 1990), it plays an important role in explaining foreign subsidiary growth in the host country (Chan *et al.*, 2008; Chung and Beamish, 2005; Kim *et al.*, 2010; Makino *et al.*, 2004; Taussig and Delios, 2014).

However, despite these theoretical predictions, empirical evidence concerning the performance effects of institutional development is conflicting. Whereas some evidence shows that institutional development improves firm performance (e.g., Ngobo and Fouda, 2012), other studies report that it has negative consequences (e.g., Chan *et al.*, 2008). Although this conflicting evidence may appear to contradict the typical assumption that institutional development is good and desirable, it is actually explained by institutional theory that suggests that environmental changes may lead to rent redistribution and therefore, to winners and losers (North, 1990). Although institutional development leads to certain advantages and disadvantages for subsidiaries, these effects do not apply equally to all MNE subsidiaries. Thus, although institutional development might affect how firms manage institutional contexts and their resources, we have an incomplete and inconsistent understanding of how and to what extent cross-country differences in institutional development influence foreign subsidiary growth. Indeed, although each transition economy experiences significant and often discontinuous institutional transformations that vary

in their degree and pace, making these countries particularly diverse (Meyer and Peng, 2005; Peng *et al.*, 2008), we know relatively little about what distinguishes more successful foreign subsidiaries from less successful ones in the context of transition economies.

We seek to enhance the scholarly understanding of how institutions influence subsidiary growth in transition economies by examining how variations in the institutional development of these countries influence the effectiveness of intangible assets and capabilities in enhancing subsidiary growth. We show that because institutions vary across transition economies and evolve in different ways (Danis *et al.*, 2010; Peng, 2003), the usefulness of intangible assets and capabilities also varies. A key underlying assumption of prior research is that regardless of the institutional environment in which a foreign subsidiary operates, it needs strong intangible assets and capabilities to survive, compete and expand. In practice, however, it is not clear that the marginal performance effects of intangible assets and capabilities should always be similar or that there exist no boundary conditions on such effects (Huesch, 2013). For instance, recent evidence shows that managerial ability matters more under certain contextual conditions (Sirmon *et al.*, 2008). Given the significant trend toward large investments in emerging countries (Feinberg and Gupta, 2009), it is noteworthy that prior research is largely silent as to how institutional variations influence the effectiveness of a subsidiary's intangible assets and capabilities in accelerating firm growth.

We propose and empirically document that the growth-enhancing effects of intangible assets and capabilities change in their importance depending on the level of institutional development in the host transition economy. More specifically, despite conventional wisdom about the role of intangible assets, we show that the role of those assets in increasing subsidiary growth is less important—or even insignificant—in transition economies with weaker institutions. In contrast, the effectiveness of intangible assets in accelerating foreign subsidiary growth is greater in transition economies that exhibit a higher level of institutional development. However, a completely different pattern emerges when we consider subsidiary capabilities. The marginal effects of capabilities on growth are significantly higher in transition countries with weaker institutions than in transition countries with more developed institutions, suggesting that capabilities are an effective response to high transaction costs and market imperfections.

Overall, the findings reveal that the usefulness of a subsidiary's intangible assets and capabilities is contingent (but in a different way) upon the institutional development of its host country. An implication is that not all foreign firms benefit equally from institutional development. Subsidiary capabilities seem to compensate for weaker institutions but conversely, the intangible assets of a subsidiary and host-country institutions seem to complement one another in enhancing the subsidiary's growth.

To examine the mechanisms that result in such asymmetric effects, we consider how variations in institutional voids (Khanna and Palepu, 1997) increase or decrease the usefulness and competitive advantages that intangible assets and capabilities offer to a subsidiary. The theoretical and practical implication of our analysis is that intangible assets are more useful in certain institutional environments, whereas other institutional settings require stronger subsidiary capabilities. This finding extends prior research that offered useful insights into subsidiary evolution (Birkinshaw and Hood, 1998; Frost *et al.*, 2002) and showed that local institutional contexts influence firm performance (Meyer *et al.*, 2011; Ngobo and Fouda, 2012; Shinkle and Kriauciunas, 2010) but did not examine how the growth-enhancing effects of intangible assets and capabilities are influenced by such institutional contexts. Our analysis also has implications for how firms manage institutional idiosyncrasies in the global economy and the location choices of MNEs, highlighting that firm growth in a given country depends on the fit between the firm's own characteristics and the host country's institutional environment. Our hypotheses are tested against a dataset of more than 33,000 observations in 14 CEE countries. This enables us to consider differences in both the development of institutions and the subsidiary's intangible assets and capabilities, and to explain between- and within-country variations in foreign subsidiary growth, respectively.

THEORETICAL BACKGROUND

The combination of institutional theory and the resource-based view (RBV) is helpful because these theories are complementary and interdependent (Meyer *et al.*, 2009; Wang *et al.*, 2012). Each view provides only a partial account of firm growth because each has different theoretical boundaries and relies on different assumptions (Meyer *et al.*, 2009; Wang *et al.*, 2012). For instance, although intangible assets may help a foreign subsidiary expand in its host country, the firm may not be able to effectively exploit its

assets if the institutional environment is challenging. Equally, although a less-developed institutional setting may increase transaction costs, foreign subsidiaries that possess strong capabilities may be successful in responding to institutional pressures by internalizing certain activities. Furthermore, the level of institutional development affects how foreign subsidiaries employ their intangible assets and capabilities to accelerate their growth (Oliver, 1997). This notion is consistent with studies showing that institutions can augment a firm's resources and in turn, superior resources often enable firms to maintain a degree of independence from institutional demands (Wang *et al.*, 2012). Thus, as institutional forces influence and are influenced by, resource-based constructs, combining the two theoretical lenses may enrich conventional explanations of foreign subsidiary growth.

Subsidiary Intangible Assets and Capabilities

The literature has long recognized the strategic importance of the firm's intangible assets and capabilities (Collis, 1994; Hall, 1992) and their role in influencing subsidiary growth (Delios and Beamish, 2001; Penrose, 1959). Because MNE subsidiaries are not stand-alone firms, they can build such assets and capabilities themselves or source them from the parent firm. Unlike tangible assets, intangible assets and capabilities are more prone to market imperfections and imperfect mobility. Thus, they more readily represent firm-specific distinctive competences (Caves, 1971; Grant, 1987). Firms that possess strong intangible assets and capabilities can grow by internalizing such advantages (Buckley and Casson, 1976), differentiating themselves from competition and implementing new strategic initiatives in host countries (Fang *et al.*, 2007). Therefore, it is accepted in the literature that intangible assets and capabilities constitute the foundation for subsidiary expansion and performance.

To explain the asymmetric effects of institutional development, we first need to distinguish between intangible assets and capabilities and consider whether they influence one another. Our conceptual definitions are aligned with the work of Amit and Schoemaker (1993), among others. *Intangible assets* are defined as stocks of available factors such as intellectual property, technology, licenses, trademarks and brand names that can be used by a firm to create advantages, generate rents and expand in a given market (Denekamp, 1995; Hall, 1992, 1993; Roberts and Dowling, 2002). Different

research streams in the RBV literature have established that the performance effects of intangible assets depend on the opportunities for *bundling* such assets with resources that are available in the market and on the *exploitation* and *protection* of such assets (Sirmon *et al.*, 2008; Teece, 1986; Teece *et al.*, 1997).

Conversely, the literature has defined *capabilities* in an even broader manner. Depending on their objectives, prior studies have focused on different functional areas and dimensions of capabilities, ranging from R&D and marketing capabilities that may determine the firm's innovativeness and reputation (Dutta *et al.*, 1999, 2005) to governance capabilities (the ability to manage transaction costs) and productive capabilities (operational competencies across various stages of the value chain) (Jacobides and Hitt, 2005; Jacobides and Winter, 2005). In our study, following established practice (e.g. Amit and Schoemaker, 1993; Dutta *et al.*, 2005; Huesch, 2013; Makadok, 2001), we define capabilities as the overall efficiency with which a subsidiary deploys and combines its assets using various organizational processes to transform those assets and to achieve certain outcomes. Capabilities can therefore be conceptualized as “intermediate” processes, mechanisms and functional competences in various areas of the value chain that help the firm enhance the efficiency or productivity of other assets possessed by the firm (Collis, 1994; Makadok, 2001; Teece *et al.*, 1997). Because subsidiaries that are more capable can use and combine their assets more efficiently and creatively, they can expand faster than their less-capable counterparts. Theory has also established that such benefits are particularly important when a firm must rely on itself and internalize activities in its host country (Buckley and Casson, 1976).

Empirical studies also indicate that intangible assets and the capability to use these assets influence firm performance independently. Recent work suggests that their effects are not always synergistic, as is often assumed (Huesch, 2013). Accordingly, we conceptualize and measure a subsidiary's intangible assets and capabilities separately. Firms enhance their performance not only because they possess intangible assets but also because their capabilities enable them to make better use of such assets (Foss *et al.*, 2007; Mahoney and Pandian, 1992; Penrose, 1959). The same set of assets can generate different value in the hands of different firms. Thus, a subsidiary may possess intangible assets but without strong capabilities, it may fail to use its assets creatively to expand in a given market.

Institutional Development and Foreign Subsidiary Growth

Institutional development, or the extent to which institutions are established, varies significantly across countries (Chung and Beamish, 2005; Dikova and Witteloostuijn, 2007; Hitt *et al.*, 2004). Such development depends on both public and private institutions that may be both formal (such as laws) and informal (such as norms) (Peng, 2003). Public institutions are associated with property rights protection, judicial systems, political processes and government agencies (North, 1990; Williamson, 2000).

Institutional development thus influences the growth of foreign subsidiaries by affecting key dimensions of institutional voids such as 1) the availability of markets for resources, 2) market opportunities, 3) the cost of transacting in a market and 4) the regulatory and contractual framework in a given host country (Chan *et al.*, 2008; Estrin *et al.*, 2009b; Hoskisson *et al.*, 2013; North, 1990; Uhlenbruck, 2004).

For instance, regulatory institutions—the legal infrastructure and its enforcement in a given economy (Williamson, 2000)—influence the *protection* of intellectual property rights and increase the difficulty and cost of accessing the market when intangible assets are *bundled* with external resources. In transition economies, there is often a large discrepancy between the formal legislative framework and actual law enforcement (Roland and Verdier, 2003). These discrepancies reduce the effectiveness of the judicial system in settling contractual disputes and in appropriating economic rents and may thus limit subsidiary growth. Another source of inefficiency stems from the excessive involvement of government in private firms' operations. The arbitrary involvement of state officials increases uncertainty in the business environment and constrains the growth opportunities available to MNE subsidiaries by increasing the difficulty of accessing various markets and the cost of transacting in such environments. Similarly, weaker institutions of corporate governance (Bruton *et al.*, 2010; Estrin *et al.*, 2009a), ethics and accountability make external monitoring difficult and may negatively influence performance by increasing agency costs (Cuervo-Cazurra and Dau, 2009). Overall, such institutional challenges shape firms' behavior (Oliver, 1997), influence the internalization of certain functions (Buckley and Casson, 1976) and can accelerate or constrain the expansion of foreign subsidiaries.

Institutional Variations Across Transition Economies

Transition economies can be seen as a special sub-set of emerging economies that are characterized by a radical transition from formerly centrally planned economies towards market based systems (Hoskisson *et al.*, 2000; Wright *et al.*, 2005). Institutional transition involves fundamental changes and reforms that span political, legal and socioeconomic institutions (Danis *et al.*, 2010; Peng, 2003; Steensma *et al.*, 2005; Wright *et al.*, 2005; Xu and Meyer, 2013). Such reforms focus on 1) the development of various markets and 2) the enforcement of rules. Transition economies have gradually rejected central planning in favor of a market orientation and private ownership (Danis *et al.*, 2010; Steensma *et al.*, 2005; Uhlenbruck *et al.*, 2003). During the earlier stages of economic transition, governments focused on privatizing state assets and opening their markets to MNEs (Meyer, 2001). Governments then shifted their attention to institutional reforms that were considered necessary for building efficient market economies (Williamson, 2000). As a result, transition economies are seen as a “natural laboratory” for testing and advancing international business and management theories (Danis *et al.*, 2010; Meyer and Peng, 2005; Shinkle and Kriauciunas, 2010) and the institution-based view (Meyer and Peng, 2005; Peng *et al.*, 2008). Recent data show that on average, institutions in transition economies are less developed than those in Western countries (WEF, 2012). However, there remain significant institutional variations across transition economies. Institutional reforms in countries such as Serbia and Ukraine are still in their initial stages (EBRD, 2012; WEF, 2012). Institutions in such transition economies are less developed and are characterized by particularly high transaction costs, market imperfections and uncertainty. Conversely, other transition economies have more developed markets and more reliable, transparent and trustworthy institutions. For instance, institutional development in countries such as Poland and Estonia is much stronger than in many other transition economies and is closer to the institutional development of some developed countries (EBRD, 2012; WEF, 2012).

HYPOTHESES

Institutional Development and Intangible Assets

Although we concur with the view that subsidiary growth is a function of its intangible assets, we also argue that intangible assets and institutional development are complementary to one another in enhancing subsidiary growth (i.e., their joint interaction effects are positive). Although a prevalent view in the literature is that intangible assets may lead to firm expansion (Birkinshaw and Hood, 1998; Caves, 1971; Grant, 1987), the institutional environment may influence the rents that intangible assets generate (Oliver, 1997). We expect the effects of intangible assets on growth to be greater for foreign subsidiaries operating in environments with more developed institutions than for other subsidiaries that may have similar capabilities but operate in environments with a lower level of institutional development. Thus, even if two subsidiaries have the same level of capabilities, the usefulness of intangible assets in accelerating growth will differ when they operate in different institutional settings. In other words, we propose that institutional idiosyncrasies influence the growth-enhancing effects of firms' intangible assets (when all else, including their capabilities, is equal).

Our reasoning focuses on the premise that for a given level of firm capabilities, variations in three key dimensions of institutional voids (availability of markets for resources, market opportunities, and regulatory framework) affect potential opportunities for *bundling*, *exploiting* and *protecting* the intangible assets of the subsidiary (Huesch, 2013; Sirmon *et al.*, 2008; Teece, 1986; Teece *et al.*, 1997). Although these mechanisms are empirically indistinguishable, they help us understand why different levels of institutional development have different effects on the usefulness of intangible assets in a given institutional environment and therefore, on their role in accelerating subsidiary growth.

The starting point for the first mechanism (bundling) is the premise that the effects of intangible assets on enhancing subsidiary growth depend on their bundling with resources that can be found in the market (Delios and Beamish, 2001; Makadok, 2001; Rugman and Verbeke, 2001). Although asset bundling is important for enhancing subsidiary growth, complementary assets are not always readily available in the market (Sirmon *et al.*, 2008), particularly in less-developed transition economies (Hoskisson *et al.*, 2013). Although every country provides a range of institutions to facilitate the functioning of markets, less-developed institutions are characterized by misguided regulations, unreliable

information and inefficient judicial systems (Khanna and Palepu, 1997). Institutional development increases the set of potential opportunities and combinations (Wan, 2005). In contrast, institutional voids cause imperfections and failures in capital, technology and resource markets, and increase the difficulty of accessing complementary resources. This makes bundling less likely to occur, causes the underutilization of internal intangible assets and limits the effects of those assets on subsidiary growth.

Second, institutional development also influences the *exploitation* of a subsidiary's intangible assets. The availability of intangible assets is an important determinant of growth (Amit and Schoemaker, 1993; Caves, 1971; Delios and Beamish, 2001), but the exploitation of those assets depends on the opportunities available in the environment (Chatzkel, 2002; Penrose, 1959; Rugman *et al.*, 2011; Sirmon *et al.*, 2008). In transition economies with lower levels of institutional development, two interrelated factors associated with institutional voids (namely, fewer market opportunities and information asymmetries) decrease the exploitation and growth-enhancing effects of intangible assets. Indeed, intangible assets require a certain market and institutional infrastructure to help the firm grow. For example, e-commerce requires both established e-payment platforms and a strong regulative framework to coordinate the responsibilities of participating parties. Similarly, weak intermediaries make the collection and synthesis of information difficult (Khanna and Palepu, 1997), thus constraining new strategic moves in which intangible assets can be used. In turn, the limited use of intangible assets in different initiatives and stages of the value chain decreases economies of scope (Delios and Beamish, 2001) and consequently, the marginal effect of intangible assets on subsidiary growth.

The exploitation of intangible assets also depends on political institutions (Henisz, 2000). Transition economies with weaker institutions are characterized by corruption and favoritism in government decisions, thus affecting firms in sectors such as energy and telecommunications that require government permissions. Because such environments rely on non-market mechanisms (Galang, 2012; Wan, 2005), they erode the competitive advantages that intangible assets typically provide to the subsidiary. For example, when political and regulatory institutions are weak, government officials stand above the law (Frye and Shleifer, 1997; Galang, 2012), exert coercive pressures selectively depending on

the bargaining power of firms (Henisz and Zelner, 2005; Ramamurti, 2001), and may create obstacles to firms' expansion (Wang *et al.*, 2012). In contrast, when such institutions are more developed, asset-rich subsidiaries have stronger bargaining power because of the benefits (e.g., technological spillovers and employment) that they bring to the host country (Buckley *et al.*, 2007) and therefore are more likely to receive the support and legitimacy needed for expansion.

The third mechanism that influences the relationship between intangible assets and subsidiary growth depends on how well the regulatory framework (e.g., contract enforcement and intellectual property rights law) *protects* intangible assets (Kafouros *et al.*, 2012; Khanna and Palepu, 1997). Intangible assets such as technology, product designs and trademarks are typically protected from imitation through legal means. In contrast, weaker regulatory institutions make the protection of intangible assets more challenging and time consuming. They also increase transaction and licensing costs (Henisz, 2000), the cost of contract enforcement (particularly in the cases of disputes) and therefore, the effect of intangible assets on firm expansion. Similarly, a weaker constitution does not help a subsidiary to protect its assets and to avoid opportunistic behavior and corrupted politicians when it engages in joint ventures and other collaborative agreements with domestic partners and state-owned enterprises (Abdi and Aulakh, 2012; Wan, 2005). In contrast, because intangible assets are less likely to be imitated in transition economies with more efficient regulatory and judicial systems, they help foreign subsidiaries to accelerate their growth.

In summary, building on the above three mechanisms (bundling, exploiting and protecting), we hypothesize that all else being equal, the role of intangible assets in enhancing growth will be greater in environments with stronger institutions and less important or even insignificant in environments with less-developed institutions:

Hypothesis 1: The greater the institutional development in a given transition economy, the stronger the role of the subsidiary's intangible assets in enhancing its growth.

Institutional Development and Subsidiary Capabilities

The first hypothesis predicts that stronger institutional development enhances the effects of intangible assets on subsidiary growth. We suggest that the opposite occurs in the case of capabilities. We argue that subsidiary capabilities compensate for weak institutional development and we thus expect their joint interaction effects on subsidiary growth to be negative. Once again, the causal logic here rests on the combination of resource-based and institutional thinking. Variations in key dimensions of institutional voids (the availability of markets for resources, transaction costs and the regulatory framework) influence (1) the extent to which subsidiaries have to rely on their capabilities and (2) the competitive advantage that capabilities may provide to subsidiaries.

The first mechanism rests on the premise that the extent to which subsidiary capabilities matter increases when transition environments are characterized by weaker institutional development and limited market reforms (Estrin *et al.*, 2009b; Wan, 2005). This prediction is supported by Khanna and Palepu (1997), who show that when significant institutional voids exist, the winners in the market are those firms that can efficiently perform various functions internally. Similarly, international business theory suggests that the benefits of internalization are higher in countries that are characterized by imperfections in technology, capital and resource markets (Buckley and Casson, 1976). In institutionally weaker transition economies, the role of subsidiary capabilities is more important to compensate for insufficient markets and inefficiencies in the institutional framework (Abdi and Aulakh, 2012; Estrin *et al.*, 2009b; Wan, 2005). For example, recent empirical evidence from emerging countries shows that when subsidiaries are confronted by higher risks and weaker external institutions, they increase their reliance on internal operations and networks (Feinberg and Gupta, 2009). Similarly, this argument is supported by the view that subsidiaries in host countries develop capabilities in response to location-specific institutional inefficiencies and market imperfections (Asmussen *et al.*, 2009; Birkinshaw and Hood, 1998; Frost *et al.*, 2002; Rugman and Verbeke, 2001).

In contrast, market reforms and the better availability of markets for resources gradually reduce reliance on internal capabilities and enable firms to externalize certain functions (Jacobides and Winter, 2005; Weigelt, 2013). Although internal capabilities—embedded as they are within organizations—

cannot be easily transferred (Teece *et al.*, 1997), firms can still access some of the expertise and services (e.g., engineering and IT consulting) that comprise these capabilities when such services are more readily available in external markets (Taussig and Delios, 2014; Weigelt, 2013). Such benefits are stronger when the regulatory framework increases the reliability of contractual agreements and offers better intellectual-property protection. Indeed, firm boundaries depend on transaction costs that are largely determined not only by market characteristics such as complexity and uncertainty but also by the reliability and effectiveness of regulatory institutions in enforcing contracts (Williamson, 2000). Therefore, a richer set of opportunities—along with a more supportive and reliable regulatory framework for using such opportunities—increases both the willingness and ability of foreign subsidiaries to access intermediate services and functions from the market (Taussig and Delios, 2014). Because these opportunities reduce subsidiaries' dependence on internal capabilities, we expect the marginal performance effects of internal capabilities to also decrease.

The second proposed mechanism concerns how the level of institutional development influences the competitive advantages that capabilities provide to the subsidiary and therefore, their effects on growth. We argue that although the competitive advantages that internal capabilities generate will be significant in less-developed institutional environments, the (comparative) strength of these advantages will weaken in institutionally stronger transition economies. As the institutional environment develops and reforms are implemented, external markets become more efficient and the availability of services and expertise increases (Khanna and Palepu, 1997). Thus, not only the subsidiary but also its competitors will have the opportunity to access new services, functions and expertise from outside (Weigelt, 2013). As a result, the subsidiary's capabilities will become less rare and distinctive and the firm will begin to lose its competitive position because some of its rivals that might not possess strong internal capabilities will have the option of using the market to compensate for those competitive disadvantages. This argument is reinforced by evidence suggesting that although some foreign subsidiaries rely on their own capabilities, other firms rely on institutional infrastructure and external networks (Hoskisson *et al.*, 2000). Additionally, as discussed above, transition economies with more developed institutions not only increase

the availability of such external opportunities but also make access to such services and expertise both easier and more reliable by providing tighter contractual enforcement (Wright *et al.*, 2005). Overall, this will decrease the relative usefulness of the subsidiary's internal capabilities and therefore, the marginal effects of capabilities on subsidiary growth.

In summary, the benefits of internalizing activities will be higher when external resource markets and the regulatory framework are less developed and transaction costs are high, and vice versa. Thus, whereas the role of capabilities in enhancing growth will be stronger in environments with less-developed institutions, we expect such contributions to be weaker when institutional regimes are more developed:

Hypothesis 2: The greater the institutional development in a given transition economy, the weaker the role of the subsidiary's capabilities in enhancing its growth.

DATA

To test our hypotheses, we need subsidiary-level data for several years and country-level data on the development of institutions in transition economies. To collect subsidiary-level data, we used the Amadeus database (provided by the Bureau van Dijk). Amadeus provides comprehensive financial and ownership data on companies in Europe, enabling cross-country comparisons. All of the financial data are expressed in Euros. To identify MNE subsidiaries, we searched for firms with more than 50% foreign ownership. The justification for this choice is that an ownership share that is more than 50% ensures that these firms are indeed MNE subsidiaries and avoids capturing the MNE's portfolio investments. It also makes more likely that the parent firm will transfer some assets to these affiliates.

We identified a sample that covers 14 countries in Central and Eastern Europe (CEE) and 85 two-digit industries (NACE classification). The variation in the CEE countries that comprise our sample accounts for two-thirds of the total variation for the entirety of Europe (i.e., both developed and transition economies). We selected our sample by identifying firms that reported key financial indicators and that were at least 50% owned by a foreign company. Because our analysis focuses on subsidiaries, we also ensured that our sample includes only unconsolidated¹ subsidiary-level data. These criteria resulted in an unbalanced panel dataset of 6,321 firms for 2003-2011 (40,512 observations). To calculate subsidiary

growth, we kept only firms with revenues reported for at least two consecutive years. This slightly reduced the size of the dataset to 33,764 observations. We also removed outliers with extreme values in our dependent variable (i.e., with a tenfold year-on-year sales growth or decline). This resulted in a further decrease of 61 observations. Accordingly, we ended up with 33,703 observations for 6,295 firms.

Table I provides information on the distribution of firms by countries. Foreign subsidiaries in our sample are well distributed across countries. We estimate the empirical models using two samples. Sample 2 is a subsample of Sample 1 that contains only foreign subsidiaries for which data on the parent firm were available. This sample enables us to control for the parent firm's influences. The two samples are similar in terms of growth rate and institutional development (Table II provides descriptive statistics). Of 4,362 parent MNEs, 778 had two or more subsidiaries in our sample; 628 of those had subsidiaries in more than one country. The top three MNEs were E.ON, Strabag and Siemens with 28, 24 and 21 subsidiaries, respectively.

--- Insert Table I and Table II about here ---

METHODS

Dependent Variable

Because our hypotheses focus on subsidiary growth, we employed each subsidiary's annual sales growth to capture its expansion in each given year. Sales growth is a commonly used performance measure (e.g., Peng, 2004; Uhlenbruck, 2004). Growth is important in the context of transition economies because it is directly influenced by a subsidiary's ability to adapt to the institutional context of its host country and to deploy its assets and capabilities to expand (Hoskisson *et al.*, 2000; Uhlenbruck, 2004).

Annual sales growth is calculated as $\Delta S_t = \frac{S_t - S_{t-1}}{S_{t-1}}$, where S stands for annual subsidiary sales and the subscript t denotes time. Because sales growth can have both positive and negative values, we use the inverse hyperbolic sine transformation, rather than the traditional logarithmic transformation, to normalize the dependent and independent variables (Burbidge *et al.*, 1988). The inverse hyperbolic sine transformation has gained popularity for its effectiveness in handling negative values while both

improving the normality of the data and down-weighting extreme values (Burbidge *et al.*, 1988; Nyberg *et al.*, 2010). In the robustness tests section, we also consider a profitability measure of performance.

Independent Variables

Intangible assets and subsidiary capabilities

Following the practice typically used in other studies (Chang *et al.*, 2013a, 2013b; Denicolai *et al.*, 2014; Filatotchev and Piesse, 2009; Wei and Liu, 2006; Zhang *et al.*, 2014), we construct a measure of the *Intangible Assets* possessed by foreign subsidiaries using the book value of intangible assets² as reported in each subsidiary's balance sheets.³ An alternative operationalization for intangible assets is to use the firm's R&D and advertising expenditures (e.g. Berry, 2006; Delios and Beamish, 2001). However, it would be too restrictive to use R&D and advertising spending in the context of foreign subsidiaries because that spending does not capture intangible assets, such as licenses and technologies that are developed by the MNE groups elsewhere and transferred to their subsidiaries (Chang *et al.*, 2013b). Therefore, the book value of intangible assets is an appropriate operationalization of the intangible assets possessed by a subsidiary. This measure is less restrictive because it includes all intangible assets, including not only those transferred from the parent MNE but also those acquired or developed in the host country. Rather than using absolute values, we estimate a measure of intangible assets per employee. This approach is consistent with the operationalization used in the literature and normalizes the measure for firm size (Wang *et al.*, 2012). To check the robustness of our results to different ways of normalizing for size, we also used fixed assets and total assets for this estimation. As expected, the measure of intangible assets is positively correlated with product diversification (0.14) and parent country development (0.33).

Capabilities rely on firm-specific processes and routines that are difficult to observe and therefore, to measure. Prior studies measure firm capabilities using two distinct methods. The first research stream uses surveys or interviews to examine managers' perceptions about their firms' capabilities (Gudergan *et al.*, 2012; McEvily and Chakravarthy, 2002). The benefit of this perceptual measure is that it can help researchers identify the different types of capabilities possessed by each firm.

One of its limitations is that it is difficult to use when the sample is composed of a very large number of firms and the analysis requires longitudinal data. The second research stream measures capabilities (often different types of capabilities, e.g., innovative, marketing and productive capabilities) by looking at how good each firm is at using various inputs to achieve certain outputs (e.g. Blalock and Simon, 2009; Jacobides and Hitt, 2005; Wang *et al.*, 2012). The key benefit of this approach is that it avoids tautological operationalizations by keeping capabilities independent of their rent-generating ability (see Dutta *et al.*, 2005). Because our analysis uses more than 33,000 observations and rests on the definition that subsidiary capability is the efficiency with which a firm converts its assets into desired outputs (Amit and Schoemaker, 1993; Dutta *et al.*, 2005), we use the method employed in the second research stream.

Prior research on the measurement of firm capabilities notes that “since capabilities are an intermediate step between resources and outputs, one can hope to *see* the inputs that a firm uses and the outputs it achieves, but one can only *infer* its abilities in converting one to the other” (Dutta *et al.*, 2005, p. 278). Following a large number of previous studies (Coe and Helpman, 1995; Dutta *et al.*, 2005; Jacobides and Hitt, 2005; Wang *et al.*, 2012), we estimated a “residual” that captures increases in outputs that cannot be explained by variations in inputs using the following formula: $\text{Capabilities} = \frac{Q}{f(X;\hat{\beta})}$, where Q stands for the subsidiary’s output (Value Added); the denominator represents a function with the vector of inputs (assets) X and the estimated parameters $\hat{\beta}$. This residual, which is commonly used in the strategic management literature to capture the concept of capabilities (see Dutta *et al.*, 2005 for a review), is based on the notion of Solow’s residual and multifactor productivity in economics. What this residual really captures is variations in a subsidiary’s capability to transform and generate value from a given set of inputs (assets). In other words, it is an aggregate measure of subsidiary capability spanning the entire value chain of firm activities, ranging from technology and production processes to advertising and organizational routines. Thus, although two subsidiaries may possess exactly the same assets, one of the two may be able to generate more value because it possesses stronger capabilities.

In our study, the vector of inputs X consists of three key types of assets (inputs): tangible assets, human assets and intangible assets (Wang *et al.*, 2012). We measure tangible assets using the subsidiary's tangible fixed assets. The term 'human assets' is measured using the number of employees or the cost of employing them (to control for labor cost differences across countries). A measure of intangible assets is sourced from each subsidiary's reported intangible assets (a measure of intangible assets is needed to ensure that the measure of *capability* captures a firm's ability to combine such assets, rather than the direct contribution of intangible assets). Furthermore, building on prior studies (Chen *et al.*, 2015; Coe and Helpman, 1995; Kafouros *et al.*, 2012), we operationalized output using 'value added'. The benefit of value added is that it captures a firm's output in terms of sales while controlling for the raw materials and intermediate inputs that the firm is using to achieve a given level of output. This approach not only enables us to control for additional inputs but also helps us avoid biases associated with the fact that at different levels of outputs, there may be scale economies in the use of inputs. The estimated capability function also includes year-specific dummy variables to account for exogenous shifts in technological development. Overall, therefore, the estimated capability function can effectively capture variations in output not explained by variations in the level of inputs. Table II shows that the correlation between intangible assets and capabilities is particularly low (0.09 for sample 1 and 0.08 for sample 2), confirming that they are two distinct constructs that are not necessarily strongly associated (Hall, 1992, 1993).

Institutional development. To measure the level of institutional development and how it evolves over time, we need an indicator that reflects the quality of institutions in each host country over several years. We follow prior studies (e.g., Shaner and Maznevski, 2011) and use the measure of quality of institutions provided by the World Economic Forum (WEF) in its Global Competitiveness Reports. The report is issued every year and the indicators are updated annually (Table I shows how these institutional indicators change over time).⁴ The WEF measure of institutional development relies on the weighted combination of various aspects of institutional development, capturing not only formal and informal but also public and private institutions. The WEF report (WEF, 2012, p. 46) provides detailed information about the components of the measure of institutional development and their weights used by WEF in

constructing the indicator. Although our main analysis relies on the WEF weights, we also conducted principal component analysis for comparison purposes (discussed in the robustness tests section).

Control variables. We further control for subsidiary-specific characteristics. First, we control for *subsidiary age*, measured as the number of years since the establishment of the subsidiary. This may account not only for the fact that experience is accumulated over time but also for the fact that new entrants and established firms are likely to experience different annual growth. Second, to control for *subsidiary size*, we include the number of employees. Third, previous research suggests that *product diversification* influences firm performance (Miller, 2006). In the context of subsidiary growth, MNE subsidiaries with more diversified product portfolios have more opportunities to reach out to a larger group of customers than do less diversified firms. Thus, we include the number of product segments⁵ to account for product diversification.

Furthermore, the subsidiaries in the sample are owned by parent MNEs. Although the accounts of the subsidiary reflect the transfer of assets from the parent to the subsidiary, we further control for various parent-firm characteristics that may influence subsidiaries' performance. First, we control for Parent Firm Industry Relevance by specifying a dummy variable that takes the value of 1 if the parent firm and the subsidiary operate in the same two-digit NACE industry. Second, we follow Chan *et al.* (2008) and control for parent firm size (Chan *et al.*, 2008; Penrose, 1959). We use two alternative measures of parent firm size, parent firm Total Assets and parent firm Sales⁶. Third, MNEs originating from developed countries are likely to operate and adapt to transition economies differently than do MNEs originating from emerging economies (Wang *et al.*, 2009). Therefore, the model includes a dummy variable (*parent country development*) that equals one if the MNE home country is an advanced economy in the IMF World Economic Outlook report. Finally, we include a set of parent-firm, country-specific dummy variables to account for the effects of the country of origin (Wang *et al.*, 2009).

In addition to subsidiary- and parent-firm-specific characteristics, subsidiary growth might also be affected by a firm's choice to enter a particular country and industry. Accordingly, we control for a number of country and industry-specific attributes. To account for the fact that subsidiary growth is

affected by the competitive intensity of a given industry and country, we calculate the Herfindahl index for each country-industry-year combination (at the four-digit industry level). Furthermore, subsidiary growth might be influenced by market power. To control for this effect, we estimated the market share of the subsidiary as a firm-to-industry sales ratio in each year⁷. To control for country- and industry-specific idiosyncrasies that may not be captured by the above control variables, we include country and industry dummy variables⁸. We also use year-specific dummy variables to control for time trends in the data.

Estimation Method

Although the correlations among the independent variables are low (see Table II), we use mean-centered interaction terms to avoid multicollinearity problems (Aiken and West, 1991). To select between Random Effects (RE) and Fixed Effects (FE), we considered both theoretical and empirical reasons. Theoretically, the RE approach fits our model better because cross-country institutional variation is higher than within-country variation. However, RE models are valid only under the assumption that firm-specific effects are not correlated with the idiosyncratic error terms. Because the Hausman specification test was inconclusive (it resulted in a non-positive definite matrix of differences in coefficients), we report both the RE and FE results. While we primarily rely on the Generalized Least Squares (GLS) estimation, we also employ alternative estimation methods to check the robustness of our results.

RESULTS

Table III reports the regression results. All of the models return high levels of χ^2 and F values, rejecting the null hypothesis of model misspecification at the 0.1% level. The values of R^2 vary across models but remain at acceptable levels. Table III reports group clustered Huber-White standard errors that are robust to heteroskedasticity and intra-group correlation of the error terms (Wooldridge, 2002). Model 1 includes only the direct effects of subsidiary capability, intangible assets and control variables. Model 2 introduces the direct effect of the institutional development variable, whereas in Models 3 and 4, we interact subsidiary capabilities and intangible assets with institutional development. Model 5 incorporates both interactions together.

The direct effect of intangible assets is statistically significant at the 5% level in the base models but loses its significance in some of the models after the introduction of interaction terms, implying that the direct effect is not always strong. The direct effect of subsidiary capability is significant at the 0.1% level throughout the estimated models (Models 1 to 5), indicating that on average, firms that are more capable can grow more quickly. The interaction effect between institutional development and firm intangible assets is positive and statistically significant (Models 3 and 5). This finding supports H1, suggesting that the role of intangible assets in enhancing MNE subsidiary growth is stronger in environments that exhibit a higher level of institutional development. Interestingly, although the literature often presumes that foreign subsidiaries can compete in new markets because they deploy their intangible assets, our findings suggest that the contribution of such assets to firm growth is either very small or insignificant in transition economies with less-developed institutional environments.

--- Insert Table III about here ---

Figure 1a presents the marginal effects of intangible assets on firm growth at different levels of institutional development. The vertical axis shows the marginal effect of intangible assets on firm growth and the horizontal axis shows the level of institutional development (the figure also includes the 95% confidence intervals). This figure confirms that institutional development moderates the effect of intangible assets on firm growth. The confidence intervals show that at low levels of institutional development, the effect of intangible assets on subsidiary growth is statistically insignificant. Hence, a certain level of institutional development is needed in order to benefit from intangible assets.

--- Insert Figures 1a and 1b about here ---

The results differ significantly when the interaction between institutional development and subsidiary capability is considered, yielding a negative coefficient. This corroborates H2 and confirms that a subsidiary's capabilities are particularly influential in improving its growth in less-developed institutional environments. As Figure 1b shows, the effect of capabilities is strongest at lower levels of institutional development, and this effect declines as institutions develop. It also shows that at higher levels of institutional development, the contribution of subsidiary capabilities to firm growth loses its

statistical significance. This suggests that firms that do not possess strong capabilities have a better chance of growing in institutionally developed environments because they do not have to use solely internal capabilities, but can rely on the external provision of such services.

One concern is that the possible correlation between Sales and Value Added (used as output in the capability measure) may lead to endogeneity. To address this issue, we use a two-stage fixed effects Instrumental Variable (2SLS) approach (Wooldridge, 2002). We use factor prices as instruments for the capability measure; the firm-specific average cost of labor per employee (overall cost of labor divided by the number of employees) and the average cost of capital (interest paid divided by current and long-term liabilities). We expect these instruments to be both *relevant* and *valid* because microeconomic theory has established that factor prices influence firms' resource deployment decisions and because factor prices are exogenously influenced by market forces (e.g. Gravelle and Rees, 2004). However, we also used the F test of excluded instruments to confirm the relevance of the instruments. Furthermore, we undertook the test of overidentifying restrictions to test the validity (i.e., exogeneity) of the instruments (Wooldridge, 2002). The Hansen–J statistic of overidentifying restrictions confirmed the validity of the instruments. The 2SLS approach involves using valid instruments to predict a proxy for the endogenous regressor and using the predicted value in the second stage (Wooldridge, 2002). The results of the 2SLS approach in Models 6 and 7 (first and second stage equations respectively) confirm the hypothesized relationships.

Robustness Tests and Additional Analyses

First, to examine whether our results are influenced by the weights that WEF gave to the 22 components of institutional development (WEF, 2012, p. 46), we conducted principal component analysis and estimated the model with the first principal component. To ensure that our results are not the outcome of a specific way of measuring institutional development, we also replaced the WEF GCI scores with the World Bank Worldwide Governance Indicators (WGI) (Models 8-14 are reported in the supplementary Table S1). Next, because our operationalization of capabilities relies on human capital, labor cost variations across countries may bias the results. We thus re-estimated subsidiary capabilities using labor costs instead of the number of employees. All these new results corroborated our initial findings.

Second, we examined the sensitivity of our results to changes in the estimation method. We re-estimated the main model (Model 5) using the Maximum Likelihood Estimation (MLE) (Model 9), the Generalized Estimating Equation (GEE) (Model 10) and the Fixed-Effects methods. These alternative estimation methods confirmed our initial findings. Third, we experimented with profitability measures of performance (return on sales, ROS) as our dependent variable (Model 11). Although ROS reflects a different aspect of performance, it is noteworthy that this analysis yielded results similar to those presented in the previous section⁹. Next, we used Sample 2 to control for parent-firm effects such as industry relevance and firm size. Model 12 relies on the parent firm's total assets to measure firm size, whereas Model 13 uses parent firm sales, as suggested by Chan *et al.* (2008). The new results once again corroborated the hypotheses.

Fifth, we considered the possibility of sample selection bias (Heckman, 1979). The raw dataset included subsidiaries that did not report their intangible assets. Although this represents a small part (only 22 percent) of the dataset, we examined whether subsidiaries that did not report intangible assets differ from the subsidiaries included in our sample by estimating Heckman's correction model (Heckman, 1979). In addition to firm-specific controls, we specified host-country institutional development, international openness (Dhanaraj and Beamish, 2009) and the subsidiary's prior return on investment¹⁰ as determinants of intangible assets. The results of the Heckman model (Model 14) support the hypotheses, suggesting that our findings are not influenced by selection bias.

Furthermore, we empirically investigated the interaction between intangible assets and capabilities. It is commonly assumed that intangible assets and capabilities have a complementary or synergistic relationship (Huesch, 2013), which implies that the possession of intangible assets might improve the capability of using them. To test this argument, we interacted intangible assets and firm capability. This analysis yielded a negative joint effect (-0.01 at the 1% significance level), suggesting that intangible assets and capabilities do not actually have a synergistic relationship (Holcomb *et al.*, 2009; Huesch, 2013). Finally, we created lagged measures (one year) of the variables and re-estimated the results. Once again, the results remained similar and confirmed the above interpretations.

DISCUSSION AND CONCLUSION

Theoretical Implications

First, prior studies often assume that the level of institutional development in a host country influences all foreign subsidiaries in a similar way. The empirical analysis of more than 33,000 observations in 14 transition economies challenges this assumption. It indicates that the effects of institutional development on MNE subsidiary growth are not uniform but instead depend on the subsidiary's intangible assets and capabilities, thus implying that significant boundary conditions exist on such effects. Research on subsidiary evolution suggests that subsidiaries change their capabilities according to the host-country environment (e.g. Birkinshaw and Hood, 1998; Frost *et al.*, 2002). Our study complements this research stream by showing how key institutional dimensions of this environment influence (1) the extent to which subsidiaries have to rely on their own capabilities, (2) the comparative advantage that internal capabilities may provide to subsidiaries and (3) the effects of such capabilities on subsidiary performance. Our contribution lies in theorizing and documenting the mechanisms through which the growth-enhancing effects of intangible assets and capabilities of MNE subsidiaries are influenced (differently) by the host country's institutional development. This enables us to consider why certain institutional conditions may be more or less beneficial to subsidiaries and to explain why some subsidiaries grow more quickly in less-developed institutional environments, whereas others grow more quickly in countries with more developed institutions.

Second, our study contributes to recent research that highlights the role of local institutions in affecting performance (Meyer *et al.*, 2011; Ngobo and Fouda, 2012) but does not examine how the growth-enhancing effects of intangible assets and capabilities are affected by such institutional contexts. We demonstrate that although the performance-enhancing effects of intangible assets increase with the development of institutions, the opposite is true for the marginal effects of subsidiary capabilities (i.e., their usefulness is lower in countries where institutions are more developed). The empirical analysis therefore reveals that while institutions and the subsidiary's intangible assets complement each other in enhancing its growth, its capabilities may compensate for inefficient institutions. By showing that

institutional consequences do not apply equally to all foreign subsidiaries, the results partly explain why prior evidence concerning the performance effects of institutions is conflicting. Furthermore, although our findings imply that institutional changes may lead to rent redistribution (North, 1990), they do not support the view that subsidiary performance will be lower in institutionally weaker host countries and higher in countries with more developed institutions. In fact, the *direct* effect of institutional development on the growth of the 6,295 subsidiaries of our sample is statistically insignificant and, with one exception, this finding remains consistent across different samples, specifications and estimation techniques.

Third, an implicit assumption in the resource-based literature is that intangible assets and capabilities are always desirable and beneficial. Our findings challenge this view, showing that the contribution of intangible assets to subsidiary growth is very little or even insignificant in host countries with weaker institutions. However, in countries that are institutionally less developed, subsidiaries with strong capabilities can overcome the challenges associated with weaker institutions and can expand more easily. Nevertheless, as institutions develop, the usefulness of subsidiary capability declines. In contrast, as more developed institutions improve the potential opportunities for *bundling*, *exploiting* and *protecting* a subsidiary's intangible assets, the growth effects of intangible assets become crucial. This evidence suggests that foreign subsidiaries engage in institutional arbitrage (Khanna and Palepu, 1997), but differ in their ability to manage institutional idiosyncrasies (Chan *et al.*, 2008). These asymmetric moderating effects also have implications for theory on firm performance and international business, implying that privileged resource positions do not always lead to the same performance outcomes. Although this finding does not contradict the premise that MNEs expand abroad by internalizing their advantages in host countries (Buckley and Casson, 1976; Delios and Beamish, 2001), it suggests that different firm advantages are necessary depending on the institutional environment of the given country.

Managerial Implications

Because our findings explain why foreign subsidiaries can differentially overcome institutional challenges and expand in a given market, their first practical implication concerns how MNE subsidiaries manage their distinctive assets and capabilities in different institutional contexts around the world.

Although our findings do not contradict the typical view that intangible assets may lead to superior performance, they show that the effectiveness of such assets in enhancing performance is limited when the host-country environment is characterized by weaker institutions. When managers make decisions about the allocation and transfer of assets within the portfolio of subsidiaries, they should consider that the growth-enhancing effects of such assets increase with the improvement of the host country's institutional environment. This means that subsidiary performance depends on how well managers understand how the firm's intangible assets and host country institutions interact with one another. The transfer of intangible assets to subsidiaries is more useful in more developed institutional environments.

In contrast, it seems that the relative role of capabilities in explaining subsidiary expansion is actually stronger in countries with less-developed institutional environments (e.g., Ukraine and Serbia). This finding suggests that because the development and transfer of capabilities require costly investments, the marginal effects of such investments are likely to be less significant in markets with more developed institutions. In other words, MNEs that locate their subsidiaries in institutionally less-developed environments reap a greater benefit from subsidiary capabilities than do their counterparts that establish subsidiaries in transition economies in which institutions are stronger (e.g., Estonia and Hungary).

Because intangible assets and capabilities are not equally beneficial in all host countries, managers need to ask not whether overseas subsidiaries can expand in a given market but under what conditions they can do so. Even if two MNE subsidiaries possess similar assets and capabilities, their location—and therefore, the institutional environment in which they operate—may differ considerably. These institutional variations influence how far each subsidiary can exploit its advantages and may result in different expansion outcomes for each firm. Locating subsidiaries in institutionally developed markets will not guarantee faster expansion. Equally, the MNE will not necessarily be worse off when it is locating its subsidiaries in weak institutional markets.

Limitations and Future Research

First, because institutional change in some transition economies may be discontinuous and drastic (Chan *et al.*, 2008; North, 1990), the institutional indices may not fully capture such changes.

Furthermore, the measurement of institutions in our study rests upon various surveys and datasets. Although the validity of these sources has been established in previous studies, such surveys and data may still contain sampling and measurement biases (Chan *et al.*, 2008). Second, our institutional development measures do not capture differences across subnational regions (Ma *et al.*, 2013). By treating each country as a single location, we implicitly assume that formal and informal institutions are similar across all regions. Because important within-country variations exist (Wang *et al.*, 2012), future research should examine how subnational institutional differences influence the results.

Additionally, although our analysis captures variations across 14 countries, it is limited to the context of transition economies. Future research should examine whether our findings hold when countries other than transition economies are investigated. In addition, our analysis focused on vertical institutional differences (i.e., lower or higher levels of institutional development) as opposed to horizontal differences (i.e., liberal versus coordinated) that are discussed in the varieties of capitalism literature (Feldmann, 2006; Hall and Soskice, 2001; Lane and Myant, 2007). Consideration of such horizontal differences may enable future studies to explain why in two countries with the same level of institutional development, institutions might still influence the performance of foreign subsidiaries differently.

Third, we did not control for the entry mode (e.g., greenfield or acquisition) of the subsidiary. Because the firm's entry mode may influence its performance and how well it can respond to institutional pressures, future research should incorporate such variations in its design. In addition, although we took into account some of the characteristics of the parent firm, other studies should control for the different intangible assets and capabilities of the parent firm and potential transfer of knowledge and assets to subsidiaries. Finally, we demonstrate how a firm's intangible assets and capabilities and different types of institutions jointly influence subsidiary growth, but we do not consider how other location-specific characteristics, such as the availability of scientific talent or affiliation with government, may help the subsidiary to exploit its assets and grow (Kafouros *et al.*, 2012). Similarly, although our study examines the role of the firm's capabilities in their entirety, future research can look at the effects of different types of capabilities, such as marketing and technological capabilities.

NOTES

¹ Amadeus provides group-level consolidated accounts and unit-level unconsolidated accounts.

² According to International Accounting Standards (IAS) 38, intangible assets include “scientific or technical knowledge, design and implementation of new processes or systems, licenses, intellectual property, market knowledge and trademarks (including brand names and publishing titles). Common examples of items encompassed by these broad headings are computer software, patents, copyrights, motion picture films, customer lists, mortgage servicing rights, fishing licenses, import quotas, franchises, customer or supplier relationships, customer loyalty, market share and marketing rights” (IAS 38, §9). Intangible assets must fulfill three criteria: identifiability, control over a resource and existence of future benefits (IAS, §10). They are measured as “costs incurred initially to acquire or internally generate an intangible asset and those incurred subsequently to add to, replace part of, or service it” (IAS 38, §18).

³ We also considered cross-country differences in the accounting rules of measuring intangible assets. We used the “Survey of National Accounting Rules Benchmarked against International Accounting Standards” that identifies the extent to which accounting systems in 62 countries deviate from IAS rules. Accounting rules in most countries allow capitalization of some research costs as they are incurred, whereas IAS rules allow recognition of all research costs as intangible assets only after the project is completed. Such differences are minor and do not distort the measures.

⁴ The WEF institutional scores are normalized to range between 1 and 100.

⁵ The number of two-digit level primary NACE industry codes.

⁶ Chan *et al.* (2008) use the parent firm Sales. However, because the parent firm Total Assets is an equally good measure of parent firm assets, we use both measures in two models to ascertain the robustness of the results.

⁷ The Herfindahl Index and Market Share variables use the sales of both domestic and foreign firms.

⁸ Industry defined as the NACE two-digit level; 85 industries are represented in our sample.

⁹ Because of the direct negative coefficient of intangible assets, we used the *margins* command in Stata to calculate the margins at the mean value of intangible assets and at the institutional development scores of 42 and 72, which returned the margins of 0.94 and 1.20 respectively.

¹⁰ International openness is measured by the “Trade Freedom” indicator (Heritage Foundation) that considers trade, government interventions and restrictions on quantities, prices, regulations, investment and customs.

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--- TABLES AND FIGURES ---

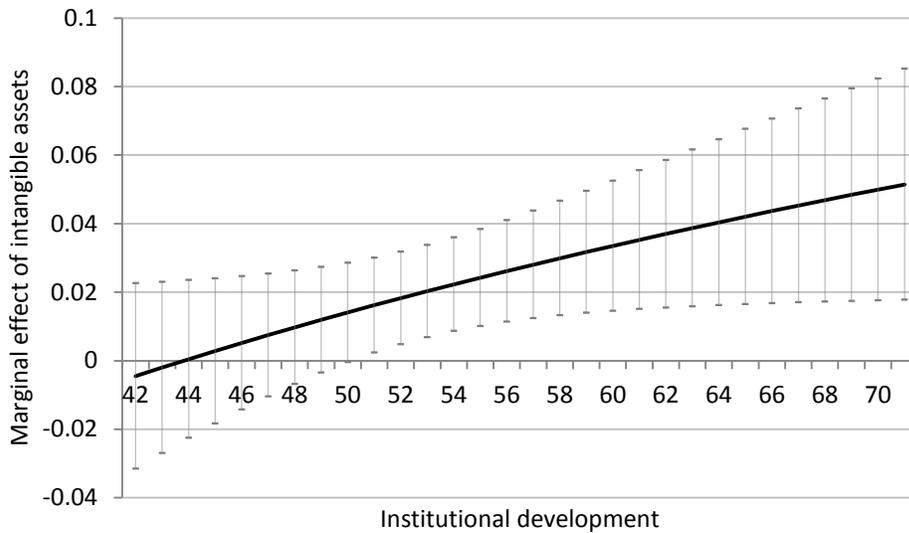


Figure 1a. Marginal effect of intangible assets on subsidiary growth at different levels of institutional development

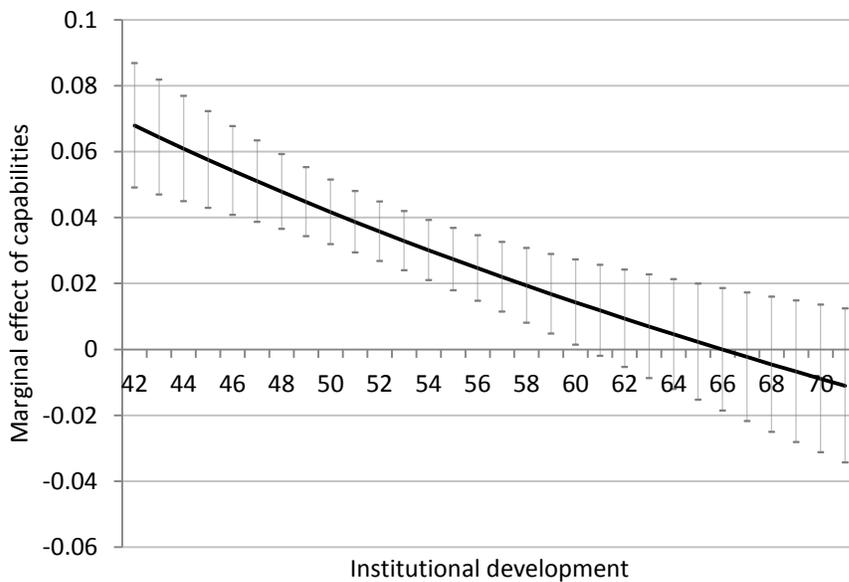


Figure 1b. Marginal effect of subsidiary capabilities on subsidiary growth at different levels of institutional development (Note: When drawing the figures, the coefficients were recalculated to take account of mean centering.)

TABLE I
Distribution of firms in the sample by countries

Country	Sample 1	Sample 2	Institutional development scores		
			2003	2007	2011
Bosnia and Herzegovina	133	78	43.57	43.69	51.95
Bulgaria	263	165	43.61	46.87	48.43
Czech Republic	1224	976	55.55	55.27	52.37
Estonia	105	87	66.67	69.22	70.56
Croatia	234	184	51.62	54.55	50.35
Hungary	399	363	60.21	56.28	52.79
Latvia	15	13	56.56	57.91	57.34
Montenegro	9	6	52.71	58.08	62.60
Poland	1269	915	52.04	51.82	58.78
Romania	1152	674	47.37	51.81	47.58
Serbia	278	180	48.17	48.54	45.13
Slovenia	173	134	60.86	62.80	57.82
Slovakia	292	241	56.80	55.05	49.17
Ukraine	749	226	44.83	46.51	44.75
Total (firms)	6295	4242			

TABLE II
Descriptive statistics[†] and correlations*

Sample 1

Variables	Mean	S. d.	1	2	3	4	5	6	7	8	9
1 Annual growth	0.42	2.68									
2 Institutional development (1-100)	52.10	5.41	-0.10								
3 Intangible assets (thousand EUR)	11.65	417.26	0.01	0.10							
4 Subsidiary capability	0.06	1.76	0.04	0.07	0.09						
5 Firm age (number of years)	14.39	14.52	-0.28	0.10	-0.02	-0.04					
6 Product diversification ^a	2.63	2.68	-0.06	0.14	0.04	0.02	0.04				
7 Number of employees	498.75	1470.46	-0.08	-0.13	-0.15	-0.23	0.21	0.04			
8 Herfindahl index	0.31	0.27	0.02	0.01	0.10	-0.07	0.01	0.07	0.05		
9 Market share	0.23	0.29	0.00	0.04	0.10	-0.01	0.07	0.09	0.19	0.79	
10 Parent country development ^b	0.83	0.38	-0.02	0.33	0.04	0.07	0.01	0.11	-0.03	-0.01	0.04

Sample 2 (22547 observations)

Variables	Mean	S. d.	1	2	3	4	5	6	7	8	9	10	11
1 Annual growth	0.41	2.67											
2 Institutional development (1-100)	53.10	5.08	-0.11										
3 Intangible assets (thousand EUR)	15.33	508.99	0.01	0.04									
4 Subsidiary capability	0.15	1.72	0.02	0.03	0.09								
5 Firm age (number of years)	14.37	14.03	-0.30	0.11	-0.04	-0.01							
6 Product diversification ^a	2.89	2.87	-0.06	0.09	0.02	0.01	0.03						
7 Number of employees	496.55	1522.99	-0.08	-0.10	-0.13	-0.23	0.20	0.05					
8 Herfindahl index	0.32	0.27	0.03	-0.01	0.09	-0.09	-0.01	0.06	0.05				
9 Market share	0.25	0.30	0.01	0.01	0.09	-0.03	0.04	0.06	0.20	0.81			
10 Parent country development ^b	0.94	0.24	0.00	0.12	-0.02	0.05	0.01	0.02	0.01	-0.07	-0.04		
11 Parent firm industry relevance	0.33	0.47	0.01	0.03	0.01	-0.04	0.03	0.02	0.09	0.02	0.01	-0.04	
12 Parent firm total assets	13,972	68,379	-0.03	0.01	0.15	0.18	0.06	0.12	0.08	0.02	0.07	0.07	0.07

[†] Mean values and standard deviations reported in units indicated.

* Correlations are reported in transformed forms using IHS transformation.

^a Count of NACE industry codes at two digit level.

^b Dummy variable equals 1 if the country of origin is a developed economy.

TABLE III
Regression results^a

Method:												2SLS			
	RE GLS		RE GLS		RE GLS		RE GLS		RE GLS		Stage 1		Stage 2		
	Sales growth		Sales growth		Sales growth		Sales growth		Sales growth		Sub. Capability		Sales growth		
Dependent Variable:	M 1		M 2		M 3		M 4		M 5		M 6		M 7		
Independent Variables	Coef.	SE	Coef.	SE	Coef.	SE									
Intangible Assets	0.01 *	(0.00)	0.01 *	(0.00)	0.00	(0.00)	0.01 *	(0.00)	0.00	(0.00)	-0.03	(0.03)	0.01	(0.01)	
Subsidiary Capability	0.02 ***	(0.00)	0.02 ***	(0.00)	0.02 ***	(0.00)	0.02 ***	(0.00)	0.02 ***	(0.00)			0.27 ***	(0.05)	
Institutional Development			0.07	(0.07)	0.04	(0.07)	0.06	(0.07)	0.02	(0.07)	-1.65 ***	(0.36)	0.38 ***	(0.11)	
H1: Int. Assets. x Inst. Dev.					0.12 ***	(0.03)			0.13 ***	(0.03)			0.18 *	(0.07)	
H2: Sub. Cap. x Inst. Dev.							-0.08 **	(0.02)	-0.08 ***	(0.02)			-0.23 *	(0.11)	
Age	-0.21 ***	(0.01)	-0.21 ***	(0.01)	-0.21 ***	(0.01)	-0.21 ***	(0.01)	-0.21 ***	(0.01)	0.51 ***	(0.11)	-1.35 ***	(0.01)	
Diversification	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)					
Size (number of employees)	-0.03 ***	(0.00)	-0.03 ***	(0.00)	-0.03 ***	(0.00)	-0.03 ***	(0.00)	-0.03 ***	(0.00)	-0.21 ***	(0.04)	0.07 ***	(0.02)	
Herfindahl Index	-0.10 ***	(0.03)	-0.10 ***	(0.03)	-0.1 ***	(0.03)	-0.1 ***	(0.03)	-0.10 ***	(0.03)	-1.03 ***	(0.24)	-0.03	(0.09)	
Market Share	0.12 ***	(0.02)	0.12 ***	(0.02)	0.12 ***	(0.02)	0.12 ***	(0.02)	0.12 ***	(0.02)	2.40 ***	(0.28)	0.05	(0.14)	
Parent country development	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)					
Year dummies	Included		Included		Included										
Industry dummies	Included														
Country Dummies	Included														
Instruments:															
Cost of labor (per employee)											0.45 ***	(0.05)			
Cost of capital											0.27 *	(0.12)			
Number of observations	33703		33703		33703		33703		33703		26769		26769		
Number of subsidiaries	6295		6295		6295		6295		6295		5584		5584		
Wald Chi ² / F statistic	6047.18 ***		6048.37 ***		6069.88 ***		6075.71 ***		6101.75 ***		31.95 ***		185.16 ***		
R ² (within/between/overall)	0.15/0.21/0.15		0.15/0.21/0.15		0.15/0.21/0.16		0.15/0.21/0.16		0.15/0.21/0.16		0.05/0.10/0.08		0.20/0.12/0.08		

^a All standard errors (in parentheses) are group clustered Huber-White standard errors robust to heteroskedasticity and autocorrelation; *** p< 0.001; ** p< 0.01; * p< 0.05; † p< 0.10.