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Investment Facilitators and the Sequential Growth of Multinational Enterprises

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ABSTRACT

This dissertation examines how investment facilitators – targeted host-country policy instruments such as R&D tax incentives – shape the sequential growth of multinational enterprises (MNEs). Sequential growth refers to the post-entry expansion of established MNEs. Drawing on the firm-specific and country-specific advantages (FSA/CSA) framework, Penrosean growth theory, and internalization theory, this dissertation conceptualizes sequential growth as three interrelated forms: subsequent investment in host countries, the growth trajectories of established subsidiaries, and strategic shifts in governance choices.

Essay 1 focuses on MNEs' subsequent investment decisions. It develops an attention-based FSA/CSA framework by integrating the attention-based view with the FSA/CSA matrix. It proposes that managerial attention evolves with experience, shifting from general environmental conditions at initial entry to specific policy instruments during subsequent investments. In this later stage, MNEs with strong FSAs are more likely to pursue policy-aligned investments, and those with weak FSAs tend to pursue policy-enabled investments. The essay further proposes that government agencies act as curators that can influence these patterns by directing managerial attention.

Essay 2 integrates Penrosean growth theory and the location-advantages literature to assess how R&D tax incentives affect the growth trajectories of MNE R&D subsidiaries. The findings uncover the dual role of R&D tax incentives: they complement productive resources by amplifying the growth potential of well-funded subsidiaries and compensate for constraints in managerial resources and capabilities by reducing barriers to expansion.

Essay 3 extends internalization theory by showing how R&D tax incentives shift MNEs' R&D governance from full internalization to quasi-internalization, conceptualized as relational R&D outsourcing. It argues that R&D tax incentives positively influence MNEs' relational R&D outsourcing and that this effect is strengthened by MNEs' external relationship capabilities shaped by their home-country intellectual property (IP) regulations and their absorptive capacity in host country.

Collectively, the three essays demonstrate that MNEs' post-entry expansion is shaped not only by internal capabilities but also by investment facilitators that direct managerial attention, interact with subsidiary resources, and recalibrate governance costs. This dissertation therefore advances international business scholarship by integrating institutional interventions into models of firm growth and offers actionable insights for policymakers seeking to steer the long-term contributions of MNEs.

Keywords

Sequential growth, post-entry growth, subsequent investment, MNEs expansions, subsidiary growth, reinvestment, investment facilitators, enabling institutions, orienting institutions, investment incentives, investment promotion agencies, public procurement contracts, FDI attraction policies, R&D tax incentives, location advantages, internalization theory, quasi-internalization, R&D outsourcing, R&D internalization, transaction costs, qualitative content analysis, longitudinal analysis, mixed-methods, fixed-effect models.

SUMMARY FOR LAY AUDIENCE

This dissertation explores how investment facilitators – targeted government policy tools – shape the sequential growth of multinational enterprises (MNEs). Sequential growth refers to the steps an MNE takes after its initial entry into a foreign country. Drawing on three international business theories – the firm-specific and country-specific advantages (FSA/CSA) framework, Penrosean growth theory, and internalization theory – it describes sequential growth as three linked processes: follow-up investment, subsidiary growth, and governance shifts in R&D operations.

Essay 1 examines how MNEs decide on follow-up investments. It develops an attention-based FSA/CSA framework, showing that managers' attention shifts as investment unfolds. At market entry, MNEs assess general economic conditions, whereas at the follow-up stage they focus on specific policy instruments such as tax incentives or procurement programs. In this later stage, MNEs with strong internal capabilities are more likely to pursue policy-aligned investments, while those with weaker capabilities tend toward policy-enabled investments. The essay further proposes that government agencies can shape these patterns by designing programs that guide managerial attention.

Essay 2 investigates whether R&D tax incentives – a key form of investment facilitator – foster the growth of MNE R&D subsidiaries. It argues that such incentives lower the cost of innovation and strengthen resource bundles, enabling sustained expansion. Using Canadian longitudinal data, it finds that incentives both amplify growth for well-resourced subsidiaries and compensate for limited managerial experience and weaker technological capabilities.

Essay 3 analyzes how R&D tax incentives influence R&D governance. While MNEs typically keep most R&D in-house to protect proprietary knowledge, generous incentives encourage a middle path – long-term, trust-based partnerships with external partners, described as quasi-internalization or relational outsourcing. This effect is stronger when the home country provides weak intellectual property protection and when MNEs have strong absorptive capacity for managing relationship-based outsourcing.

Together, the three essays show that MNEs' sequential growth depends not only on their own resources and capabilities but also on investment facilitators that guide managerial attention, interact with subsidiary resources, and change the costs of alternative governance choices. The dissertation contributes to the international business literature and offers practical guidance for policymakers seeking to sustain the long-term contributions of foreign investors.

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CHAPTER 1 INVESTMENT FACILITATORS AND THE SEQUENTIAL GROWTH OF MULTINATIONAL ENTERPRISES

1.1 INTRODUCTION

The sequential growth of multinational enterprises (MNEs) has become a critical phenomenon of international business (IB) research. It refers to how established MNEs expand, deepen, or restructure their presence in host countries. These firms are key drivers of long-term industrial development in host economies (OECD, 2025). For example, the OECD (2022) shows that established MNEs drove the recovery of FDI flows in OECD countries post-COVID pandemic from 2019 to 2021. In the European Union, such MNEs account for a substantial share of business R&D spending: 25% in Germany, France, and Spain; 30-50% in Portugal and Sweden; and over half in Austria, Belgium, and Ireland (Ernst & Young Global, 2021). Despite this economic significance, research on the drivers of MNEs' sequential growth remains fragmented across multiple theoretical perspectives. Therefore, this dissertation explains the sequential growth of MNEs by showing how investment facilitators – targeted policy instruments such as R&D tax credits, procurement, and promotion – channel managerial attention, amplify subsidiary resources, and reconfigure R&D governance.

Three major perspectives explain different aspects of sequential growth. The firm-specific advantages (FSAs) and country-specific advantages (CSAs) framework views MNE growth as subsequent investment shaped by strategic considerations of internal capabilities and host-country conditions (Rugman, 1981). However, the framework underplays the role of managerial attention in evaluating host-country opportunities (Andrews, Fainshmidt, Ambos, & Haensel, 2022). In practice, it is not the mere availability of FSAs and CSAs, but the advantages selectively attended to by managers that ultimately shape investment decisions (Ocasio, 1997). The Penrosean perspective perceives MNEs' growth as the growth of their subsidiaries, which occurs when subsidiaries exploit underutilized productive and managerial resources to pursue profitable opportunities in the country (Tan, Su, Mahoney, & Kor, 2020; Tan & Mahoney, 2005). However, Penrose-inspired studies tend to overlook how external institutional conditions affect subsidiary growth (Tan et al., 2020). Also, internalization theory argues that MNEs expand by internalizing activities in response to market failures, though most studies focus on MNEs'

governance decisions at entry rather than on governance shifts post-entry (Narula, 2014; Verbeke & Kano, 2015).

Two key inferences emerge from existing theoretical perspectives. First, MNEs' sequential growth can be understood in three interrelated forms: subsequent investment in host countries, the growth trajectories of established subsidiaries, and strategic shifts in governance choices. Second, explaining these dynamics requires examining the interaction between firm-level factors and host-country conditions, because neither internal resources nor external factors alone can fully account for MNEs' post-entry expansion.

Therefore, this dissertation positions sequential growth as its central phenomenon, examining how it unfolds and what drives its different forms. In addition to the FSAs that have been well studied in the literature, this dissertation pays particular attention to the role of host-country investment facilitators. Investment facilitators are defined as targeted policy instruments – such as investment incentives – designed to support the country's investment promotion strategies and, thereby, direct the ongoing expansion of MNEs (Sauvant, 2015; Lazo & Bazrafkan, 2019). They are “enabling institutions” that not only open up possibilities for action but also actively guide firms to pursue specific opportunities (Cardinale, 2018). As such, the location advantages literature classifies investment facilitators as institutional-related location factors that enhance the attractiveness of a country (Sauvant, 2022). Investment facilitators are often discussed in national-level reports and surveys, but we still lack systematic evidence on how they shape firm-level resources of established MNEs.

Accordingly, this dissertation examines how investment facilitators shape the sequential growth of MNEs across three essays. Essay 1 shows how managerial attention to specific policy instruments in the host country directs subsequent investment. Essay 2 analyzes how R&D tax incentives influence the growth of MNE R&D subsidiaries through a cost-minimization design that interacts with subsidiary resources. Essay 3 identifies the conditions under which R&D tax incentives shift R&D governance from internalization to quasi-internalization (relational outsourcing) by altering comparative governance costs. Together, the essays demonstrate that post-entry expansion depends not only on internal resources and capabilities but also on host-

country investment facilitators – notably targeted policy instruments and R&D tax incentives – that aim to sustain and steer MNE operations.

In the remainder of this chapter, I first review the relevant literature on MNE growth and investment promotion. I then briefly introduce the three essays, summarize their methodological approaches, and highlight their core arguments. Finally, I conclude the chapter by positioning the dissertation's overall contribution to IB theory and policy.

1.2 THE SEQUENTIAL GROWTH OF MNES

Sequential growth represents the post-entry expansion of MNEs (Tan et al., 2020). It can therefore be theoretically explained by the FSA/CSA framework, Penrosean growth theory, internalization theory, and the Uppsala model. The Uppsala model conceptualizes growth as an incremental increase in market commitment as MNEs accumulate experiential knowledge. More recent iterations, however, place greater emphasis on network relationships and opportunity development (Vahlne & Johanson, 2020), which are less central to the forms of sequential growth examined in this dissertation. Thus, this dissertation draws primarily on the first three theories to explain the dynamics of subsequent expansion.

1.2.1 The FSA/CSA Framework

Originally conceptualized by Rugman (1981), the FSA/CSA framework explains the international strategies of MNEs through the interaction of firm-level resources and country conditions. Early studies emphasize generic FSAs that MNEs developed in their home countries, such as product innovation and scale economies. Subsequent research expanded the concept to capture greater nuance, such as location-bounded and non-location-bounded FSAs (Rugman & Verbeke, 1992; 2001). CSAs were initially framed as home-country conditions that shape the development of generic FSAs and thus influence global expansion (Rugman, 1987; Nachum & Rolle, 1999). Later research, however, emphasizes host CSAs, such as market growth (Belderbos & Zou, 2007), Free Trade Zones (Souza-Júnior, Martins, Siegler, & Soares-Filho, 2019), and complementary assets from universities and research institutions that promote innovation (Wei & Nguyen, 2020).

For sequential growth, it can be inferred that FSAs and host CSAs are the primary drivers of MNEs' subsequent investment. FSAs developed at headquarters, non-location-bounded FSAs transferable across markets, and subsidiary-level FSAs generated through local engagement collectively inform MNEs' capacity for subsequent expansion (Rugman & Verbeke, 2001; Chen, Li, & Shapiro, 2015; Osabutey, Papanastassiou, Jin, Navre, & Agyapong, 2023). Host CSAs, meanwhile, directly affect the locational attractiveness of further expansion, as they influence the ongoing development of subsidiary-level FSAs and reduce external uncertainty (Wang, Lavelle, & Gunnigle, 2024).

Most applications of the FSA/CSA framework assume investment decisions are rational responses to the structural fit between FSAs and CSAs (Rugman & Verbeke, 1992), neglecting the role of headquarters' managerial attention (Andrews et al., 2022). Managerial attention shifts from broad formal evaluations of host CSAs at the entry stage to selective responses to specific host CSAs during subsequent expansion (Rugman & Verbeke, 2001; 2003). As such, existing studies on the FSA/CSA framework remain fragmented in that they do not distinguish how various types of host CSAs – specifically those that headquarters managers attend to – shape MNEs' subsequent investment decisions.

1.2.2 Penrosean Growth Theory

Penrose (1959) views growth as a natural process arising from the underutilization of productive and managerial resources in the pursuit of profit opportunities. Productive resources are tangible and intangible assets that enable firms to outperform competitors (Buckley & Casson, 2009), while managerial resources encompass managers' experience and networks that facilitate opportunity recognition (Tan, 2009). Penrose (1959) argues that underutilized resources emerge through managerial learning in daily operations, whereby firms first develop managerial capabilities, which in turn enable them to expand the range of services derived from existing resource bundles (Tan et al., 2020). Consequently, firms' growth trajectories depend heavily on the strength of their managerial capabilities, with inadequate capabilities constraining both the pace and sustainability of expansion.

The Penrosean perspective emphasizes that MNEs' sequential growth can stem from subsidiaries pursuing opportunities in host countries, thereby leveraging subsidiary-level

resources and capabilities. Existing studies find that subsidiary-level productive and managerial resources can enhance MNE growth (Kafouros & Aliyev, 2016; Riaz, Rowe, & Beamish, 2014). Research also indicates that subsidiaries with managers capable of integrating parent-firm and host-country resources tend to achieve superior performance and future expansion (Distel, Sofka, Faria, Preto, & Ribeiro, 2022).

However, the Penrosean perspective largely neglects the impact of the external environment. Penrose (1959) argues that if the external environment limits a firm's growth, the firm lacks managerial capabilities to "shape creative imagination and vision for the firm" (p.36), "create confidence in investors" (p.38), and "evaluate and manage risk and uncertainty" in various contexts (p.41). Thus, Penrose-inspired studies stress the internal drivers of MNEs' sequential growth, focusing on the continuous expansions of their subsidiaries in host countries (Tan & Mahoney, 2005; Tan & Meyer, 2010; Lin, Chen, Ahlstrom, & Wang, 2020).

1.2.3 Internalization Theory

Internalization theory views MNEs as multinational hierarchies that coordinate value-added activities across national boundaries (Buckley & Casson, 1976, 2009, 2019). It claims that technological knowledge generated through R&D embodies a firm's intellectual capital and technological know-how and is therefore a critical source of FSAs (Buckley & Casson, 1976; Gaur, Ma, & Ge, 2019). However, the cross-border exchange of such knowledge through the open market is constrained by market failures, which raise the transaction costs of negotiating, monitoring, and enforcing knowledge-based contracts (Narula & Verbeke, 2015; Rugman & Verbeke, 2003). Therefore, R&D outsourcing represents a risky and costly governance choice for MNEs (Hennart, 1982). By internalizing these activities within the organizational hierarchy, MNEs protect their technological know-how, mitigate knowledge spillovers, and preserve the returns on innovation (Buckley & Casson, 2009; Narula, Asmussen, Chi, & Kundu, 2019).

A central implication of internalization theory is that MNEs expand in host countries when they find efficiency gains in internalizing cross-border activities that markets cannot manage at an acceptable cost (Buckley & Casson, 1976; 2009). The governance choice between internalization and outsourcing is not static but dynamic: MNEs continually reassess the optimal governance form as they accumulate capabilities and as host institutions evolve (Rugman &

Verbeke, 2003; Narula & Verbeke, 2015). As a result, governance shifts – such as from equity-based internalization to arm’s-length outsourcing or to hybrid forms of quasi-internalization – reflect how MNEs adjust to changing transaction costs, institutional environments, and technological conditions (Forsgren & Holm, 2022). Thus, internalization theory explains not only entry strategies but also the evolution of MNEs’ governance structures.

However, most internalization studies have concentrated on the initial entry decision – whether to internalize or outsource a particular activity – rather than on how governance structures shift post-entry. Specifically, very few studies examine whether and how external interventions, such as innovation policies, induce governance shifts once MNEs are already established in the country. Therefore, the theory’s empirical application has often overlooked how public policy and firm-specific capabilities interact to reconfigure governance choices over time (Narula & Verbeke, 2015; Asmussen, Chi, & Narula, 2022).

1.2.4 Summary

Existing theoretical lenses remain comprehensive yet fragmented, each highlighting only partial drivers of sequential growth. The FSA/CSA framework stresses the structural fit between firm- and country-specific advantages but understates the role of selective attention by MNE headquarters managers. The Penrosean perspective emphasizes firm-level resources and capabilities but overlooks how external conditions shape expansion opportunities. Internalization theory explains governance choice at entry but rarely examines the governance shifts of MNEs post-entry. Yet, these theories collectively underscore the importance of interactions between firm-level factors and host-country conditions. Building on this insight, this dissertation advances a holistic account of MNEs’ sequential growth by analyzing how FSAs interact with host-country conditions, particularly investment facilitators.

1.3 INVESTMENT FACILITATORS AS LOCATION ADVANTAGES

Investment facilitators are policy instruments that underpin the investment promotion strategies designed by host governments to enable and direct the ongoing expansion of MNEs in the country (Sauvant, 2015; Lazo & Bazrafkan, 2019). Sauvant (2016; 2018) identifies three external drivers of MNEs’ investments: economic factors, the regulatory framework, and

investment promotion strategies. Similar to Dunning and Lundan (2008), economic factors refer to a country's market variables and locational resources and assets, such as the availability of skilled labour. The regulatory framework encompasses the laws and regulations that affect the quality of the host country's institutional environment, including the liberalization of foreign investment regimes and the enforcement of international agreements and bilateral treaties (Sauvant & Sachs, 2009).

While the impacts of economic factors and the regulatory framework on MNE growth have been widely studied (i.e., Beugelsdijk, Kostova, Kunst, Spadafora, & van Essen, 2018; Dau, Chacar, Lyles, & Li, 2022), far less attention has been paid to the investment promotion strategies (Lazo & Bazrafkan, 2019). These strategies “concern activities that promote a location as an investment destination” (Lazo & Bazrafkan, 2019, p. 23) and are implemented through the proactive use of investment facilitators. These facilitators are ‘enabling institutions’ that orient firm behaviour by making “a given actor more likely to settle on some possibilities out of those it enables” (Cardinale, 2018, p. 137). In the location advantages literature, they are classified as “institutional-related locational advantages” monitored by government agencies (Dunning & Lundan, 2008) and are thus expected to “directly induce higher foreign direct investment flows” (Sauvant, 2022, p. 3).

Investment facilitators are especially relevant for established MNEs (Sauvant, 2015). Most institutional factors – such as the country's legal and regulatory framework – would take years to change (Ghemawat & Khanna, 1998; Zhang & Beamish, 2019). By contrast, investment facilitators are volatile in the short run because they are subject to changes in government policies (Sauvant, 2020). Thus, with accumulated local experience, established MNEs are well positioned to respond to such instruments (Sauvant, 2015; 2020). As such, investment facilitators feature prominently in national-level FDI reports and surveys. For example, a survey by the International Trade Centre (2022) reports that over half of foreign investors view investment facilitators as ‘important’ (p. 24). Similarly, UNCTAD (2024) *World Investment Report* identifies them as a central theme, noting that 72 percent of FDI policy measures are linked to such instruments. However, systematic evidence on how investment facilitators shape the firm-level responses of established MNEs remains scarce, leaving a limited understanding of how they interact with FSAs to influence sequential growth.

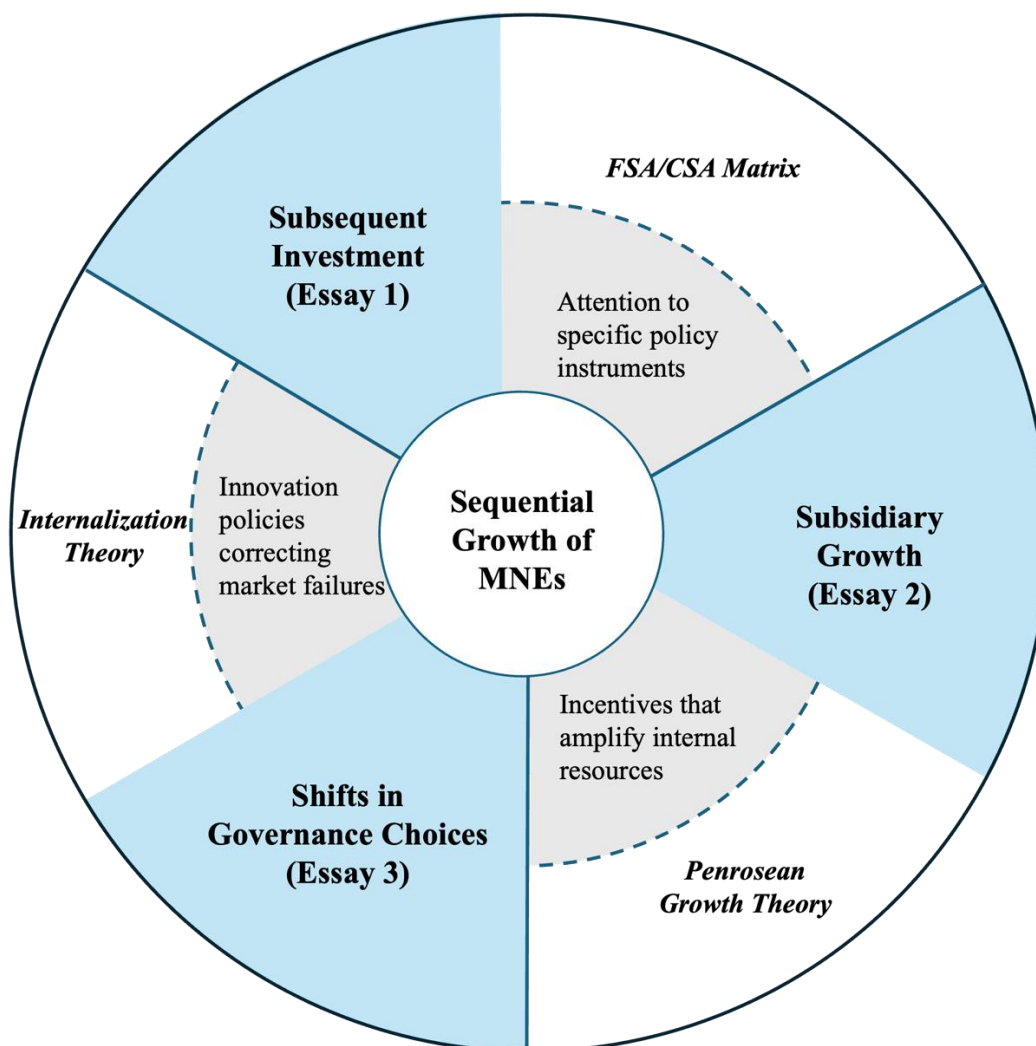
1.4 DISSERTATION OVERVIEW

Hence, this dissertation investigates how investment facilitators influence the sequential growth of established MNEs. Drawing on the theoretical insights discussed earlier, it examines this phenomenon across three interrelated dimensions: (1) subsequent investment decisions, which reflect how MNEs deepen their commitment in host countries; (2) the growth trajectories of R&D subsidiaries, which capture the sustained impact of policy incentives on subsidiary expansion; and (3) shifts in R&D governance from internalization to quasi-internalization, which reveal how incentives alter the organizational forms of overseas R&D operations. Each dimension is addressed through a dedicated essay, as summarized in Table 1-1. Together, these essays provide a comprehensive account of MNEs' sequential growth by showing how investment facilitators interact with firm-specific factors to influence different yet connected forms of post-entry expansion.

Table 1-1 Dissertation Overview

| | Essay 1 | Essay 2 | Essay 3 |
|--------------------------------|--|--|---|
| Essay Title | <i>Revisiting the FSA/CSA matrix: An attention-based framework for subsequent investment by MNEs</i> | <i>R&D tax incentives and the growth trajectory of multinational R&D subsidiaries</i> | <i>R&D tax incentives and the governance shift toward quasi-internalization in MNEs</i> |
| Research Question | How does managerial attention to host CSAs shape MNEs' initial and subsequent investment decisions? | Under what conditions are R&D tax incentives effectively stimulating the growth of MNEs' R&D subsidiaries? | Under what conditions do R&D tax incentives make relational R&D outsourcing a viable governance alternative to R&D internalization? |
| Theoretical Foundations | The FSA/ CSA matrix Attention-based view | Location advantages Penrose growth theory | Internalization theory Institutional theory |
| Methodology | Qualitative content analysis. | Multilevel regression analysis | Fixed-effect regression analysis |
| Empirical Setting | Qualitative data based on public announcement of subsequent/initial investments | Quantitative data was sourced from Statistics Canada's Business Research Microdata (2001 – 2021), focusing on the impact of SR&ED. | |

Figure 1-1 Sequential Growth of MNEs - Theories and Missing Puzzle



1.4.1 The Attention-Based FSA/CSA Framework in Chapter 2

Essay 1 (Chapter 2) is entitled “*Revisiting the FSA/CSA Matrix: An Attention-Based Framework for Subsequent Investment by Multinational Enterprises.*” It focuses on subsequent investment, defined as the additional capital MNEs commit to expand existing operations in host countries. Subsequent investment represents a key dimension of sequential growth (Tan et al., 2020). It accounted for nearly half of U.S. FDI inflows between 2020 and 2024 (U.S. Bureau of Economic Analysis, 2025). Yet, most prior studies in the growth literature have concentrated on the determinants of MNE growth through initial entry into new foreign markets, leaving open the question of whether the same locational factors also drive subsequent investment by MNEs (Tan et al., 2020).

Essay 1 revisits the FSA/CSA matrix, a framework widely applied to explain MNEs' investments by emphasizing the alignment of FSAs, such as technological or organizational assets, with host CSAs, such as market size or skilled labour (Rugman, 1981; Rugman & Verbeke, 1992). Although the classic matrix has been re-examined multiple times in existing literature, most applications assume that investment decisions are rational responses by MNEs to the characteristics of these advantages (i.e., Hillemann & Gestrin, 2016; Chen et al., 2015). They neglect how headquarters managers selectively notice and prioritize certain host CSAs over others (Andrews et al., 2022).

To address this gap, Essay 1 asks: *How does managerial attention to host-country advantages shape MNEs' initial versus subsequent investment decisions?* The essay develops an attention-based FSA/CSA framework that integrates the matrix with the attention-based view (ABV) (Ocasio, 1997). The framework rests on two core assumptions: first, that FSAs are relatively stable at the moment of investment and therefore do not require the same evaluative attention as host CSAs; second, that host CSAs influence MNEs' investment decisions only when they attract managerial attention. Building on these assumptions, the framework shifts the analytic focus from the structural availability of host CSAs to the attention-based host CSAs – that is, the specific advantages to which managers actually attend.

The framework distinguishes two types of host CSAs: (1) general environmental conditions (e.g., market growth, geographic proximity) and (2) specific policy instruments (e.g., tax incentives, investment promotion agencies, procurement contracts). It proposes that the former captures managerial attention during initial entry, whereas the latter becomes more salient as MNEs embed locally and managers seek concrete opportunities for growth. When combined with the strength of FSAs, the framework identifies four ideal-type investment strategies: asset-augmenting, policy-enabled, asset-exploiting, and policy-aligned investment. For subsequent investment, it suggests that MNEs with weak FSAs engage in policy-enabled investment and those with strong FSAs pursue policy-aligned investment. Finally, the framework underscores the role of government agencies as curators of host CSAs who can direct managerial attention and thereby shape whether MNEs commit to initial or subsequent investments.

To support the proposed framework, Essay 1 draws on illustrative evidence from 219 public announcements on both subsequent and initial investments between 2020 and 2024, using a qualitative content analysis. Although not a formal empirical test, this evidence grounds the propositions and highlights managerial attention as a behavioural extension of the FSA/CSA matrix. The findings show that managerial attention shifts MNE investment logic from broad market conditions to targeted policy instruments when pursuing sequential growth via subsequent investment. Essay 1 thus argues that subsequent investment differs fundamentally from initial investment and is strongly shaped by investment facilitators.

1.4.2 R&D Tax Incentives and the Growth Trajectory of R&D Subsidiaries in Chapter 3

Essay 2 (Chapter 3) is entitled “*R&D Tax Incentives and the Growth Trajectory of Multinational R&D Subsidiaries.*” It focuses on the growth of MNEs’ R&D subsidiaries in host countries, an important yet underexplored dimension of the R&D internationalization literature. Although scholars have emphasized that R&D subsidiaries are central to host countries’ innovation systems (Papanastassiou, Pearce, & Zanfei, 2020), most prior research has examined the location factors shaping MNEs’ initial R&D entries (Zhao, 2020; Belderbos, Lee, Mudambi, Du, & Somers, 2024). Far less is known about how host-country conditions, especially R&D tax incentives, shape the subsequent growth of R&D subsidiaries. This gap limits our understanding of how host-country policies influence the sustained expansion of MNE R&D operations, an issue that is particularly relevant for policymakers seeking to anchor foreign innovation activities within their domestic economies.

R&D tax incentives are among the most widely used innovation policy instruments globally (OECD, 2023). Typically provided through the regular tax code, they apply broadly to all eligible firms, including foreign-owned subsidiaries (OECD, 2017; 2021). These incentives are intended to lower the effective cost of R&D, stimulate innovation activities, and strengthen a country’s attractiveness as a location for high-value functions (Bösenberg & Egger, 2017). As such, in the location advantages literature, R&D tax incentives are understood as institutional-related locational factors (Dunning & Lundan, 2008) that reduce transaction and production costs and thereby enhance the country’s competitiveness as a site for innovation. They can be, thus,

conceptualized as investment facilitators – policy instruments designed to entice and direct investment by foreign firms (Sauvant, 2020; 2022).

Yet empirical evidence on the effectiveness of R&D tax incentives for MNEs remains mixed. On one hand, studies find that incentives increase R&D expenditures and attract foreign research projects (Hall & Van Reenen, 2000; Bloom, Griffith, & Van Reenen, 2002; Ivus, Jose, & Sharma, 2021). On the other hand, critics argue that their effects are limited because tax incentives often represent only a small share of overall R&D costs and thus play a minor role in investment location decisions (Thomas, 2007; Knoll, Riedel, Schwab, Todtenhaupt, & Voget, 2021; Feng, 2024). Importantly, most studies frame tax incentives as entry drivers – determinants of whether MNEs choose to establish new R&D subsidiaries in a country (Siedschlag, Smith, Turcu, & Zhang, 2013). Very few examine whether such incentives continue to shape the long-term growth trajectories of subsidiaries that are already embedded in local environments (Cantwell & Mudambi, 2005). This is a crucial omission, as governments often design incentives with the expectation that foreign subsidiaries will not only enter but also expand their local R&D activities and contribute to national innovation systems over time (OECD, 2023).

Therefore, Essay 2 integrates the location advantages literature with Penrosean growth theory to address the research question: *Under what conditions are R&D tax incentives effective in encouraging the growth of MNEs' R&D subsidiaries?* It hypothesizes that R&D tax incentives lower innovation costs and expand the opportunity space for growth; nevertheless, following the Penrosean lens, their effectiveness depends on the internal characteristics of subsidiaries. Specifically, incentives are expected to amplify growth for subsidiaries with strong productive resources while compensating those constrained by managerial resources and R&D capabilities.

Empirically, the essay employs a dynamic multilevel regression analysis using the Business Research Microdata (BRM) (2001–2021) from Statistics Canada. The findings provide strong support for the hypotheses. Specifically, a one standard deviation increase in R&D tax incentives raises subsidiary growth rates by 8.22%. This effect intensifies with higher levels of productive resources (+26.99%) and lower levels of managerial resources (+9.61%) and R&D capabilities (+3.73% per additional patent). These results demonstrate that tax incentives do not operate uniformly across all subsidiaries but interact with subsidiary-level characteristics to

shape long-term growth outcomes. In particular, incentives amplify the growth of resource-rich subsidiaries while also supporting those with limited managerial experience or weaker R&D capabilities.

1.4.3 R&D Tax Incentives and the Quasi-Internalization in Chapter 4

Essay 3 (Chapter 4) is entitled “*R&D Tax Incentives and the Governance Shift Toward Quasi-Internalization in Multinational Enterprises.*” The evolution of R&D governance represents the third critical dimension of the sequential growth of MNEs. As subsidiaries deepen their presence in host countries, MNEs reassess how R&D activities are organized and governed, striking a balance between the benefits of internal control and the opportunities to access external knowledge and capabilities. These governance shifts reflect strategic adaptations to both host-country institutions and subsidiary resource conditions, marking an essential aspect of how MNEs expand beyond their initial investment.

R&D governance has long been at the core of internalization theory. The theory holds that because technological knowledge, as an output of R&D, is vulnerable to market failures, MNEs internalize their overseas R&D operations to maintain control over their knowledge and to safeguard returns on innovation (Buckley & Casson, 2009; Verbeke & Kano, 2015). However, internalization theory also recognizes that governance decisions are shaped by the institutional environments in which subsidiaries operate (Narula & Verbeke, 2015). In particular, innovation policies, such as R&D tax incentives, represent formal institutional interventions designed to address market failures and stimulate innovation (Chaminade & Edquist, 2010). While prior research confirms that such incentives can boost aggregate R&D investment (Parsons, 2011; Ernst & Spengel, 2011; Mohnen, Vankan, & Verspagen, 2017), little is known about their influence on the form of R&D governance – that is, whether MNEs invest in R&D through internalization or outsourcing in response to the incentives.

This gap is important because innovation policy directly engages the central mechanism of internalization theory. If R&D tax incentives compensate firms for the risks and transaction costs associated with knowledge spillovers, then they may alter the comparative advantages of different governance modes. Thus, Essay 3 asks: *under what conditions do R&D tax incentives make quasi-internalization (relational outsourcing) a viable governance alternative to*

internalization? By lowering the cost differentials between outsourcing and internalization, these incentives reduce the dominance of hierarchical governance and open space for outsourcing to emerge as a viable choice. Hence, the baseline hypothesis is that R&D tax incentives can shift MNEs' governance choices from internalization toward outsourcing, thereby increasing the outsourcing-to-internalization ratio.

Building on recent studies of the internalization theory, Essay 3 then focuses on the modes of outsourcing. It conceptualizes quasi-internalization as the middle ground between arm's-length or nonrelational outsourcing and full internalization (Forsgren & Holm, 2022; Narula et al., 2019). Quasi-internalization allows MNEs to "control without owning" by organizing external R&D through stable, trust-based partnerships that combine contractual safeguards with informal mechanisms such as reputation, social capital, and trust (Magnani, Zucchella, & Strange, 2019). As such, relational R&D outsourcing can be a proxy for quasi-internalization. Because repeated collaboration lowers future transaction costs (Liu, Luo, & Liu, 2009), the essay hypothesizes that R&D tax incentives increase the relational-to-nonrelational outsourcing ratio.

Essay 3 further argues that this relationship is contingent on both home-country and firm-level conditions. Weak home-country intellectual property (IP) regimes encourage MNEs to develop external relationship capabilities at home and thereby support relational outsourcing abroad. At the same time, MNEs' absorptive capacity in host country – proxied by labour productivity and prior outsourcing experience – enables them to evaluate, absorb, and govern external R&D outputs effectively (Lewin & Peeters, 2006). Hence, Essay 3 proposes that the effect of R&D tax incentives on the relational-to-nonrelational outsourcing ratio is enhanced when (1) the home country has weaker IP protection, (2) subsidiaries exhibit higher labour productivity, and (3) MNEs have accumulated outsourcing experience.

The hypotheses are tested using Business Research Microdata (BRM) (2001–2021) in the Canadian context. The findings show that a one standard deviation increase in R&D tax incentives is associated with a 4.2% increase in the outsourcing-to-internalization ratio and a 4.8% increase in the relational-to-nonrelational outsourcing ratio. The effect on the latter is further strengthened by 10.1%, 5.0%, and 8.2% when host-country IP protection, MNE labour

productivity, and prior outsourcing experience each increase by one standard deviation, respectively.

1.5 CONTRIBUTIONS

This dissertation contributes to the IB literature by advancing a more comprehensive understanding of the sequential growth of MNEs. By integrating firm-level factors with host-country investment facilitators, it shows how internal capabilities and external conditions jointly shape MNEs' subsequent investment, subsidiary expansion, and governance shifts. Collectively, the three essays broaden the conceptualization of MNE growth beyond entry into new foreign markets, demonstrating how established MNEs evolve in response to policy interventions.

Particularly, Essay 1 extends the FSA/CSA framework through the attention-based view (ABV). It introduces the concept of attention-based host CSAs to capture the institutional factors that managers selectively notice and act upon, shifting the explanatory focus from the structural availability of advantages to their behavioural salience. This explains why subsequent investments differ from initial entries and why investment facilitators become more influential for established MNEs.

Essay 2 contributes to the R&D internationalization literature by examining the growth of R&D subsidiaries. By integrating Penrosean growth theory with the location advantages perspective, it demonstrates that R&D tax incentives function not as direct growth drivers but as enabling conditions that amplify or compensate for subsidiaries' internal resources and capabilities. In doing so, the essay reframes the role of location advantages as contingent complements to subsidiary-level endowments.

Essay 3 extends internalization theory by analyzing how public innovation policies influence governance choices. It emphasizes quasi-internalization – relational R&D outsourcing – as a governance form that becomes viable when tax incentives reduce transaction costs and address market failures. In doing so, Essay 3 bridges internalization theory and innovation policy research, showing how institutional conditions and firm capabilities interact to reshape governance logic over time.

Together, the three essays underscore that investment facilitators can shape how MNEs expand, grow subsidiaries, and govern R&D operations in host countries. The dissertation therefore carries strong policy implications. Broadly, it suggests that, for policymakers, designing investment facilitators is not merely about attracting FDI inflows but also about sustaining and steering the long-term contributions of established MNEs. More specifically, Essay 1 highlights that governments can influence subsequent investments by actively curating investment facilitators that capture the selective attention of MNE managers. Essay 2 shows that the impact of policy tools, such as R&D tax incentives, varies across firm types and underscores the need for context-specific theorization of the role of tax incentives in shaping the growth of R&D firms. Essay 3 reveals that governments can use incentives not only to increase R&D volume but also to foster collaborative partnerships between MNEs and local firms, thereby embedding foreign subsidiaries more deeply in domestic innovation ecosystems.

In summary, the theoretical and policy contributions of this dissertation illustrate a two-way relationship between MNEs and host-country institutions. On the one hand, the three essays show that firm growth is not simply the outcome of internal resources or structural advantages but rather is mediated by managerial attention, subsidiary capabilities, and governance adaptations. On the other hand, the essays reveal that host governments can purposefully shape these dynamics through the design of investment facilitators, thereby influencing not only the scale but also the form and direction of MNEs' sequential growth.

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CHAPTER 2 REVISITING THE FSA/CSA MATRIX: AN ATTENTION-BASED FRAMEWORK FOR SUBSEQUENT INVESTMENT BY MULTINATIONAL ENTERPRISES

2.1 INTRODUCTION

Investments in foreign subsidiaries are driven by firm-specific advantages (FSAs) and their interaction with country-specific advantages (CSAs), as highlighted by a long stream of international business scholarship (Rugman & Verbeke, 2001; Xie, Reddy, & Liang, 2017). Yet, this theoretical relationship lacks microfoundations. Managers do not pay equal attention to all aspects of FSAs and CSAs, yet variations in attention influence the selection of investment projects. Specifically, this chapter argues that decision-makers' attention systematically differs between initial and subsequent investments in a country.

Subsequent investment refers to the additional capital an MNE commits to expand its existing operations, thus representing the sequential growth of MNEs in a host country (Tan, Su, Mahoney, & Kor, 2020). It accounted for almost half of total inward FDI in the U.S. from 2020 to 2024 (U.S. Bureau of Economic Analysis, 2025). Despite its importance, the MNE growth literature has focused on the determinants of MNEs' initial investment in new foreign markets, offering limited insight into whether the same factors also drive their subsequent growth in the same market (Tan et al., 2020).

This chapter investigates the microfoundations of this growth by integrating the attention-based view (ABV) with the FSA/CSA matrix. The FSA/CSA matrix explains MNEs' investment decisions based on the nature and interactions of FSAs, such as tangible and intangible assets, and CSAs, such as natural resources and labour availability (Rugman, 1981; Rugman & Verbeke, 1992). This chapter focuses on FSAs and host CSAs, because FSAs, whether developed at headquarters or the subsidiary level, define MNEs' capabilities for expansion, while host CSAs shape the strategic opportunities that make such expansion attractive. Their interaction forms the core of strategic decision-making around MNEs' growth.

Studies applying the FSA/CSA matrix tend to emphasize the structural availability and inherent characteristics of FSAs and CSAs (Contractor, Foss, Kundu, & Lahiri, 2019) but

overlook the role of managerial attention at the MNE headquarters (i.e., Rugman & Verbeke, 1992; Chen et al., 2015). MNE managers selectively perceive, interpret, and prioritize different aspects of their internal and external environment (Ocasio, 1997). This attention is vital because, first, only those FSAs/CSAs to which managers attend shape investment decisions. Second, unlike during initial entries, MNEs are embedded in the local environment when considering subsequent investment. Thus, managerial attention shifts between the initial and later stages of investment. Incorporating managerial attention into the FSA/CSA framework allows for a more dynamic understanding of how MNE investment decisions evolve (Andrews, Fainshmidt, Ambos, & Haensel, 2022).

Drawing on the selection dimension of the ABV, this chapter revisits the FSA/CSA matrix to address the research question: How does managerial attention to host CSAs shape MNEs' initial and subsequent investment decisions? Host CSAs are the focus because FSAs are internalized and more fully understood by headquarters managers (Rugman & Verbeke, 2003). Host CSAs, in contrast, are external, often unfamiliar to MNEs; they require interpretation, judgment, and thus selective attention by managers. The proposed attention-based FSA/CSA framework shifts the focus from the availability of host CSAs to those that managers notice, what I term attention-based host CSAs. The framework assumes that host CSAs influence investment decisions only when they attract managerial attention. This theoretical integration provides a microfoundational lens that links the influence of macro-level host CSAs on MNEs' investment decisions with a micro-level attentional filter.

The attention-based FSA/CSA framework is organized along two dimensions: the strength of FSAs (weak or strong) and the type of host CSAs that attract managerial attention, categorized as either general environmental conditions (e.g., economic growth, geographic proximity) or specific policy instruments (e.g., tax incentives, procurement contracts). The ABV suggests that managerial attention is selective, context-dependent, and shaped by institutional structures and actors (Ocasio, 1997). Thus, I propose that managerial attention evolves with in-country experience. MNEs considering initial investments tend to focus on general environmental conditions to assess market attractiveness, whereas those engaging in subsequent investments are embedded in local networks and more likely to attend to specific policies that offer concrete opportunities for growth.

The attention-based FSA/CSA framework underpins a two-by-two matrix that identifies four ideal-type investment strategies. Asset-augmenting investment describes MNEs with limited FSAs investing in host countries in pursuit of transferable assets. Policy-enabled investment refers to MNEs with limited FSAs expanding in response to targeted instruments, such as tax incentives. Asset-exploiting investment represents MNEs with strong FSAs leveraging their internal strengths to exploit opportunities in host markets. Policy-aligned investment entails MNEs with strong FSAs actively aligning their strategies with specific host-country policy initiatives through collaboration with government actors.

The framework has direct policy implications. Government agencies can act as curators of host CSAs by directing managerial attention and, thus, shape MNEs' investment decisions. Initial investors may attend to specific policy instruments if these are prominently promoted, and existing MNEs may respond to general environmental conditions under targeted government interventions. To illustrate the framework, this chapter draws on public announcements of subsequent and initial investments. While not intended as a formal empirical test, this evidence grounds the theoretical propositions and underscores the importance of managerial attention as a behavioural extension to the FSA/CSA matrix.

This chapter offers several contributions to the IB scholarship. First, it contributes to the literature on firm growth by offering a comprehensive explanation that distinguishes between MNEs' initial versus subsequent investment decisions. Second, it extends the classic FSA/CSA matrix by adopting a microfoundational perspective via the ABV. I highlight managerial attention as the behavioural mechanism that mediates the relationship between external conditions and firm-level strategic outcomes. In doing so, I respond directly to calls for micro-level explanations that link individual decision-making processes to IB outcomes (Ambos, Andersson, Drogendijk, Lunnan, Scott, & Yildiz, 2025; Andrews et al., 2022; Yasuda & Kotabe, 2020). Third, this chapter contributes to the ABV research by examining the types of host CSAs that managers attend to, effectively broadening the scope of ABV studies beyond internal organizational processes. The analysis further suggests that government agencies can guide MNEs' attentional focus, thereby affecting the nature and direction of their investment decisions.

2.2 THEORETICAL FOUNDATIONS

2.2.1 Subsequent Investment

Subsequent investment is the sequential expansion of MNE subsidiaries and is, thus, a major form of growth by MNEs in host countries (Tan et al., 2020). However, in their review of research on MNE growth, Tan et al. (2020) find that most existing studies focus on MNEs' investments in new markets and that fewer than 20% address how they expand within markets where they are already established.

The limited scholarly focus on subsequent investment may stem from its conceptual overlap with reinvestment. Reinvestment refers to the retained earnings of foreign subsidiaries that are reinvested locally, without cross-border fund transfer (OECD, 2001; Nguyen, 2016). Because it typically involves only a marginal investment amount (Lundan, 2006), most studies of reinvestment lie within the finance literature, where the focus is on profit allocation and internal funding transfer rather than strategic internationalization (e.g., El Ghoul, Guedhami, Kwok, & Shao, 2015; Polat, 2017; Cull & Xu, 2005). As a result, reinvestment has attracted limited interest from IB scholars.

Subsequent investment, however, differs meaningfully from reinvestment. It requires scholarly attention because it reflects an increase in resource commitment by MNEs in host countries where they already hold operational control. Subsequent investment can be substantial in the absolute amount and is often announced publicly. Example headlines of such investments include Roche investing \$500 million to expand its facility in Canada¹, and Siemens Mobility planning to triple its R&D facility in Hungary.²

2.2.2 The FSA/CSA Matrix

This chapter applies and extends the FSA/CSA matrix to systematically examine the determinants of subsequent investment and how these determinants differ from those of initial investment. Alan Rugman first conceptualized this matrix in the early 1980s. Grounded in internalization theory, the matrix offers a four-cell typology in explaining MNEs' international strategies based on the interactions of their FSAs and home CSAs (Rugman, 1981). As shown in Figure 2-1, Cell 1 (weak FSAs, strong home CSAs) represents MNEs that pursue licensing

strategies relying more on their home-country advantages than on proprietary assets. Cell 2 (weak FSAs, weak home CSAs) comprises MNEs lacking the foundations necessary for successful foreign investment. Cell 3 (strong FSAs, strong home CSAs) includes MNEs well prepared for global expansion, leveraging both internal assets and supportive home-country conditions. Cell 4 (strong FSAs, weak home CSAs) captures MNEs investing abroad mainly to exploit their internal strengths in more favourable foreign environments.

Figure 2-1 The Classic FSA/CSA Matrix (Rugman, 1981)

| | | Firm-specific advantages (FSAs) | |
|------------------------------------|--------|---------------------------------|--------|
| | | Weak | Strong |
| Country-specific advantages (CSAs) | Strong | 1 | 3 |
| | Weak | 2 | 4 |

In the classic FSA/CSA matrix, Rugman (1981) emphasizes generic FSAs that MNEs developed in their home countries, such as product innovation and scale economies. Rugman and Verbeke (1992) later distinguished *location-bounded* FSAs that “benefit a company only in a particular location,” from *non-location-bounded* FSAs that are transferable globally. Subsequent works show that FSAs also emerge at the subsidiary level through interactions with local institutions (Rugman & Verbeke, 2001). These subsidiary-level FSAs are shaped by the MNEs’ ability to access local talent and establish linkages with suppliers, customers, and institutional actors (Adarkwah & Malonæs, 2022; Yaprak, Yosun, & Cetindamar, 2018; Rudy, Miller, & Wang, 2016).

Similarly, CSAs were initially defined as home-country conditions that shape the nature of MNEs’ generic FSAs and enable global expansion (Rugman, 1987; Nachum & Rolle, 1999; Osabutey, Papanastassiou, Jin, Navare, & Agyapong, 2023). More recent research highlights host CSAs as pull factors that drive MNE investment, such as strong market growth (Belderbos & Zou, 2007), transparent regulatory regimes (Surdu, Mellahi, Glaister, & Nardella, 2018), and complementary assets developed by host institutional actors (Wei & Nguyen, 2020). To capture

these diverse forms of FSAs and CSAs, the classic matrix has been refined in multiple studies. For example, Hillemann and Gestrin (2016) consider market efficiency in accessing FSAs and CSAs, and Osabutey et al. (2023) show how emerging-market MNEs create FSAs by strategically leveraging and transforming local resources.

Thus, subsequent investment decisions are driven, first, by FSAs, which include generic FSAs developed at the headquarters, non-location-bounded FSAs created in third countries and transferable to host markets, and subsidiary-level FSAs formed in the host context. Second, while home CSAs shape MNEs' initial investment (Rugman & Verbeke, 1992), host CSAs are more directly relevant for subsequent investment. For example, Foroudi, Gupta, Patel, Batsaki, Vaatanen, and Czinkota (2023) find that home-country factors support emerging-country MNEs' initial foreign entries but do not lead to further expansion. By contrast, host CSAs enhance the attractiveness of further growth in a specific location by fostering the ongoing development of subsidiary-level FSAs (Rugman & Verbeke, 2001) and encouraging industrial relations practices (Wang, Lavelle, & Gunnigle, 2024) and social investments (Zhou, Liu, & Teng, 2024). Thus, this chapter focuses on FSAs and host CSAs as the main drivers of MNEs' subsequent investment decisions.

However, existing versions of the FSA/CSA matrix overlook the role of managerial attention in shaping MNEs' investment decisions. They assume that MNEs act rationally based on the structural fit between the FSAs and CSAs (Rugman & Verbeke, 1992; Chen et al., 2015; Osabutey et al., 2023). In practice, however, investment decisions are driven not by the mere availability of FSAs and CSAs but by the specific advantages that managers notice. As such, FSAs and host CSAs may not translate into further investment unless they align with what managers attend to and prioritize (Andrews et al., 2022).

Moreover, initial investments are typically undertaken by MNEs with limited experience in the host context and therefore rely on more formal evaluation processes to cope with high external uncertainty (Buettner & Ruf, 2007; OECD, 2000). However, subsequent investments are pursued by MNEs with an established local subsidiary, accumulated knowledge of the local environment, and sustained interactions with host institutions (Rugman & Verbeke, 2001; 2003). As external uncertainty declines with direct experience (Delios & Henisz, 2003), managerial

attention shifts between initial and later stages of investment. This chapter therefore revisits the FSA/CSA matrix by incorporating the attention-based view to explain MNEs' initial versus subsequent investment decisions.

2.2.3 Attention-Based View

Inspired by the behavioural theory of the firm (Simon, 1947; Cyert & March, 1963), Ocasio (1997) introduced the attention-based view (ABV), conceptualizing firms as “*systems of attention allocation*” (p. 188). He contends that managerial attention, rather than environmental stimuli alone, determines organizational decisions. Managerial attention is defined as “*the noticing, encoding, interpreting, and focusing of time and effort by organizational decision-makers on both issues and answers*” (Ocasio, 1997, p. 189).

Ocasio (2011) identified three types of managerial attention. First, the attention perspective reflects the firm's dominant strategy on internal resource allocation. Second, attention engagement refers to top management's daily routines and the cognitive effort devoted to problem-solving, sense-making, and decision-making (Haq, Drogendijk, & Holm, 2017; Ocasio, 2011). Third, attention selection concerns the specific external issues that top managers choose to prioritize (Haq et al., 2017). This chapter focuses on attention selection, defined as the opportunities that MNE managers perceive as strategically relevant and the responses they consider feasible in host markets (Andrews et al., 2022).

The ABV assumes that managers do not behave rationally in a given environmental context because of bounded rationality (Ocasio, 1997; 2011). Bounded rationality holds that managers face cognitive constraints that limit their ability to attend to all possible stimuli and process all available alternatives (Simon, 1990; Ocasio, 1997). Thus, the ABV has three core principles. The first is the *focus of attention*. Managers take strategic actions only on issues and opportunities they notice. Because attention is a scarce resource, managers are selective in the issues they attend to at any given time (Ocasio, 1997). The second principle is *situated attention*, which claims that attention is shaped by the context in which the managers are embedded. Thus, the focus of attention can be triggered by the social, spatial, and material conditions of the environment (Brielmaier & Friesl, 2023). The third principle is *structural distribution of attention*, which indicates that “the particular context decision-makers find themselves in, and

how they attend to it, depends on how the organization distributes and controls the allocation of issues, answers, and decision-makers within specific firm activities, communications, and procedures” (Ocasio, 1997, p. 191). Thus, managerial attention is shaped by organizational structures, communication channels, and institutional actors (Ocasio, 1997).

According to the ABV, subsequent investment can be explained by how headquarters allocate attention and resources across complex subsidiary networks. For example, Andrews et al. (2022) argue that MNE investments are shaped by attentional inertia, hierarchical filtering, and cognitive limitations at the top of the firm. Scholars also find that headquarters’ attention can be influenced by their own biases (Monteiro, 2015) toward the activities and past behavior of subsidiary representatives (Conroy, Collings, & Clancy, 2019; Bouquet & Birkinshaw, 2008). Therefore, subsidiary initiatives may attract subsequent investment when they align with the attentional preferences of headquarters managers (Andrews et al., 2022). Ambos and Birkinshaw (2010) further suggest that headquarters’ attention is a critical resource for subsidiaries; those that gain such attention attract more resources and perform better than their peers. Gorgijevski, Lind, and Lagerström (2019) also show that subsidiaries engaging in entrepreneurial activities are more likely to capture headquarters’ attention, thereby increasing their chances of receiving subsequent support. Therefore, prior studies confirm that MNEs’ subsequent investment is conditional on headquarters’ allocation of managerial attention to the subsidiary.

The ABV provides microfoundations for macro constructs (Felin & Foss, 2005; Stea, Linder, & Foss, 2015) by adopting a bottom-up perspective on decision-making (Ocasio & Joseph, 2005). MNEs’ investments emerge from selective managerial attention directed by informational channels embedded in the host context. At the micro level, boundedly rational headquarters managers prioritize only a subset of environmental factors, shaping how issues and opportunities enter the organizational agenda. Through organizational structures, routines, and communication channels, these individual attentional choices are then filtered and amplified, ultimately producing macro-level constructs such as investment strategies. Previous empirical work illustrates this mechanism: managerial attention to host country conditions shapes MNEs’ location choices (Yasuda & Kotabe, 2020). In established markets, such attention shifts to local customer and supplier interactions, driving further investment (Lee & Griffith, 2019). Therefore,

integrating the ABV with the FSA/CSA framework offers a microfoundational lens to understand how MNEs pursue initial and subsequent investment in relation to different types of host CSAs.

FSA and host CSA differ in their accessibility and cognitive demands. FSAs are internally developed capabilities embedded within the MNEs' organizational structures (Rugman & Verbeke, 2003). They are reinforced via internal reporting systems and thus well understood by headquarters (Rickleby & Karim, 2018). Although deploying FSAs in a new or evolving context also requires managerial judgment, the evaluation of such FSAs involves less ambiguity than the assessment of external CSAs (Bhaumik, Driffield, & Zhou, 2016). Thus, FSAs are not the focus of attentional filtering in this chapter. By contrast, host CSAs are external to the MNEs' organizational boundaries and not automatically integrated into decision-making processes. They require active interpretation, sensemaking, and judgment by headquarters managers, particularly when such features are ambiguous or contested (Andrews et al., 2022; Brielmaier & Friesl, 2023). Thus, host CSAs must first capture managerial attention before they can influence strategic outcomes. As such, their influence on investment decisions is contingent on the extent to which they are recognized, interpreted, and prioritized by MNE managers. Therefore, this chapter focuses on MNEs' managerial attention to the features of the host CSAs.

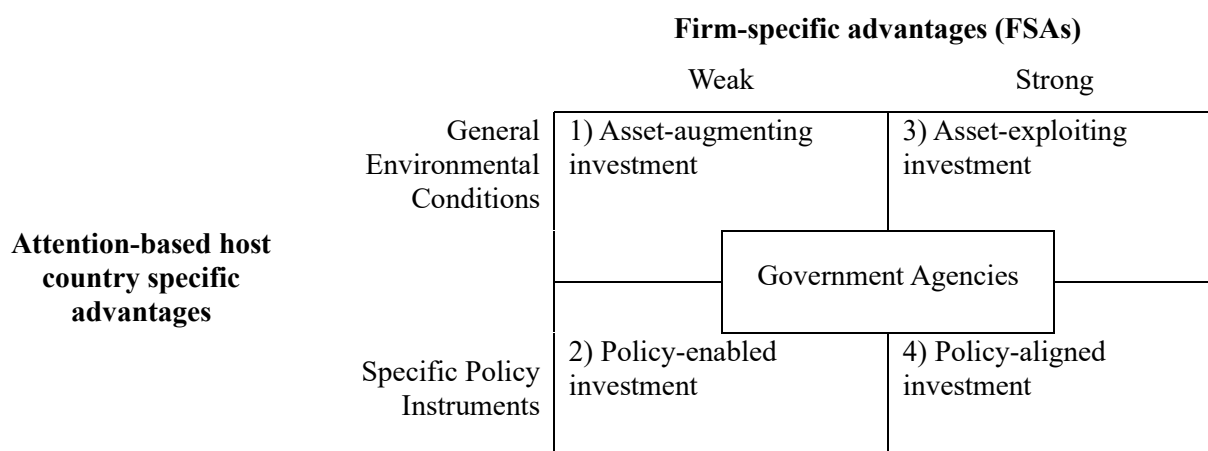
2.3 AN ATTENTION-BASED FSA/CSA FRAMEWORK

Building on the theoretical foundations, I propose an attention-based FSA/CSA framework to address the research question: *How does managerial attention to host CSAs shape subsequent investment versus initial investment by MNEs?* The framework explains MNEs' investment decisions as jointly driven by internal FSAs and by the selective attention through which host CSAs are interpreted and evaluated.

As shown in Figure 2-2, the attention-based FSA/CSA framework is organized along two dimensions. The first dimension is the MNEs' FSA, including those developed at headquarters, transferred from third countries, and created within host-country subsidiaries (Rugman & Verbeke, 1992). FSAs are classified as either strong or weak. Strong FSAs are well-developed internal capabilities that confer competitive advantage in host markets (Rugman, 1981; Rugman & Verbeke, 1992). They include technological know-how, brands, and networks with local suppliers or customers. Weak FSAs, in contrast, reflect underdeveloped capabilities stemming

from constrained resource endowments or limited international experience (Rugman & Verbeke, 2001; Osabutey et al., 2023). Although FSAs evolve via organizational learning and subsidiary development (Rugman & Verbeke, 2003), the framework assumes that FSAs are locally time-invariant at the investment decision point to isolate their role in shaping managerial attention.

Figure 2-2 The Attention-Based FSA/CSA Framework



The second dimension is the attention-based host CSAs, defined as host CSAs that have captured managerial attention at MNE headquarters. Consistent with the ABV, the framework assumes that host CSAs exist objectively but influence investment only if they attract managerial attention (Brielmaier & Friesl, 2023). I classify attention-based host CSAs into two categories: general environmental conditions and specific policy instruments. General environmental conditions encompass factors that determine the overall attractiveness of a host country. They include, for example, macroeconomic stability, market size and growth potential, and resource endowment (Belderbos & Zou, 2007; Surdu et al., 2018). Specific policy instruments are based on government initiatives that directly influence MNE investment decisions. They include tax incentives, preferential access to land or capital, public procurement contracts, and Special Economic Zones (Souza-Júnior, Martins, Siegler, & Soares-Filho, 2019). General environmental conditions tend to be stable and slow to change (Zhang & Beamish, 2019); yet specific policy instruments are more volatile, shifting in response to government policies (Sauvant, 2020; 2022).

Thus, the attention-based FSA/CSA framework presents a two-by-two matrix that delineates four distinct ideal-type investment strategies. Cell 1 and Cell 3 represent cases where managerial attention is directed toward general environmental conditions; Cells 2 and 4 reflect

decisions in which managerial attention focuses on specific policy instruments. Government agencies are placed at the centre of the framework to highlight their role as institutional actors that channel managerial attention toward certain host-country advantages. Building on this, I first explain why initial investments are more commonly associated with MNEs' managerial attention to general environmental conditions (Cells 1 and 3). I then propose that subsequent investments are more closely linked to managerial attention to specific policy instruments (Cells 2 and 4), followed by a proposition on the role of government agencies.

2.3.1 Initial Investment and Managerial Attention to General Environmental Conditions

Drawing on the three core principles of the ABV, I argue that managers of MNEs pursuing initial investment are more likely to attend to the general environmental conditions of the host country. First, according to the *focus of attention* principle, at the initial entry stage, managers have limited knowledge of the host country (Johanson & Vahlne, 1977). Hence, they prioritize indicators that are easily accessible and widely reported. Second, the *situated attention* principle argues that initial entry decisions are often made at headquarters, where managers are spatially and socially distant from the host context (Håkanson & Ambos, 2010; Williams & Grégoire, 2015). As such, their attention is shaped by a generalized assessment of the host market (Weber, Chahabadi, & Maurer, 2020). Third, the principle of *structural distribution of attention* further confirms this view. Previous studies find that MNEs tend to follow a two-stage centralized process in evaluating initial FDI: they first screen countries based on general CSAs – such as market size and natural resources – and then consider specific tax incentives to differentiate among similar locations, though such incentives rarely influence the initial entry decision (Cantwell & Mudambi, 2000; Yanikkaya & Karaboga, 2017; Ersel & Filiztekin, 2008). These insights suggest that Cells 1 and 3 reflect two initial investment strategies. Thus, I offer the following baseline proposition:

Baseline Proposition: *When pursuing initial investment, MNE managers are more likely to attend to the general environmental conditions relative to specific policy instruments of the host country.*

Asset-augmenting investment (Cell 1). Cell 1 represents MNEs with weak FSAs whose managers attend to general environmental conditions in the host country. These MNEs lack the

internal capabilities to achieve competitiveness abroad (Rugman & Verbeke, 1992). They thus pursue direct investments not to exploit existing FSAs, but to augment the strategic assets or resources they lack internally by acquiring them from the host market (Cantwell & Mudambi, 2005). Successful augmenting requires effective recombination of complementary host CSAs with existing FSAs resulting in new FSAs (Galunic & Rodan, 1998; Sirmon, Hitt, & Ireland, 2007). As such, this cell is labeled *asset-augmenting* (Cantwell & Mudambi, 2005). This strategy is common among emerging-market MNEs seeking to overcome capability constraints through international expansion in advanced economies (Luo & Tung, 2007). Because such constraints are often addressed during initial entries, asset-augmenting investments occur more often at the first market entry than in subsequent expansions, when the MNE has already accumulated local assets and capabilities (Damioli & Marin, 2024; Munjal, Andersson, Pereira, & Budhwar, 2021).

Asset-exploiting investment (Cell 3). Cell 3 characterizes MNEs with strong FSAs whose managerial attention is focused on the general environmental conditions of the host country. These firms possess strong internal capabilities that can be transferred across borders and leveraged in new markets. This strategy reflects the traditional capability-exploitation rationale for MNEs' initial entries: managers evaluate the general host environment to determine the feasibility of deploying existing FSAs for profit or market-seeking purposes (Hymer, 1970). In particular, internalization theorists argue that MNEs' competitiveness stems from their ability to exploit knowledge efficiently within organizational boundaries rather than through open markets (Buckley & Casson, 1976; 2009). Thus, this cell is labeled *asset-exploiting investment* (Rugman & Verbeke, 1992; Cantwell & Mudambi, 2005). Although it represents the most conventional pathway for initial investment (Kogut & Zander, 1993), asset-exploiting can also characterize subsequent investments when MNEs continue to leverage their FSAs to scale their operations within a host country.

2.3.2 Subsequent Investment and Managerial Attention to Specific Policy Instruments

By comparison, managers of MNEs pursuing subsequent investment are more likely to attend to specific policy instruments. Following the *focus of attention* principle of the ABV, managers responsible for expansion decisions tend to notice and act upon concrete, localized opportunities that become more visible and actionable through ongoing presence and interaction.

The *situated attention* principle reinforces this shift: although headquarters managers may remain spatially distant, subsidiary managers are embedded in the host context, and their cognitive frames are influenced by local knowledge and closer ties with domestic actors and business networks (Dellestrand, 2011). The *structural distribution of attention* also evolves with the development of a local subsidiary. Through reporting channels, subsidiary managers can surface specific policy instruments that may not have reached headquarters during the initial entry stage, encouraging MNEs to commit additional resources (Ambos & Birkinshaw, 2010). Therefore, subsequent investment reflects a more selective allocation of managerial attention – one that extends beyond general environmental conditions and corresponds with the evolving operational needs of the MNEs. Hence, Cells 2 and 4 indicate two subsequent investment strategies. I propose that:

Proposition 1: *When pursuing subsequent investment, MNE managers are more likely to attend to specific policy instruments relative to general environmental conditions of the host country.*

Policy-enabled investment (Cell 2). Cell 2 captures MNEs with weak FSAs whose managers direct attention to specific policy instruments in the host country. These MNEs are constrained in their ability to pursue growth autonomously and, therefore, depend on external enablers to justify further investment (Souza-Júnior et al., 2019). Their investment decisions are often shaped by targeted policy instruments, such as tax incentives and government grants, that reduce investment risks and create investment opportunities that are not otherwise accessible (Wen, 2020). Such instruments also provide additional resources that can enrich the existing FSA bundles of MNE subsidiaries (Rugman & Verbeke, 2001; 2003). For example, Chu and Nguyen (2025) find that policy-based investment incentives increased the revenue growth of foreign small and medium-sized enterprises in targeted locations by 17% compared with similar firms outside those areas. Therefore, in this context, managerial attention plays a compensatory role: attention to specific instruments substitutes for internal capability constraints. Over time, such attention may contribute to the gradual development of subsidiary-level FSAs, encouraging MNEs to pursue investment in the country (Gorgijevski et al., 2019). Thus, this cell is termed *policy-enabled investment*, highlighting the enabling role of targeted policy instruments (Cardinale, 2018). Although MNEs may also respond to such instruments at the initial entry

stage, those with prior experience in the host environment are better equipped to identify, interpret, and capitalize on them. As a result, policy-enabled investment is more strongly associated with subsequent expansions. Thus, I propose that:

Proposition 2a: *Managerial attention to specific host-country policy instruments increases the likelihood that MNEs with weak firm-specific advantages will pursue policy-enabled subsequent investment.*

Policy-aligned investment (Cell 4). Cell 4 captures MNEs with strong FSAs whose managerial attention is focused on the specific policy instruments in the host country. These firms possess internal capabilities and are well-positioned to engage proactively with local institutions by supporting policy initiatives, co-developing solutions with host governments, and capitalizing on targeted opportunities such as infrastructure partnerships or sustainability programs (Mazzucato, 2018; Van Assche, Pasha, Cernat, & Voss, 2023; Wang, Xiong, Wu, & Zhu, 2018). Such investment decisions are driven less by market trends than by institutional opportunities created by host governments. Thus, this cell is termed *policy-aligned investment*, highlighting a collaborative form of investment between MNEs and host governments. In this context, managerial attention is guided by not only what the firm *can do* but also what it seeks to accomplish in alignment with host country priorities. This requires MNEs to have in-depth knowledge of domestic policy initiatives and institutional processes, which is often accumulated through local presence and continuous interactions with institutional actors. Hence, policy-aligned investment is more often associated with subsequent investment. I propose that:

Proposition 2b: *Managerial attention to specific host-country policy instruments increases the likelihood that MNEs with strong firm-specific advantages will pursue policy-aligned subsequent investment.*

2.3.3 The Curating Role of Government Agencies

MNEs' managerial attention is a selective process rather than a binary condition of noticing or ignoring (Ocasio, 1997). Consistent with the *structural distribution principle* of the ABV (Ocasio, 1997; 2011), managerial attention can also be actively directed by external actors, especially government agencies. As such, I extend the attention-based FSA/CSA framework to

incorporate the role of government agencies as curators of specific host CSAs, thereby affecting MNEs' investment decisions.

On the one hand, although MNE managers pursuing initial investment typically focus on the host country's general environmental conditions, government agencies can redirect their attention toward specific policy instruments through promotional activities (Giroud & Bonilla-Feret, 2025). For example, agencies can highlight tailored investment incentives or accelerated permitting schemes during bilateral consultations with new MNEs (Sauvant, 2020). They may also publicly advertise upcoming infrastructure projects through government portals to attract capable MNEs with the required expertise (Giroud & Bonilla-Feret, 2025). Such efforts make specific policy instruments more salient in the attention structures of new foreign investors who might otherwise overlook these mechanisms during their high-level screening of host countries.

On the other hand, the bounded rationality assumption of the ABV suggests that even MNEs with a local presence may not fully recognize the breadth of resource endowments in the host country (Ocasio, 1997; 2011). By highlighting, aggregating, or facilitating access to such resources through preferential access schemes, government agencies can enable MNEs to enrich their internal resource bundles and thereby create subsidiary-level FSAs (Rugman & Verbeke, 2001). In this sense, general environmental conditions in the form of the country's resource endowments can be reframed or rendered more salient through government interventions. Thus, government agencies can reorient managerial attention to a country's broader environmental conditions. Thus, I propose that:

Proposition 3: *The promotion of host-country specific advantages by government agencies increases the likelihood that MNE managers will attend to existing advantages, thereby shaping MNEs' investment decisions.*

2.4 ILLUSTRATIVE EVIDENCE FROM PUBLIC ANNOUNCEMENTS

2.4.1 Qualitative Content Analysis

I conducted a qualitative content analysis of public announcements on MNEs' initial and subsequent investments to demonstrate the practical relevance of the attention-based FSA/CSA

framework. While *not* intended as a formal empirical test, this analysis serves as *illustrative evidence* to ground the theoretical propositions in observable, real-world investment behaviours.

Qualitative content analysis examines both the word usage and the meanings embedded in communication (Zhang & Wildemuth, 2009). It is an “empirical, methodologically controlled analysis of texts in the context of communication, following contextual, analytical rules and step-by-step models, without rash qualification” (Mayring, 2000, Section 1). This approach allows for the interpretation of manifest and latent meanings in textual data (Sandelowski, 2000) and is well suited for systematically describing real-world phenomena (Drisko & Maschi, 2016). The assumption is that frequently occurring themes reflect what MNE managers most attend to in the host context (Zhang & Wildemuth, 2009).

Public announcements, especially those with comments by company executives, are not neutral records of events. Although these announcements are partly shaped by impression-management concerns, ABV research suggests that they nonetheless provide valuable signals of what firms frame as strategically salient (Ocasio, Laamanen, & Vaara, 2018; DeHaan, Shevlin, & Thornock, 2015; Hao & Xiong, 2021). In particular, public announcements are curated messages that firms use to legitimate their strategic choices (Ocasio et al., 2018). I therefore interpret announcements as proxies for what MNE managers notice and deem strategically relevant in the external environment. In this sense, analyzing patterns in public releases allows inferences on how managerial attention is directed toward specific host CSAs.

I collected public announcements on initial and subsequent investment from Google News covering the years 2020 to 2024. I focused on the US manufacturing sector to ensure that MNEs pursuing initial and subsequent investments are comparable, enabling a focused comparison of their managerial attention to host CSAs. Table 2-1 provides a few example keywords used to collect the announcements. I ensured the articles were readable in English and related to the study context. I included one article per event, excluded duplicates, and dropped the articles that did not report an investment amount. I also ensured that credible sources reported the articles. I assumed the investment exists if I found multiple articles on the same event. Articles are included in the sample as long as they fulfill the above criteria. The final sample has 219 articles, with 114 on initial investment and 105 on subsequent investment.

Table 2-1 Examples of Search Phrases

| Type of Investment | Examples of Search Phrases |
|-----------------------|---|
| Subsequent Investment | <ul style="list-style-type: none"> - “Company expands footprint in the U.S.” - “Company builds new factory in the U.S.” - “Company expands production in the U.S.” - “Company opens additional facilities in the U.S.” - “Company expands capacity in the U.S.” - “Company announces U.S. expansion” |
| Initial Investment | <ul style="list-style-type: none"> - “Company to establish the first plant in the U.S.” - “Company to establish first facility in the U.S.” - “Company to open its headquarters in the U.S.” - “Company to establish the first centre in the U.S.” - “Company to establish the first lab in the U.S.” - “Company opens the first factory in the U.S.” |

I coded the announcements using a three-step scheme. First, I classified two types of FSAs. Tangible FSAs include R&D outputs and innovative processes. Intangible FSAs capture relational or reputational assets, such as partnerships with suppliers or customers. An MNE was coded as possessing strong FSAs if both types were mentioned in the article; otherwise, the case was coded as weak FSAs. Second, I coded attention-based host CSAs, distinguishing between general environmental conditions and specific policy instruments. Each category was assessed on three dimensions aligned with the ABV: 1) Mention (1 point): the category was referenced anywhere in the article, indicating that it entered the attentional field; 2) Prominence (1 point): the category appeared in the headline, lead, or a stand-alone paragraph, showing that it was foregrounded relative to other content; and 3) Richness (1 point): the category was discussed in detail (i.e., naming programs, citing incentive amounts, or quoting a company spokesperson), suggesting that additional attentional resources were devoted to it. Each host CSA category could therefore score from 0 to 3; the higher-scoring category was interpreted as the dominant focus of MNE managerial attention. Third, I coded government agency involvement on a three-point scale: “0” if no agency was mentioned; “1” if an agency was mentioned in a general statement; and “2” if a company spokesperson explicitly attributed the investment decision to support from the agency. Table 2-2 presents the definitions of the themes and the coding examples.

To assess the reliability of my coding practices, eight PhD-level colleagues independently re-coded a random subset of 40 announcements, representing 20% of the sample. The intercoder agreement rate was 96%, corresponding to a Krippendorff’s alpha of 0.92, which indicates a high level of reliability (Krippendorff, 2004).

Table 2-2 Definitions of the Themes and Coding Examples

| Sub Themes: Definition | Coding Rules | Coding Example |
|---|---|---|
| Tangible FSAs: R&D outputs, financial resources, funding sources, innovative processes | Mentioned = 1; 0 otherwise | Founded in 2015, Arrival has developed a new method of designing and producing zero-emission vehicles using its proprietary hardware, vertically integrated technology and comparatively low-cost micro factories. ³ |
| Intangible FSAs: Networking, supplier partnerships, relationships | Mentioned = 1; 0 otherwise | Jinsuk Lee, CEO of Daechang Seat Savannah Corp. “DSC holds a prominent partnership with Hyundai Transys and Hyundai Mobis at HMGMA, and we hope to collaborate with even more projects in the future.” ¹⁵ |
| General Environmental Conditions (Host CSAs): Proximity to customers, skilled workforce, infrastructure, general business environment. | Mentioned = 1; 0 otherwise | Amaero will build upon the U.S.’s resurgent manufacturing sector and the strong regional manufacturing ecosystem. ⁴ |
| | Prominence (Appeared in headline, opening, or stand-alone paragraph) = 1; 0 otherwise | The article includes a stand-alone paragraph with a company executive’s quote, e.g., “It is critical that the United States leads in establishing the critical metals supply chain essential to a changing manufacturing landscape across North America,” Ucore Chairman and CEO Patrick Ryan said.” ⁵ |
| | Richness (Detailed program names, dollar amounts or quotes) = 1; 0 otherwise | “The electric vehicle market is a market with a bright future with an expected compound annual growth rate of 32 percent by 2030, and the demand for related materials such as electrolytes is projected to rise accordingly. With our business in this promising market, I hope that we can create a mutually beneficial environment where the community and the company can both continue to grow.” – Duksan Electera America, Inc. President Suwan Lee. ⁶ |
| Specific Policy Instruments (Host CSAs): Tax abatement, grants, economic zones/ industrial parks, public procurement contracts | Mentioned = 1; 0 otherwise | The incentive package offered to SK was detailed in documents obtained by The Atlanta Journal-Constitution through the Georgia Open Records Act. ⁷ |
| | Prominence (Appeared in headline, opening, or stand-alone paragraph) = 1; 0 otherwise | The article includes a stand-alone paragraph about the details of the incentive program, e.g., “Bridgestone has received research grants from the U.S. Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) for its guayule research initiative. The DOE grant is supporting the development of a pilot plant in Akron, Ohio, to explore non-fossil-based materials. Additionally, Bridgestone has participated in various promotional offers, including rebates and prepaid card rewards, for customers purchasing their tires, though these are not directly from the U.S. government.” ²² |

| | | |
|--|--|--|
| | Richness (Detailed program names, dollar amounts or quotes) = 1; 0 otherwise | The project is expected to generate a total capital investment of nearly \$1.3 million and create 100 high-wage jobs with the support of a \$600,000 Michigan Business Development Program (MBDP) performance-based grant... In addition, the company intends to utilize a partnership with Michigan Works! to reach potential talent. ⁸ |
| Government Agencies: Whether government agencies supported the project | Mentioned = 1; 0 otherwise | The Virginia Economic Development Partnership worked with the city and The Port of Virginia to secure the project for Virginia. ⁹ |
| | Company executives thanked the government for the support = 2 | Terry Farrell, chief operating officer, FUJIFILM Diosynth Biotechnologies, Texas. "We are grateful to Governor Greg Abbott, and the State of Texas for its commitment to supporting the growth of the Texas bio corridor and creating highly skilled jobs in the state. We are also grateful to the cities of Bryan and College Station and Brazos County for their continued support with this initiative." ¹⁰ |

2.4.2 Managerial Attention Shift Between Initial and Subsequent Investment

Table 2-3 presents the results. Panel A applies the attention-based framework to initial investments, and Panel B to subsequent investments. The analysis reveals systematic attentional patterns, which I elaborate in the following section to illustrate the theoretical propositions.

Of the 114 initial investment projects, 33 are classified as asset-augmenting investments, and 55 as asset-exploiting investments. Thus, 77% of these projects have general environmental conditions as the dominant focus of MNE managerial attention. Additionally, eight projects display a dual attentional focus, indicating that general environmental conditions and specific policy instruments received equal scores and played comparable roles in shaping investment decisions. In total, 84% of initial investment projects suggest that general economic conditions attracted a significant share of attentional resources and contributed to the final investment decision.

In comparison, among the 105 subsequent investment projects, 38 are classified as policy-enabled investments, and 41 as policy-aligned investments. Consequently, 75% of these projects have specific policy instruments as the dominant focus of MNE managerial attention. Also, 15 projects show a dual attentional focus, suggesting that both categories were considered simultaneously. In total, 90% of subsequent investment projects indicate that MNE managers

primarily attend to specific policy instruments when making expansion decisions. As such, these findings provide evidence of a clear attentional shift – from general environmental conditions during the initial investment to specific policy instruments during subsequent investment – providing evidence for the baseline proposition and proposition 1.

2.4.3 Managerial Attention and Initial Investments

For MNEs' initial investments in new markets, the analysis confirms previous IB studies that general environmental conditions are the main considerations for headquarters managers. For example, the managing director of Italy-based Certified Origins explained that the firm chose Virginia because “the state has an outstanding port located in the mid-Atlantic region, which is a great location to support customers.”¹¹ The managing director of Dutch-based Expandable LLC mentioned that “Greenville, S.C., was the perfect location for our first foreign expansion... With its strategic location, infrastructure, and available talent pool, this is the place where we wanted to be.”¹² Similarly, the chairman of South Korea-based Duckshin Housing noted that “by coming to Athens, we can be closer to the growing and new construction projects in Georgia and all other states of the U.S.”¹³ The CEO of another South Korea-based company, Dongwon Tech Corporation, also remarked that “Georgia has many Korean Americans, and already many Korean conglomerates have entered the country, making it easier for Dongwon Tech to enter the country in the early stages of investment.”¹⁴

The attributes of the general environmental conditions mentioned in asset-augmenting and asset-exploiting investments do not differ drastically. However, the median capital investment amount for asset-exploiting projects is about USD 40 million, which is significantly higher than that for asset-augmenting projects, USD 22 million.

Table 2-3 Results of Qualitative Content Analysis

| Subsequent Investment | Weak FSAs | | | Strong FSAs | | | Grand Total | | |
|----------------------------------|---------------------------------------|----------------|-------------------------|---------------------------------------|----------------|-------------------------|-----------------|----------------|-------------------------|
| | No. of Projects | CAPEX (Median) | Government Agency Score | No. of Projects | CAPEX (Median) | Government Agency Score | No. of Projects | CAPEX (Median) | Government Agency Score |
| Attention-Based Host CSAs | | | | | | | | | |
| General Environmental Conditions | 1) Asset-augmenting investment | | | 3) Asset-exploiting investment | | | 11 | 50 | 0.90 |
| | n.a. | n.a. | n.a. | 11 | 50 | 0.90 | | | |
| Specific Policy Instruments | 2) Policy-enabled investment | | | 4) Policy-aligned investment | | | 79 | 125 | 1.67 |
| | 38 | 41.5 | 1.46 | 41 | 275 | 1.85 | | | |
| Dual-Attention | 10 | 29.8 | 1.30 | 5 | 57 | 1.60 | 15 | 35 | 1.40 |
| Grand Total | 48 | 33.80 | 1.43 | 57 | 100 | 1.66 | 105 | 72 | 1.55 |

| Initial Investment | Weak FSAs | | | Strong FSAs | | | Grand Total | | |
|----------------------------------|---------------------------------------|----------------|-------------------------|---------------------------------------|----------------|-------------------------|-----------------|----------------|-------------------------|
| | No. of Projects | CAPEX (Median) | Government Agency Score | No. of Projects | CAPEX (Median) | Government Agency Score | No. of Projects | CAPEX (Median) | Government Agency Score |
| Attention-Based Host CSAs | | | | | | | | | |
| General Environmental Conditions | 1) Asset-augmenting investment | | | 3) Asset-exploiting investment | | | 88 | 30 | 1.39 |
| | 33 | 22 | 1.32 | 55 | 40 | 1.43 | | | |
| Specific Policy Instruments | 2) Policy-enabled investment | | | 4) Policy-aligned investment | | | 18 | 36 | 1.62 |
| | 9 | 13 | 1.63 | 9 | 37 | 1.60 | | | |
| Dual-Attention | 5 | 15 | 1.50 | 3 | 93 | 1.33 | 8 | 19 | 1.40 |
| Grand Total | 47 | 20.0 | 1.41 | 67 | 40 | 1.44 | 114 | 30 | 1.43 |

2.4.4 Managerial Attention and Subsequent Investments

For subsequent investment decisions, MNEs with weak FSAs are more likely to pursue policy-enabled investments. Among 48 such projects, 38 show managerial attention dominated by specific policy instruments, and 10 exhibit a dual attentional focus.

More specifically, MNE managers engaging in policy-enabled investments mostly focus on investment incentives. For example, British-based Bia Energy Operating Company (BEOC) received investment funds from the New Louisiana Angel Fund. According to the announcement, “this initial funding was important to moving the project through the front-end engineering and environmental permitting phase.”¹⁵ Also, Sweden-based Saab was supported by a “USD 3.5 million Michigan Business Development Program grant and approval of a 15-year, 100% SESA (Strategic Environmental and Social Assessment) exemption with an estimated value of up to \$664,500 for its eligible investment in Eligible Personal Property.”¹⁶ Similarly, the Kentucky Economic Development Finance Authority (KEDFA) approved German Bilstein for “up to USD 200,000 in tax incentives through the Kentucky Enterprise Initiative Act... In addition, Bilstein received resources from the Kentucky Skills Network.”¹⁷

Because these MNEs possess weak FSAs and because weak FSAs signal limited internal resource availability, targeted incentives are especially attractive, not for their absolute financial value, but because they lower investment barriers, reduce risk, and offer external resources that partially compensate for these weaknesses. ABV studies emphasize that resource scarcity draws managerial attention (Wiedmer & Whipple, 2022). Mullainathan and Shafir (2013) suggest that resource scarcity may even lead to tunnelling or paying too much attention to the potential weaknesses. Investment incentives can thus act as substitutes for internal strengths, attracting managerial attention and shaping subsequent investment decisions. This pattern is also evident in my analysis: none of the subsequent investment projects are asset-augmenting, suggesting that MNEs with weak FSAs may be reluctant to pursue sequential growth without external support.

Meanwhile, the analysis shows that MNEs with strong FSAs are more likely to engage in policy-aligned investments. Of the 57 subsequent investments made by such MNEs, 41 projects have managerial attention dominated by specific policy instruments, 5 have a dual attentional

focus, and 11 have an attentional focus on general environmental conditions. The result has two implications. First, policy-aligned investment is the dominant strategy through which strong FSA MNEs pursue expansion. Second, a smaller number of subsequent investments take the form of asset-exploiting projects in which firms expand to capture rising demand, as seen in investment projects by Germany-based Anheuser-Busch¹⁸, Sweden-based Camfil¹⁹, and Japan-based Hitachi Rail.²⁰ Because these asset-exploiting projects reflect the conventional exploitation logic, this chapter emphasizes the more distinctive role of policy-aligned investments.

Policy-aligned investments are closely linked to major government initiatives that create substantial opportunities for MNEs. Two prominent examples captured in the sample are the Inflation Reduction Act and the CHIPS and Science Act. The former has spurred some major investments from Hyundai Motor²¹ and Kia Motor²², as well as from their suppliers, such as Daechang Seat²³ and SK Battery²⁴. One announcement specifically mentioned that “the carmaker is eager to get the site up and running to take advantage of the incentives for localized EV manufacture offered by the U.S. government’s Inflation Reduction Act.”¹⁵ The latter has prompted expansion decisions by Samsung Electronics and Taiwan-based TSMC. In particular, one article highlights that “after President Joe Biden signed the CHIPS and Science Act into law, Samsung has agreed to invest in facilities that will manufacture and package the advanced chips in the U.S.”²⁵ TSMC Chairman also stated that “The CHIPS and Science Act provides TSMC the opportunity to make this unprecedented investment.”²⁶

Sometimes, these major government initiatives also result in public procurement contracts between MNEs and the host institutions. The sample identified eight policy-aligned subsequent investments involving such contracts. For example, Daimler Truck partners with the Michigan Legislature and the Michigan Economic Development Corporation to manufacture components for commercial trucking applications; the contract is part of the State’s Critical Industry Program.²⁷ DENSO collaborates with Western Michigan University and Kellogg Community College to develop a world-class skilled workforce pipeline in the electric vehicle and semiconductor industries.²⁸ Also, Switzerland-based Mediterranean Shipping Company partners with the State of Louisiana to advance the container facility on the Lower Mississippi River and support the State’s goal of “strengthening the Port’s competitiveness and making it a primary facility capable of handling ultra-large container vessels.”²⁹

Thus, the median capital investment amount for policy-aligned subsequent investments is the highest among all investment types, at about USD 275 million, followed by that of asset-exploiting projects (USD 50 million) and policy-enabled projects (USD 41.5 million).

2.4.5 The Curating Role of Government Agencies

Table 2-3 also reports the average score of government agency involvement for each cell of the attention-based framework. Among initial investment projects, the scores for policy-enabled and policy-aligned investments are nearly identical at 1.60, followed by asset-exploiting investments at 1.43 and asset-augmenting investments at 1.32. For subsequent investments, the highest average score occurs in policy-aligned investments at 1.85, followed by policy-enabled investments at 1.46 and asset-exploiting investments at 0.90. The analysis suggests two patterns.

First, government agencies are more systematically involved in subsequent investments, largely because they can build long-term partnerships with MNEs that are locally embedded in the host context. For example, Japan-based Bridgestone noted that its expansion in the U.S. drew on a four-decade partnership with the state's Department of Economic and Community Development.³⁰ The president of CF Industries also expressed appreciation for "the partnership we have had with the state of Louisiana and Ascension Parish over the years as we have expanded our operations, taken industry-leading steps to decarbonize our existing assets and now as we explore new, low-carbon ammonia production capacity."³¹ Through sustained interactions, government agencies can direct managerial attention toward the details of policy instruments and highlight the availability of host CSAs, thereby encouraging sequential expansion. Policy-aligned subsequent investments, in particular, show the highest level of government agency involvement across all categories. This evidence confirms that when governments proactively promote specific initiatives, MNEs with strong FSAs and deep local embeddedness are more likely to expand in directions that align with these initiatives.

Second, government agencies can also direct MNE managerial attention toward specific policy instruments at the initial investment stage. Policy-aligned initial investments continue to reference the Inflation Reduction Act, as seen in the investments of Norwegian NorSun³², South Korean SungEel Recycling³³, and Canadian Moment Energy³⁴. Policy-enabled initial investments, however, demand more hands-on involvement from government agencies. The

chairman of Germany-based VACOM explained that the governor of Montana persuaded him that the state has great universities and needs more high-tech jobs.³⁵ Similarly, the chair of Australian Star Scientific Global noted that “from the very earliest conversations, the officials in New Mexico outlined their long-term commitment to hydrogen and their whole-of-government approach... We were impressed by their planning for both industrial needs and human details, such as housing and education incentives. There is also an infectious ‘can-do’ attitude which appeals to us Australians very much.” Executive Chair of British MEP Ltd also mentioned that the “City’s efforts to promote STEM skills and diversity were a major factor in our decision.”³⁶

In summary, these findings highlight the curating role of government agencies in shaping the attentional focus of MNEs. By providing incentives, building partnerships, and framing policies in ways that resonate with firms’ strategic concerns, agencies not only lower barriers for weak FSA firms at entry but also channel the expansion trajectories of strong FSA firms once they are locally embedded. At both stages, government involvement acts as an attentional cue, reinforcing the salience of specific host CSAs and guiding investment toward policy priorities.

2.5 DISCUSSION

This chapter develops an attention-based FSA/CSA framework by integrating the FSA/CSA matrix with the attention-based view (ABV) to examine how MNEs’ investment decisions differ between initial and subsequent investments. The framework is structured along two dimensions: the strength of FSAs and the attention-based host CSAs. It assumes that FSAs remain stable at the time of investment and that host CSAs influence decisions only when they capture managerial attention.

Building on the ABV, I propose that MNEs focus on general environmental conditions when entering new markets but shift their attention to specific policy instruments when undertaking subsequent investments. The choice of investment strategy is then conditioned by the strength of FSAs: in subsequent investments, MNEs with weak FSAs are more likely to pursue policy-enabled investments, while those with strong FSAs are more likely to pursue policy-aligned investments. I also argue that government agencies can actively direct managerial attention, affecting MNEs’ investment decisions. These propositions are illustrated through a qualitative content analysis of public investment announcements.

2.5.1 Theoretical contributions

This chapter offers three key theoretical contributions. First, it builds on the MNE growth literature. In their review, Tan et al. (2020) find that most studies of MNE growth emphasize foreign market entry, leaving the determinants of sequential expansion underexplored. They, thus, highlight the unresolved question of whether “facilitators of initial entry into a host market also enhance MNE’s subsequent growth in the particular market?” (p. 524). This chapter directly addresses this question. By systematically distinguishing between initial investment (guided by managerial attention to general environmental conditions) and subsequent investment (guided by attention to specific policy instruments), I show that the drivers of MNE growth differ across stages. I argue that investment decisions in foreign markets result from the interaction between MNEs’ FSAs and the host CSAs that their managers attend to, which gives rise to four ideal-type investment strategies: asset-augmenting and asset-exploiting investments at the entry stage, and policy-enabled and policy-aligned investments in subsequent growth stages.

Second, this chapter extends the FSA/CSA literature by incorporating a microfoundational lens to a matrix that has traditionally emphasized structural conditions. Existing versions of the FSA/CSA matrix focus on the availability and characteristics of host CSAs, treating these external factors as objective determinants of internationalization strategies (Rugman & Verbeke, 2001; Osabutey et al., 2023; Chen et al., 2015). This chapter advances the literature by incorporating the attention-based view (ABV) into the matrix, arguing that host CSAs shape investment decisions only when they capture managerial attention. By shifting the focus from structural availability to attentional salience, the attention-based FSA/CSA framework provides a behavioural mechanism linking external conditions to strategic action.

As such, the framework adopts a microfoundations perspective that seeks to “open explanatory black boxes” by tracing how purposive actions and interactions at the micro level generate macro-level effects (Felin, Foss, & Ployhart, 2015; Foss & Pedersen, 2019). Extending this perspective, Ambos et al. (2025) propose a modular microfoundations approach that conceptualizes how macro and micro levels can be connected. The study applies an abridged modular explanation that “combines macro-to-micro and micro-to-macro relationships, linking micro constructs to macro-outcomes” (Ambos et al., 2025, p. 4). Specifically, the theoretical

model begins with the availability of host CSAs, a macro-level construct. Headquarters managers then selectively allocate their *focus of attention* to general environmental conditions or specific policy instruments. This allocation is shaped by both their *situated context* (local experience) and the *structured channelling of attention* facilitated by host government agencies. The attentional choices then lead to MNEs' investment strategies, demonstrating that international expansion outcomes can be explained by tracing the micro-level attentional processes. The framework thus highlights managerial attention as the central micro-level filter between host-country context and organizational outcomes (Ambos et al., 2025). Hence, it opens the “explanatory black box” that connects micro-level attention to the broader macro-level growth trajectories of MNEs.

Third, this chapter builds on the ABV by specifying that the features of the host country that attract headquarters managerial attention can effectively influence MNEs' strategies for expansion. In particular, I propose that MNE headquarters managers focus on different host CSAs at different stages of investment. Moreover, I theorize the role of government agencies as external structural actors that can deliberately direct managerial attention, showing how institutional forces interact with attentional processes. This perspective highlights that external factors and policy environments can actively shape attention. Therefore, this chapter broadens the scope of the ABV to encompass how various types of external opportunities are noticed, interpreted, and acted upon, connecting attention with internationalization outcomes.

2.5.2 Implications for Society and Practice

This chapter offers several important implications for policymakers seeking to attract and retain multinational enterprises. First, the analysis underscores that government initiatives function not only as financial incentives but also as attentional cues. Investment decisions are shaped by what managers notice and interpret as strategically relevant. Even modest incentives can have disproportionate influence if they are highly visible, well-communicated, and explicitly framed as part of a broader national strategy. Policymakers should thus devote as much effort to promoting policy initiatives as to designing their financial terms, ensuring that MNE managers are aware of, and can easily interpret the relevance of available support mechanisms.

Second, the findings highlight the importance of long-term relational engagement. Policy-aligned investments, which often involve the largest capital commitments, are associated

with deep engagement between MNEs and host country agencies. One-off incentives may thus be less effective than sustained collaboration in channelling MNE expansion toward national priorities. Government agencies can play a proactive role by cultivating ongoing relationships with locally embedded MNEs. Such long-term engagement builds credibility, reduces uncertainty, and ensures that policy instruments are interpreted not as temporary financial sweeteners but as enduring opportunities for strategic partnership.

Third, the evidence suggests that policy design should be tailored to firm heterogeneity. MNEs with weaker FSAs respond to targeted incentives because these instruments help overcome internal resource gaps. In comparison, those with stronger FSAs are more likely to align with large-scale strategic initiatives. Policymakers can maximize impact by differentiating their approach: offering entry-enabling incentives for weaker firms that need external support, while engaging stronger MNEs through co-development opportunities that advance national priorities (e.g., sustainability or technological upgrading). This dual strategy ensures that incentives not only attract new investors but also channel the expansion of established MNEs toward sectors critical for long-term competitiveness.

2.5.3 Limitations and Directions for Future Empirical Analysis

This study has several limitations. First, the attention-based framework focuses on host CSAs and assumes that FSAs are static at the time of investment. However, FSAs themselves can also attract managerial attention and thus influence MNEs' expansion decisions. Future studies should investigate the effect of attention-based FSAs, for example, by examining how evolving subsidiary-level FSAs or headquarters-developed capabilities redirect attention toward different types of host CSAs over time. Such research could reveal whether the co-evolution of FSAs and CSAs alters the strategic balance between asset-augmenting, asset-exploiting, policy-enabled, and policy-aligned investments.

Second, this chapter focuses on the "attention selection" aspect of the ABV (Ocasio, 2011). Future studies should also reexamine these questions by adopting the attention perspective and attention engagement dimensions, which highlight not only what managers notice, but also how they frame issues and how deeply they sustain their focus. Incorporating these dimensions

could enrich our understanding of how managers interpret complex policy landscapes and how sustained engagement with certain CSAs shapes investment trajectories.

Third, while the data illustrate the practical relevance of my propositions, they do not permit a formal test. Therefore, moving forward, empirical studies are required to verify the results. Large-sample quantitative analyses or mixed-method approaches are needed to assess whether the attentional patterns observed in announcements generalize across industries and countries. Such empirical work would strengthen the external validity of the framework and clarify the boundary conditions under which managerial attention to host CSAs most strongly influences investment decisions.

Future research can empirically test managerial attention through several approaches. Because attention is reflected in communications (Ocasio et al., 2018), one approach is to analyze press releases, or annual reports through text analysis to capture the issues that managers highlight and prioritize. Surveys of executives could also provide direct measures of how attention is allocated and how it shifts across investment stages. In-depth qualitative case studies could further trace attentional processes over time, uncovering how managers interpret policy signals, respond to environmental cues, and balance FSAs with host CSAs in practice.

Policy-enabled investments can be explored by examining how the interaction between MNEs' FSAs and targeted policy instruments, such as investment incentives, shapes their investment decisions. Investment incentives can be measured by the availability of programs for which MNEs are eligible in the host country. Although detailed terms of the incentive schemes are rarely disclosed publicly, news articles often note whether incentives were granted. In Special Economic Zones (SEZ), the SEZ's official website often provides information on incentives available to investors. The World Bank also offers a database that covers tax incentives and restrictions of over 3,000 SEZs globally (World Bank, 2022). The type of incentives can be classified according to UNCTAD (2000) or existing studies (i.e., Tuomi, 2012).

Policy-aligned investments can be investigated in two complementary ways. First, scholars can analyze the impact of major government initiatives, such as the Inflation Reduction Act in the U.S., by employing a differences-in-differences design to compare MNE investment before and after the announcement of the initiative (Callaway & Sant'Anna, 2021). This helps

isolate the causal effect of policy initiatives on firms' expansion strategies. Second, researchers can analyze public procurement tenders in industries where local content requirements (hard or soft) are attached. Studying firms' responses to these tenders would reveal how MNEs adapt their investment strategies to meet policy conditions and capture government contracts.

Finally, the involvement of government agencies can be measured by the effectiveness of the country's Investment Promotion Agencies (IPAs). Monaghan, Gunnigle, and Lavelle (2014) find that IPAs help MNEs gain "insidership" within the host country, and, in later work, show that IPAs possess subnational location capital, defined as "economic and social assets accessible through relationships within a subnational location" (2020, p. 618). Thus, by engaging with IPAs, MNEs access local resources, which in turn affect their location choices. The effectiveness of IPAs can be proxied by the number of services they provide or their access to government funding. This information is often disclosed publicly. Alternatively, the influence of an IPA can be inferred from the governmental rank of its CEO. As UNCTAD (2008) suggests, the "closer the reporting is to the highest policymakers or the private sector, the more effective the IPA is." Thus, the higher the CEO's government position, the more government support the IPA can leverage and the better equipped it is to shape MNE headquarters' managerial attention.

2.6 CONCLUSION

MNEs' international growth unfolds not only through initial investments in new foreign markets but also through subsequent investments in existing host countries. This chapter explains the differences in MNEs' investment decisions between these two stages by adopting a microfoundations perspective. It develops an attention-based framework that integrates the firm-specific advantages/ country-specific advantages matrix with the attention-based view. The analysis shows that managerial attention acts as the micro-level filter through which host country advantages shape investment strategies and that government agencies can channel this attention toward policy priorities to stimulate MNEs' investments. Thus, policymakers can not only create favourable general environmental conditions to attract initial entries but also design targeted policy mechanisms to influence MNEs' growth trajectories. Further research could unpack the microfoundational mechanisms of attention and identify the most effective ways to engage MNEs so as to optimize their sustained contributions to the host society.

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CHAPTER 3 R&D TAX INCENTIVES AND THE GROWTH TRAJECTORY OF MULTINATIONAL R&D SUBSIDIARIES

3.1 INTRODUCTION

The growth trajectory of MNEs' R&D subsidiaries has emerged as a critical research frontier in the internationalization of R&D literature (Papanastassiou, Pearce, & Zanfei, 2020). While previous studies emphasize the role of host country location factors in shaping MNEs' R&D entry in foreign markets (Papanastassiou et al., 2020; Zhao, 2020; Belderbos, Lee, Mudambi, Du, & Somers, 2024), they have largely overlooked how these factors influence the subsequent expansion of MNEs' R&D subsidiaries in existing host countries. Thus, this chapter integrates the location advantages literature with Penrosean growth theory to examine the effectiveness of R&D tax incentives in promoting the growth of MNEs' R&D subsidiaries.

R&D tax incentives are among the most widely used innovation policy instruments worldwide to stimulate R&D investment (OECD, 2023). These incentives are granted to MNEs through either special tax treatment or the regular incentive system. The former is negotiated with specific MNEs, whereas the latter is part of the general tax code (OECD, 2017). This chapter focuses on the latter because most MNEs access R&D tax incentives via regular tax provisions (OECD, 2021). Such schemes are also commonly designed to attract foreign direct investment (FDI) (Munongo, Akanbi, & Robinson, 2017; United Nations, 2018).

The location advantages literature views R&D tax incentives as institutional-related location factors (Dunning & Lundan, 2008). By alleviating corporate tax burdens, reducing the cost of capital, and improving the rates of return on investments (Wen, 2020), these incentives create cost advantages for the host country (Dunning & Lundan, 2008). R&D tax incentives granted to MNE subsidiaries are also investment facilitators, "enticing foreign investors to invest in a given country" (Sauvant, 2020, p. 4). Therefore, host countries expect such incentives to encourage MNEs' R&D activities in priority sectors and geographic locations (Bosenberg & Egger, 2017; OECD, 2023).

Prior research has shown that R&D tax incentives can influence MNEs' R&D investment, although findings remain inconclusive. Some studies find a positive effect of these

incentives on MNEs' R&D investment (Hall & Van Reenen, 2000; Bloom, Griffith, & Van Reenen, 2002; Yang, Huang, & Hou, 2012; Ivus, Jose, & Sharma, 2021). Others argue that these tax incentives are not a significant consideration in MNEs' R&D investment decisions (i.e., Knoll, Riedel, Schwab, Todtenhaupt, & Voget, 2021; Feng, 2024) because these incentives are “too small a magnitude to affect such decisions” (Thomas, 2007, p. 12).

However, most empirical studies frame R&D tax incentives as MNEs' R&D entry drivers and overlook their role in the growth of established R&D subsidiaries, an important yet underexplored dimension of R&D internationalization (Papanastassiou et al., 2020; Feng, 2024). Previous studies show that, during initial foreign entries, tax incentives play a secondary role compared with fundamental location factors, such as market size and proximity to research centres (Cantwell & Mudambi, 2000; Siedschlag, Smith, Turcu, & Zhang, 2013). In contrast, during post-entry growth, established subsidiaries may leverage tax incentives differently because they have accumulated knowledge of local institutions and possess stronger capabilities to access these incentives (Cantwell & Mudambi, 2005). Moreover, governments expect these established subsidiaries to continuously contribute to national innovation systems through knowledge transfer and workforce training (UNCTAD, 2000). Therefore, it is crucial to examine how R&D tax incentives affect the expansion of MNEs' R&D footprint in host countries.

Drawing on Penrose's (1959) theory of the growth of the firm, the growth of R&D subsidiaries is driven by subsidiary-level resources and capabilities dedicated to R&D activities (Tan, Su, Mahoney, & Kor, 2020). These encompass underutilized productive resources that guide the direction of growth, managerial resources that identify profitable opportunities, and managerial capabilities – developed through managerial learning – that convert R&D outputs into competitive advantages and deploy the firm's resource bundles effectively and efficiently in the host country. Empirical studies confirm that such resources and capabilities are critical to MNE subsidiaries' growth (Tan & Mahoney, 2005; Tan, 2009; Lin, Chen, Ahlstrom, & Wang, 2020). However, existing Penrosean studies mainly stress the importance of internal factors and neglect the role of locational factors in enabling or amplifying growth (Tan et al., 2020).

Thus, this chapter addresses the research question: *Under what conditions are R&D tax incentives effective in encouraging the growth trajectory of MNEs' R&D subsidiaries?* I

hypothesize that R&D tax incentives foster subsidiary growth by lowering innovation costs and expanding the opportunity space. Drawing on the Penrosean growth theory, I further argue that the realization of this growth depends on the internal characteristics of the R&D subsidiary, specifically productive resources (proxied by R&D funding), managerial resources (proxied by R&D partnership experience), and R&D capabilities (measured by previous R&D patents). In particular, I hypothesize that R&D tax incentives (a) complement subsidiaries with abundant productive resources by strengthening their ability to exploit opportunities and (b) compensate those constrained by managerial resources and capabilities by alleviating financial constraints and facilitating capability development.

Employing a dynamic multilevel regression analysis, I use the Business Research Microdata (BRM) (2001–2021) from Statistics Canada. I find support for all the hypotheses. Specifically, a one standard deviation increase in R&D tax incentives raises the growth of R&D subsidiaries by 7.9%. This effect strengthens by 26.6% when R&D funding increases by one standard deviation but reduces by 9.5% with a one standard deviation increase in R&D partnership experience and by 3.7% for each additional patent. The results confirm the dual role of R&D tax incentives: they not only amplify the growth of subsidiaries with strong resource endowments but also support those facing managerial and capability constraints.

This chapter makes several contributions to the field. First, it contributes to the R&D internationalization literature by shifting attention from MNEs' R&D entry strategies to the post-entry growth of their established R&D subsidiaries. Second, it extends the location advantages literature by showing that R&D tax incentives, an institutional-related location factor offered by host governments, can act as enablers of subsequent R&D expansion beyond the immediate effect on R&D activities. Third, it contributes to Penrosean growth theory by demonstrating how host-country policy instruments interact with subsidiary-level resources and capabilities. More specifically, R&D tax incentives do not directly cause subsidiary growth but rather serve as preconditions that facilitate growth when internal conditions are met. A complementary analysis of domestic R&D firms further reveals that these incentives are most effective for resource-rich and technologically capable local firms. This contrast illustrates that the impact of policy tools varies across firm types and underscores the need for context-specific theorization of their role in shaping the growth of R&D firms.

3.2 THEORETICAL FOUNDATIONS

3.2.1 The Internationalization of R&D

The internationalization of R&D literature has focused extensively on the influence of location specific factors on MNEs' R&D strategies (Papanastassiou et al., 2020). Early studies suggested that R&D was centralized in the home country and viewed foreign R&D operations as adaptive units that supported local market demand (Stopford & Wells, 1972). Over time, as the exploratory and innovation-generating functions of overseas R&D operations became more prominent (Ronstadt, 1977; Behrman & Fischer, 1980), scholars identified various types of R&D strategies linked to host country characteristics, including asset-exploiting and asset-seeking (Kuemmerle, 1999; Dunning & Narula, 1995).

Subsequent research has therefore connected the host country locational factors to MNEs' R&D entry in new foreign markets. For example, Belderbos, Leten, and Suzuki (2013) show that MNEs are more likely to establish R&D subsidiaries in regions characterized by strong technological agglomeration. Williams and Vrabie (2018) find that, in cluster-abundant countries, technology-intensive MNEs prefer to organize their R&D operations through joint ventures rather than wholly owned subsidiaries. More recently, Zhao (2020) demonstrates that host-country intellectual property protection has a significant impact on foreign R&D entry, particularly for firms operating in industries with high patenting activity. Belderbos et al. (2024) also show that a city becomes less attractive for new R&D investment when a small number of MNEs control its international knowledge connections.

Thus, most empirical studies emphasize the *breadth* of R&D internationalization by assessing the numbers and spatial dispersion of newly initiated foreign R&D subunits across multiple host locations (Iwasa & Odagiri, 2004; Lahiri, 2010; Xiao & Yu, 2024). However, relatively little is known about the depth of R&D internationalization – specifically, whether and how MNEs continue to expand their R&D footprint within an existing host country. As such, we have a limited understanding regarding the extent to which MNEs' R&D subsidiaries experience subsequent growth after their initial establishment. Hence, this chapter addresses this gap by examining how host-country locational factors, particularly R&D tax incentives, influence the growth trajectory of MNEs' R&D subsidiaries.

3.2.2 R&D Tax Incentives as Host Country Location Factors

R&D tax incentives are institutional-related location advantages that reduce corporate tax burdens and enhance the rates of return on R&D investments (Wen, 2020; Dunning & Lundan, 2008). They reflect the socioeconomic and political environment of the country, as well as other industry and market-related complementary assets that affect MNEs' investment decisions (Narula & Santangelo, 2012). Thus, R&D tax incentives indicate the availability and promotion of clusters of related activities, thereby improving the attractiveness of a country (Dunning & Lundan, 2008). For example, Guimón (2009) shows that R&D tax incentives enhance Spain's competitiveness as an R&D location. Oliver, Kourouklis, and Jofre-Bonet (2024) demonstrate that UK R&D tax credits foster innovation in the life sciences sector. Sauvart (2020) also argues that such incentives serve as investment facilitators, signalling a welcoming investment climate for MNEs to engage in innovation activities in the country. Therefore, the effectiveness of R&D tax incentives in shaping MNEs' R&D activities has attracted much attention in the literature.

Existing studies indicate that R&D tax incentives can foster MNEs' R&D investments, though the magnitude of this effect remains contested. Some studies show that incentives have a positive effect. For example, Hall and Van Reenen (2000) find that each dollar of R&D tax credits in OECD countries generates about one dollar of additional R&D spending by firms, and Bloom et al. (2002) find that tax incentives increase R&D intensity even after controlling for country-specific conditions, macroeconomic shocks, and other policy influences. Similar results are also observed in Taiwan (Yang et al., 2012) and India (Ivus et al., 2021).

Other studies contend, however, that R&D tax incentives have a negligible impact on MNEs' investment decisions. LeRoy (2005) argues that tax incentives account for "only 1.2 percent of the typical firm's cost of doing business" and, thus, are not significant enough to affect MNEs' investment decisions. Knoll et al. (2021) likewise find that MNEs' overall R&D activity remains unchanged in response to more generous tax incentives. Similarly, Feng (2024) suggests that firms tend to relocate their R&D from countries offering low tax subsidies to those offering high tax subsidies and that the actual impact of tax incentives on fostering innovation is limited.

Reflecting the dominant focus of R&D internationalization literature, most studies on R&D tax incentives have focused on their impact on the levels of MNEs' initial R&D investment

in new foreign markets (Hall & Van Reenen, 2000; Feng, 2024). In this view, R&D tax incentives act as entry drivers that shape where and how MNEs internationalize their R&D activities (Papanastassiou et al., 2020). Yet, little attention has been given to their impact on the growth of MNEs' existing R&D subsidiaries. This omission is important for two reasons.

First, evidence on the effectiveness of R&D tax incentives is mixed partly because they play a secondary role in MNEs' initial investment decisions (OECD, 2000). MNEs first screen countries based on fundamental location factors, such as market size and access to raw materials (Cantwell & Mudambi, 2000) and then use tax incentives to differentiate among otherwise comparable locations. Devereux and Griffith (1998), for example, find that tax incentives are “effective in the choice between locations but not in the choice of whether to locate the plant in Europe compared with one of the outside options” (p. 335). Siedschlag et al. (2013) demonstrate that agglomeration economies, human capital, and proximity to the centre of research excellence primarily drive R&D location choices. Hsu, Lee, Leon-Gonzalez, and Zhao (2019) also confirm that such investment in China is largely determined by market size rather than tax incentives.

Second, subsequent growth decisions are made by MNEs that already operate R&D subsidiaries in the host country, and these firms may respond to tax incentives differently than new entrants. With accumulated experience and local embeddedness, established subsidiaries are more aware of policy instruments and better able to access and leverage R&D tax incentives (Chang & Rosenzweig, 2001; Cantwell & Mudambi, 2005). Moreover, governments design such incentives not only to attract new R&D investment but also to retain and expand existing MNEs' R&D operations in the country. They expect the established R&D subsidiaries to continuously contribute to the prosperity of specific industries, enhance export trading and employment training, and transfer up-to-date technologies in response to the R&D incentives (UNCTAD, 2000). Consequently, it is essential to examine how R&D tax incentives shape the growth of MNEs' R&D subsidiaries.

3.2.3 A Penrosean Perspective on Subsidiary Growth

To examine the growth trajectory of MNEs' R&D subsidiaries, this chapter adopts the Penrosean theory of firm growth (1959), one of the most influential theoretical perspectives for understanding firms' growth trajectories (Tan et al., 2020; Kor, Mahoney, & Tan, 2024). Penrose

(1959) argues that firm growth is a natural process driven by underutilized productive and managerial resources, as well as managerial capabilities that enable firms to pursue profit-maximizing opportunities.

Productive resources encompass both tangible and intangible assets that enable firms to compete effectively in local markets (Buckley & Casson, 2009). Managerial resources refer to managers' prior work experience and external networks, which allow them to respond to external changes, synthesize information, facilitate communication across divisions, and plan growth strategies (Tan, 2009). While productive resources "shape the direction in which businesses expand their scope" (Tan & Meyer, 2010, p. 157), managerial resources enable firms to discover the profit-seeking opportunities.

However, to effectively leverage these resources, firms must also possess strong managerial capabilities, which are firm-specific knowledge developed through continuous learning embedded in the firm's daily operations. As Penrose (1959) notes, "learning increases and enriches managers' tacit knowledge about the resource bundles in the firm, which in turn expands the range of productive services from those resources" (Tan et al., 2020, p. 500). Hence, excess productive and managerial resources can arise from strong managerial capabilities. When the development of such capabilities is constrained, firms may struggle to absorb further growth. For example, Tan and Mahoney (2005) find that episodes of rapid expansion are followed by episodes of slow growth because the initial expansion creates dynamic adjustment costs that disrupt current operations and temporarily limit the development of managerial capabilities, thereby hindering the firm's ability to sustain continued growth.

Applying the Penrosean perspective, it can be inferred that subsidiary-level resources in the form of underutilized productive and managerial resources guide the *direction* of the R&D subsidiary's growth (Buckley, 2024). Productive resources refer to the subsidiary resources dedicated to innovation activities. Managerial resources reflect the R&D partnership experiences embedded in the subsidiary's workforce. For example, Kafouros and Aliyev (2016) find that a subsidiary's intangible assets can enhance its growth in transition economies with well-developed institutions. Riaz, Rowe, and Beamish (2014) also find that the long-term growth of

subsidiaries is associated with a higher proportion of expatriates at founding, as expatriates bring administrative capacities that enable them to assume managerial responsibilities.

Managerial capabilities in this context refer to the R&D capabilities that enable subsidiary managers to translate research activities into actionable knowledge, thereby enhancing the subsidiary's performance (Somaya, 2012; Leung & Sharma, 2021). Tan (2009) shows that managerial capabilities at the subsidiary level are as critical as those at the headquarters level. She argues that such capabilities "allow managers to handle daily operations, explore opportunities, and develop operations" (p. 1047). Distel, Sofka, Faria, Preto, and Ribeiro (2022) also find that MNE subsidiaries led by managers capable of combining parent firm and host-country resources tend to achieve superior performance, enabling future expansion.

While Penrose (1959) explains the internal drivers of growth, she provides limited guidance regarding the external determinants of growth. Penrose (1959), specifically, writes that "*external barriers to expansion can be ruled out assuming that the supply to the firm of capital, labour and management is not absolutely fixed and that there are opportunities for profitable investment open somewhere in the economy at existing prices and interest rates*" (pp. 39-40). Thus, in facing the external environment, managers who possess managerial capabilities can always decide to "escape stagnant markets by diversifying into other product markets or geographical locations" (p. 43).

Therefore, from a Penrosean perspective, although R&D tax incentives are provided by host governments to foster innovation-related activities, they do not inherently guide subsidiary growth. Their effectiveness is shaped by the subsidiary's internal factors. Therefore, R&D tax incentives create cost-efficient opportunities for expansion, but whether this potential is realized hinges on the subsidiary's productive resources, managerial resources, and R&D capabilities.

3.3 HYPOTHESIS DEVELOPMENT

Based on the literature review, I argue that R&D tax incentives promote the growth of MNE R&D subsidiaries for two reasons. First, by reducing the after-tax cost of innovation, R&D tax incentives create cost-efficient opportunities for investment that lower the financial barriers to sustaining or expanding R&D activities (Dunning & Lundan, 2008; Mayer & Sabel, 2023).

These incentives enhance the subsidiary's ability to allocate resources toward innovation by freeing up internal funds that would otherwise be absorbed by tax liabilities. In doing so, they not only reduce the immediate costs of conducting research but also enrich the existing bundle of subsidiary-level productive resources, thereby facilitating growth decisions (Tan et al., 2020).

Second, regular R&D tax schemes are fiscal incentives granted with performance-based conditions. For example, Ireland requires MNEs to recruit highly skilled talent, cooperate with local institutions or invest in designated regions (UNCTAD, 2006). Similarly, Japan-based AISIN Drivetrain has approved "an incentive of \$425,000 in tax credits in the US ...[but] until employees are hired, the firm is not eligible to claim incentives" (Business Facilities, 2018). Also, many R&D tax schemes include deferred benefit provisions that allow firms to carry forward unused credits or claim deductions in future fiscal years. Such conditions imply that subsidiaries can only realize the full benefits of incentives after sustained activity.

Therefore, as Cuervo-Cazurra, Silva-Rego, and Figueira (2022) note, "the benefits of fiscal incentives are usually focused on the later stages of investment" (p. 423). Liu, Cowling, and Zhang (2025) also demonstrate that R&D tax incentives take time to manifest themselves in innovation outcomes in the UK. Thus, I argue that because R&D tax incentives not only reduce costs but also are designed with deferred benefits, they are likely to influence the continued expansion of subsidiaries' R&D activities. Accordingly, I hypothesize that:

Hypothesis 1: R&D tax incentives positively encourage the growth of MNE R&D subsidiaries.

3.3.1 The Moderating Effect of Penrosean Factors

Building on the Penrosean perspective, the productive and managerial resources of an R&D subsidiary shape its capacity to pursue growth (Penrose, 1959; Tan et al., 2020). Although subsidiaries can access resources from their headquarters, this chapter focuses on subsidiary-level resources because host governments grant tax incentives mainly based on resources and activities embedded in the local operations. Thus, subsidiary-level resources are immediate determinants of whether these incentives translate into sustained growth. I thus concentrate on two relatively fungible resources at the subsidiary level: R&D funding, representing productive resources, and R&D partnership experience, representing managerial resources.

R&D funding is a financial resource and a key form of productive resource dedicated to innovation. Penrose (1959) classifies such financial resources as versatile resources that provide a wide range of potential services and increase a firm's combinative opportunities. As she notes, *“the versatility of resources are the important factor governing the possibilities of its expansion. So long as there are profitable production opportunities open anywhere in the economy, a firm can take advantage of them if its resources are versatile”* (Penrose, 1959, p. 539).

Accordingly, well-funded R&D subsidiaries can engage in a broader array of innovation activities (Nason & Wiklund, 2018), seize emergent investment opportunities (Sapienza, Autio, George, & Zahra, 2006), and adapt more effectively to dynamic business environments (Kraatz & Zajac, 2001). They are, therefore, better positioned to leverage the benefits of R&D tax incentives, which lower the marginal cost of R&D investment and expand the effective use of existing resource bundles (Mayer & Sabel, 2023). With additional policy support, such subsidiaries are more capable of absorbing and integrating them into ongoing projects, scaling up R&D commitments, and pursuing longer-term initiatives. In other word, R&D tax incentives can encourage these subsidiaries to deploy their resources more aggressively toward ambitious projects or riskier innovation strategies (Castellacci & Lie, 2015).

In contrast, subsidiaries with limited R&D funding often experience resource shortages (Bachas, Brockmeyer, Dom, & Semelet, 2023), lack the autonomy to pursue strategic growth (Levinthal, 1997), and are less equipped to navigate competitive pressures or invest in high-risk R&D activities (Bourgeois, 1981; Singh, 1986). Thus, financially constrained R&D subsidiaries might use R&D tax incentives defensively to sustain existing projects rather than strategically to expand their operations (Levinthal, 1997). Consequently, subsidiaries with greater R&D funding are more likely to respond strongly to tax incentives that enhance their ability to exploit profitable opportunities. Particularly, R&D tax incentives complement productive resources by amplifying the capacity of well-funded subsidiaries to pursue innovation and expansion. Thus, I hypothesize that:

Hypothesis 2a: *The positive relationship between R&D tax incentives and the growth of MNE R&D subsidiaries is strengthened when subsidiaries possess greater productive resources.*

The availability of extensive managerial resources, proxied by R&D partnership experience, also encourages R&D subsidiaries to pursue growth in the host country (Tan, 2009). Strong R&D partnership experience has two important implications. First, R&D subsidiaries with extensive local partnerships are more embedded in host-country networks, which enables managers to access richer information flows and identify new expansion opportunities (Stallkamp, Pinkham, Schotter, & Buchel, 2018). Such relational capital allows the subsidiaries to collaborate more effectively with universities, industry associations, and local firms, thereby broadening their growth options (Luo, 2001).

Second, R&D subsidiaries with strong partnership experience often employ specialized workforces and, therefore, hold greater bargaining power with host governments (Halkos & Tzeremes, 2007). Because most performance-based conditions associated with the R&D tax incentives are linked to skilled job creation (Appelt, Bajgar, Criscuolo, & Galindo-Rueda, 2016), these subsidiaries can leverage their employment contributions to negotiate preferential tax treatment. For example, Egger, Strecker, and Zoller-Rydzek (2020) note that “in threatening to move their operations to other locations, MNEs are able to extract greater tax deductions” (p. 1). Also, Maggioni, Santangelo, and Koymen-Ozer (2019) find that, due to their role as employers, MNEs can influence the host country’s economic development and social upgrading. Thus, MNEs with such subsidiaries are less sensitive to calls to pay their ‘fair share of tax’ (Bird & Davis-Nozeamack, 2018). Therefore, R&D subsidiaries with extensive partnership experience may be able to negotiate special tax treatments and, thus, may not be attracted to the R&D tax incentives offered under the regular system.

In contrast, R&D subsidiaries with limited R&D partnership experience are more likely to value R&D tax incentives. First, without extensive local networks, these subsidiaries lack access to potential growth opportunities arising from information flows and collaborations with local partners. Their weaker embeddedness reduces their ability to discover profitable opportunities independently, making them more dependent on external policy support, as R&D tax incentives under the regular system represent one of the few external resources they can access. Second, subsidiaries with limited partnership experience typically employ smaller or less specialized workforces and thus wield less bargaining power with host governments (Brooks, Godfrey, Hillenbrand, & Money, 2016). These subsidiaries are less able to negotiate special tax

treatments with the government. As Morriset and Prinia (2001) note, “taxes may play a more important role in the cost structure of small investors because they do not have the human capacity to develop sophisticated tax avoidance strategies” (p. 10). Therefore, R&D subsidiaries with limited partnership experience are more reliant on the formal R&D tax schemes, and, thus, are more likely to respond positively as a means of expanding their activities. Therefore, I hypothesize that:

Hypothesis 2b: *The positive relationship between R&D tax incentives and the growth of MNE R&D subsidiaries is strengthened when subsidiaries possess fewer managerial resources.*

In addition to subsidiary productive and managerial resources, the effectiveness of R&D tax incentives also depends on whether subsidiaries possess R&D capabilities proxied by R&D patents. R&D patents represent tangible outputs from previous R&D activities (Faber & Heslen, 2004). Subsidiaries with more R&D patents have the ability to translate subsidiary-specific technological knowledge into innovative solutions (Barney, 1991), which allow them to gain competitive advantages (Somaya, 2012), improve their profitability (Leung & Sharma, 2021), and pursue growth opportunities. As a result, R&D subsidiaries with strong R&D capabilities are more likely to expand organically, with less reliance on external policy support, such as R&D tax incentives.

Furthermore, the more patents a subsidiary holds, the more technological knowledge it accumulates internally. Subsidiary-specific technological knowledge cannot be easily traded in an open market due to market failures (Buckley & Casson, 2009). These market failures increase transaction costs and expose subsidiaries to opportunistic behaviour by third-party partners (Santangelo, Meyer, & Jindra, 2016), thereby limiting their ability to fully appropriate the value of patents (Buckley & Casson, 2009). As a result, MNEs would commit more resources to integrate the R&D activities of the subsidiaries within their organizational boundaries (Hashai & Almor, 2008) and to fully capture the return on innovation (Williamson, 1981). Thus, R&D subsidiaries with more patents are also more likely to receive continued investment from their parent MNE, further reducing their reliance on regular tax incentives in pursuing growth trajectories in the host country.

Nevertheless, subsidiaries with fewer patents – and thus weaker R&D capabilities – are more likely to value the benefits of R&D tax incentives. Building such capabilities requires substantial upfront investment and is subject to high uncertainty (Samuelsson & Davidsson, 2009). In their early stages, R&D subsidiaries often face organizational diseconomies of scale driven by coordination costs and financial burdens (Lee & Sung, 2005), leading to unpredictable performance and even operational losses (Lin, Lee, & Hung, 2006). R&D tax incentives, particularly those with deferred and cumulative tax credits (Columbia Centre, 2022), mitigate these burdens by allowing subsidiaries to redistribute expenses and tax liabilities over time. In doing so, they provide resource-constrained subsidiaries with the financial buffer and time needed to develop R&D capabilities. As Cuervo-Cazurra et al. (2022) note, “by lowering future costs, the firm can focus on achieving success in the country in the long run, knowing that future profits will be captured” (p. 423). Hence, R&D subsidiaries with weaker R&D capabilities are more likely to pursue growth in response to tax incentives, as these incentives alleviate financial constraints and facilitate capability development. Therefore, I hypothesize that:

***Hypothesis 2c:** The positive relationship between R&D tax incentives and the growth of MNE R&D subsidiaries is strengthened when subsidiaries possess fewer R&D patents.*

3.4 RESEARCH DESIGN

3.4.1 Empirical Setting

To empirically assess the effectiveness of R&D tax incentives in fostering the long-term growth of MNE R&D subsidiaries, this study examines the impact of Canada’s Scientific Research and Experimental Development (SR&ED) Tax Incentive Program. SR&ED is Canada’s largest R&D tax incentive program, providing “over \$3 billion in tax incentives to over 20,000 claimants annually” (Government of Canada, 2022a). It is available to all MNE subsidiaries operating in Canada at both federal and provincial (including territories) levels (Government of Canada, 2022b). However, not all provinces offer SR&ED, and the credit rates vary by province.

To ensure that the study accurately reflects reality, I interviewed a practitioner who founded a consulting firm that has assisted businesses in accessing SR&ED in Canada since 2005. I learned that firms must first commit to R&D investment and engage in innovation

activities before applying. In doing so, they incur SR&ED expenditures, which include “salaries and wages, materials, R&D-related contracts in Canada, lease costs of equipment, overhead, and payments made to eligible research institutions and centres” (SR&ED Education, 2022). As for empirical testing, this implies that subsidiaries’ eligibility to claim SR&ED credits in the current year is highly related to their SR&ED expenditures in the previous year.

Firms then apply for SR&ED incentives through their annual tax return, based on their SR&ED expenditures undertaken during the fiscal year. Applications must provide detailed descriptions of the R&D project, including its objectives, technological obstacles, and the activities undertaken to address these obstacles. Firms may submit SR&ED claims annually for ongoing projects until completion and can also file multiple claims for different activities within the same year. Therefore, a subsidiary’s operating status in Canada can influence the amount of incentives it receives in a given year. Also, SR&ED credits that subsidiaries received in the previous period can affect their applications in the current period.

All SR&ED applications are reviewed by the Canada Revenue Agency (CRA), the federal authority responsible for administering tax laws in Canada. After verifying the R&D activities reported by firms, the CRA approves incentives based on eligible SR&ED expenditures. These incentives are granted mainly as investment tax credits (SR&ED credits), which reduces a firm’s income tax payable. For foreign subsidiaries, the credit rate is capped at 15% of the SR&ED expenditures. The subsidiaries can carry excess SR&ED credits back three years or forward for 20 years. In addition, SR&ED expenditure is capped at \$50 million for the income tax deduction and \$3 million for SR&ED credits.

SR&ED is suitable for this study for two reasons. First, most investment promotion agencies (IPAs) in Canada use SR&ED to attract FDI, including Toronto Global at the municipal level, Invest in Alberta at the provincial level, and Invest in Canada at the national level. This aligns with my argument that R&D tax incentives are investment facilitators, inducing MNEs to commit more investments in the country. Second, MNEs must establish a Canadian subsidiary to access the program (Invest in Canada, 2022), making SR&ED an appropriate empirical setting for examining the long-term growth trajectories of MNE R&D subsidiaries.

3.4.2 Empirical Model

I test the hypotheses using a dynamic multilevel regression analysis. This approach is appropriate for three reasons. First, R&D internationalization occurs through multiple interactions between subsidiaries and their host environment (Volberda, Baden-Fuller, & Den Bosch, 2001). A multilevel design captures these cross-level interactions such as how province-level R&D tax incentives interact with subsidiary-level R&D funding, partnership experience, and R&D patents to influence growth, while accounting for country-level differences.

Second, R&D subsidiaries are nested within Canadian provinces, industries, years, and home countries. Ignoring this hierarchical structure would violate the assumption of independent observations, leading to biased standard errors and incorrect inferences. Multilevel models address this by allowing for random intercepts at higher levels, which account for unobserved heterogeneity across contextual units (Gelman & Hill, 2007). This specification captures time-invariant provincial and industry characteristics, annual macroeconomic shocks, and country-of-origin effects that may shape the baseline growth of R&D subsidiaries (Gelman & Hill, 2007).

Third, the model incorporates a dynamic component by including the lagged dependent variable (*log (subsidiary assets)* in the previous year) as a predictor. This term captures the persistence of subsidiary growth and enables estimation of both short-term effects and long-term multipliers of R&D tax incentives and internal resources. This design reflects the Penrosean view that subsidiary growth unfolds over time via cumulative learning and path-dependent processes (Penrose, 1959). Therefore, the dynamic multilevel model accommodates the hierarchical data structure, incorporates temporal dependencies, and captures key theoretical mechanisms.

The hypotheses are tested using the following equation. $\log(\textit{subsidiary assets})_{s,p,i,t,h}$ denotes the growth trajectory of the R&D subsidiary, s , located in province p , operating in industry i , in the year t , and originating from home country h . The lagged dependent variable, $\log(\textit{subsidiary assets})_{s,t-1,p,h}$, is included to capture the dynamic, path-dependent nature of firm growth. $SR\&ED\ credits_{s,t,p}$ is the key independent variable, measuring the SR&ED credits received by subsidiary s in year t in province p . $Mod_{s,t}$ refers to the moderators, including *R&D funding*, *R&D partnership experience*, and *R&D patents*. $Control_{s,t}$ includes control variables.

The terms u_p , u_i , u_t , and u_h are random intercepts for province, industry, year, and the subsidiaries' home country. Finally, $\varepsilon_{s,p,i,t,h}$ is the idiosyncratic error term.

$$\begin{aligned} \log(\text{subsidiary assets})_{s,p,i,t,h} &= \pi + \beta_1 SR\&ED\ Credits_{s,t,p} + \beta_2 (SR\&ED\ Credits_{s,t,p} * Mod_{s,t}) \\ &+ \beta_3 \log(\text{subsidiary assets})_{s,t-1,p,h} + \beta_4 SR\&ED\ Credits_{s,t-1,p} + \beta_5 Control_{s,t} \\ &+ u_p + u_i + u_t + u_h + \varepsilon_{s,p,i,t,h} \end{aligned}$$

To more accurately capture the temporal relationship between R&D tax incentives and subsidiary growth, the model includes a lagged measure of the incentives, $SR\&ED\ credits_{s,t-1,p}$. This specification reflects the operational reality of the SR&ED program in Canada: SR&ED credits granted in year t are tied to R&D activities undertaken in year $t - 1$, and their growth effects typically materialize in subsequent periods. In addition, because SR&ED credits can be carried forward or backward across fiscal years, the lagged term also captures intertemporal planning by MNEs in managing R&D investments and tax strategies. Finally, including the lagged incentive helps mitigate concerns of reverse causality, as a higher current growth rate may influence the size of the tax credit. Thus, it allows for a more causally coherent estimation of the effect of R&D tax incentives on the growth of R&D subsidiaries.

3.4.3 Data and Sample

This chapter employs the Business Research Microdata (BRM) (2001 – 2021) developed by the Economic Analysis Division at Statistics Canada. The BRM provides high-quality data on the population of MNE subsidiaries in Canada and includes firm-level variables consistently processed and defined in line with the Division's own work. Key variables include financial performance, merchandise trade, investment, R&D expenditures, and patenting activities, as well as derived measures based on economic theory, such as labour productivity.

I define R&D subsidiaries as MNE subsidiaries with at least one patent and, thus, exclude subsidiaries without substantial R&D operations. Because the analysis includes a lagged measure of SR&ED credits ($SR\&ED\ credits_{s,t-1,p}$), observations from 2001 are dropped due to missing lagged values. Additionally, some subsidiaries exhibit unstable performance, characterized by

disproportionately high R&D spending relative to revenue, which can lead to a skewed interpretation of the results (Paik & Woo, 2017). Thus, I perform winsorization at the 90th percentile of revenue (Ghosh & Vogt, 2012). The remaining dataset is then merged with World Bank data on MNEs' home country factors.

The final sample consists of 2150 observations from about 700 R&D subsidiaries whose parent MNEs originate from 30 countries. About 20% of subsidiary-year observations do not report SR&ED credits. This variation represents meaningful heterogeneity in policy exposure, allowing an effective comparison between subsidiaries that benefit from the incentive and those that do not. Table 3-1 summarizes the final sample by the top five sectors (Panel A), provinces (Panel B), and home countries (Panel C). In line with Statistics Canada's confidentiality rules, the reported number of subsidiaries and observations is rounded to the nearest fifth or tenth unit.

Table 3-1 Descriptive Summary of the Final Sample

| Panel A: By Top 5 Sectors | Number of Observations | Number of Firms | Average Growth Rate | Average SR&ED Credits |
|----------------------------------|------------------------|-----------------|---------------------|-----------------------|
| Energy | 130 | 40 | 3.563 | 1.457 |
| Manufacturing | 1250 | 410 | 2.872 | 1.868 |
| Real Estate | 40 | 20 | 2.92 | 0.062 |
| Services | 410 | 180 | 2.801 | 1.901 |
| Wholesale | 320 | 110 | 3.096 | 1.937 |

| Panel B: Top 5 Provinces | Number of Observations | Number of Firms | Average Growth Rate | Average SR&ED Credits |
|---------------------------------|------------------------|-----------------|---------------------|-----------------------|
| Ontario | 1085 | 365 | 2.914 | 2.039 |
| Quebec | 510 | 170 | 2.912 | 1.772 |
| Alberta | 270 | 80 | 3.334 | 1.978 |
| British Columbia | 180 | 75 | 2.489 | 0.736 |
| Saskatchewan | 50 | 10 | 2.952 | 1.418 |

| Panel C: Top 5 Countries | Number of Observations | Number of Firms | Average Growth Rate | Average SR&ED Credits |
|---------------------------------|------------------------|-----------------|---------------------|-----------------------|
| United States | 1105 | 400 | 2.879 | 1.805 |
| France | 200 | 50 | 3.147 | 2.977 |
| Germany | 150 | 50 | 2.891 | 1.028 |
| United Kingdom | 150 | 60 | 3.17 | 2.728 |
| Netherlands | 80 | 30 | 2.775 | 0.913 |

3.4.4 Variables

Dependent variable. The dependent variable is the $\log(\text{subsidiary assets})_t$. Total assets are an appropriate proxy for the subsidiary's growth trajectory because they reflect cumulative investments and capacity expansion and are less sensitive to short-term fluctuations than measures such as sales or annual R&D expenditures (Ghahroudi, Turnbull, & Hoshino, 2010). The log transformation expresses changes in proportional (percentage) terms, which facilitates comparability across subsidiaries of different scales and reduces skewness in the asset distribution (Chau, Anh, & Duc, 2025).

Independent variables. $SR\&ED\ credits_t$ are measured as the standardized total amount of R&D tax incentives each subsidiary receives. $R\&D\ funding$ is the standardized annual in-house R&D expenditures of a subsidiary, capturing its internally financed productive resources dedicated to innovation activities. $R\&D\ partnership\ experience$ captures the standardized cumulative spending on non-arm's-length R&D contracts. These contracts represent repeated, relational transactions that extend beyond one-time exchanges and reflect enduring collaborative arrangements between firms (UNCTAD, 2001). $R\&D\ patents$ denote the cumulative number of patent filings in previous fiscal years, reflecting the subsidiary's technological output and thus serving as a proxy for R&D capability.

Control variables. This study controls for many other variables that may shape the subsidiary's growth decisions. At the subsidiary level, I include $\log(\text{subsidiary assets})_{t-1}$ to incorporate the dynamic component in the model. I also include $SR\&ED\ credits_{t-1}$ – the incentives received by the subsidiary in the previous year; it shapes the likelihood of the subsidiary receiving SR&ED credits in the current period. $Employee\ number$ reflects the scale of human resources available to the subsidiary and may also signal bargaining power in the host country, thereby affecting the extent to which the subsidiary values the cost advantages associated with tax incentives (Maggioni et al., 2019). $R\&D\ intensity$, which is measured as total R&D spending as a share of total revenue, reflects the application process of the SR&ED credits. High R&D intensity may also influence the MNE's willingness to commit further resources to the subsidiary (Williamson, 1981).

I also incorporate indicators of subsidiary financial stability, including the *equity to debt* ratio, *profitability* (measured as income as a percentage of revenue), *current assets* (comprising cash, cash equivalents, and inventory), and *intangible investments* (including intangible assets acquired in Canada during the year). While not exclusively R&D-related, these measures capture the overall bundles of productive resources that may affect subsidiary growth decisions (Halkos & Tzeremes, 2007).

To capture operational status, I include *Canadian experience* (measured in years since establishment) and binary indicators for subsidiaries with *more than one activity* and operations across *more than one province*. The more direct experience the MNE has in a country, the more likely it is to increase market commitment (Zaheer & Mosakowski, 1998). Additional operational indicators include *labour productivity* (gross output per employee), *capital productivity* (gross output per total assets), *export intensity* (exports as a percentage of revenue), and *export countries* (number of export destination countries). These measures reflect the subsidiary's capacity to pursue new markets or product expansion, which in turn affects its growth trajectories (Bouquet & Birkinshaw, 2008).

At the home-country level, I account for the differences between Canada and the subsidiaries' home countries. *Institutional distance* is measured as the difference in institutional effectiveness scores based on data from the World Economic Forum. *Cultural distance* is calculated using Kogut and Singh's (1988) composite index based on four Hofstede dimensions: power distance, individualism, masculinity, and uncertainty avoidance. *Tax rate difference* captures the gap in statutory corporate income tax rates between Canada and the home country (Farah, Elias, Chakravarty, & Beamish, 2021).

I also control for home-country economic indicators. *GDP per capita* measures the average income level, the *inflation rate* is captured by the annual GDP deflator, the *debt-to-GDP* ratio reflects government debt as a share of GDP, and the *GDP growth* rate is the year-over-year change in GDP per capita. Because MNEs can always retain investment domestically (Nguyen, 2016), the home country's economic conditions may shape their internal capital allocation strategies and, in turn, their ability to expand R&D operations abroad (Le Bas & Sierra, 2002).

3.5 RESULTS

Table 3-2 provides a descriptive summary of the variables. It provides the mean, the standard deviation, and the Pearson correlation matrix for all continuous variables in the final sample. The highest correlation is between $\log(\text{subsidiary assets})_t$ and $\log(\text{subsidiary assets})_{t-1}$, at 0.670. This relationship is expected to examine given the focus on subsidiary growth trajectories. The variance inflation factor (VIF) is also checked in various models. The largest VIF value is 3.451, well below the cut-off value of 10. This indicates that there is no severe multicollinearity problem in the model.

Table 3-3 presents the results of the dynamic multilevel regression model. Model 1 is the base model with only control variables. Models 2–5 test the hypotheses. The results of Hypotheses 2a, 2b, and 2c are reported in Models 3, 4, and 5, respectively. Model 6 is the full model, including all variables and interaction terms. The robust standard errors and p-values are reported for all models.

3.5.1 Results of Main Analysis

Model 2 examines Hypothesis 1, which predicts that R&D tax incentives promote the growth of MNE R&D subsidiaries. The result shows that a one standard deviation increase in SR&ED credits is associated with a 7.9% increase¹ in subsidiary growth ($\beta_1 = 0.076, p = 0.001$). This effect remains significant even after accounting for unobserved heterogeneity across provinces, sectors, years, and home countries through random intercepts. Also, the lagged assets coefficient implies a long-run multiplier² of 0.080 ($\beta_3 = 0.051, p = 0.001$), indicating that a one standard deviation increase in SR&ED credits leads to an 8.3% long-run increase³ in subsidiary assets. Therefore, R&D tax incentives play an effective role in supporting the long-term expansion of MNE R&D subsidiaries. Thus, Hypothesis 1 is supported. Figure 3-1 plots the main effect of SR&ED credits on the growth of MNE R&D subsidiaries.

¹ The percentage increase is calculated as $(e^\beta - 1) * 100$.

² Long-run multiplier is calculated as $m = \beta_1 \text{ or } 2 / (1 - \beta_3)$.

³ The percentage increase is calculated as $(e^m - 1) * 100$

Model 3 assesses Hypothesis 2a, which predicts a moderating effect of R&D funding, a proxy for subsidiaries' productive resources in Penrosean theory. The result indicates that the effect of SR&ED credits on subsidiary growth is about 26.6% stronger for subsidiaries with one standard deviation higher R&D funding ($\beta_2 = 0.236, p = 0.004$). The lagged asset coefficient ($\beta_3 = 0.049, p = 0.001$) indicates that a one standard deviation increase in SR&ED credits is associated with an approximately 24.8% long-run increase in subsidiary assets. The finding suggests that as R&D funding increases, the positive effect of SR&ED credits on subsidiary growth becomes stronger. Thus, Hypothesis 2a is supported. Figure 3-2 plots the interaction effect of SR&ED credits and R&D funding on the growth of MNE R&D subsidiaries.

Model 4 tests Hypothesis 2b, which investigates the moderating effect of the R&D partnership experience, a proxy for subsidiaries' managerial resources. The results show that a one standard deviation increase in partnership experience reduces the growth impact of SR&ED credits by about 9.5% ($\beta_2 = -0.100, p = 0.002$). Thus, subsidiaries with extensive partnerships exhibit approximately 10% weaker growth response to SR&ED credits than those with limited partnerships. The dynamic specification reinforces this conclusion: with a lagged-asset coefficient of 0.054 ($\beta_3 = 0.054, p = 0.000$), the long-run effect of SR&ED credits declines by roughly 10% for each standard deviation increase in partnership experience. Thus, Hypothesis 2b is supported. Figure 3-3 plots the interaction effect of SR&ED credits and R&D partnership experience.

Model 5 studies Hypothesis 2c, which examines the moderating effect of R&D capabilities measured using the number of *R&D patents* filed. I find that each additional patent reduces the growth impact of SR&ED credits by about 3.7% ($\beta_2 = -0.038, p = 0.006$). Also, with a lagged-asset coefficient of 0.050 ($\beta_3 = 0.047, p = 0.000$), the long-run growth of subsidiary assets with respect to SR&ED credits declines by about 4.0% for each additional patent. As such, R&D subsidiaries with fewer patents benefit more from R&D tax incentives, supporting the argument that such incentives help offset the costs of developing R&D capabilities and thereby foster growth under capability constraints. Hypothesis 2c is supported. Figure 3-4 plots the interaction effect of SR&ED credits and R&D patents on subsidiary growth rate.

Model 6 is the full model, including all three interaction terms. The moderating effect of R&D funding is positive and significant, whereas that of partnership experience and patents is negative and significant. The main effect of SR&ED credits becomes insignificant ($\beta_1 = 0.050$, $p = 0.309$), which is unsurprising given that the interaction terms capture much of its variance. Overall, the findings are consistent with the previous models, reinforcing that R&D tax incentives are more effective for subsidiaries with stronger R&D funding, weaker managerial ties, and limited R&D capabilities.

3.5.2 Robustness Check Using Fixed-Effects Models

To verify my findings, I re-estimated all models using fixed-effects regressions to account for unobserved heterogeneity at the subsidiary level. Table 3-4 reports the results: Model A is the base model; Models B–E test Hypotheses 1 through 2c, respectively, and Model F is the full model. Robust standard errors and p-values are reported for all models.

The results are consistent with those obtained from the multilevel models. First, the main effect of R&D tax incentives remains positive and significant in most models, indicating that tax incentives are associated with the growth of MNE R&D subsidiaries after controlling for time-invariant subsidiary-specific factors. Second, the interaction effects behave similarly to those reported in the multilevel models in Table 3-3. The direction, significance, and magnitude of the key coefficients remain stable, reinforcing the robustness and credibility of the empirical results.

Table 3-2 Descriptive Summary of the Variables

| Variables | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1. Log (subsidiary assets) $_t$ | 6.054 | 6.236 | 1.000 | | | | | | | | |
| 2. R&D tax incentives (SR&ED credits $_t$) | 1.825 | 4.445 | 0.320 | 1.000 | | | | | | | |
| 3. R&D funding | 29.357 | 26.341 | 0.160 | 0.290 | 1.000 | | | | | | |
| 4. R&D partnership experience | 9.109 | 7.222 | 0.240 | 0.320 | 0.560 | 1.000 | | | | | |
| 5. R&D patents | 11.692 | 47.904 | 0.160 | 0.220 | 0.070 | 0.150 | 1.000 | | | | |
| 6. Log (subsidiary assets) $_{t-1}$ | 5.520 | 6.107 | 0.670 | 0.450 | 0.200 | 0.240 | 0.270 | 1.000 | | | |
| 7. SR&ED credits $_{t-1}$ | 1.825 | 4.445 | 0.140 | 0.300 | 0.480 | 0.300 | 0.040 | 0.160 | 1.000 | | |
| 8. R&D intensity | 0.761 | 1.602 | -0.170 | 0.170 | 0.120 | 0.210 | 0.005 | -0.080 | 0.091 | 1.000 | |
| 9. Employee number | 1053 | 2242 | 0.350 | 0.500 | 0.180 | 0.190 | 0.170 | 0.430 | 0.190 | -0.098 | 1.000 |
| 10. Equity debt ratio | 1.805 | 2.905 | 0.035 | -0.087 | -0.059 | -0.032 | -0.055 | -0.029 | -0.050 | 0.120 | -0.110 |
| 11. Profitability | 0.068 | 0.233 | 0.150 | 0.110 | 0.021 | 0.034 | 0.024 | 0.069 | 0.011 | -0.160 | 0.054 |
| 12. Current assets | 11.977 | 7.247 | 0.130 | 0.047 | 0.095 | 0.170 | 0.027 | 0.061 | 0.033 | -0.250 | 0.078 |
| 13. Intangible investments | 0.021 | 0.059 | 0.078 | 0.067 | -0.021 | 0.000 | 0.100 | 0.077 | -0.020 | 0.046 | 0.090 |
| 14. Canadian experience | 18.785 | 15.650 | 0.160 | 0.240 | 0.100 | 0.100 | 0.009 | 0.170 | 0.110 | -0.065 | 0.260 |
| 15. More than one activity | 0.517 | 0.500 | 0.430 | 0.260 | 0.160 | 0.240 | 0.140 | 0.380 | 0.120 | -0.190 | 0.350 |
| 16. More than one province | 0.496 | 0.500 | 0.300 | 0.190 | 0.120 | 0.160 | 0.110 | 0.280 | 0.110 | -0.190 | 0.340 |
| 17. Labour productivity | 12.917 | 0.943 | 0.370 | 0.170 | 0.082 | 0.120 | 0.057 | 0.220 | 0.058 | -0.300 | 0.033 |
| 18. Capital productivity | 1.002 | 0.854 | -0.310 | -0.064 | -0.064 | -0.088 | -0.022 | -0.210 | -0.039 | -0.062 | -0.043 |
| 19. Export intensity | 0.359 | 0.683 | 0.210 | 0.290 | 0.120 | 0.150 | 0.056 | 0.320 | 0.100 | -0.017 | 0.220 |
| 20. Export countries | 10.763 | 17.247 | 0.200 | 0.170 | 0.110 | 0.180 | 0.200 | 0.220 | 0.074 | -0.029 | 0.067 |
| 21. Institution distance | 0.353 | 0.380 | 0.031 | 0.063 | 0.008 | 0.026 | -0.007 | 0.061 | -0.004 | -0.009 | -0.001 |
| 22. Cultural distance | -2.631 | 5.062 | -0.020 | -0.032 | -0.025 | -0.035 | 0.032 | -0.019 | -0.032 | 0.002 | -0.050 |
| 23. Tax rate differences | -11.827 | 7.850 | 0.026 | 0.020 | 0.037 | 0.029 | -0.030 | 0.023 | 0.013 | -0.069 | 0.063 |
| 24. GDP per capita | 10.728 | 0.475 | -0.040 | -0.059 | -0.028 | -0.054 | 0.005 | -0.061 | -0.024 | 0.035 | -0.066 |
| 25. Inflation rate | 1.788 | 1.247 | 0.018 | 0.031 | 0.041 | 0.046 | 0.028 | 0.024 | 0.021 | 0.009 | 0.058 |
| 26. Debt GDP ratio | 68.499 | 29.723 | -0.005 | -0.057 | -0.052 | -0.068 | -0.014 | -0.029 | -0.034 | 0.066 | -0.092 |
| 27. GDP growth rate | 1.957 | 1.798 | 0.021 | 0.015 | -0.024 | -0.018 | -0.035 | 0.023 | -0.026 | 0.027 | 0.002 |

| Variables | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 10. Equity debt ratio | 1.000 | | | | | | | | |
| 11. Profitability | 0.110 | 1.000 | | | | | | | |
| 12. Current assets | -0.094 | 0.100 | 1.000 | | | | | | |
| 13. Intangible investments | -0.011 | 0.050 | -0.064 | 1.000 | | | | | |
| 14. Canadian experience | 0.022 | 0.033 | 0.014 | -0.058 | 1.000 | | | | |
| 15. More than one activity | -0.070 | 0.110 | 0.230 | 0.035 | 0.140 | 1.000 | | | |
| 16. More than one province | -0.067 | 0.061 | 0.200 | -0.019 | 0.100 | 0.620 | 1.000 | | |
| 17. Labour productivity | 0.002 | 0.270 | 0.200 | 0.039 | 0.120 | 0.190 | 0.140 | 1.000 | |
| 18. Capital productivity | -0.210 | 0.012 | 0.074 | -0.064 | -0.060 | -0.080 | -0.003 | 0.038 | 1.000 |
| 19. Export intensity | -0.058 | 0.038 | 0.120 | -0.034 | 0.140 | 0.074 | 0.027 | 0.100 | -0.160 |
| 20. Export countries | -0.041 | 0.110 | 0.100 | 0.072 | 0.074 | 0.098 | 0.024 | 0.066 | -0.085 |
| 21. Institution distance | -0.044 | 0.027 | -0.010 | -0.035 | -0.027 | -0.004 | -0.048 | 0.054 | -0.031 |
| 22. Cultural distance | 0.015 | 0.018 | -0.044 | -0.009 | -0.023 | -0.070 | -0.088 | 0.035 | -0.077 |
| 23. Tax rate differences | -0.047 | -0.066 | 0.092 | -0.015 | -0.002 | 0.019 | 0.081 | 0.038 | 0.032 |
| 24. GDP per capita | 0.039 | -0.004 | -0.048 | 0.013 | 0.024 | -0.049 | -0.083 | -0.042 | 0.002 |
| 25. Inflation rate | 0.027 | 0.022 | 0.030 | -0.001 | -0.045 | 0.055 | 0.075 | 0.016 | -0.048 |
| 26. Debt GDP ratio | 0.073 | -0.024 | -0.083 | -0.004 | 0.054 | -0.098 | -0.170 | -0.001 | -0.018 |
| 27. GDP growth rate | -0.021 | 0.026 | -0.031 | -0.003 | -0.002 | -0.036 | -0.036 | 0.027 | -0.054 |

| Variables | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 19. Export intensity | 1.000 | | | | | | | | |
| 20. Export countries | 0.400 | 1.000 | | | | | | | |
| 21. Institution distance | 0.130 | -0.067 | 1.000 | | | | | | |
| 22. Cultural distance | 0.047 | 0.045 | -0.073 | 1.000 | | | | | |
| 23. Tax rate differences | 0.021 | 0.034 | -0.260 | 0.014 | 1.000 | | | | |
| 24. GDP per capita | -0.002 | 0.140 | -0.750 | 0.040 | 0.021 | 1.000 | | | |
| 25. Inflation rate | -0.063 | -0.120 | 0.200 | 0.190 | -0.052 | -0.370 | 1.000 | | |
| 26. Debt GDP ratio | 0.062 | 0.072 | 0.190 | -0.340 | -0.380 | 0.057 | -0.160 | 1.000 | |
| 27. GDP growth rate | 0.130 | 0.052 | 0.320 | 0.240 | 0.039 | -0.280 | 0.230 | -0.099 | 1.000 |

Notes: (1) Number of observations: N = 2,150; (2) Categorical variables are not included in this table.

Table 3-3 Main Analysis: Dynamic Multilevel Regression Results

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|--|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | Base Model | Hypothesis 1 | Hypothesis 2a | Hypothesis 2b | Hypothesis 2c | Full Model |
| <i>Dependent Variable</i> | <i>log(subsidiary assets)_t</i> | | | | | |
| <i>Control Variables</i> | | | | | | |
| Log (subsidiary assets) _{t-1} | 0.049(0.007) <i>p</i> = 0.000 | 0.051(0.007) <i>p</i> = 0.000 | 0.049(0.007) <i>p</i> = 0.000 | 0.054(0.007) <i>p</i> = 0.000 | 0.047(0.007) <i>p</i> = 0.000 | 0.050(0.007) <i>p</i> = 0.000 |
| SR&ED credits _{t-1} | 0.009(0.004) <i>p</i> = 0.034 | 0.007(0.004) <i>p</i> = 0.114 | 0.007(0.004) <i>p</i> = 0.100 | 0.005(0.004) <i>p</i> = 0.256 | 0.007(0.004) <i>p</i> = 0.103 | 0.005(0.004) <i>p</i> = 0.214 |
| R&D intensity | -0.028(0.013) <i>p</i> = 0.028 | -0.041(0.013) <i>p</i> = 0.002 | -0.046(0.013) <i>p</i> = 0.000 | -0.064(0.014) <i>p</i> = 0.000 | -0.043(0.013) <i>p</i> = 0.001 | -0.068(0.014) <i>p</i> = 0.000 |
| Employee number | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 |
| Equity debt ratio | 0.011(0.006) <i>p</i> = 0.088 | 0.013(0.006) <i>p</i> = 0.052 | 0.012(0.006) <i>p</i> = 0.051 | 0.012(0.006) <i>p</i> = 0.068 | 0.013(0.006) <i>p</i> = 0.042 | 0.012(0.006) <i>p</i> = 0.052 |
| Profitability | 0.093(0.082) <i>p</i> = 0.253 | 0.071(0.082) <i>p</i> = 0.385 | 0.076(0.08) <i>p</i> = 0.342 | 0.051(0.082) <i>p</i> = 0.536 | 0.070(0.082) <i>p</i> = 0.388 | 0.060(0.080) <i>p</i> = 0.451 |
| Current assets | 0.002(0.003) <i>p</i> = 0.468 | 0.003(0.003) <i>p</i> = 0.401 | 0.004(0.003) <i>p</i> = 0.169 | 0.000(0.003) <i>p</i> = 0.994 | 0.002(0.003) <i>p</i> = 0.512 | 0.001(0.003) <i>p</i> = 0.617 |
| Intangible investments | 0.266(0.311) <i>p</i> = 0.394 | 0.236(0.311) <i>p</i> = 0.447 | 0.107(0.307) <i>p</i> = 0.728 | 0.135(0.313) <i>p</i> = 0.666 | 0.114(0.312) <i>p</i> = 0.715 | -0.048(0.310) <i>p</i> = 0.878 |
| Canadian experience | -0.001(0.001) <i>p</i> = 0.453 | -0.001(0.001) <i>p</i> = 0.262 | -0.001(0.001) <i>p</i> = 0.393 | -0.001(0.001) <i>p</i> = 0.238 | -0.002(0.001) <i>p</i> = 0.195 | -0.001(0.001) <i>p</i> = 0.310 |
| More than one activity | 0.520(0.048) <i>p</i> = 0.000 | 0.506(0.048) <i>p</i> = 0.000 | 0.461(0.047) <i>p</i> = 0.000 | 0.469(0.048) <i>p</i> = 0.000 | 0.502(0.048) <i>p</i> = 0.000 | 0.424(0.048) <i>p</i> = 0.001 |
| More than one province | 0.040(0.048) <i>p</i> = 0.405 | 0.043(0.048) <i>p</i> = 0.370 | 0.053(0.047) <i>p</i> = 0.262 | 0.051(0.047) <i>p</i> = 0.284 | 0.041(0.048) <i>p</i> = 0.395 | 0.056(0.047) <i>p</i> = 0.233 |
| Labour productivity | 0.328(0.022) <i>p</i> = 0.000 | 0.314(0.022) <i>p</i> = 0.000 | 0.303(0.022) <i>p</i> = 0.000 | 0.302(0.022) <i>p</i> = 0.000 | 0.313(0.022) <i>p</i> = 0.000 | 0.291(0.022) <i>p</i> = 0.001 |
| Capital productivity | -0.348(0.022) <i>p</i> = 0.000 | -0.347(0.022) <i>p</i> = 0.000 | -0.248(0.025) <i>p</i> = 0.000 | -0.342(0.022) <i>p</i> = 0.000 | -0.348(0.022) <i>p</i> = 0.000 | -0.248(0.024) <i>p</i> = 0.001 |
| Export intensity | 0.047(0.032) <i>p</i> = 0.137 | 0.032(0.032) <i>p</i> = 0.318 | 0.011(0.032) <i>p</i> = 0.721 | 0.039(0.032) <i>p</i> = 0.224 | 0.048(0.032) <i>p</i> = 0.134 | 0.030(0.032) <i>p</i> = 0.342 |
| Export countries | 0.006(0.001) <i>p</i> = 0.000 | 0.006(0.001) <i>p</i> = 0.000 | 0.006(0.001) <i>p</i> = 0.001 | 0.005(0.001) <i>p</i> = 0.000 | 0.006(0.001) <i>p</i> = 0.000 | 0.005(0.001) <i>p</i> = 0.000 |
| Institution distance | 0.008(0.113) <i>p</i> = 0.944 | 0.002(0.112) <i>p</i> = 0.986 | 0.062(0.111) <i>p</i> = 0.576 | 0.003(0.112) <i>p</i> = 0.975 | -0.009(0.113) <i>p</i> = 0.936 | 0.052(0.112) <i>p</i> = 0.643 |

| | | | | | | |
|---|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Cultural distance | 0.001(0.006) $p = 0.929$ | 0.001(0.006) $p = 0.908$ | 0.003(0.006) $p = 0.640$ | 0.002(0.006) $p = 0.712$ | 0.001(0.006) $p = 0.931$ | 0.004(0.006) $p = 0.516$ |
| Tax rate differences | 0.005(0.004) $p = 0.154$ | 0.004(0.004) $p = 0.232$ | 0.004(0.004) $p = 0.276$ | 0.005(0.004) $p = 0.194$ | 0.004(0.004) $p = 0.294$ | 0.004(0.004) $p = 0.269$ |
| GDP per capita | 0.019(0.088) $p = 0.831$ | 0.025(0.088) $p = 0.779$ | 0.064(0.087) $p = 0.460$ | 0.033(0.087) $p = 0.704$ | 0.023(0.088) $p = 0.795$ | 0.069(0.087) $p = 0.426$ |
| Inflation rate | 0.002(0.018) $p = 0.894$ | 0.003(0.018) $p = 0.888$ | -0.001(0.017) $p = 0.933$ | -0.001(0.018) $p = 0.973$ | 0.002(0.018) $p = 0.932$ | -0.005(0.018) $p = 0.783$ |
| Debt GDP ratio | 0.002(0.001) $p = 0.026$ | 0.002(0.001) $p = 0.013$ | 0.003(0.001) $p = 0.005$ | 0.003(0.001) $p = 0.005$ | 0.002(0.001) $p = 0.013$ | 0.003(0.001) $p = 0.002$ |
| GDP growth rate | 0.002(0.012) $p = 0.855$ | 0.004(0.012) $p = 0.719$ | 0.006(0.011) $p = 0.582$ | 0.006(0.012) $p = 0.584$ | 0.005(0.012) $p = 0.636$ | 0.009(0.012) $p = 0.418$ |
| <i>Key Predictors</i> | | | | | | |
| R&D tax incentives (SR&ED credits _{<i>t</i>}) | | 0.076(0.024) $p = 0.001$ | -0.012(0.042) $p = 0.775$ | 0.150(0.036) $p = 0.000$ | 0.097(0.027) $p = 0.000$ | 0.050(0.050) $p = 0.309$ |
| R&D funding | | | -0.685(0.082) $p = 0.000$ | | | -0.661(0.082) $p = 0.000$ |
| SR&ED credits _{<i>t</i>} × R&D funding | | | 0.236(0.082) $p = 0.004$ | | | 0.253(0.083) $p = 0.002$ |
| R&D partnership experience | | | | 0.067(0.022) $p = 0.003$ | | 0.065(0.022) $p = 0.003$ |
| SR&ED credits _{<i>t</i>} × R&D partnership experience | | | | -0.100(0.033) $p = 0.002$ | | -0.079(0.033) $p = 0.015$ |
| R&D patents | | | | | 0.063(0.021) $p = 0.002$ | 0.051(0.020) $p = 0.011$ |
| SR&ED credits _{<i>t</i>} × R&D patents | | | | | -0.038(0.014) $p = 0.006$ | -0.026(0.014) $p = 0.067$ |
| (Intercept) | -1.778(1.013) $p = 0.079$ | -1.629(1.008) $p = 0.106$ | -1.681(0.991) $p = 0.09$ | -1.446(1.002) $p = 0.149$ | -1.576(1.010) $p = 0.119$ | -1.469(0.995) $p = 0.140$ |
| Residual RE σ^2 | 0.67 | 0.67 | 0.64 | 0.66 | 0.66 | 0.63 |
| Marginal R ² | 0.429 | 0.431 | 0.443 | 0.439 | 0.437 | 0.452 |
| Conditional R ² | 0.460 | 0.462 | 0.474 | 0.470 | 0.469 | 0.484 |

Notes: (1) Number of observations: N = 2,150; (2) Coefficients are followed by robust standard error in brackets. (3) Random intercepts for Canadian provinces, industries, years, and home countries are included in all models.

Figure 3-1 Main Analysis: The Main Effect of R&D Tax Incentives on R&D Subsidiary Growth

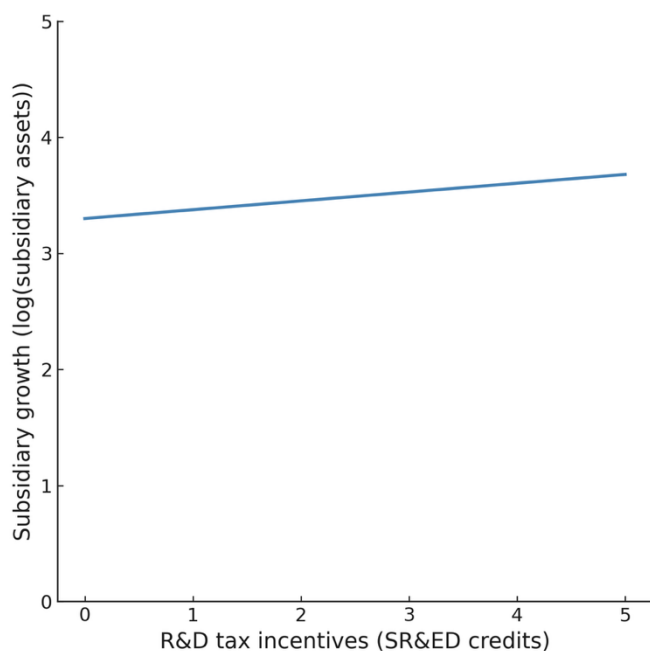


Figure 3-2 Main Analysis: The Moderating Effect of R&D Funding (Productive Resources)

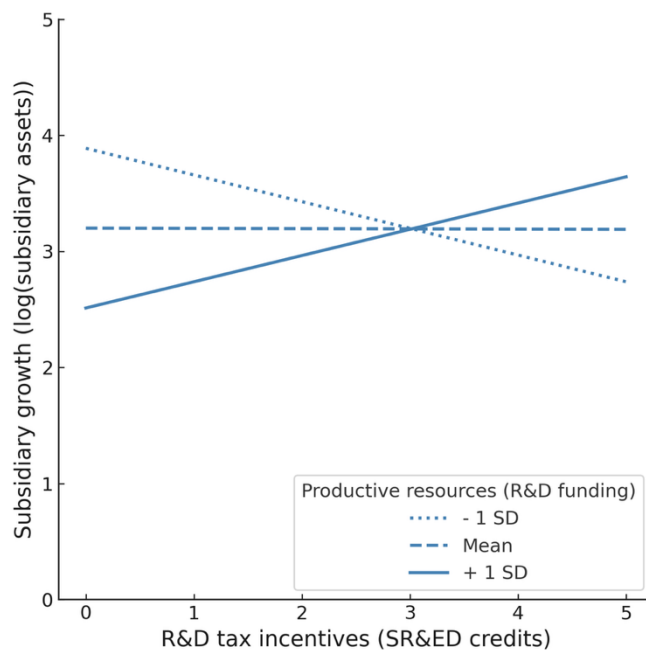


Figure 3-3 Main analysis: The Moderating Effect of R&D Partnership Experiences (Managerial Resources)

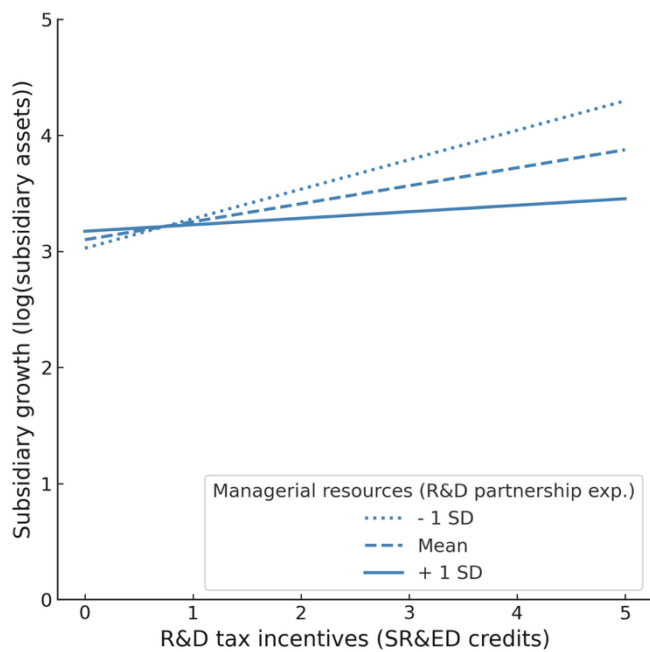


Figure 3-4 Main Analysis: The Moderating Effect of R&D Patents (R&D Capabilities)

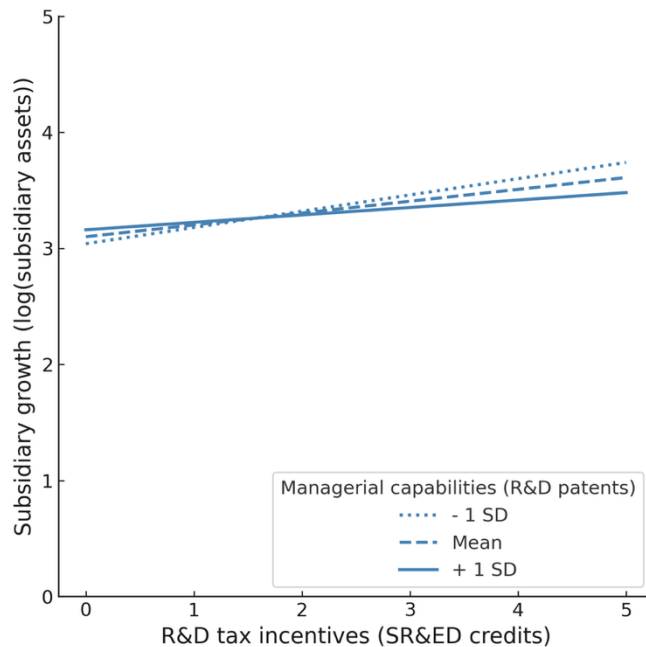


Table 3-4 Additional Analysis: Fixed-Effects Regression Results

| | Model A | Model B | Model C | Model D | Model E | Model F |
|--|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | Base Model | Hypothesis 1 | Hypothesis 2a | Hypothesis 2b | Hypothesis 2c | Full Model |
| <i>Dependent Variable</i> | <i>log(subsidiary assets)_t</i> | | | | | |
| <i>Control Variables</i> | | | | | | |
| Log (subsidiary assets) _{t-1} | 0.052(0.007) <i>p</i> = 0.000 | 0.049(0.007) <i>p</i> = 0.000 | 0.047(0.007) <i>p</i> = 0.000 | 0.053(0.007) <i>p</i> = 0.000 | 0.056(0.007) <i>p</i> = 0.000 | 0.052(0.007) <i>p</i> = 0.000 |
| SR&ED credits _{t-1} | 0.010(0.004) <i>p</i> = 0.020 | 0.008(0.004) <i>p</i> = 0.069 | 0.008(0.004) <i>p</i> = 0.057 | 0.006(0.004) <i>p</i> = 0.176 | 0.008(0.004) <i>p</i> = 0.062 | 0.006(0.004) <i>p</i> = 0.141 |
| R&D intensity | -0.027(0.013) <i>p</i> = 0.039 | -0.040(0.013) <i>p</i> = 0.003 | -0.046(0.013) <i>p</i> = 0.001 | -0.065(0.014) <i>p</i> = 0.000 | -0.042(0.013) <i>p</i> = 0.002 | -0.070(0.014) <i>p</i> = 0.000 |
| Employee number | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 |
| Equity debt ratio | 0.010(0.007) <i>p</i> = 0.118 | 0.012(0.007) <i>p</i> = 0.067 | 0.013(0.006) <i>p</i> = 0.054 | 0.012(0.007) <i>p</i> = 0.080 | 0.013(0.007) <i>p</i> = 0.055 | 0.013(0.006) <i>p</i> = 0.051 |
| Profitability | 0.082(0.083) <i>p</i> = 0.325 | 0.057(0.083) <i>p</i> = 0.496 | 0.063(0.082) <i>p</i> = 0.441 | 0.037(0.083) <i>p</i> = 0.659 | 0.054(0.083) <i>p</i> = 0.518 | 0.044(0.081) <i>p</i> = 0.585 |
| Current assets | 0.003(0.003) <i>p</i> = 0.359 | 0.003(0.003) <i>p</i> = 0.274 | 0.005(0.003) <i>p</i> = 0.106 | 0.001(0.003) <i>p</i> = 0.796 | 0.003(0.003) <i>p</i> = 0.347 | 0.002(0.003) <i>p</i> = 0.455 |
| Intangible investments | 0.244(0.314) <i>p</i> = 0.437 | 0.203(0.313) <i>p</i> = 0.517 | 0.060(0.310) <i>p</i> = 0.847 | 0.103(0.315) <i>p</i> = 0.743 | 0.092(0.314) <i>p</i> = 0.771 | -0.089(0.312) <i>p</i> = 0.775 |
| Canadian experience | -0.001(0.001) <i>p</i> = 0.447 | -0.002(0.001) <i>p</i> = 0.220 | -0.001(0.001) <i>p</i> = 0.307 | -0.002(0.001) <i>p</i> = 0.178 | -0.002(0.001) <i>p</i> = 0.164 | -0.002(0.001) <i>p</i> = 0.224 |
| More than one activity | 0.519(0.049) <i>p</i> = 0.000 | 0.505(0.049) <i>p</i> = 0.000 | 0.459(0.048) <i>p</i> = 0.000 | 0.468(0.049) <i>p</i> = 0.000 | 0.502(0.049) <i>p</i> = 0.000 | 0.423(0.048) <i>p</i> = 0.000 |
| More than one province | 0.035(0.050) <i>p</i> = 0.474 | 0.043(0.050) <i>p</i> = 0.383 | 0.054(0.049) <i>p</i> = 0.270 | 0.052(0.049) <i>p</i> = 0.291 | 0.041(0.049) <i>p</i> = 0.406 | 0.058(0.048) <i>p</i> = 0.227 |
| Labour productivity | 0.323(0.022) <i>p</i> = 0.000 | 0.309(0.023) <i>p</i> = 0.000 | 0.299(0.022) <i>p</i> = 0.000 | 0.295(0.023) <i>p</i> = 0.000 | 0.308(0.023) <i>p</i> = 0.000 | 0.285(0.022) <i>p</i> = 0.000 |
| Capital productivity | -0.344(0.023) <i>p</i> = 0.000 | -0.342(0.023) <i>p</i> = 0.000 | -0.246(0.025) <i>p</i> = 0.000 | -0.336(0.023) <i>p</i> = 0.000 | -0.343(0.023) <i>p</i> = 0.000 | -0.244(0.025) <i>p</i> = 0.000 |
| Export intensity | 0.038(0.033) <i>p</i> = 0.249 | 0.022(0.033) <i>p</i> = 0.518 | 0.001(0.033) <i>p</i> = 0.972 | 0.028(0.033) <i>p</i> = 0.405 | 0.039(0.034) <i>p</i> = 0.241 | 0.021(0.033) <i>p</i> = 0.519 |
| Export countries | 0.006(0.001) <i>p</i> = 0.000 | 0.005(0.001) <i>p</i> = 0.000 | 0.005(0.001) <i>p</i> = 0.000 | 0.004(0.001) <i>p</i> = 0.001 | 0.005(0.001) <i>p</i> = 0.000 | 0.004(0.001) <i>p</i> = 0.002 |
| Institution distance | -0.710(0.381) <i>p</i> = 0.062 | -0.692(0.380) <i>p</i> = 0.069 | -0.622(0.373) <i>p</i> = 0.095 | -0.653(0.377) <i>p</i> = 0.083 | -0.672(0.379) <i>p</i> = 0.076 | -0.573(0.370) <i>p</i> = 0.122 |

| | | | | | | |
|--|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Cultural distance | -0.166(2.254) $p = 0.941$ | -0.052(2.249) $p = 0.981$ | 0.375(2.207) $p = 0.865$ | 0.019(2.235) $p = 0.993$ | 0.135(2.245) $p = 0.952$ | 0.595(2.192) $p = 0.786$ |
| Tax rate differences | 0.011(0.007) $p = 0.104$ | 0.011(0.007) $p = 0.107$ | 0.011(0.007) $p = 0.127$ | 0.011(0.007) $p = 0.124$ | 0.010(0.007) $p = 0.137$ | 0.009(0.007) $p = 0.168$ |
| GDP per capita | 0.098(0.241) $p = 0.686$ | 0.095(0.241) $p = 0.694$ | 0.048(0.236) $p = 0.838$ | 0.103(0.239) $p = 0.665$ | 0.109(0.240) $p = 0.649$ | 0.071(0.235) $p = 0.761$ |
| Inflation rate | -0.006(0.032) $p = 0.858$ | -0.004(0.032) $p = 0.894$ | -0.001(0.032) $p = 0.976$ | -0.004(0.032) $p = 0.906$ | -0.005(0.032) $p = 0.884$ | -0.001(0.031) $p = 0.976$ |
| Debt GDP ratio | -0.001(0.002) $p = 0.600$ | -0.001(0.002) $p = 0.602$ | -0.001(0.002) $p = 0.633$ | -0.001(0.002) $p = 0.585$ | -0.001(0.002) $p = 0.638$ | -0.001(0.002) $p = 0.658$ |
| GDP growth rate | 0.027(0.023) $p = 0.251$ | 0.028(0.023) $p = 0.223$ | 0.030(0.023) $p = 0.185$ | 0.031(0.023) $p = 0.182$ | 0.032(0.023) $p = 0.163$ | 0.035(0.023) $p = 0.116$ |
| <i>Key Predictors</i> | | | | | | |
| R&D tax incentives (SR&ED credits _t) | | 0.083(0.025) $p = 0.001$ | -0.002(0.043) $p = 0.954$ | 0.155(0.037) $p = 0.000$ | 0.102(0.028) $p = 0.000$ | 0.059(0.051) $p = 0.240$ |
| R&D funding | | | -0.688(0.083) $p = 0.000$ | | | -0.670(0.083) $p = 0.000$ |
| SR&ED credits _t × R&D funding | | | 0.228(0.083) $p = 0.006$ | | | 0.242(0.085) $p = 0.004$ |
| R&D partnership experience | | | | 0.073(0.023) $p = 0.001$ | | 0.072(0.022) $p = 0.001$ |
| SR&ED credits _t × R&D partnership experience | | | | -0.099(0.033) $p = 0.003$ | | -0.081(0.033) $p = 0.015$ |
| R&D patents | | | | | 0.060(0.021) $p = 0.005$ | 0.050(0.021) $p = 0.015$ |
| SR&ED credits _t × R&D patents | | | | | -0.035(0.014) $p = 0.012$ | -0.023(0.014) $p = 0.105$ |
| (Intercept) | -2.176(4.011) $p = 0.588$ | -1.737(4.003) $p = 0.664$ | -0.359(3.930) $p = 0.927$ | -1.404(3.977) $p = 0.724$ | -1.634(3.995) $p = 0.683$ | -0.018(3.902) $p = 0.996$ |
| R ² | 0.463 | 0.465 | 0.486 | 0.473 | 0.468 | 0.495 |
| Adj R ² | 0.443 | 0.445 | 0.466 | 0.453 | 0.448 | 0.474 |
| F-statistic | 23.191 | 23.149 | 24.496 | 23.239 | 22.804 | 24.104 |

Notes: (1) Number of observations: N = 2,150; (2) Coefficients are followed by robust standard error in brackets. (3) Fixed effects for Canadian provinces, industries, years, and home countries are included in all models.

3.6 DISCUSSION

3.6.1 Theoretical Contributions

This chapter makes several contributions to the IB field. First, it contributes to the R&D internationalization literature by examining the conditions under which MNE R&D subsidiaries pursue additional growth in existing host countries. While prior research has largely concentrated on MNEs' entry strategies and the determinants of foreign R&D location choices (Narula & Hagedoorn, 1999; Castellani & Zanfei, 2002), this chapter shifts attention to the post-entry growth of R&D subsidiaries. By examining how R&D tax incentives affect the growth of R&D subsidiaries, it demonstrates the empirical importance of policy incentives in shaping the subsequent expansion of foreign R&D operations.

Second, it extends the literature on location advantages. Responding to Dunning and Lundan's (2008) claim that certain location factors are more suited to explain MNEs' sequential FDI activities in a country, this chapter explores the role of R&D tax incentives as enablers of the subsequent expansion of MNEs' R&D subsidiaries. Using a firm-level dataset, I show that institutional-related location factors, such as R&D tax incentives, can effectively attract established subsidiaries and drive their sequential expansion in host countries. Although many previous studies stress the influence of such institutional factors on the level of R&D investments by MNEs (Hall & Van Reenen, 2000; Bloom et al., 2002), examining the impact of these factors in the context of R&D subsidiary growth was overdue.

Third, this chapter builds on the Penrosean growth literature. It not only confirms the importance of subsidiary-level resources in MNE R&D subsidiaries' growth decisions but also demonstrates that certain policy instruments, such as the R&D tax incentives, from the host governments can facilitate the exploitation of subsidiary-level resources (Tan et al., 2020).

Specifically, the results highlight the complementary role of R&D tax incentives to subsidiaries' productive resources. The positive and significant interaction between SR&ED credits and R&D funding shows that tax incentives amplify the growth potential of subsidiaries that are already financially well-endowed. In this sense, incentives work less as equalizers and more as resource multipliers. This finding aligns with Penrose's (1959) view of financial

resources as versatile, combinative assets. It also suggests that policy instruments can enhance the versatility of R&D subsidiaries by lowering the marginal cost of R&D and broadening the range of profitable opportunities available. Thus, R&D tax incentives complement existing productive resources by strengthening the ability of well-funded subsidiaries to translate their resource base into long-term growth.

Additionally, the findings on managerial resources and R&D capabilities also underscore the compensatory role of R&D tax incentives. The negative and significant interactions with partnership experience and patent applications indicate that subsidiaries with weaker managerial ties and fewer technological outputs derive greater growth benefits from incentives. In these cases, tax incentives help offset the costs and constraints of capability development, reducing the barriers that prevent resource-limited subsidiaries from expanding. In other words, when managerial resources and R&D capabilities are scarce, policy support substitutes for these deficits by creating the slack necessary to sustain investment and pursue growth. This compensatory role highlights how incentives can act as a corrective mechanism, leveling the playing field for subsidiaries that face capability constraints.

3.6.2 Additional Analysis with Domestic R&D Firms

To assess whether the arguments and findings presented in this study are specific to MNE subsidiaries, I replicated the dynamic multilevel regression models in the main analysis using a sample of domestic R&D firms from the same BRM dataset. I conducted propensity score matching to create a comparison sample of domestic R&D firms that closely parallels the MNE subsidiary sample. Matching was based on sector, province, total revenue, total assets, and R&D patents. The resulting domestic sample – 2,150 observations across 1,310 firms – is thus a close empirical match to the MNE subsidiary sample. As such, this additional analysis helps establish the boundary conditions of the theoretical framework and reinforces this chapter's contribution to the IB field.

This additional analysis examines the direction and magnitude of the effects of R&D tax incentives, as well as their interaction with key Penrosean variables, on local firms, which include R&D funding, R&D partnership experience, and R&D patents. Variables specific to MNE R&D subsidiaries, such as institutional and cultural distance, are excluded from this

analysis. The objective is not to fully model the growth of domestic firms but to assess whether the observed relationships among MNE R&D subsidiaries also apply in the domestic context. Thus, the analytical framework mirrors that of the main MNE subsidiary analysis. That is, I estimate a dynamic multilevel regression with random intercepts for province, industry, and year. The descriptive summary of the domestic sample is provided in Table 3-5, and the dynamic multilevel regression results in Table 3-6. The plots for the hypotheses are presented in Figures 3-5, 3-6, 3-7, and 3-8.

The analysis of domestic R&D firms shows that R&D tax incentives (SR&ED credits) have a consistently significant and positive effect on firm growth across all models, indicating that local firms generally benefit from these credits. Second, the interaction between SR&ED credits and R&D funding is positive and significant ($\beta_2 = 0.255, p = 0.000$). This indicates that better-funded domestic firms benefit more from tax incentives. Third, and most notably, the interactions between SR&ED credits and both R&D partnership experience ($\beta_2 = 0.050, p = 0.023$) and R&D patents ($\beta_2 = 0.190, p = 0.001$) are positive and significant for local firms, contrasting the negative interactions observed among MNE R&D subsidiaries. Also, the estimated long-run effect of SR&ED and their interactions are nearly identical as these immediate impacts. This suggests that, unlike MNE subsidiaries, domestic firms with extensive partnerships and strong R&D capabilities are better positioned to leverage R&D tax incentives in pursuing growth opportunities.

As a result, these findings suggest that R&D tax incentives play different roles across firm types. For MNE R&D subsidiaries, these incentives amplify growth when productive resources are abundant but also compensate for constraints in managerial resources and R&D capabilities. In contrast, for local firms, tax incentives primarily act as amplifiers of existing strengths; they are most effective when firms are already well-resourced and technologically capable. This divergence underscores the need for context-specific theorization when examining the effect of policy instruments on firms' growth.

Table 3-5 Additional Analysis: Descriptive Summary of the Variables in the Domestic R&D Firms Sample

| Variables | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1. Log (subsidiary assets) _{<i>t</i>} | 5.627 | 6.681 | 1.000 | | | | | | | | |
| 2. SR&ED credits _{<i>t</i>} | 0.179 | 0.922 | 0.250 | 1.000 | | | | | | | |
| 3. R&D funding | 0.555 | 0.290 | -0.450 | -0.092 | 1.000 | | | | | | |
| 4. R&D partnership experience | 2.455 | 5.471 | 0.200 | 0.440 | -0.100 | 1.000 | | | | | |
| 5. R&D patents | 3.955 | 17.233 | 0.170 | 0.390 | -0.086 | 0.160 | 1.000 | | | | |
| 6. Log (subsidiary assets) _{<i>t-1</i>} | 4.691 | 6.252 | 0.610 | 0.005 | 0.002 | 0.091 | 0.100 | 1.000 | | | |
| 7. SR&ED credits _{<i>t-1</i>} | 0.727 | 1.596 | 0.048 | 0.097 | -0.008 | 0.076 | -0.019 | 0.007 | 1.000 | | |
| 8. R&D intensity | 1.327 | 8.919 | -0.020 | 0.190 | -0.001 | 0.360 | 0.037 | 0.007 | 0.017 | 1.000 | |
| 9. Employee number | 653 | 5129 | 0.210 | 0.130 | -0.110 | 0.140 | 0.073 | 0.250 | 0.011 | -0.015 | 1.000 |
| 10. Equity debt ratio | 1.780 | 3.358 | 0.190 | 0.090 | -0.140 | 0.081 | 0.082 | 0.052 | -0.029 | 0.140 | -0.017 |
| 11. Profitability | -0.324 | 2.213 | 0.063 | -0.029 | 0.014 | -0.051 | -0.007 | 0.024 | 0.018 | -0.350 | 0.025 |
| 12. Current assets | 10.106 | 6.927 | 0.060 | 0.059 | 0.240 | 0.017 | -0.035 | -0.021 | 0.050 | -0.140 | 0.029 |
| 13. Intangible investments | 0.076 | 0.552 | 0.180 | 0.160 | -0.052 | 0.070 | 0.088 | 0.069 | -0.011 | 0.021 | 0.038 |
| 14. Canadian experience | 17.150 | 12.708 | 0.072 | -0.035 | 0.079 | -0.055 | 0.005 | 0.070 | -0.034 | -0.100 | 0.110 |
| 15. More than one activity | 0.223 | 0.417 | 0.560 | 0.120 | -0.260 | 0.120 | 0.120 | 0.290 | 0.010 | -0.061 | 0.190 |
| 16. More than one province | 0.397 | 0.489 | 0.410 | 0.160 | -0.140 | 0.170 | 0.064 | 0.130 | 0.077 | -0.069 | 0.130 |
| 17. Labour productivity | 12.154 | 1.761 | 0.170 | -0.024 | 0.130 | -0.088 | 0.023 | 0.054 | 0.031 | -0.160 | 0.008 |
| 18. Capital productivity | 1.303 | 0.990 | -0.490 | -0.150 | 0.540 | -0.200 | -0.110 | -0.210 | 0.002 | -0.170 | -0.074 |
| 19. Export intensity | 0.108 | 0.250 | 0.041 | -0.083 | -0.028 | -0.088 | -0.005 | 0.040 | -0.032 | -0.035 | -0.020 |
| 20. Export countries | 2.244 | 6.335 | 0.140 | -0.069 | -0.011 | -0.069 | 0.013 | 0.084 | 0.001 | -0.047 | 0.004 |

| Variables | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 10. Equity debt ratio | 1.000 | | | | | | | | | | |
| 11. Profitability | -0.120 | 1.000 | | | | | | | | | |
| 12. Current assets | -0.180 | 0.180 | 1.000 | | | | | | | | |
| 13. Intangible investments | 0.130 | 0.000 | 0.006 | 1.000 | | | | | | | |
| 14. Canadian experience | -0.051 | 0.130 | 0.210 | -0.018 | 1.000 | | | | | | |
| 15. More than one activity | -0.018 | 0.080 | 0.150 | 0.091 | 0.092 | 1.000 | | | | | |
| 16. More than one province | -0.001 | 0.092 | 0.160 | 0.067 | 0.003 | 0.410 | 1.000 | | | | |
| 17. Labour productivity | -0.098 | 0.260 | 0.240 | 0.020 | 0.140 | 0.081 | 0.068 | 1.000 | | | |
| 18. Capital productivity | -0.290 | 0.190 | 0.220 | -0.120 | 0.100 | -0.200 | -0.063 | 0.260 | 1.000 | | |
| 19. Export intensity | 0.031 | 0.024 | 0.081 | 0.005 | 0.087 | 0.028 | -0.150 | -0.059 | -0.068 | 1.000 | |
| 20. Export countries | 0.001 | 0.056 | 0.120 | -0.001 | 0.160 | 0.180 | -0.005 | 0.057 | -0.061 | 0.430 | 1.000 |

Notes: (1) Number of observations: N = 2,150

Table 3-6 Additional Analysis: Multilevel Regression Results on Domestic Firms

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|--|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | Base Model | Hypothesis 1 | Hypothesis 2a | Hypothesis 2b | Hypothesis 2c | Full Model |
| <i>Dependent Variable</i> | <i>log(subsidiary assets)_t</i> | | | | | |
| <i>Control Variables</i> | | | | | | |
| Log (subsidiary assets) _{t-1} | 0.060(0.015) <i>p</i> = 0.000 | 0.052(0.015) <i>p</i> = 0.000 | 0.060(0.015) <i>p</i> = 0.000 | 0.051(0.015) <i>p</i> = 0.001 | 0.046(0.015) <i>p</i> = 0.002 | 0.053(0.014) <i>p</i> = 0.000 |
| SR&ED credits _{t-1} | 0.000(0.000) <i>p</i> = 0.573 | 0.000(0.000) <i>p</i> = 0.324 | 0.000(0.000) <i>p</i> = 0.192 | 0.000(0.000) <i>p</i> = 0.281 | 0.000(0.000) <i>p</i> = 0.514 | 0.000(0.000) <i>p</i> = 0.325 |
| R&D intensity | -0.001(0.001) <i>p</i> = 0.551 | -0.003(0.001) <i>p</i> = 0.041 | -0.002(0.001) <i>p</i> = 0.121 | -0.003(0.001) <i>p</i> = 0.010 | -0.003(0.001) <i>p</i> = 0.023 | -0.002(0.001) <i>p</i> = 0.048 |
| Employee number | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.001 |
| Equity debt ratio | 0.022(0.003) <i>p</i> = 0.000 | 0.021(0.003) <i>p</i> = 0.000 | 0.021(0.003) <i>p</i> = 0.000 | 0.021(0.003) <i>p</i> = 0.000 | 0.019(0.003) <i>p</i> = 0.000 | 0.020(0.003) <i>p</i> = 0.000 |
| Profitability | 0.014(0.005) <i>p</i> = 0.006 | 0.013(0.005) <i>p</i> = 0.011 | 0.008(0.005) <i>p</i> = 0.110 | 0.012(0.005) <i>p</i> = 0.017 | 0.012(0.005) <i>p</i> = 0.012 | 0.007(0.005) <i>p</i> = 0.135 |
| Current assets | 0.004(0.002) <i>p</i> = 0.046 | 0.003(0.002) <i>p</i> = 0.119 | 0.006(0.002) <i>p</i> = 0.001 | 0.003(0.002) <i>p</i> = 0.141 | 0.003(0.002) <i>p</i> = 0.102 | 0.006(0.002) <i>p</i> = 0.000 |
| Intangible investments | 0.000(0.000) <i>p</i> = 0.001 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.000 | 0.000(0.000) <i>p</i> = 0.001 | 0.000(0.000) <i>p</i> = 0.000 |
| Canadian experience | 0.003(0.001) <i>p</i> = 0.003 | 0.003(0.001) <i>p</i> = 0.001 | 0.003(0.001) <i>p</i> = 0.000 | 0.003(0.001) <i>p</i> = 0.001 | 0.003(0.001) <i>p</i> = 0.001 | 0.003(0.001) <i>p</i> = 0.000 |
| More than one activity | 0.594(0.029) <i>p</i> = 0.000 | 0.586(0.028) <i>p</i> = 0.000 | 0.547(0.028) <i>p</i> = 0.000 | 0.587(0.029) <i>p</i> = 0.000 | 0.568(0.028) <i>p</i> = 0.000 | 0.526(0.028) <i>p</i> = 0.000 |
| More than one province | 0.315(0.024) <i>p</i> = 0.000 | 0.296(0.023) <i>p</i> = 0.000 | 0.274(0.023) <i>p</i> = 0.000 | 0.292(0.024) <i>p</i> = 0.000 | 0.300(0.023) <i>p</i> = 0.001 | 0.279(0.023) <i>p</i> = 0.000 |
| Labour productivity | 0.090(0.006) <i>p</i> = 0.000 | 0.090(0.006) <i>p</i> = 0.000 | 0.090(0.006) <i>p</i> = 0.001 | 0.090(0.006) <i>p</i> = 0.000 | 0.089(0.006) <i>p</i> = 0.000 | 0.089(0.006) <i>p</i> = 0.000 |
| Capital productivity | -0.322(0.012) <i>p</i> = 0.000 | -0.313(0.012) <i>p</i> = 0.000 | -0.245(0.013) <i>p</i> = 0.000 | -0.310(0.012) <i>p</i> = 0.000 | -0.305(0.012) <i>p</i> = 0.000 | -0.235(0.013) <i>p</i> = 0.000 |
| Export intensity | 0.166(0.047) <i>p</i> = 0.000 | 0.190(0.046) <i>p</i> = 0.000 | 0.176(0.045) <i>p</i> = 0.000 | 0.191(0.047) <i>p</i> = 0.000 | 0.183(0.046) <i>p</i> = 0.000 | 0.164(0.045) <i>p</i> = 0.000 |
| Export countries | 0.000(0.002) <i>p</i> = 0.861 | 0.001(0.002) <i>p</i> = 0.590 | 0.002(0.002) <i>p</i> = 0.361 | 0.001(0.002) <i>p</i> = 0.597 | 0.000(0.002) <i>p</i> = 0.802 | 0.001(0.002) <i>p</i> = 0.580 |

| <i>Key Predictors</i> | | | | | | |
|--|----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| R&D tax incentives (SR&ED credits _t) | | 0.137(0.017) <i>p</i> = 0.000 | 0.045(0.028) <i>p</i> = 0.115 | 0.176(0.029) <i>p</i> = 0.000 | 0.134(0.018) <i>p</i> = 0.000 | 0.082(0.040) <i>p</i> = 0.039 |
| R&D funding | | | -0.370(0.048) <i>p</i> = 0.000 | | | -0.399(0.048) <i>p</i> = 0.000 |
| SR&ED credits _t × R&D funding | | | 0.255(0.067) <i>p</i> = 0.000 | | | 0.187(0.069) <i>p</i> = 0.007 |
| R&D partnership experience | | | | -0.020(0.018) <i>p</i> = 0.254 | | -0.019(0.017) <i>p</i> = 0.261 |
| SR&ED credits _t × R&D partnership experience | | | | 0.050(0.022) <i>p</i> = 0.023 | | 0.027(0.022) <i>p</i> = 0.208 |
| R&D patents | | | | | -0.894(0.122) <i>p</i> = 0.000 | -0.877(0.118) <i>p</i> = 0.000 |
| SR&ED credits _t × R&D patents | | | | | 0.190(0.025) <i>p</i> = 0.001 | 0.180(0.025) <i>p</i> = 0.000 |
| (Intercept) | 0.211(0.095) <i>p</i> = 0.026 | 0.281(0.095) <i>p</i> = 0.003 | 0.369(0.095) <i>p</i> = 0.000 | 0.338(0.097) <i>p</i> = 0.000 | 0.361(0.095) <i>p</i> = 0.000 | 0.499(0.095) <i>p</i> = 0.000 |
| Residual RE σ^2 | 0.22 | 0.21 | 0.20 | 0.21 | 0.21 | 0.19 |
| Marginal R ² | 0.578 | 0.604 | 0.628 | 0.591 | 0.599 | 0.623 |
| Conditional R ² | 0.602 | 0.627 | 0.652 | 0.618 | 0.624 | 0.650 |

Notes: (1) Number of observations: N = 2,150; (2) Coefficients are followed by robust standard error in brackets. (3) Random intercepts for Canadian provinces, industries, and years are included in all models.

Figure 3-5 Additional Analysis: The Main Effect of R&D Tax Incentives on the Growth of Domestic R&D Firms

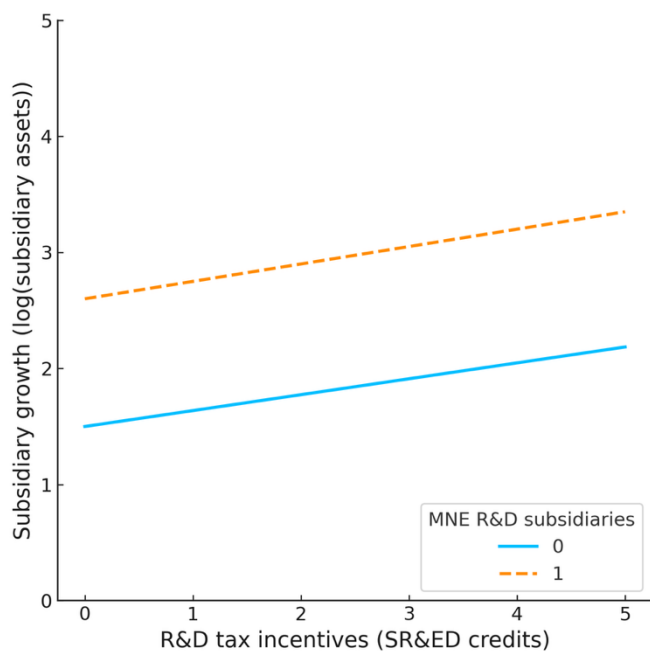


Figure 3-6 Additional Analysis: The Moderating Effect of R&D Funding (Productive Resources)

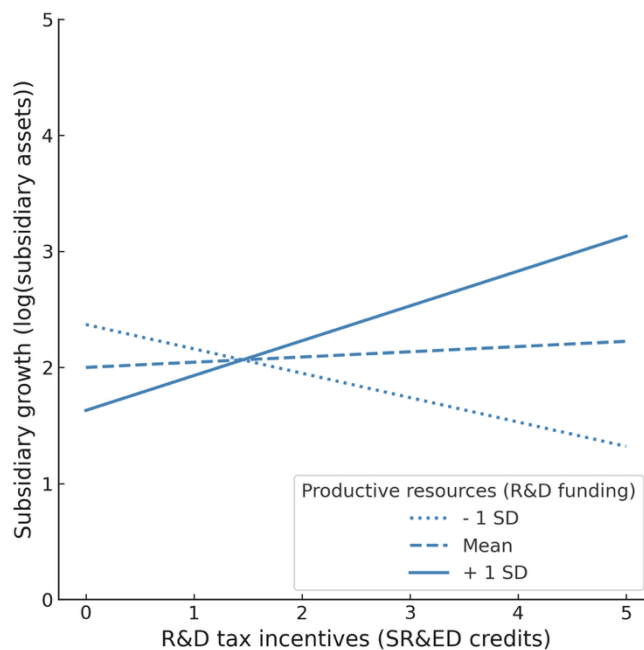


Figure 3-7 Additional Analysis: The Moderating Effect of R&D Partnership Exp. (Managerial Resources)

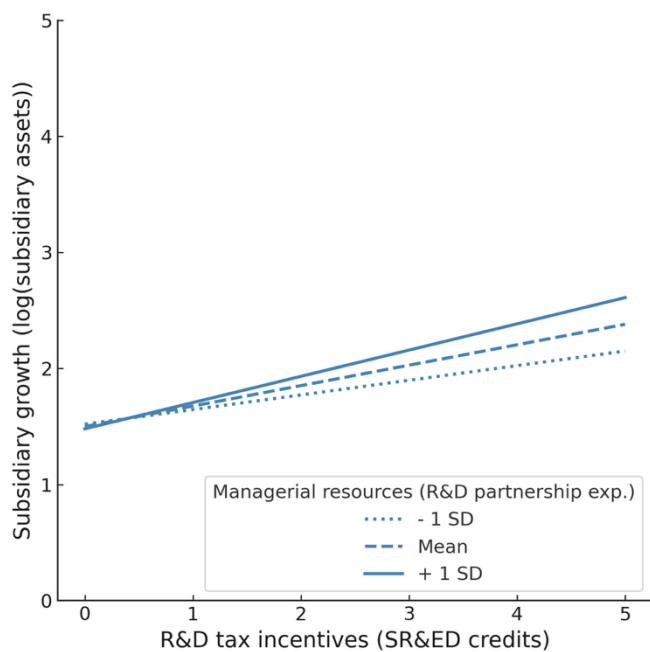
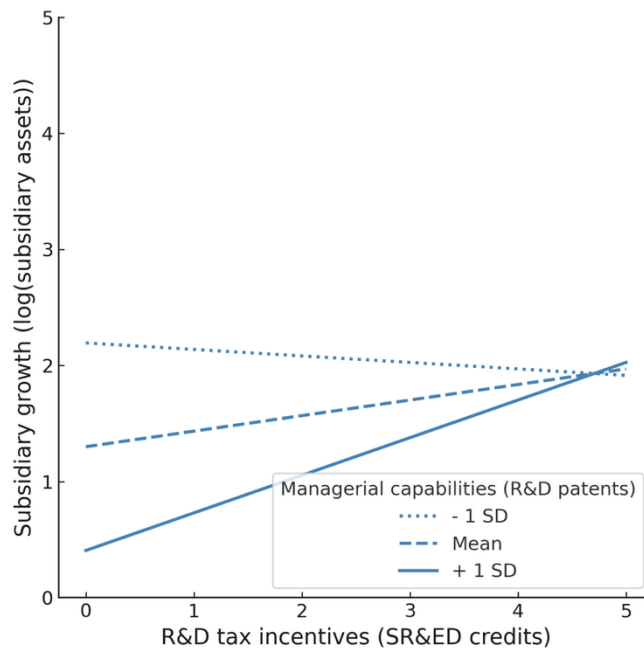


Figure 3-8 Additional Analysis: The Moderating Effect of R&D Patents (R&D Capabilities)



3.6.3 Implications for Managers and Policymakers

The findings have significant implications for policymakers who aim to attract foreign R&D investment that strengthens a country's industrial base (Benito & Meyer, 2024). First, R&D tax incentives may have limited influence on MNEs' R&D entry decisions because they are secondary to fundamental location factors, such as market size and talent availability (OECD, 2000). Yet, the results suggest that these incentives are more effective in facilitating sequential engagement by established subsidiaries. Specifically, their design features, such as performance-based eligibility and deferred credit mechanisms, are well-aligned with the evolving operational needs of long-term R&D projects. By reducing the cost of additional investment, these incentives enable established R&D subsidiaries to scale up their local R&D footprint. Thus, R&D tax incentives should be operationalized not just as entry inducements, but as growth enablers – a tool to deepen foreign R&D activity over time. For policymakers, this highlights the importance of performance-linked incentive regimes that effectively support both the retention and expansion of strategic R&D functions by MNEs within national borders.

Second, policymakers should closely consider the internal characteristics of the R&D subsidiaries that are most responsive to R&D tax incentives to ensure alignment between policy design and intended outcomes. This study finds that tax incentives – specifically Canada's SR&ED program – are particularly effective in promoting growth among subsidiaries with abundant R&D-related productive resources (e.g., R&D funding) but limited managerial resources and R&D capabilities. Thus, the current incentive structures may disproportionately benefit R&D subsidiaries that are financially well-positioned but lack the internal capacity to fully translate those resources into innovation outputs. As such, if the policy goal is to support subsidiaries with stronger R&D outputs, adjustments to incentive design may be necessary. For example, eligibility criteria that reward collaborative R&D or capability-building investments could help redirect support toward subsidiaries with stronger R&D capabilities. In doing so, R&D tax incentives can be more strategically tailored to shape the quality and impact of R&D activity in the host country.

The findings also carry important implications for executives, both at MNE headquarters and within local R&D subsidiaries. For MNE headquarters, the results underscore the importance

of subsidiary-level conditions in determining the success of future expansion strategies in host countries. Rather than viewing R&D tax incentives as universally beneficial, executives should recognize that host governments reward subsidiaries based on their local embeddedness, including their employment contributions, resource investments, and innovation capabilities. Therefore, when designing global R&D strategies or allocating resources across subsidiaries, MNEs should factor in how the characteristics of local subsidiaries align with the criteria embedded in host country incentive regimes.

For subsidiary managers, the findings highlight that R&D tax incentives can be strategic levers for growth. These policies often form part of broader investment promotion frameworks and can create opportunities for subsidiaries to scale operations, enhance technological capabilities, or deepen local integration. Subsidiary managers should proactively monitor and respond to these policies as they can unlock co-financing opportunities, lower innovation costs, and improve the subsidiary's strategic profile within the MNE's global network.

3.6.4 Limitations and Future Research

This chapter leverages the BRM dataset compiled by Statistics Canada based on administrative records and real-life business activity. Its national coverage provides reliable, comprehensive insights into the operations of R&D-performing subsidiaries in Canada. However, like any data source, the BRM has limitations that open avenues for future research.

First, this study examines the effectiveness of R&D tax incentives in stimulating the growth of R&D subsidiaries within the Canadian context. Canada ranks second among G20 countries for business environment and 14th globally for intellectual property protection. Canada's SR&ED program is also among the most generous R&D tax incentive schemes worldwide. These features raise questions about the generalizability of the findings to other national contexts. Further research is needed to assess whether the results observed in Canada hold in other national contexts.

Second, the BRM dataset does not include information on R&D subsidiaries' parent firms. Due to confidentiality protections, firm identities are anonymized, preventing linkage with external data sources on the financial or operational characteristics of MNE headquarters. As a

result, the study in this chapter cannot account for corporate-level influences on subsidiary growth. Additionally, in the absence of such data, the analysis also implicitly assumes a two-country model (home and host), even though many MNEs operate across multiple jurisdictions. Future research could incorporate global MNE data and geographic footprints to better capture the dynamics of the long-term growth of R&D subsidiaries.

3.7 CONCLUSION

Countries increasingly use investment facilitators – such as R&D tax incentives – as tools to attract and retain foreign R&D investment. This chapter contributes to the R&D internationalization literature by demonstrating that R&D tax incentives can effectively promote the growth of MNE R&D subsidiaries. Building on Penrosean growth theory, the findings demonstrate that the effectiveness of these incentives depends on subsidiary-specific conditions, particularly R&D-related productive and managerial resources, as well as R&D capabilities. By highlighting how these factors shape subsidiaries' responsiveness to host-country policy instruments, the study offers important insights into the investment decisions of MNEs with established subsidiaries. It also opens new avenues for innovation and international business research on the role of institutional incentives in supporting the sequential expansion of MNEs. Future research is needed to investigate how different types of investment facilitators impact post-entry subsidiary growth across various national and sectoral contexts.

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CHAPTER 4 R&D TAX INCENTIVES AND THE GOVERNANCE SHIFT TOWARD QUASI-INTERNALIZATION IN MULTINATIONAL ENTERPRISES

4.1 INTRODUCTION

The R&D governance decisions of multinational enterprises (MNEs) have long been a central theme in internalization theory (Buckley & Casson, 1991, 2009, 2019). The theory is grounded in the foundational premise of market failures (Narula, Asmussen, Chi, & Kundu, 2019). It suggests that, because market failures raise the external transaction costs of drafting and enforcing knowledge-based contracts, MNEs manage R&D more efficiently via internalization within their organizational hierarchies than through externalization – or outsourcing – in the open market (Buckley & Casson, 2009). However, integrating internalization theory and institutional theory, this chapter examines whether R&D tax incentives shift governance choice toward quasi-internalization – or relational R&D outsourcing – in host countries.

According to the institutional theory, the institutional environment governs the open market and shapes transaction costs (North, 1991). In knowledge-based transactions, R&D tax incentives are formal innovation policies designed by host institutions to provide financial subsidies in the form of tax credits to support MNEs' R&D investment (Mayer & Sabel, 2023). These incentives are granted either through special tax treatments negotiated on a case-by-case basis or through standard provisions embedded in the general tax code (OECD, 2017). Because the former arrangements are often confidential, this chapter focuses on the latter.

Existing studies on innovation policy also stress market failures as a core premise (Chaminade & Edquist, 2010). Scholars argue that because market failures limit MNEs' ability to fully appropriate the benefits of R&D output, MNEs tend to reduce their R&D investment in the country (Bryan & Williams, 2021). R&D tax incentives, therefore, serve as public interventions aimed at correcting these failures (Bryan & Williams, 2021). Empirical studies find that such incentives reduce the gap between social and private returns (Chaminade & Edquist, 2010; Le & Hredzak, 2014) and encourage MNEs to increase their R&D investment in targeted industries and locations (Parsons, 2011; Tyson & Linden, 2012; Ernst & Spengel, 2011; Mohnen, Vankan, & Verspagen, 2017). However, previous research has not distinguished whether this increased investment occurs through internalization or outsourcing and thereby has overlooked how R&D

tax incentives influence MNEs' governance choices in host countries. As such, this chapter addresses the research question: *under what conditions do R&D tax incentives make relational R&D outsourcing a viable governance choice?*

Drawing on innovation policy studies, R&D tax incentives reduce the financial burden of R&D partnerships and indicate host governments' intention to compensate MNEs for market failures (OECD, 2021). By narrowing the cost and risk differentials between internal and external R&D, these incentives diminish the comparative advantage of internalization. Hence, my baseline hypothesis is that R&D tax incentives can shift MNEs' governance choices from internalization toward outsourcing, thereby increasing the outsourcing-to-internalization ratio.

Building on this baseline result, I then turn to the modes of outsourcing. Recent internalization studies suggest that in institutional environments characterized by intermediate levels of market failure, MNEs are not limited to full internalization but can also manage their overseas R&D operations through quasi-internalization (Asmussen, Chi, & Narula, 2022). Quasi-internalization occurs when transactions are managed externally via trust-based relationships (Narula et al., 2019). It is the inter-firm relationship that falls between spot market transactions and full equity ownership and thus allows MNEs to retain the control benefits of internal hierarchies without requiring full ownership (Forsgren & Holm, 2022).

Accordingly, two distinct governance modes of outsourcing emerge: nonrelational and relational. The former occurs through arm's-length contracts, while the latter is carried out through non-arm's-length arrangements. Relational R&D outsourcing is thus a form of quasi-internalization, because non-arm's-length transactions entail long-term partnerships between firms, relying not only on formal contracts but also on trust, social ties, and reputational mechanisms (UNCTAD, 2001; Magnani, Zucchella, & Strange, 2019). Because repeated collaboration lowers future transaction costs (Liu, Luo, & Liu, 2009), I hypothesize that R&D tax incentives increase the relational-to-nonrelational outsourcing ratio.

However, the degree of market failure – and thus the extent to which MNEs can pursue quasi-internalization or relational outsourcing – varies with their external relationship capabilities (Narula et al., 2019), which are developed through experiences in both home and host countries. I thus hypothesize that the positive effect of R&D tax incentives on the relational-

to-nonrelational outsourcing ratio is strengthened (1) when the home country provides weak intellectual property (IP) protection and (2) when MNEs have high labour productivity and prior outsourcing experience in the host country. Weak home-country IP protection encourages firms to rely on relationship-based mechanisms domestically, fostering relational governance capabilities. Greater labour productivity and accumulated outsourcing experience in host country enhance absorptive capacity, enabling firms to effectively exploit the R&D outputs of external partners and manage the uncertainties associated with market failure (Lewin & Peeters, 2006).

This chapter, building on the Business Research Microdata (BRM) (2000 – 2021) from Statistics Canada also used in Chapter 3, studies how the Scientific Research and Experimental Development (SR&ED) Tax Incentive Program influences MNEs' R&D governance choices in Canada. The results show that a one-standard-deviation increase in R&D tax incentives leads to a 4.2% increase in the outsourcing-to-internalization ratio and a 4.8% increase in the relational-to-nonrelational outsourcing ratio. Moreover, the effect on the latter ratio increases by an additional 10.1%, 5.0%, and 8.2%, respectively, when home-country IP protection decreases by one standard deviation and when MNE labour productivity and prior outsourcing experience each increase by one standard deviation.

This chapter makes several contributions to the IB literature. First, it integrates internalization theory with institutional theory to explain how innovation policies shape MNEs' R&D governance choices. I find that by partially alleviating market failures, R&D tax incentives encourage MNEs to pursue more outsourcing relative to internalization. Second, this chapter is among the few to empirically examine quasi-internalization as an R&D governance choice (Narula et al., 2019), showing that relational outsourcing is more sensitive to market failures – and thus more responsive to R&D tax incentives – than nonrelational outsourcing. This relationship remains robust when using both the relational-to-nonrelational and relational-to-outsourcing ratios as dependent variables. Third, this chapter identifies the conditions under which R&D tax incentives foster quasi-internalization. It finds that home-country IP protection exerts a stronger moderating effect than absorptive capacity, suggesting that home institutions more decisively shape MNEs' governance responses to R&D tax incentives. Finally, this chapter has strong policy implications. I recommend that policymakers design R&D tax incentives to promote MNEs' deeper integration into local innovation ecosystems.

4.2 THEORETICAL FOUNDATIONS

4.2.1 The Internalization Theory

Internalization theory was conceptualized by Buckley and Casson (1976). Drawing on Coase (1937), Buckley and Casson (1991, 2009, 2019) view MNEs as multinational hierarchies that coordinate value-added activities across national boundaries. Technological knowledge, generated through R&D activities, is a key source of firm-specific advantages (FSAs) (Gaur, Ma, & Ge, 2019; Buckley & Casson, 1991). Because cross-border exchange of such knowledge is often constrained by market failures that escalate transaction costs in negotiating, monitoring, and enforcing contracts, MNEs can more efficiently exploit their technological knowledge internally within the multinational hierarchy than externally through the open market (Buckley & Casson, 1991; 2009; 2019)

Therefore, the core premise of internalization theory is the market failures assumption (Narula et al., 2019). In knowledge-based transactions, three interrelated market failures are especially salient. First is information asymmetry (Buckley & Casson, 2019). It is often difficult to predict the market potential of technological knowledge (Buckley & Casson, 1991). Thus, “there is inequality between the buyer and the seller with respect to the knowledge of the nature or value of the product, resulting in buyer uncertainty” (Buckley & Casson, 1991, p. 38). Since the seller is better informed, the buyer is reluctant to engage in such transactions, making contract negotiation costly and leading to a preference for internalization (Narula et al., 2019).

Second is opportunistic behaviour (Hennart, 1982; 2009). Because technological knowledge has public-good attributes (Casson, 2015), it is vulnerable to knowledge spillovers (Lester & Warda, 2020). Such spillovers are difficult to prevent, even in countries with strict intellectual property (IP) regulations, since they can stem from patent applications (Fung, 2005) and executive conferences (Kennedy & Barry, 2020). As a result, exchange partners may create imitations or counterfeit products, driving up the costs of monitoring knowledge utilization (Anderson & Gatignon, 1986; Hennart, 1982). Hence, MNEs are prompted to replace exchange contracts with internal employment contracts to safeguard their proprietary knowledge and limit knowledge spillovers (Hashai & Almor, 2008).

Third is underdeveloped IP protection, manifested in both weak regimes and discriminatory policies. Weak regimes expose MNEs to partners who may violate IP regulations and breach contract terms (Peng, Ahlstrom, Carraher, & Shi, 2017; Hill, 2007). Discriminatory policies favour local firms: IP rules might be well administered for local firms, but not for MNEs. For example, patent applications are more costly and time-consuming for MNEs than for local firms in the UK (Nicholas, 2011), Spain (Peng et al., 2017), and Japan (Kotabe, 1992). Such conditions create uncertainty in contract enforcement and hinder MNEs' ability to assert legal claims. Thus, MNEs prefer internalization to mitigate external uncertainties (Liedong, Peparah, Amartey, & Rajwani, 2020)

Therefore, R&D internalization is a firm-level strategic choice that enables MNEs to cope with market failures that generate high external transaction costs (Narula et al., 2019). However, institutional theory provides a complementary perspective, focusing on how the host government attempts to correct these market failures through regulatory innovation policy instruments, particularly R&D tax incentives.

4.2.2 The Institutional Theory

The institutional environment governs the open market and “determines the cost of transacting” (North, 1991, p. 98). In knowledge-based transactions, it affects the behaviours of MNEs through R&D tax incentives, which are the formal innovation policies through which host governments aim to shape MNEs' R&D investment and innovation processes (Chaminade & Edquist, 2010). R&D tax incentives are exceptions to the general tax regime, such as tax holidays and investment tax credits (Holland & Vann, 1998). They are often offered via regular tax returns (Mayer & Sabel, 2023).

Market failure is also the core theoretical foundation of existing studies on R&D tax incentives (Chaminade & Edquist, 2010). Innovation policy research converges with internalization theory on the idea that market failures create high transaction costs (Howlett & Ramesh, 2014), but they argue that the most direct result of these failures is knowledge inappropriability – firms cannot capture the full returns on their R&D investments. Thus, firms underinvest in R&D (Bryan & Williams, 2021).

Thus, innovation policy scholars urge policymakers to provide R&D tax incentives to correct market failures by reducing the gap between social and private returns (Demircioglu, Audretsch, & Link, 2024). They find strong support in the notion that such incentives can, at least partially, help address market failures. For example, Chaminade and Edquist (2010) found that in OECD countries, R&D investment yields a higher social rate of return than the private rate of return, supporting public intervention through R&D incentives. Le and Hredzak (2014) also find that R&D tax incentives can narrow the gap between private and social returns in Asian countries. Thus, empirical studies find that these incentives can effectively increase MNEs' R&D investment. For example, Ernst and Spengel (2011) find that R&D tax incentives increase firms' propensity to invest in R&D and participate in patenting activities. Mohnen, Vankan, and Verspagen (2017) show that subsidizing R&D in private firms can encourage firms to undertake more R&D than they otherwise would. Similarly, Güçeri, Köthenbürger, and Simmler (2020) report that European firms, on average, spend more on R&D when they benefit from tax credits.

However, prior studies on R&D tax incentives (e.g., Ernst & Spengel, 2011; Güçeri et al., 2020) do not distinguish whether MNEs expand R&D through internalization or outsourcing. They thus overlook how such incentives shape MNEs' R&D governance choices. This gap is critical because the innovation policy research directly challenges the core assumption of internalization theory. More specifically, if R&D tax incentives, as an innovation policy, can partially address market failures, they should shape MNEs' R&D governance decisions. Thus, the question becomes *whether and under what conditions these incentives make relational R&D outsourcing a viable governance choice as opposed to R&D internalization*.

4.3 HYPOTHESES DEVELOPMENT

4.3.1 From Internalization to Outsourcing

Based on the theoretical foundations, R&D tax incentives reduce the transaction costs of conducting R&D activities. To compensate for the consequences of market failures, these incentives are often designed to directly reimburse expenditures related to R&D cooperation and outsourcing, such as contracting and partnerships. This is the case in many countries, including the US, Canada, the UK, India, and the Netherlands (OECD, 2021). These incentives also offer

additional grants if the MNE partners with local research institutes, such as research centres and universities. Thus, R&D tax incentives encourage MNEs to engage in local R&D contracts.

R&D tax incentives also signal host governments' commitment to addressing market failures and strengthening the local institutional environment. They create more favourable conditions in the exchange market and, thus, reduce the transaction risks that previously justified internalization, encouraging MNEs to reconsider external contractual options that were deemed too risky or costly. As such, MNEs are likely to allocate a greater share of their R&D investment toward R&D outsourcing rather than internalization in response to R&D tax incentives. Thus, the baseline hypothesis is:

Baseline Hypothesis: *R&D tax incentives increase MNEs' R&D outsourcing-to-internalization ratio in the host country.*

4.3.2 Quasi-internalization as a Governance Choice

More specifically, by partially alleviating market failure, R&D tax incentives help create an institutional environment with intermediate levels of market failures. That is, “transaction cost problems with trading in the services of the assets are... not too severe,” and “the market for the underlying assets is functional” (Narula et al., 2019, p. 1238). Recent studies in internalization theory suggest that, under such conditions, MNEs can adopt an alternative mode of governance – quasi-internalization (Narula et al., 2019; Asmussen et al., 2022). Quasi-internalization refers to the governance of external transactions through relational mechanisms, replicating some of the coordination and control benefits of internal hierarchies, without requiring full ownership or integration (Forsgren & Holm, 2022).

Accordingly, there are two types of R&D outsourcing. First, *nonrelational R&D outsourcing* occurs through arm's-length contracts typically embedded in customer-supplier relationships (Narula, 1999). Transactions are discrete and largely impersonal; collaboration usually ends when the contract is completed, so each new project requires searching for a new supplier and renegotiating terms. The type of knowledge exchanged is mostly explicit knowledge, and thus, knowledge flows are narrow with codified and standardized specifications.

The second type is relational R&D outsourcing, defined as “transactions that are non-arm’s-length and involve longer-term relations between firms” (UNCTAD, 2001, p. 127). It requires MNEs to manage contractual relationships through trust, long-term commitment, and mutual adaptation rather than relying solely on the legal enforceability of formal contracts (Magnani et al., 2019). Subsequent projects tend to proceed with the same partners. Interactions are intensive, and the knowledge exchanged is largely tacit and co-developed through iterative learning and mutual adaptation. Thus, relational outsourcing can be understood as a form of quasi-internalization. I thus treat relational and nonrelational outsourcing as distinct governance choices that do not evolve into one another within the scope of this analysis.

Additionally, I argue that production costs – the direct expenses of conducting R&D, such as employee salaries, laboratory materials, and equipment – are broadly comparable across relational and nonrelational outsourcing because external partners in the same host country operate in almost identical local input markets and rely on similar technological infrastructures. What differentiates the two forms of outsourcing is the share of transaction and coordination costs in total R&D expenditure. Particularly, relational outsourcing entails a much larger share of such costs, arising from repeated interactions, mutual adaptation, joint problem solving, and efforts to minimize knowledge spillover and opportunism. These ongoing coordination activities create quasi-organizational routines that make relational outsourcing more transaction-cost-intensive than nonrelational outsourcing.

Table 4-1 compares relational and nonrelational outsourcing and defines each governance mode at the transaction level. Building on the descriptive features listed in Table 4-1, the following analysis shifts the level of explanation from transactions to firms. Specifically, the impact of R&D tax incentives on governance choice emerges not because these incentives disproportionately reduce production costs but because they relax the transaction-cost constraints that uniquely characterize relational outsourcing.

Table 4-1 Comparison of Relational and Nonrelational R&D Outsourcing

| Dimensions | Relational R&D Outsourcing | Nonrelational R&D Outsourcing |
|-----------------------|--|--|
| Relationship duration | Long-term partnerships; ongoing partnerships; repeated projects with the same partners reduce marginal costs of future transactions (Basis for H1) | Short-term, project-specific transactions; each project entails new supplier search or renegotiation, making future transaction costs recurrent. |

| | | |
|-------------------------------------|--|---|
| Interaction intensity | High: frequent communication, joint problem solving, and shared routines; more vulnerable to opportunistic behaviours (Basis for H2) | Low to moderate: limited to contract execution and monitoring; less exposed to opportunism. |
| Nature of knowledge exchanged | Largely tacit, co-developed through iterative learning; effectiveness depends on absorptive capacity and skilled labour productivity. (Basis for H3a) | Primarily explicit, codified knowledge transferred through standardized specifications; less reliant on absorptive capacity. |
| Governance mechanism and capability | Non-arm's-length transactions governed by trust, mutual adaptation, and reputational mechanisms in addition to formal contracts requires high governance capability to mitigate hold-up risks. (Basis for H3b) | Arm's-length contracts governed primarily by formal, legally enforceable agreements; less reliant on accumulated governance capability. |
| Type of governance mode | <i>Quasi-internalization</i> – captures coordination and control benefits of internal hierarchies without full ownership | Classic market-based outsourcing, representing pure externalization. |

Although R&D tax incentives lower transaction costs for both relational and nonrelational outsourcing, we argue that MNEs engaged in relational outsourcing will respond more favourably. In nonrelational outsourcing, MNEs may repeat projects with the same supplier, but governance remains transactional. As a result, MNEs need to search (or re-benchmark) suppliers, conduct due diligence, renegotiate terms, and re-establish monitoring. These recurring search, bargaining, and oversight costs can limit the impact of R&D tax incentives on nonrelational outsourcing. In relational outsourcing, however, long-term relational ties create shared routines and established norms that reduce the costs associated with searching, negotiating, and monitoring future transactions (Gulati, 1995; Dyer & Singh, 1998; Liu et al., 2009). The marginal cost of scaling them up in response to tax incentives is lower than that initiating new arm's-length contracts. Thus, these incentives are expected to spur a more aggressive expansion of relational outsourcing compared to nonrelational outsourcing. Thus, I hypothesize that:

Hypothesis 1: R&D tax incentives increase MNEs' R&D relational-to-nonrelational outsourcing ratio in the host country.

However, the degree of market failures varies with MNEs' external relationship capabilities (Narula et al., 2019). We argue that these capabilities are shaped by two main factors:

home country IP protection and MNEs' absorptive capacity (Narula et al., 2019). In particular, home-country IP regimes influence firms' reliance on, and preferences for, relationship-based innovation partnerships (Lu, Tsang, & Peng, 2008). Labour productivity and previous outsourcing experience capture different aspects of absorptive capacity that reflect the MNEs' ability to manage quasi-internalization when market failures are partially alleviated by R&D tax incentives (Narula et al., 2019). We argue that these factors amplify the effect of R&D tax incentives more for relational than for nonrelational outsourcing because of the structural differences between the two modes summarized in Table 4-1.

4.3.3 The Moderating Effect of Home IP Protection

IP regulation defines a nation's institutional environment for protecting and appropriating knowledge-based transactions (Khoury, Cuervo-Cazurra, & Dau, 2014). Prior research suggests that MNEs evaluate and compare their home and host institutions and adjust their governance strategies accordingly (Nguyen, 2016; Knoll, Riedel, Schwab, Todtenhaupt, and Voget, 2021). Because this study is conducted in a single host country context (which will be elaborated in the empirical context section), we focus on the variation in MNEs' home country IP protection.

I argue that home country IP protection shapes how MNEs coordinate R&D transactions in host countries. In home environments with weaker IP protection, MNEs cannot rely solely on formal legal enforcement to prevent opportunism (North, 1991). To protect their technological knowledge, these firms develop relational governance mechanisms – trust-based ties, informal safeguards, and social monitoring – that substitute for formal IP institutions (Peng, Ahlstrom, Carraher, & Shi, 2017). For example, Nguyen (2021) find that social networks can compensate for inefficient legal enforcement and non-transparent governance system. Boddewyn and Peng (2021) also argue that the value of relational ties tends to be amplified in countries with weak formal institutions. Therefore, MNEs from such contexts are more adept at managing relational exchanges and mitigating the hazards of quasi-internalization in a host country. As such, R&D tax incentives interact with their relational capabilities to encourage greater relational outsourcing among such firms.

By contrast, MNEs from strong-IP home countries are accustomed to operating in legally secure institutional environments that protect intellectual assets through formal contracts and

litigation (Peng et al., 2017). In particular, strong IP regulation improves the enforcement of contractual obligations in knowledge transactions (Ulset, 1996), ensuring that transacting parties adhere to their commitments, reducing the likelihood of disputes (Henisz & Williamson, 1999; Santangelo, Meyer, & Jindra, 2016), and enabling MNEs to control and receive the rewards from their R&D investments (Foss & Foss, 2005). Therefore, these MNEs are less reliant on and less experienced with informal governance mechanisms. As such, they may not respond as strongly to R&D tax incentives through relational outsourcing, because their internal routines emphasize contractual control rather than relational adaptation.

Compared to nonrelational outsourcing, relational outsourcing is more sensitive to MNEs' prior experience in managing knowledge transactions under institutional uncertainty and thus higher levels of market failures. In relational R&D partnerships, repeated and tacit exchanges expose MNEs to higher risks of knowledge leakage (Cantwell & Santangelo, 1999). MNEs originating from weaker-IP home countries are better equipped to navigate these relational hazards by leveraging trust-based governance and exploiting fiscal incentives. In contrast, MNEs from stronger-IP home countries rely more on formal safeguards and thus face higher transaction costs in managing relational outsourcing; these firms are more inclined to pursue nonrelational outsourcing. Therefore, I argue that the positive effect of R&D tax incentives on the relational-to-nonrelational outsourcing ratio will be stronger for MNEs from home countries with weaker IP protection. Thus, I hypothesize that:

***Hypothesis 2:** The positive effect of R&D tax incentives on MNEs' R&D relational-to-nonrelational outsourcing ratio is strengthened for MNEs from home countries with weaker IP protection.*

4.3.4 The Moderating Effect of Absorptive Capacity

Absorptive capacity is defined as “the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends” (Cohen & Levinthal, 1990, p. 218); it enables firms to acquire, assimilate, transform, and exploit external knowledge (Zahra & George, 2002). As such, absorptive capacity influences the extent to which MNEs can pursue quasi-internalization, or relational R&D outsourcing, in the host country (Narula et al., 2019).

R&D outsourcing – both relational and nonrelational – has two operational dimensions: “outside-in” and “inside-out” (West & Bogers, 2014). Outside-in refers to the process through which MNEs enrich their internal knowledge base by bringing external knowledge into the organization (Dahlander & Gann, 2010). It represents a key advantage of outsourcing that is not available through internalization. R&D outsourcing can increase knowledge diversity (Frank, Cortimiglia, Ribeiro, & Oliveira, 2016; Dahlander & Gann, 2010) and improve innovation performance (Nieto & Rodriguez, 2011). As such, Bertrand and Mol (2013) claim that “obtaining and utilizing new knowledge through outsourcing of R&D are crucial aspects of competitive strategy” (p. 752). Effectively managing outside-in knowledge flows requires MNEs to possess absorptive capacity, reflected in their labour productivity (Narula et al., 2019).

MNEs with high labour productivity are well-positioned to recognize ways to incorporate external knowledge with internal knowledge (Lane & Lubatkin, 1998; Cantwell & Mudambi, 2005) because they can effectively mitigate the cognitive distance between themselves and their local R&D suppliers (Bertrand & Mol, 2013). Cognitive distance refers to the differences in how people perceive and understand knowledge (Nooteboom, 2009). Thus, high labour productivity allows MNEs to “scan their boundaries in order to assess the resources available within [their] network of external partners” (Narula et al. 2019, p. 1238). Un (2017) also finds that firms with more skilled employees develop absorptive capacity to leverage external knowledge effectively.

Consequently, such MNEs are more likely to respond to R&D tax incentives and pursue R&D outsourcing when they possess high labour productivity. High-productivity MNEs are better equipped to recognize the value of external innovations (Bertrand & Mol, 2013), and their strategic focus extends beyond cost efficiency to include innovation performance (Narula & Hagedoorn, 1999). While R&D tax incentives mitigate knowledge inappropriability, labour productivity determines the extent to which firms can translate these incentives into R&D outputs. In other words, the incentives create the opportunity, but high labour productivity enables MNEs to seize it. Thus, the effect of R&D tax incentives is amplified when MNEs can identify and apply external knowledge effectively (Siregar & Patunru, 2021).

Labour productivity is more critical for relational than for nonrelational outsourcing because the knowledge exchanged in relational arrangements is predominantly tacit. As Cantwell

and Santangelo (1999) emphasize, close and sustained interactions between exchange partners become necessary when technological development involves tacit and uncodified knowledge that cannot be fully articulated in advance or protected through formal contracts. In such settings, effective collaboration depends heavily on repeated face-to-face engagement, mutual adaptation, and thus the absorptive capacity of skilled employees (Narula, 1999). By contrast, nonrelational outsourcing is often centred on explicit knowledge that can be codified and transferred through standardized specifications and formal documentation (Narula, 1999). Because such exchanges rely on clear deliverables, they require less interactive learning and fewer iterative adjustments, making labour productivity less critical to their effectiveness (Grant & Phene, 2021).

Therefore, MNEs with high labour productivity are able to absorb tacit knowledge from relational partners; they are more capable of translating the benefits of R&D tax incentives into innovation performance by pursuing relational outsourcing. In comparison, MNEs with low labour productivity lack the capacity to exploit tacit knowledge flows (Zahra & George, 2002). Their limited stock of skilled labour constrains their ability to co-develop or adapt complex technologies with external partners, leading them to prioritize the cost-minimizing aspects of R&D outsourcing (Narula, 1999). Therefore, when R&D tax incentives reduce the transaction costs of outsourcing, such MNEs are more inclined to pursue nonrelational, arm's-length contracts that rely on codified knowledge and standardized agreements. Thus, the effect of R&D tax incentives on the relational-to-nonrelational outsourcing ratio should be stronger for MNEs with higher labour productivity. Hence, I hypothesize that:

Hypothesis 3a: *The positive effect of R&D tax incentives on MNEs' R&D relational-to-nonrelational outsourcing ratio is strengthened for MNEs with high labour productivity in the host country.*

The “inside-out” dimension of R&D outsourcing refers to the transfer of internal knowledge to local partners (West & Bogers, 2014). Because this dimension is especially vulnerable to market failures, MNEs' previous outsourcing experience in the host country provides them with absorptive capacity to mitigate opportunism risks and manage relationships with local partners (Lewin, Massini, & Peeters, 2009).

“Inside-out” involves a series of strategic decisions about what activities to retain in-house, what to outsource, and which local suppliers to work with (Rilla & Squicciarini, 2011; Paju, 2007; Lewin & Peeters, 2006). Therefore, outsourcing is a dynamic process in which past experience drives their future decisions (Jensen & Pedersen, 2007). Bhalla, Sodhi, and Son (2008) confirm that MNEs engage in R&D outsourcing in gradual steps. They first acquire less complex operational models at home, then enter joint ventures, and lastly pursue R&D outsourcing. As “controlling without owning” is more operationally challenging than executing one-off contractual agreements, this path dependence means that relational outsourcing often builds on more accumulated outsourcing experience than nonrelational outsourcing.

Additionally, MNEs develop governance capability through outsourcing experience (Mayer & Salomon, 2006). Governance capability is defined as the “ability of an enterprise to arrange and smooth outsourcing activities” (Tseng & Chen, 2013, p. 7). It is a type of firm-specific capability that plays a “large role when transactions present ‘hold-up’ and observability hazards” (Mayer & Salomon, 2006, p. 943). The ‘hold-up’ hazard occurs when one exchange party exploits its position in a transaction, and the observability hazard arises when it is difficult to monitor the actions or performance of external partners (Mayer & Salomon, 2006). Governance capability allows MNEs to mitigate these risks and effectively select outsourcing suppliers, sign appropriate contracts, and monitor knowledge exchanges in the local context (Lewin & Peeters, 2006; Rilla & Squicciarini, 2011; Tseng & Chen, 2013). In other words, past experience complements the effect of R&D tax incentives. While R&D tax incentives are external instruments designed to mitigate market failures, outsourcing experience provides internal capabilities to navigate the resulting uncertainties.

Although both forms of outsourcing require governance capabilities developed through prior outsourcing experience, relational outsourcing demands stronger capabilities to manage trust-based, long-term relationships, because the enduring and collaborative nature of such arrangements makes them particularly vulnerable to market failures (Narula, 1999). In particular, beyond drafting contracts, firms must manage repeated interactions, sustain partner commitment, and protect against knowledge spillover or opportunism that may arise over time. Governance capability ensures that “MNEs are comfortable investing in relationship-based externalization without fearing that their partners will take advantage of them, achieving some of the benefits of

internalization but without the hierarchical costs” (Narula et al., 2019, p. 1238). Thus, MNEs with substantial prior outsourcing experience are more likely to engage in relational outsourcing because their experience amplifies the effect of R&D tax incentives. Conversely, MNEs with limited experience may lack the governance capabilities to manage uncertainties. These firms are more likely to choose nonrelational outsourcing in response to R&D tax incentives that lower external transaction costs. Thus, I hypothesize that:

***Hypothesis 3b:** The positive effect of R&D tax incentives on MNEs’ R&D relational-to-nonrelational outsourcing ratio is strengthened for MNEs with greater previous outsourcing experience in the host country.*

4.4 RESEARCH DESIGN

4.4.1 Empirical Context

I study the conditions under which Canada’s Scientific Research and Experimental Development Tax Incentive Program (SR&ED) – the country’s most extensive R&D incentive program (Government of Canada, 2022) – enables MNEs to shift their R&D governance choices from internalization toward quasi-internalization or relational outsourcing.

SR&ED is available to all MNEs operating in Canada (Invest in Canada, 2022). Firms apply for SR&ED through their annual tax returns. The applications are then reviewed by the Canada Revenue Agency (CRA), the federal agency that administers tax laws, benefits programs, and tax incentives for the Government of Canada. The CRA carefully evaluates each firm’s R&D activities and its eligible SR&ED expenditures for the year. Eligible SR&ED expenditures include “salaries and wages, materials, R&D contracts in Canada, lease costs of equipment, overhead, and payments made to eligible research institutes” (SR&ED Education, 2022). Once approved, the firm receives SR&ED credits – income tax credits calculated based on the approved expenditures – to reduce its income tax payable. For each MNE, SR&ED expenditure eligible for approval is capped at \$50 million for an income tax deduction and \$3 million for SR&ED credits. No additional benefits will be granted for expenses exceeding the limit.

SR&ED provides a relevant empirical context for this study because it directly subsidizes the costs of both arm’s-length and non-arm’s-length R&D contracts. By covering a portion of

R&D expenditures and lowering the transaction costs associated with contractual R&D partnerships, SR&ED helps correct market failures that prevent firms from fully appropriating the private returns of their R&D investments – particularly those involving external collaboration. In addition, MNEs must submit detailed research proposals when first applying for SR&ED and update their applications annually with the CRA if the project continues. The CRA also streamlines program administration. It “ensures that firms are aware of the program and can access it as easily as possible” and “administers the program with fiscal integrity by applying the legislation correctly, consistently, and fairly” (SR&ED Education, 2022). Thus, SR&ED indicates an intermediate level of market failures in the Canadian institutional environment.

4.4.2 Data and Sample

This chapter uses the Business Research Microdata (BRM) (2000 – 2021), developed by the Economic Analysis Division at Statistics Canada. The BRM provides high-quality, firm-level data covering the population of MNE operations in Canada. It contains detailed information on SR&ED credits and in-house and arm’s-length and non-arm’s-length outsourcing R&D contracts. It also includes derived variables that the Division produces, such as labour and capital productivity. Therefore, the BRM provides the opportunity to assess the effect of SR&ED on MNEs’ R&D governance decisions in Canada.

To perform the study, I first excluded Canadian-owned enterprises. Because the focus is on MNEs’ R&D governance decisions, I also dropped MNEs that performed no R&D activities in Canada and those with fewer than 10 employees, as such entities are likely representative offices. The remaining BRM data were then merged with MNEs’ home country factors from the World Bank databases. To eliminate the influence of extreme outliers, I winsorized total R&D spending and SR&ED credits at the 95th percentile (Ghosh & Vogt, 2012).

I also conducted propensity score matching between SR&ED recipients (treated) and eligible nonrecipients (controls). Propensity scores were estimated with a logistic model that included industry, province, and home-country indicators, and key pre-treatment covariates: total operating expenses, patent applications, and employee numbers. These covariates reflect SR&ED expenditures, R&D capabilities, and potential R&D staffing in Canada, respectively; they affect a firm’s likelihood of receiving SR&ED credits. This procedure aims to mitigate selection bias.

Balance diagnostics in Table 4-2 indicate that all covariates have a standardized mean difference below 0.1 after matching, indicating sufficient covariate balance.

Table 4-2 Matching Balance Diagnostics

| | Type | Unadjusted Mean Differences | Adjusted Mean Differences | M. Threshold |
|----------------------------|----------|-----------------------------|---------------------------|----------------|
| distance | Distance | 0.842 | 0.025 | Balanced, <0.1 |
| Total operation expenses | Contin. | 0.393 | 0.069 | Balanced, <0.1 |
| Patent applications | Contin. | 0.083 | 0.078 | Balanced, <0.1 |
| Employee numbers | Contin. | 0.211 | 0.070 | Balanced, <0.1 |
| sector_ Energy | Binary | -0.036 | 0.002 | Balanced, <0.1 |
| sector_ Manufacturing | Binary | 0.302 | 0.024 | Balanced, <0.1 |
| sector_ Real Estate | Binary | -0.073 | 0.000 | Balanced, <0.1 |
| sector_ Services | Binary | -0.028 | -0.033 | Balanced, <0.1 |
| sector_ Wholesale | Binary | -0.165 | 0.006 | Balanced, <0.1 |
| province_ Alberta | Binary | -0.026 | 0.000 | Balanced, <0.1 |
| province_ British Columbia | Binary | -0.018 | -0.003 | Balanced, <0.1 |
| province_ Manitoba | Binary | 0.001 | -0.001 | Balanced, <0.1 |
| province_ Ontario | Binary | -0.089 | -0.021 | Balanced, <0.1 |
| Province_ Quebec | Binary | 0.128 | 0.022 | Balanced, <0.1 |
| country_ France | Binary | 0.023 | 0.002 | Balanced, <0.1 |
| country_ Germany | Binary | 0.008 | -0.003 | Balanced, <0.1 |
| country_ Japan | Binary | -0.017 | -0.001 | Balanced, <0.1 |
| country_ United Kingdom | Binary | 0.005 | -0.006 | Balanced, <0.1 |
| country_ United States | Binary | -0.045 | -0.008 | Balanced, <0.1 |

Notes: Only the top five Canadian provinces and top five home countries are listed for illustration.

The final sample comprises 28,020 observations, representing 4,770 MNEs from 45 countries. Of these, 14,010 observations from 2,385 MNEs received SR&ED credits. Table 4-3 summarize the final sample by the top five sectors, provinces, and countries, respectively. Following the confidentiality rules of Statistics Canada, I rounded the number of firms to the nearest fifth or tenth unit. Table 4-3 is therefore presented for descriptive illustration only.

Table 4-3 Descriptive Summary of the Final Sample (N = 28,020)

| Panel A: Top 5 Sectors | Number of Observations | Number of Firms | Total Relational Outsourcing | Total SRED Credits | Relational outsourced per SRED Credit |
|-------------------------------|------------------------|-----------------|------------------------------|--------------------|---------------------------------------|
| Energy | 2630 | 640 | 157.400 | 503.200 | 0.313 |
| Manufacturing | 18800 | 2790 | 756.330 | 3958.720 | 0.191 |
| Real Estate | 250 | 95 | 110.170 | 18.390 | 5.991 |
| Services | 4210 | 1140 | 648.740 | 2729.700 | 0.238 |
| Wholesale | 2130 | 480 | 231.510 | 1478.560 | 0.157 |

| Panel B: Top 5 Provinces | Number of Observations | Number of Firms | Total Relational Outsourcing | Total SRED Credits | Relational outsourced per SRED Credit |
|---------------------------------|------------------------|-----------------|------------------------------|--------------------|---------------------------------------|
| Ontario | 14990 | 2440 | 839.670 | 4718.830 | 0.178 |
| Quebec | 6330 | 1130 | 791.280 | 2278.320 | 0.347 |
| British Columbia | 2270 | 490 | 115.100 | 647.050 | 0.178 |
| Alberta | 2500 | 530 | 112.220 | 707.970 | 0.159 |
| Manitoba | 640 | 120 | 11.360 | 113.610 | 0.100 |

| Panel B: Top 5 Countries | Number of Observations | Number of Firms | Total Relational Outsourcing | Total SRED Credits | Relational outsourced per SRED Credit |
|---------------------------------|------------------------|-----------------|------------------------------|--------------------|---------------------------------------|
| United States | 15760 | 2990 | 885.200 | 4951.460 | 0.179 |
| Germany | 1690 | 290 | 62.430 | 475.380 | 0.131 |
| United Kingdom | 1730 | 370 | 201.620 | 762.200 | 0.265 |
| Japan | 1460 | 210 | 133.810 | 298.150 | 0.449 |
| France | 2025 | 350 | 266.710 | 710.300 | 0.375 |

Notes: (1) Total relational outsourcing and total SR&ED credits are reported in millions of Canadian dollars, while relational outsourcing per SR&ED credit is reported in Canadian dollars.

4.4.3 Variables

Dependent variables. This study measures R&D governance choices of MNEs with two related variables. For the baseline hypothesis, which examines the effect of R&D tax incentives on R&D outsourcing relative to in-house R&D, the dependent variable is the *outsourcing-to-internalization ratio*, calculated as total R&D outsourcing divided by total in-house R&D. I added a small constant ($1e-6$) and log-transformed the ratios to reduce skewness.

For Hypotheses 1 through 3b, the focus shifts to the composition of outsourcing. In the BRM dataset, total R&D outsourcing is the sum of arm's-length contracts (variable L0340) and non-arm's-length contracts (variable L0345). According to the Income Tax Act, an arm's-length contract is a transaction between parties acting in their own separate interests; a non-arm's-length contract involves parties with a pre-existing relationship that may influence the terms of the transaction (Government of Canada, 2025). Such relationships include family ties, business connections, or even close friendships (Pollock & Rosen, 2024). I thus use L0340 as a proxy for nonrelational outsourcing and L0345 for relational outsourcing. The dependent variable is the relational-to-nonrelational outsourcing ratio, measured as total relational outsourcing divided by

total nonrelational outsourcing. After adding a small constant (1e-6) to the zeros, I log-transformed the ratios to mitigate heteroskedasticity.

Although non-arm's-length contracts most closely capture ongoing, trust-based relationships, they may also include some transactions that are not fully relational in the quasi-internalization sense. To my knowledge, no alternative large-scale dataset provides a more precise separation of relational from nonrelational outsourcing. To assess the validity of this proxy, I performed supplementary triangulation analyses (Table 4-4). The analysis finds that the estimated relational effect is stronger in manufacturing sectors where tacit, hard-to-codify knowledge is prevalent and for MNEs with longer operating experience in Canada.

Independent variable. The *R&D tax incentive* is measured as the SR&ED credits that the MNE earns in millions of dollars. The variable is standardized in the empirical models to aid interpretation.

Moderator variables. *Home IP protection* is calculated as the home country's IP protection legislation score from the World Governance Indicators (WGI). A higher score indicates that the MNE's home country provides stronger IP protection, reflecting a more effective institutional environment for governing R&D activities. Accordingly, MNEs from such countries are less reliant on relational governance mechanisms. *Labour productivity* is measured by value-added gross output per employee. The higher the labour productivity, the greater the absorptive capacity an MNE has to identify, assimilate, and apply external knowledge (Spithoven & Teirlinck, 2015). *Previous outsourcing experience* is the log of the accumulated value of R&D outsourcing that an MNE has undertaken in prior years. A higher value reflects stronger governance capability to manage external uncertainties, increasing the firm's propensity to engage in quasi-internalization, or relational R&D outsourcing (Tseng & Chen, 2013).

Table 4-4 Triangulation Analyses for Proxy Validation

| | Model A | Model 2 |
|--|----------------------|----------------------|
| SR&ED credits $t-1$ | 0.002 (0.000) 0.000 | 0.002 (0.000) 0.000 |
| Patent applications | 0.000 (0.000) 0.033 | 0.000 (0.000) 0.014 |
| Patent grants | 0.000 (0.000) 0.000 | 0.000 (0.000) 0.000 |
| R&D intensity | 0.001 (0.000) 0.000 | 0.001 (0.000) 0.000 |
| Employee number | 0.000 (0.000) 0.000 | 0.000 (0.000) 0.001 |
| Equity debt | 0.000 (0.000) 0.000 | 0.000 (0.000) 0.000 |
| Profitability | 0.000 (0.001) 0.885 | 0.000 (0.001) 0.680 |
| Current assets | 0.000 (0.000) 0.000 | 0.000 (0.000) 0.000 |
| Intangible investment | -0.020 (0.005) 0.000 | -0.020 (0.005) 0.000 |
| More than one activity | 0.001 (0.000) 0.015 | 0.001 (0.000) 0.025 |
| More than one province | -0.003 (0.000) 0.000 | -0.003 (0.000) 0.000 |
| Capital productivity | 0.000 (0.000) 0.207 | 0.000 (0.000) 0.265 |
| Export intensity | 0.000 (0.000) 0.372 | 0.000 (0.000) 0.387 |
| Export countries | 0.000 (0.000) 0.015 | 0.000 (0.000) 0.085 |
| Cultural distance | -0.007 (0.009) 0.433 | -0.007 (0.009) 0.453 |
| Tax rate differences | 0.000 (0.000) 0.128 | 0.000 (0.000) 0.143 |
| GDP per capita | 0.000 (0.000) 0.959 | 0.000 (0.000) 0.891 |
| Inflation rate | 0.001 (0.000) 0.021 | 0.001 (0.000) 0.025 |
| Debt GDP | 0.000 (0.000) 0.684 | 0.000 (0.000) 0.724 |
| GDP growth rate | 0.000 (0.000) 0.063 | 0.000 (0.000) 0.061 |
| R&D tax incentives (SR&ED credits) | 0.031 (0.001) 0.000 | 0.039 (0.002) 0.000 |
| Manufacturing | -0.001 (0.001) 0.042 | |
| SR&ED credits \times Manufacturing | 0.005 (0.001) 0.000 | |
| Canadian experience | | 0.000 (0.000) 0.963 |
| SR&ED credits \times Canadian experience | | 0.002 (0.001) 0.000 |
| (Intercept) | -0.143 (0.015) 0.000 | -0.142 (0.015) 0.000 |
| R2 | 0.290 | 0.290 |
| R2 Adj. | 0.288 | 0.287 |
| F-statistic | 117.702 | 116.327 |

Notes: (1) Number of observations: N = 28,020; (2) Coefficients are followed by robust standard error in brackets. (3) Fixed effects for Canadian provinces, industries, years, and home countries are included in all models. (4) As a validity check, we interacted SR&ED credits with a manufacturing-sector indicator (Model A) and with the MNEs' years of operation in Canada (Model B). In both models the interaction terms were positive and statistically significant. This indicates that R&D tax incentives have a stronger effect on the relational-to-nonrelational outsourcing ratio in knowledge-intensive manufacturing industries and among MNEs with longer local experience. The results are consistent with the theoretical expectation that tacit knowledge intensity and embeddedness foster quasi-internalized outsourcing.

Control variables. I control for a comprehensive set of factors that may shape MNEs' R&D governance decisions and their reactions to tax incentives in Canada. First, I include *SR&ED credits_(t-1)* – the incentives received by the firm in the previous year; these shape the likelihood the firm will receive SR&ED credits in the current period. I also account for R&D-related knowledge. This includes *R&D patents* (the number of patents filed in Canada in previous years), *patent grants* (the value of patent grant received in millions of dollars), and *R&D intensity* (the R&D spending-to-revenue ratio). These show MNEs' R&D activities and “the amount of firm-specific technological knowledge contained in each unit of output” (Hashai & Almor, 2008, p. 1023). Prior research shows that MNEs with high R&D intensity are more likely to internalize R&D (Williamson, 1981; Hashai & Almor, 2008).

Additionally, I control for subsidiary size and financial performance. *Subsidiary size* is measured by the number of employees. Financial performance includes the *equity-to-debt* ratio (total equity relative to total liabilities), *profitability* (total income as a share of total revenue), *current assets* (current assets relative to total assets), and *total intangible investment* (value of intangible assets acquired in Canada during the year). MNEs with greater resources are large employers and may thus be less sensitive to tax incentives provided under the general tax code (Halkos & Tzeremes, 2007; Bird & Davis-Nozeamack, 2018).

I also incorporate operational characteristics that reflect each MNE's local embeddedness and absorptive capacity. These include *Canadian experience* (years of operation in Canada), two binary variables indicating whether the firm has *more than one activity* operating in *more than one province*, *export intensity* (share of revenue from exports), and *export countries* (number of export destination countries).

Finally, I include home-country factors that may shape MNEs' decisions in host countries. This includes *tax rate differences* (Canada's corporate tax rate minus that of the home country), *GDP per capita* (home country's GDP per person), *inflation rate* (measured by the annual GDP deflator), *debt to GDP* ratio (government debt as a percentage of GDP), and *GDP growth rate* (rate of change in GDP per capita). *Cultural distance* is also included in this study (Farah, Elias, Chakravarty, & Beamish, 2021); it is a composite measure of four Hofstede

dimensions – power distance, individualism, masculinity, and uncertainty avoidance – using Canada as the reference country (Kogut & Singh, 1988).

4.5 RESULTS

I considered both random effects and fixed effects panel regression models to analyze the final sample. A random-effects model assumes that the unobserved heterogeneity across entities (i.e., home countries) is uncorrelated with the independent variables. In contrast, a fixed-effects model focuses on within-entity variation over time, controlling for all time-invariant characteristics of each country (Bell, Fairbrother, & Jones, 2019). To select the appropriate specification, I conducted a Hausman test, which compares the consistency of the two estimators. The test results showed a significant difference, indicating that the random-effects estimator would be inconsistent. Thus, the fixed-effects model is more appropriate for this study, though random effects results are also presented in robustness check analysis for completeness.

$$Y_{s,p,i,t,h} = \pi + \beta_1 * (R\&D \text{ tax incentives}_{s,t,p}) + \beta_2 * (R\&D \text{ tax incentives}_{s,t,p} * Main_{s,t}) \\ + \beta_3 * Control_{s,t} + \gamma_t + w_{p,i,h} + \varepsilon_{s,p,i,t,h}$$

In this specification, s indexes MNEs' Canadian subsidiaries, p denotes Canadian provinces, i indexes sectors, t indicates time, and h refers to MNEs' home countries. The dependent variable Y represents the R&D governance outcome of interest. $Main$ contains the key moderators – *IP protection*, *labour productivity*, and *outsourcing experience*. $Control$ includes all control variables described earlier. The time fixed effect (γ_t) captures shocks or macroeconomic changes common to all firms in a given year. The variable $w_{p,i,h}$ denotes province, sector, and home country fixed effects, which control for unobserved heterogeneity that may systematically influence MNEs' governance choices. The coefficient of interest, β_2 , represents the interaction between *R&D tax incentives* and the variables of interest.

Table 4-5 provides a descriptive summary of all variables in the final sample, reporting their means and standard deviations, as well as the Pearson correlation matrix for all continuous variables. I also computed the variance inflation factor (VIF) for every model. The maximum VIF value was 3.453, below the threshold of 10, indicating that multicollinearity was not a concern.

4.5.1 Results of Main Analysis

Table 4-6 shows the regression results. Model 1 reports the baseline hypothesis. Models 2 to 5 test Hypotheses 1 through 3b, respectively. Model 6 is the full model for the relational-to-nonrelational outsourcing ratio. Robust standard errors and p-values are reported for all models.

Model 1 examines the baseline hypothesis, which predicts that R&D tax incentives increase the outsourcing-to-internalization ratio. The results show that a one standard deviation increase in SR&ED credits is associated with an approximate 4.2% increase⁴ in the ratio of R&D outsourcing relative to in-house R&D, holding all other factors constant ($\beta_1 = 0.041$, $p < 0.001$). This finding indicates that R&D tax incentives substantially shift MNEs' R&D governance choice away from internalization and toward outsourcing. The baseline hypothesis is supported.

Model 2 examines Hypothesis 1, which posits that R&D tax incentives increase the relational-to-nonrelational outsourcing ratio. The results show that a one standard deviation increase in SR&ED credits is associated with an estimated 4.8% increase in the ratio ($\beta_1 = 0.047$, $p < 0.001$). This represents a sizable and economically meaningful shift in how MNEs organize their R&D, indicating that R&D tax incentives not only promote external R&D in general but also reorient the composition of outsourcing toward quasi-internalization. Thus, Hypothesis 1 is supported. Figure 4-1 shows the plot.

Models 3–6 test the moderating conditions under which R&D tax incentives most strongly direct MNEs toward relational outsourcing relative to nonrelational outsourcing. In particular, Model 3 assesses Hypothesis 2, which proposes that the positive effect of R&D tax incentives is stronger when MNEs' home country has weak IP protection. The interaction term between R&D tax incentives and home IP protection is negative and significant ($\beta_2 = -0.107$, $p < 0.001$). This implies that a one standard deviation increase in SR&ED credits is associated with a 10.1% increase in MNEs' engagement in relational outsourcing relative to nonrelational outsourcing when home-country IP protection decreases by one standard deviation. This finding indicates that weaker home-country IP regimes amplify the governance-shifting impact of R&D

⁴ The percentage increase is calculated as $(e^\beta - 1) * 100$.

tax incentives, making long-term, trust-based R&D contracts more attractive to MNEs. Thus, Hypothesis 2 is supported. Figure 2 shows the interaction plot of *SR&ED credits* and *home IP protection*.

Model 4 assesses Hypothesis 3a, which predicts that labour productivity strengthens the effect of R&D tax incentives. The interaction term between R&D tax incentives and labour productivity is positive and significant ($\beta_2 = 0.050, p < 0.001$). This indicates that each one standard deviation increase in labour productivity amplifies the impact of SR&ED credits on the relational-to-nonrelational outsourcing ratio by about 5.0%. Thus, the economic return on each dollar of SR&ED credit is higher when the firm can convert those funds into innovation outputs by effectively leveraging external knowledge, rather than merely offsetting the consequences of market failures. Hypothesis 3a is supported. Figure 4-3 shows the interaction plot.

Model 5 tests Hypothesis 3b, which proposes a moderating effect of MNEs' previous outsourcing experience. The interaction term between SR&ED credits and prior outsourcing experience is positive and significant ($\beta_2 = 0.082, p < 0.001$). The finding shows that in response to a one standard deviation increase in R&D tax incentives, MNEs' relational-to-nonrelational outsourcing ratio increases by about 8.2% when their previous outsourcing experience increases by one standard deviation. As a result, the effectiveness of R&D tax incentives in lowering transaction costs caused by market failures is magnified when MNEs possess governance capabilities built through related outsourcing experience that enable them to manage such uncertainties. Thus, Hypothesis 3b is supported. Figure 4-4 shows the interaction plot of *SR&ED credits* and MNEs' previous outsourcing experience.

Model 6 includes the full specification, including all interaction terms and control variables. The main effect of R&D tax incentives on the relational-to-nonrelational outsourcing ratio remains positive and significant ($\beta_1 = 0.032, p < 0.001$). Although the magnitude of the coefficients changes slightly, the moderating effects of home IP protection ($\beta_2 = -0.105, p < 0.001$), labour productivity ($\beta_2 = 0.034, p < 0.001$), and prior outsourcing experience ($\beta_2 = 0.078, p < 0.001$) are largely consistent with the results reported in the individual models, providing robust support for all hypotheses.

Table 4-5 Descriptive Summary of the Variables

| Variables | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1. Outsourcing-to-internalization ratio | 4.840 | 10.803 | 1.000 | | | | | | | | |
| 2. Relational-to-nonrelational outsourcing ratio | 4.496 | 17.046 | 0.062 | 1.000 | | | | | | | |
| 3. SR&ED credits $_t$ | 0.310 | 0.859 | 0.380 | 0.001 | 1.000 | | | | | | |
| 4. Home IP protection | 1.489 | 0.386 | -0.017 | -0.014 | 0.006 | 1.000 | | | | | |
| 5. Labour productivity | 0.000 | 1.000 | 0.110 | -0.006 | 0.074 | -0.010 | 1.000 | | | | |
| 6. Outsourcing experience | 0.462 | 1.568 | 0.460 | 0.018 | 0.480 | 1.000 | 0.160 | 1.000 | | | |
| 7. SR&ED credits $_{t-1}$ | 0.310 | 0.859 | 0.340 | 0.010 | 0.840 | 0.028 | 0.076 | 0.510 | 1.000 | | |
| 8. Patent applications | 0.865 | 13.621 | 0.049 | -0.001 | 0.150 | 0.014 | 0.008 | 0.091 | 0.140 | 1.000 | |
| 9. Patent grants | 0.450 | 2.558 | 0.099 | -0.003 | 0.250 | -0.007 | 0.025 | 0.110 | 0.210 | 0.240 | 1.000 |
| 10. R&D intensity | 0.465 | 1.594 | 0.150 | 0.005 | 0.320 | -0.004 | -0.100 | 0.150 | 0.250 | 0.017 | 0.057 |
| 11. Employee number | 481 | 1180 | 0.220 | 0.006 | 0.370 | -0.020 | 0.046 | 0.310 | 0.340 | 0.120 | 0.150 |
| 12. Equity debt | 2.350 | 3.532 | -0.075 | -0.008 | -0.048 | 0.004 | -0.040 | -0.059 | -0.042 | -0.022 | -0.031 |
| 13. Profitability | 0.065 | 0.188 | 0.054 | 0.000 | 0.090 | -0.002 | 0.067 | 0.058 | 0.078 | 0.009 | 0.022 |
| 14. Current assets | 7.725 | 12.368 | 0.330 | 0.005 | 0.450 | 0.009 | 0.370 | 0.460 | 0.420 | 0.110 | 0.150 |
| 15. Intangible investment | 0.004 | 0.027 | 0.069 | -0.004 | 0.110 | -0.045 | 0.023 | 0.074 | 0.091 | 0.097 | 0.110 |
| 16. Canadian experience | 19.989 | 15.984 | -0.004 | -0.006 | 0.035 | 0.041 | 0.022 | 0.052 | 0.042 | 0.000 | -0.019 |
| 17. More than one activity | 0.369 | 0.483 | 0.140 | 0.002 | 0.150 | -0.007 | 0.120 | 0.200 | 0.140 | 0.060 | 0.100 |
| 18. More than one province | 0.408 | 0.492 | 0.110 | -0.014 | 0.130 | -0.011 | 0.068 | 0.130 | 0.120 | 0.043 | 0.078 |
| 19. Capital productivity | 1.307 | 1.050 | -0.066 | 0.001 | -0.082 | -0.035 | 0.077 | -0.091 | -0.075 | -0.023 | -0.049 |
| 20. Export intensity | 0.657 | 19.466 | 0.014 | -0.001 | 0.002 | -0.084 | -0.002 | 0.022 | 0.004 | 0.000 | -0.003 |
| 21. Export countries | 5.365 | 10.492 | 0.087 | -0.003 | 0.150 | -0.041 | 0.020 | 0.200 | 0.150 | 0.120 | 0.065 |
| 22. Cultural distance | -3.004 | 5.055 | -0.004 | -0.006 | 0.005 | 0.004 | 0.023 | 0.003 | 0.001 | 0.013 | -0.003 |
| 23. Tax rate differences | -11.610 | 7.403 | 0.013 | -0.014 | 0.009 | 0.002 | 0.031 | 0.023 | 0.006 | -0.010 | -0.004 |
| 24. GDP per capita | 49.775 | 14.397 | -0.019 | -0.003 | 0.001 | -0.005 | 0.012 | 0.035 | 0.009 | -0.006 | -0.044 |
| 25. Inflation rate | 1.680 | 1.274 | 0.008 | 0.003 | 0.020 | -0.250 | -0.010 | -0.030 | 0.006 | 0.013 | 0.067 |
| 26. Debt GDP | 76.079 | 37.556 | -0.057 | -0.004 | -0.040 | -0.540 | -0.002 | 0.001 | -0.026 | -0.016 | -0.072 |
| 27. GDP growth rate | 1.137 | 2.894 | 0.024 | 0.002 | 0.026 | 0.210 | -0.011 | -0.020 | 0.015 | 0.012 | 0.028 |

| Variables | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 10. R&D intensity | 1.000 | | | | | | | | |
| 11. Employee number | -0.045 | 1.000 | | | | | | | |
| 12. Equity debt | 0.042 | -0.100 | 1.000 | | | | | | |
| 13. Profitability | -0.020 | 0.032 | 0.170 | 1.000 | | | | | |
| 14. Current assets | -0.059 | 0.570 | -0.096 | 0.095 | 1.000 | | | | |
| 15. Intangible investment | 0.046 | 0.059 | -0.029 | 0.025 | 0.110 | 1.000 | | | |
| 16. Canadian experience | -0.068 | 0.093 | 0.096 | 0.059 | 0.065 | -0.019 | 1.000 | | |
| 17. More than one activity | -0.110 | 0.310 | -0.110 | 0.045 | 0.410 | 0.056 | 0.040 | 1.000 | |
| 18. More than one province | -0.090 | 0.280 | -0.110 | 0.060 | 0.310 | 0.035 | 0.010 | 0.550 | 1.000 |
| 19. Capital productivity | -0.067 | -0.005 | -0.160 | -0.037 | -0.170 | -0.057 | -0.013 | -0.074 | -0.004 |
| 20. Export intensity | -0.004 | 0.018 | -0.006 | -0.007 | 0.045 | -0.003 | 0.026 | 0.022 | 0.005 |
| 21. Export countries | -0.013 | 0.092 | 0.012 | 0.100 | 0.180 | 0.095 | 0.095 | 0.095 | -0.011 |
| 22. Cultural distance | 0.005 | -0.011 | 0.008 | 0.018 | 0.015 | 0.010 | -0.025 | 0.039 | 0.039 |
| 23. Tax rate differences | -0.022 | 0.016 | -0.053 | -0.030 | 0.028 | 0.001 | 0.041 | 0.008 | 0.042 |
| 24. GDP per capita | 0.014 | -0.026 | 0.061 | 0.061 | -0.020 | 0.002 | 0.072 | -0.008 | -0.062 |
| 25. Inflation rate | 0.008 | 0.043 | -0.014 | 0.002 | 0.024 | 0.003 | -0.082 | 0.040 | 0.079 |
| 26. Debt GDP | 0.032 | -0.046 | 0.077 | 0.019 | -0.035 | -0.023 | 0.088 | -0.097 | -0.140 |
| 27. GDP growth rate | 0.000 | 0.031 | -0.028 | -0.015 | 0.017 | 0.019 | -0.084 | 0.046 | 0.078 |

| Variables | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 19. Capital productivity | 1.000 | | | | | | | | |
| 20. Export intensity | -0.022 | 1.000 | | | | | | | |
| 21. Export countries | -0.120 | 0.016 | 1.000 | | | | | | |
| 22. Cultural distance | -0.045 | -0.004 | 0.022 | 1.000 | | | | | |
| 23. Tax rate differences | -0.001 | 0.003 | 0.004 | -0.041 | 1.000 | | | | |
| 24. GDP per capita | -0.059 | 0.006 | 0.120 | 0.160 | 0.140 | 1.000 | | | |
| 25. Inflation rate | 0.024 | -0.009 | -0.080 | 0.290 | -0.130 | -0.260 | 1.000 | | |
| 26. Debt GDP | -0.040 | 0.021 | 0.057 | -0.450 | -0.170 | 0.002 | -0.320 | 1.000 | |
| 27. GDP growth rate | 0.040 | -0.010 | 0.002 | 0.160 | -0.150 | -0.120 | 0.370 | -0.330 | 1.000 |

Notes: (1) The means and standard deviations of the outsourcing-to-internalization and relational-to-nonrelational ratios are reported as percentages (i.e., the ratios are multiplied by 100 for easier interpretation). (2) Categorical variables are not included in this table.

Table 4-6 Main Analysis: Fixed-Effect Regression Results

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---------------------------|--|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| | Baseline Hypothesis | Hypothesis 1 | Hypothesis 2 | Hypothesis 3a | Hypothesis 3b | Full Model |
| <i>Dependent Variable</i> | <i>log (outsourcing/ internalization)</i> | | | | | |
| <i>Control Variables</i> | <i>log (relational outsourcing/ nonrelational outsourcing)</i> | | | | | |
| SR&ED credits $t-1$ | 0.024(0.011) $p = 0.030$ | 0.068(0.011) $p = 0.000$ | 0.069(0.011) $p = 0.000$ | 0.070(0.011) $p = 0.000$ | -0.098(0.012) $p = 0.000$ | -0.090(0.012) $p = 0.000$ |
| Patent applications | 0.000(0.000) $p = 0.728$ | -0.001(0.000) $p = 0.019$ | -0.001(0.000) $p = 0.018$ | -0.001(0.000) $p = 0.044$ | -0.001(0.000) $p = 0.005$ | -0.001(0.000) $p = 0.011$ |
| Patent grants | 0.017(0.002) $p = 0.000$ | -0.012(0.002) $p = 0.000$ | -0.012(0.002) $p = 0.000$ | -0.012(0.002) $p = 0.000$ | -0.008(0.002) $p = 0.000$ | -0.008(0.002) $p = 0.000$ |
| R&D intensity | 0.088(0.004) $p = 0.000$ | 0.042(0.004) $p = 0.000$ | 0.042(0.004) $p = 0.000$ | 0.047(0.004) $p = 0.000$ | 0.047(0.004) $p = 0.000$ | 0.051(0.004) $p = 0.000$ |
| Employee number | 0.000(0.000) $p = 0.005$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.001$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ |
| Equity debt | -0.012(0.002) $p = 0.000$ | -0.005(0.002) $p = 0.000$ | -0.005(0.002) $p = 0.000$ | -0.005(0.002) $p = 0.000$ | -0.005(0.001) $p = 0.002$ | -0.005(0.001) $p = 0.002$ |
| Profitability | 0.132(0.029) $p = 0.000$ | -0.009(0.028) $p = 0.759$ | -0.004(0.028) $p = 0.900$ | -0.009(0.028) $p = 0.740$ | 0.015(0.028) $p = 0.597$ | 0.016(0.028) $p = 0.554$ |
| Current assets | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ |
| Intangible investment | 0.555(0.192) $p = 0.004$ | -0.722(0.190) $p = 0.000$ | -0.720(0.190) $p = 0.000$ | -0.719(0.190) $p = 0.000$ | -0.432(0.186) $p = 0.020$ | -0.439(0.186) $p = 0.018$ |
| Canadian experience | -0.001(0.000) $p = 0.002$ | 0.000(0.000) $p = 0.369$ | 0.000(0.000) $p = 0.321$ | 0.000(0.000) $p = 0.631$ | 0.000(0.000) $p = 0.639$ | 0.000(0.000) $p = 0.534$ |
| More than one activity | 0.114(0.014) $p = 0.000$ | 0.031(0.014) $p = 0.022$ | 0.029(0.014) $p = 0.029$ | 0.033(0.013) $p = 0.015$ | 0.020(0.013) $p = 0.139$ | 0.019(0.013) $p = 0.145$ |
| More than one province | -0.007(0.014) $p = 0.614$ | -0.092(0.013) $p = 0.000$ | -0.090(0.013) $p = 0.000$ | -0.090(0.013) $p = 0.000$ | -0.087(0.013) $p = 0.000$ | -0.084(0.013) $p = 0.000$ |
| Capital productivity | -0.040(0.005) $p = 0.000$ | 0.006(0.005) $p = 0.211$ | 0.007(0.005) $p = 0.196$ | 0.004(0.005) $p = 0.501$ | 0.003(0.005) $p = 0.600$ | 0.000(0.005) $p = 0.977$ |
| Export intensity | 0.000(0.000) $p = 0.227$ | 0.000(0.000) $p = 0.388$ | 0.000(0.000) $p = 0.391$ | 0.000(0.000) $p = 0.433$ | 0.000(0.000) $p = 0.270$ | 0.000(0.000) $p = 0.310$ |
| Export countries | 0.010(0.001) $p = 0.000$ | -0.001(0.001) $p = 0.085$ | -0.001(0.001) $p = 0.096$ | -0.001(0.001) $p = 0.219$ | -0.002(0.001) $p = 0.000$ | -0.002(0.001) $p = 0.001$ |
| Cultural distance | -0.039(0.344) $p = 0.911$ | -0.262(0.340) $p = 0.441$ | 0.243(0.429) $p = 0.572$ | -0.297(0.340) $p = 0.382$ | -0.264(0.332) $p = 0.427$ | 0.111(0.419) $p = 0.791$ |

| | | | | | | |
|--|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Tax rate differences | 0.004(0.002) $p = 0.052$ | 0.003(0.002) $p = 0.129$ | 0.003(0.002) $p = 0.148$ | 0.003(0.002) $p = 0.114$ | 0.003(0.002) $p = 0.108$ | 0.003(0.002) $p = 0.110$ |
| GDP per capita | -0.002(0.001) $p = 0.074$ | 0.000(0.001) $p = 0.960$ | 0.000(0.001) $p = 0.911$ | 0.000(0.001) $p = 0.973$ | 0.001(0.001) $p = 0.587$ | 0.000(0.001) $p = 0.731$ |
| Inflation rate | -0.002(0.009) $p = 0.860$ | 0.020(0.009) $p = 0.024$ | 0.018(0.009) $p = 0.045$ | 0.021(0.009) $p = 0.020$ | 0.022(0.009) $p = 0.012$ | 0.021(0.009) $p = 0.019$ |
| Debt GDP | -0.001(0.001) $p = 0.176$ | 0.000(0.001) $p = 0.676$ | 0.000(0.001) $p = 0.850$ | 0.000(0.001) $p = 0.586$ | 0.001(0.001) $p = 0.269$ | 0.001(0.001) $p = 0.328$ |
| GDP growth rate | -0.002(0.005) $p = 0.680$ | 0.009(0.005) 0.064 | 0.008(0.005) $p = 0.070$ | 0.009(0.005) $p = 0.056$ | 0.009(0.004) $p = 0.048$ | 0.009(0.004) $p = 0.047$ |
| <i>Key Predictors</i> | | | | | | |
| R&D tax incentives (SR&ED credits _t) | 0.020(0.012) $p = 0.000$ | 0.047(0.012) $p = 0.000$ | 0.050(0.013) $p = 0.000$ | 0.045(0.012) $p = 0.000$ | 0.029(0.013) $p = 0.000$ | 0.032(0.015) $p = 0.000$ |
| Home IP protection | | | -0.164(0.101) $p = 0.106$ | | | -0.124(0.099) $p = 0.208$ |
| SR&ED credits _t × Home IP protection | | | -0.107(0.018) $p = 0.000$ | | | -0.105(0.018) $p = 0.000$ |
| Labour productivity | | | | 0.003(0.006) $p = 0.679$ | | 0.007(0.006) $p = 0.260$ |
| SR&ED credits _t × Labour productivity | | | | 0.050(0.005) $p = 0.000$ | | 0.034(0.005) $p = 0.000$ |
| Outsourcing experience | | | | | 0.080(0.004) $p = 0.000$ | 0.081(0.004) $p = 0.000$ |
| SR&ED credits _t × Outsourcing experience | | | | | 0.082(0.003) $p = 0.000$ | 0.078(0.003) $p = 0.000$ |
| (Intercept) | -0.353(0.550) $p = 0.521$ | -0.617(0.544) $p = 0.257$ | 0.151(0.676) $p = 0.823$ | -0.675(0.543) $p = 0.214$ | -0.580(0.531) $p = 0.275$ | -0.018(0.659) $p = 0.978$ |
| R ² | 0.273 | 0.289 | 0.290 | 0.292 | 0.323 | 0.325 |
| Adj. R ² | 0.271 | 0.287 | 0.288 | 0.290 | 0.321 | 0.323 |
| F-statistic | 109.470 | 118.470 | 116.590 | 117.594 | 136.177 | 132.032 |

Notes: (1) Number of observations: N = 28,020; (2) Coefficients are followed by robust standard error in brackets. (3) Fixed effects for Canadian provinces, industries, years, and home countries are included in all models.

Figure 4-1 Main Analysis: The Main Effect of R&D Tax Incentives on Relational-to-Nonrelational Outsourcing Ratio

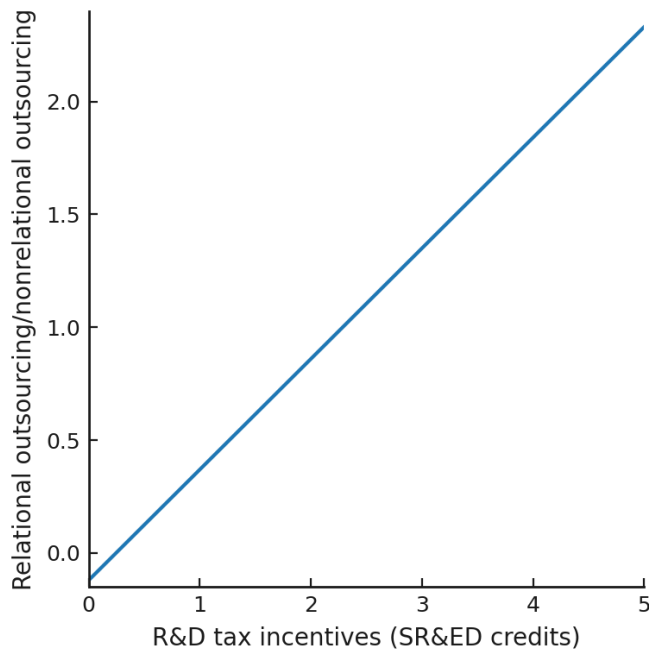


Figure 4-2 Main Analysis: The Moderating Effect of Home IP Protection

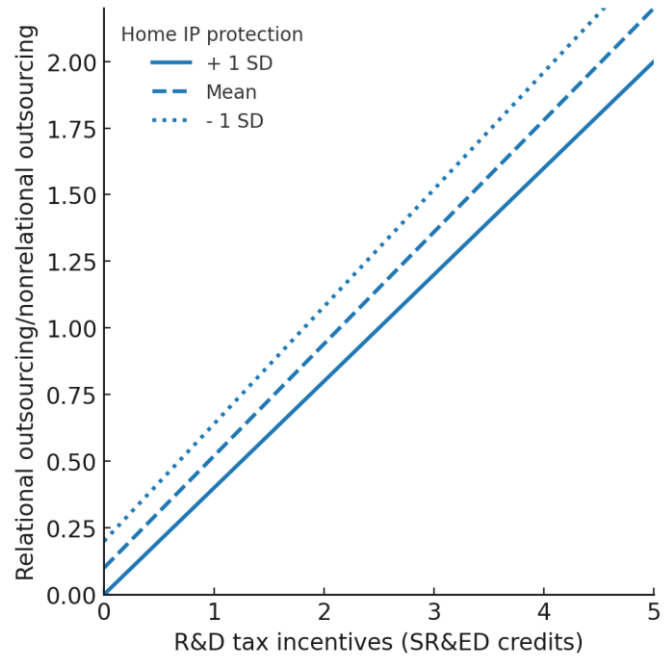


Figure 4-3 Main Analysis: The Moderating Effect of Labour Productivity

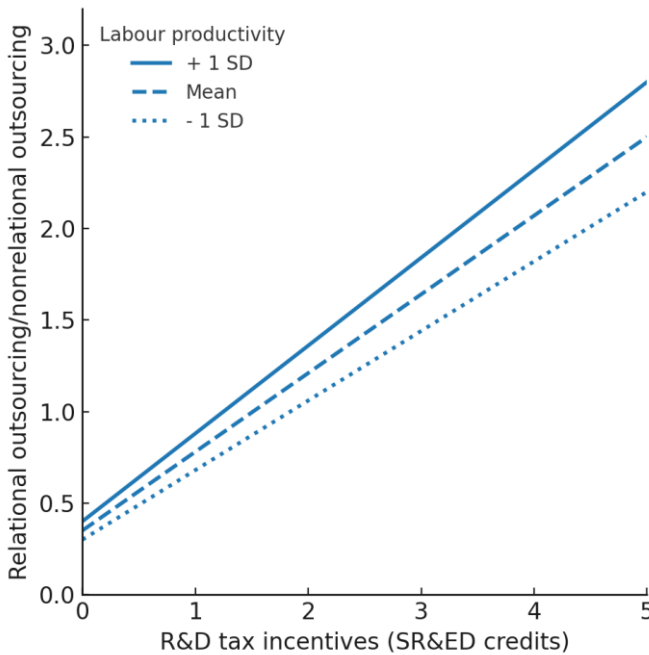
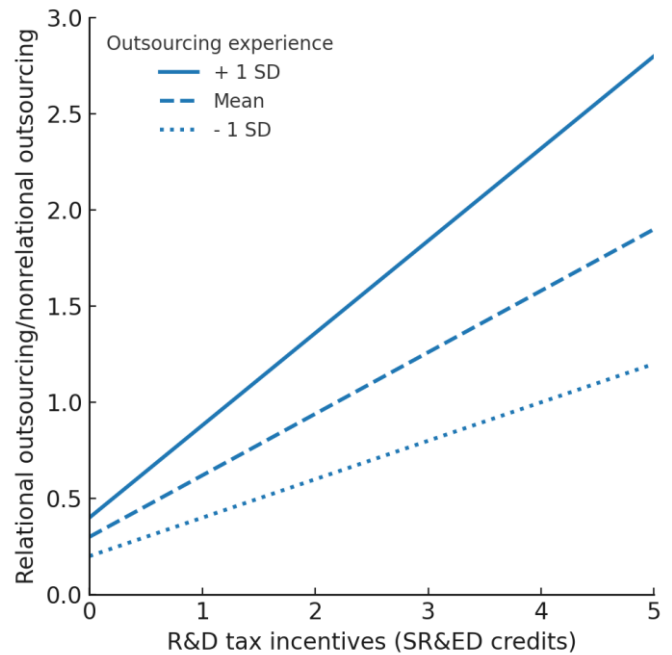


Figure 4-4 Main Analysis: The Moderating Effect of Previous Outsourcing Experience



4.5.2 Robustness Check Using Random-Effects Models

To verify the robustness of the findings, I re-estimated the analysis using random effects regression. The results are presented in Table 4-7. Model A tests the baseline hypothesis; Models B through E correspond to Hypotheses 1 to 3b, and Model F provides the full specification with the relational-to-nonrelational outsourcing ratio as the dependent variable.

The results confirm the main conclusions. The main effect of SR&ED credits remains positive and significant for both the outsourcing-to-internalization ratio ($\beta_1 = 0.020, p < 0.001$) and the relational-to-nonrelational outsourcing ratio ($\beta_1 = 0.047, p < 0.001$). Focusing on the two forms of outsourcing, the interactions with home IP protection ($\beta_2 = -0.102, p < 0.001$), labour productivity ($\beta_2 = 0.049, p < 0.001$), and outsourcing experience ($\beta_2 = 0.082, p < 0.001$) are also strong and significant across both individual and full models. These results reinforce the validity of the original findings and demonstrate that R&D tax incentives encourage MNEs to shift their governance choices toward quasi-internalization, particularly when host-country IP protection is strong and when MNEs possess the absorptive capacity to offset the effects of market failures.

4.5.3 Robustness Check Using Relational-to-Outsourcing Ratio

I also performed additional analysis on MNEs' governance shift toward relational outsourcing by replacing the dependent variable with a relational-to-outsourcing ratio. The ratio is calculated as total relational R&D outsourcing divided by total R&D outsourcing. I added a small constant ($1e-6$) and then log-transformed the variable to facilitate interpretation. The results are presented in Table 4-8 and Figures 4-5, 4-6, 4-7, and 4-8.

The analysis leads to the same conclusions. That is, a one-standard-deviation increase in SR&ED credits is associated with a 3.5% rise in relational-to-outsourcing ratio ($\beta_1 = 0.034, p < 0.001$), and the key interaction effects with home-country IP protection ($\beta_2 = -0.112, p < 0.001$), labour productivity ($\beta_2 = 0.504, p < 0.001$), and prior outsourcing experience ($\beta_2 = 0.912, p < 0.001$) remain positive and significant. These findings confirm that the governance-shifting influence of R&D tax incentives is robust to alternative dependent-variable specifications. This effect also strengthens when MNEs possess the managerial and absorptive capabilities needed to manage external R&D relationships. Therefore, the findings in the main analysis are robust.

Table 4-7 Additional Analysis using Random-Effects

| | Model A | Model B | Model C | Model D | Model E | Model F |
|---------------------------|---|--|------------------------------|------------------------------|------------------------------|------------------------------|
| | Baseline Hypothesis | Hypothesis 1 | Hypothesis 2 | Hypothesis 3a | Hypothesis 3b | Full Model |
| <i>Dependent Variable</i> | <i>log (outsourcing/ internalization)</i> | <i>log (relational outsourcing/ nonrelational outsourcing)</i> | | | | |
| <i>Control Variables</i> | | | | | | |
| SR&ED credits $t-1$ | 0.024(0.011) $p = 0.027$ | 0.068(0.011) $p = 0.000$ | 0.069(0.011) $p = 0.001$ | 0.070(0.011) $p = 0.000$ | -0.097(0.012) $p = 0.000$ | -0.089(0.012) $p = 0.000$ |
| Patent applications | 0.000(0.000) $p = 0.730$ | -0.001(0.000) $p = 0.020$ | -0.001(0.000) $p = 0.018$ | -0.001(0.000) $p = 0.046$ | -0.001(0.000) $p = 0.005$ | -0.001(0.000) $p = 0.010$ |
| Patent grants | 0.017(0.002) $p = 0.000$ | -0.012(0.002) $p = 0.000$ | -0.012(0.002) $p = 0.001$ | -0.012(0.002) $p = 0.000$ | -0.007(0.002) $p = 0.001$ | -0.007(0.002) $p = 0.001$ |
| R&D intensity | 0.088(0.004) $p = 0.000$ | 0.042(0.004) $p = 0.000$ | 0.042(0.004) $p = 0.001$ | 0.047(0.004) $p = 0.000$ | 0.047(0.004) $p = 0.000$ | 0.051(0.004) $p = 0.000$ |
| Employee number | 0.000(0.000) $p = 0.005$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.001$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ |
| Equity debt | -0.011(0.002) $p = 0.000$ | -0.005(0.002) $p = 0.000$ | -0.005(0.002) $p = 0.001$ | -0.005(0.002) $p = 0.000$ | -0.005(0.001) $p = 0.001$ | -0.005(0.001) $p = 0.001$ |
| Profitability | 0.131(0.029) $p = 0.000$ | -0.005(0.028) $p = 0.867$ | -0.001(0.028) $p = 0.967$ | -0.005(0.028) $p = 0.870$ | 0.019(0.027) $p = 0.483$ | 0.021(0.028) $p = 0.450$ |
| Current assets | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.001$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ |
| Intangible investment | 0.555(0.192) $p = 0.004$ | -0.728(0.190) $p = 0.000$ | -0.727(0.190) $p = 0.001$ | -0.727(0.190) $p = 0.000$ | -0.443(0.186) $p = 0.017$ | -0.454(0.186) $p = 0.014$ |
| Canadian experience | -0.001(0.000) $p = 0.002$ | 0.000(0.000) $p = 0.483$ | 0.000(0.000) $p = 0.390$ | 0.000(0.000) $p = 0.782$ | 0.000(0.000) $p = 0.328$ | 0.000(0.000) $p = 0.292$ |
| More than one activity | 0.117(0.014) $p = 0.000$ | 0.031(0.013) $p = 0.021$ | 0.030(0.013) $p = 0.027$ | 0.033(0.013) $p = 0.015$ | 0.021(0.013) $p = 0.110$ | 0.021(0.013) $p = 0.111$ |
| More than one province | -0.009(0.013) $p = 0.518$ | -0.085(0.013) $p = 0.001$ | -0.085(0.013) $p = 0.001$ | -0.082(0.013) $p = 0.000$ | -0.078(0.013) $p = 0.000$ | -0.078(0.013) $p = 0.000$ |
| Capital productivity | -0.039(0.005) $p = 0.000$ | 0.006(0.005) $p = 0.231$ | 0.006(0.005) $p = 0.240$ | 0.004(0.005) $p = 0.498$ | 0.003(0.005) $p = 0.569$ | 0.000(0.005) $p = 0.947$ |
| Export intensity | 0.000(0.000) $p = 0.223$ | 0.000(0.000) $p = 0.410$ | 0.000(0.000) $p = 0.416$ | 0.000(0.000) $p = 0.448$ | 0.000(0.000) $p = 0.289$ | 0.000(0.000) $p = 0.326$ |
| Export countries | 0.010(0.001) | -0.001(0.001) | -0.001(0.001) | -0.001(0.001) | -0.002(0.001) | -0.002(0.001) |

| | | | | | | |
|---|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| | $p = 0.000$ | $p = 0.061$ | $p = 0.086$ | $p = 0.141$ | $p = 0.000$ | $p = 0.000$ |
| Cultural distance | -0.002(0.004) $p = 0.575$ | 0.003(0.003) $p = 0.386$ | 0.003(0.003) $p = 0.282$ | 0.002(0.003) $p = 0.458$ | 0.001(0.003) $p = 0.819$ | 0.001(0.003) $p = 0.718$ |
| Tax rate differences | 0.000(0.002) $p = 0.870$ | 0.003(0.001) $p = 0.016$ | 0.003(0.001) $p = 0.017$ | 0.002(0.001) $p = 0.025$ | 0.003(0.001) $p = 0.001$ | 0.003(0.001) $p = 0.002$ |
| GDP per capita | -0.001(0.001) $p = 0.492$ | 0.000(0.001) $p = 0.560$ | -0.001(0.001) $p = 0.131$ | 0.000(0.001) $p = 0.475$ | -0.001(0.001) $p = 0.039$ | -0.002(0.001) $p = 0.002$ |
| Inflation rate | 0.006(0.008) $p = 0.447$ | -0.002(0.005) $p = 0.779$ | -0.002(0.005) $p = 0.766$ | -0.001(0.005) $p = 0.901$ | 0.002(0.005) $p = 0.696$ | 0.003(0.005) $p = 0.625$ |
| Debt GDP | -0.001(0.000) $p = 0.103$ | 0.000(0.000) $p = 0.750$ | 0.000(0.000) $p = 0.567$ | 0.000(0.000) $p = 0.785$ | -0.001(0.000) $p = 0.082$ | 0.000(0.000) $p = 0.674$ |
| GDP growth rate | 0.000(0.004) $p = 0.989$ | 0.006(0.002) $p = 0.003$ | 0.007(0.002) $p = 0.002$ | 0.007(0.002) $p = 0.002$ | 0.007(0.002) $p = 0.001$ | 0.007(0.002) $p = 0.001$ |
| <i>Key Predictors</i> | | | | | | |
| R&D tax incentives (SR&ED credits _{<i>t</i>}) | 0.020(0.012) $p = 0.000$ | 0.047(0.012) $p = 0.000$ | 0.050(0.013) $p = 0.000$ | 0.045(0.012) $p = 0.000$ | 0.029(0.013) $p = 0.000$ | 0.032(0.015) $p = 0.000$ |
| Home IP protection | | | 0.057(0.033) $p = 0.091$ | | | 0.079(0.032) $p = 0.016$ |
| SR&ED credits _{<i>t</i>} × Home IP protection | | | -0.102(0.018) $p = 0.000$ | | | -0.103(0.018) $p = 0.000$ |
| Labour productivity | | | | 0.001(0.006) $p = 0.868$ | | 0.005(0.006) $p = 0.436$ |
| SR&ED credits _{<i>t</i>} × Labour productivity | | | | 0.049(0.005) $p = 0.000$ | | 0.035(0.005) $p = 0.000$ |
| Outsourcing experience | | | | | 0.079(0.004) $p = 0.000$ | 0.080(0.004) $p = 0.000$ |
| SR&ED credits _{<i>t</i>} × Outsourcing experience | | | | | 0.082(0.003) $p = 0.000$ | 0.078(0.003) $p = 0.000$ |
| (Intercept) | -0.021(0.151) $p = 0.888$ | 0.010(0.160) $p = 0.952$ | 0.058(0.161) $p = 0.719$ | 0.011(0.161) $p = 0.947$ | 0.094(0.155) $p = 0.542$ | 0.154(0.157) $p = 0.326$ |
| Residual RE σ^2 | 0.73 | 0.71 | 0.71 | 0.71 | 0.68 | 0.68 |
| Marginal R ² | 0.191 | 0.276 | 0.277 | 0.279 | 0.272 | 0.274 |
| Conditional R ² | 0.313 | 0.398 | 0.399 | 0.399 | 0.399 | 0.399 |

Notes: (1) Number of observations: N = 28,020; (2) Coefficients are followed by robust standard error in brackets. (3) Random intercepts for Canadian provinces, industries, years, and home countries are included in all models.

Table 4-8 Additional Analysis using Relational-to-Outsourcing Ratio as the DV

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---------------------------|--|------------------------------|------------------------------|------------------------------|------------------------------|
| | Hypothesis 1 | Hypothesis 2 | Hypothesis 3a | Hypothesis 3b | Full Model |
| <i>Dependent Variable</i> | <i>log (relational outsourcing/ total outsourcing)</i> | | | | |
| <i>Control Variables</i> | | | | | |
| SR&ED credits $t-1$ | 0.077(0.010) $p = 0.000$ | 0.078(0.010) $p = 0.000$ | 0.079(0.010) $p = 0.000$ | -0.105(0.011) $p = 0.000$ | -0.098(0.011) $p = 0.000$ |
| Patent applications | -0.001(0.000) $p = 0.004$ | -0.001(0.000) $p = 0.003$ | -0.001(0.000) $p = 0.011$ | -0.001(0.000) $p = 0.001$ | -0.001(0.000) $p = 0.001$ |
| Patent grants | -0.013(0.002) $p = 0.000$ | -0.012(0.002) $p = 0.000$ | -0.012(0.002) $p = 0.000$ | -0.007(0.002) $p = 0.000$ | -0.007(0.002) $p = 0.000$ |
| R&D intensity | 0.033(0.004) $p = 0.000$ | 0.033(0.004) $p = 0.000$ | 0.038(0.004) $p = 0.000$ | 0.039(0.003) $p = 0.000$ | 0.043(0.003) $p = 0.000$ |
| Employee number | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ | 0.000(0.000) $p = 0.000$ |
| Equity debt | -0.005(0.001) $p = 0.001$ | -0.005(0.001) $p = 0.001$ | -0.005(0.001) $p = 0.001$ | -0.004(0.001) $p = 0.004$ | -0.004(0.001) $p = 0.004$ |
| Profitability | -0.020(0.027) $p = 0.459$ | -0.015(0.027) $p = 0.586$ | -0.021(0.027) $p = 0.440$ | 0.006(0.026) $p = 0.820$ | 0.007(0.026) $p = 0.776$ |
| Current assets | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ | 0.001(0.000) $p = 0.000$ |
| Intangible investment | -0.768(0.181) $p = 0.000$ | -0.766(0.181) $p = 0.000$ | -0.765(0.181) $p = 0.000$ | -0.447(0.176) $p = 0.011$ | -0.454(0.176) $p = 0.010$ |
| Canadian experience | 0.000(0.000) $p = 0.250$ | 0.000(0.000) $p = 0.210$ | 0.000(0.000) $p = 0.481$ | 0.000(0.000) $p = 0.655$ | 0.000(0.000) $p = 0.548$ |
| More than one activity | 0.023(0.013) $p = 0.077$ | 0.021(0.013) $p = 0.098$ | 0.025(0.013) $p = 0.055$ | 0.011(0.013) $p = 0.369$ | 0.011(0.012) $p = 0.384$ |
| More than one province | -0.086(0.013) $p = 0.000$ | -0.084(0.013) $p = 0.000$ | -0.084(0.013) $p = 0.000$ | -0.081(0.012) $p = 0.000$ | -0.078(0.012) $p = 0.000$ |
| Capital productivity | 0.009(0.005) $p = 0.067$ | 0.009(0.005) $p = 0.061$ | 0.006(0.005) $p = 0.234$ | 0.005(0.005) $p = 0.319$ | 0.002(0.005) $p = 0.661$ |
| Export intensity | 0.000(0.000) $p = 0.374$ | 0.000(0.000) $p = 0.377$ | 0.000(0.000) $p = 0.422$ | 0.000(0.000) $p = 0.243$ | 0.000(0.000) $p = 0.285$ |
| Export countries | -0.001(0.001) $p = 0.039$ | -0.001(0.001) $p = 0.045$ | -0.001(0.001) $p = 0.123$ | -0.002(0.001) $p = 0.000$ | -0.002(0.001) $p = 0.000$ |
| Cultural distance | -0.331(0.324) $p = 0.307$ | 0.163(0.409) $p = 0.690$ | -0.367(0.324) $p = 0.258$ | -0.332(0.314) $p = 0.291$ | 0.022(0.396) $p = 0.955$ |

| | | | | | |
|---|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Tax rate differences | 0.004(0.002) $p = 0.071$ | 0.003(0.002) $p = 0.083$ | 0.004(0.002) $p = 0.061$ | 0.004(0.002) $p = 0.055$ | 0.004(0.002) $p = 0.055$ |
| GDP per capita | 0.000(0.001) $p = 0.861$ | 0.000(0.001) $p = 0.730$ | 0.000(0.001) $p = 0.791$ | 0.000(0.001) $p = 0.717$ | 0.000(0.001) $p = 0.876$ |
| Inflation rate | 0.017(0.009) $p = 0.048$ | 0.015(0.009) $p = 0.086$ | 0.018(0.009) $p = 0.040$ | 0.019(0.008) $p = 0.025$ | 0.018(0.008) $p = 0.036$ |
| Debt GDP | 0.001(0.001) $p = 0.365$ | 0.000(0.001) $p = 0.507$ | 0.001(0.001) $p = 0.297$ | 0.001(0.001) $p = 0.088$ | 0.001(0.001) $p = 0.116$ |
| GDP growth rate | 0.007(0.004) $p = 0.134$ | 0.006(0.004) $p = 0.144$ | 0.007(0.004) $p = 0.118$ | 0.007(0.004) $p = 0.103$ | 0.007(0.004) $p = 0.100$ |
| <i>Key Predictors</i> | | | | | |
| R&D tax incentives (SR&ED credits _{<i>t</i>}) | 0.034(0.011) $p = 0.000$ | 0.037(0.013) $p = 0.000$ | 0.035(0.011) $p = 0.000$ | 0.033(0.013) $p = 0.000$ | 0.037(0.014) $p = 0.000$ |
| Home IP protection | | -0.159(0.097) $p = 0.101$ | | | -0.116(0.094) $p = 0.216$ |
| SR&ED credits _{<i>t</i>} × Home IP protection | | -0.112(0.017) $p = 0.000$ | | | -0.107(0.017) $p = 0.000$ |
| Labour productivity | | | 0.031(0.060) $p = 0.605$ | | 0.081(0.058) $p = 0.162$ |
| SR&ED credits _{<i>t</i>} × Labour productivity | | | 0.504(0.048) $p = 0.000$ | | 0.329(0.048) $p = 0.000$ |
| Outsourcing experience | | | | 0.835(0.040) $p = 0.000$ | 0.840(0.040) $p = 0.000$ |
| SR&ED credits _{<i>t</i>} × Outsourcing experience | | | | 0.912(0.032) $p = 0.000$ | 0.874(0.032) $p = 0.000$ |
| (Intercept) | -0.663(0.519) $p = 0.201$ | 0.088(0.644) $p = 0.891$ | -0.722(0.518) $p = 0.163$ | -0.618(0.503) $p = 0.219$ | -0.088(0.624) $p = 0.888$ |
| R ² | 0.354 | 0.355 | 0.357 | 0.394 | 0.396 |
| Adj. R ² | 0.352 | 0.353 | 0.354 | 0.392 | 0.394 |
| F-statistic | 159.323 | 156.769 | 158.012 | 185.184 | 179.388 |

Notes: (1) Number of observations: N = 28,020; (2) Coefficients are followed by robust standard error in brackets. (3) Fixed effects for Canadian provinces, industries, years, and home countries are included in all models.

Figure 4-5 Additional Analysis: The Main Effect of R&D Tax Incentives on Relational-to-Outsourcing Ratio

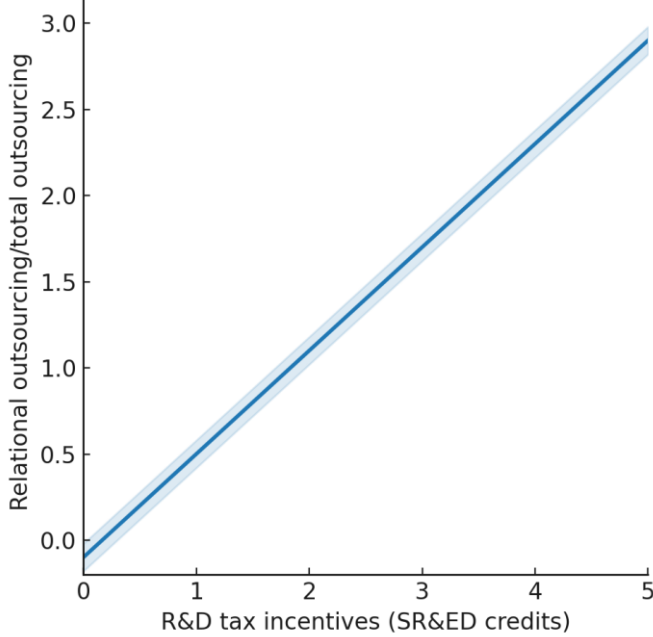


Figure 4-6 Additional Analysis: The Moderating Effect of IP Protection

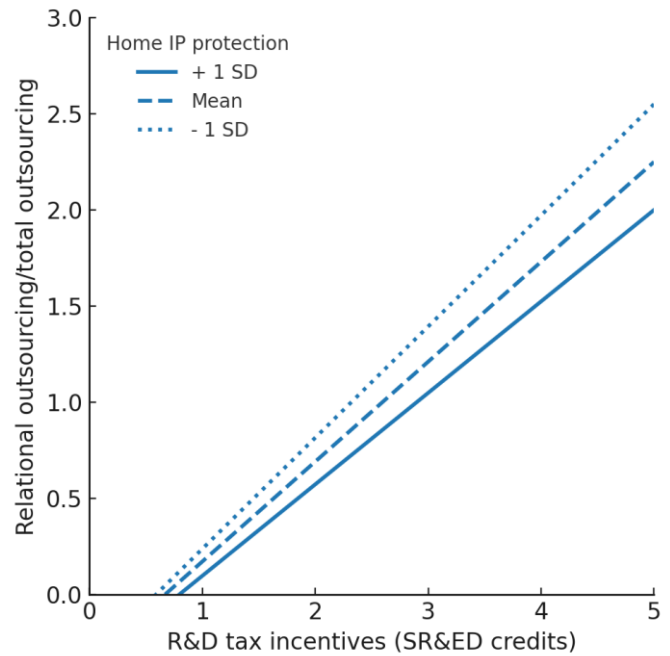


Figure 4-7 Additional Analysis: The Moderating Effect of Labour Productivity

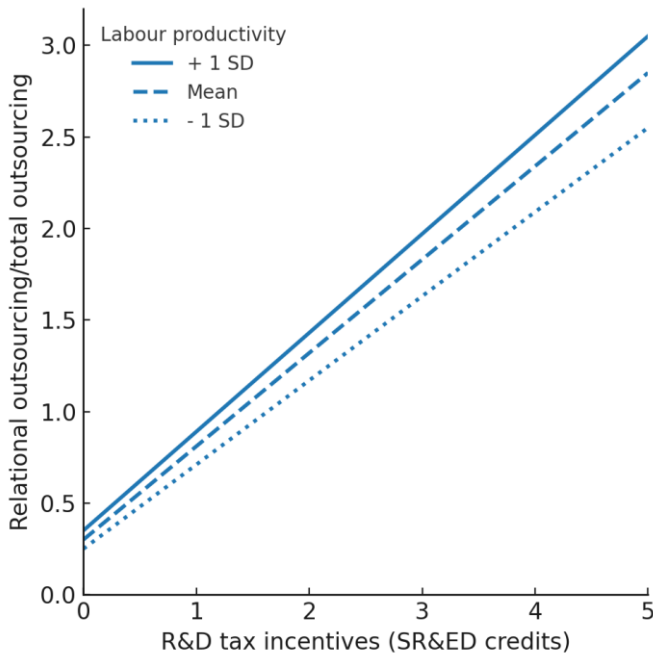
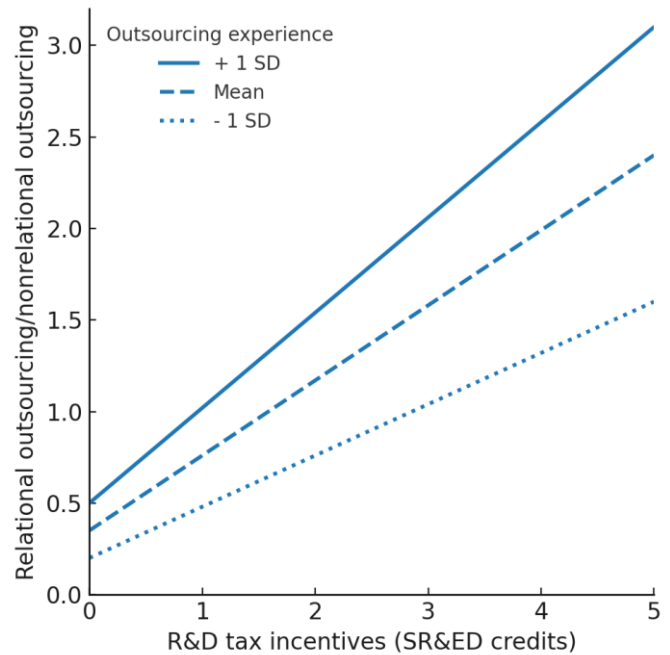


Figure 4-8 Additional Analysis: The Moderating Effect of Previous Outsourcing Experience



4.6 DISCUSSION

4.6.1 Theoretical Contributions

This chapter makes several contributions to the IB literature. First, it integrates internalization theory with institutional theory to explain how innovation policies influence MNEs' R&D governance choices in host countries. Traditional internalization theory emphasizes that MNEs internalize R&D to protect their firm-specific technological knowledge in response to market failures (Buckley & Casson, 1991; 2009). By contrast, institutional theory highlights that R&D tax incentives, as formal innovation policies, can address such failures by lowering transaction costs and mitigating knowledge inappropriability (North, 1991; Demircioglu et al., 2024). Taking these perspectives together, I argue that when external transaction costs are partially alleviated, R&D tax incentives shift governance choices away from full internalization and toward outsourcing. In particular, because the outsourcing-to-internalization ratio is log-transformed, a positive coefficient in the empirical analysis indicates that outsourcing grows faster than internalization, not merely that both grow in parallel. The results demonstrate that well-designed R&D tax incentives can effectively mitigate the consequences of market failures and thus make R&D outsourcing an attractive governance alternative to full internalization.

Second, this chapter advances our understanding of quasi-internalization as an R&D governance choice. Although recent scholarship conceptualizes quasi-internalization as governance through relational mechanisms (i.e., Narula et al., 2019; Forsgren & Holm, 2022; Asmussen et al., 2022), empirical evidence remains scarce. In this chapter, I distinguish two modes of R&D outsourcing: relational outsourcing, governed by non-arm's-length transactions, and nonrelational outsourcing, governed by arm's-length transactions. Using a large-scale firm-level dataset, I operationalize quasi-internalization as relational outsourcing. This measure reflects an MNE's commitment to long-term, trust-based transactions and provides an empirical lens beyond the traditional make-or-buy dichotomy.

In particular, I argue that MNEs engaged in relational outsourcing are likely to respond differently to R&D tax incentives than those relying on nonrelational outsourcing. Scholars find that close interactions between parties are necessary only when tacit knowledge is involved in the knowledge flows (Cantwell & Santangelo, 1999). First, repeated interactions reduce the

transaction costs of future projects (Liu et al., 2009). Consequently, the cost-reducing effect of R&D tax incentives is amplified for relational outsourcing, where established routines and trust lower the marginal cost of scaling external R&D. The empirical results confirm that MNEs engaged in relational outsourcing respond more strongly to SR&ED credits than those relying on nonrelational outsourcing. Second, the tacit knowledge flows and long-term commitments of relational outsourcing make it highly sensitive to market failures. Although R&D tax incentives are intended to mitigate these failures, their effectiveness depends on MNEs' external relationship capabilities (Narula et al., 2019), which are shaped by the intellectual property (IP) in MNEs' home country and the MNE's absorptive capacity in host country (Narula et al., 2019). We find that relational outsourcing expands more aggressively than nonrelational outsourcing when the home country provides weaker IP protection, allowing the MNEs the opportunity to develop capabilities on managing R&D operations through social relationships to ensure that partners adhere to contractual terms and safeguarding proprietary knowledge.

Third, I highlight the role of MNEs' absorptive capacity, captured by labour productivity and previous outsourcing experience, in enabling MNEs to manage uncertainties associated with market failures. In particular, MNEs with high labour productivity can integrate external and internal knowledge to enhance innovation performance (Bertrand & Mol, 2013). They value the advantages of relational R&D outsourcing and are more responsive to tax incentives. Similarly, MNEs with extensive prior outsourcing experience develop governance capabilities that help them manage the external uncertainties and contractual risks associated with outsourcing decisions (Mayer & Salomon, 2006). Therefore, the findings confirm that relational outsourcing – or quasi-internalization – is a viable governance choice only when market failures are manageable. Under such conditions, MNEs can deepen their reliance on relationship-based R&D partnerships without fearing opportunism; otherwise, they are better off pursuing nonrelational outsourcing in response to R&D tax incentives. Thus, this chapter identifies the conditions under which R&D tax incentives can induce MNEs' governance shifts toward quasi-internalization.

Finally, I find that home IP protection plays a more significant moderating role than MNEs' absorptive capacity. That is, the magnitude of the interactive term between R&D tax incentives and IP protection (10.1%) is greater than that of labour productivity (5.0%) and previous outsourcing experience (8.2%). The same pattern emerges in the robustness tests using

fixed-effects regression and in the alternative specification with the relational-to-outsourcing ratio as the dependent variable. This suggests that home-country IP protection is a more powerful lever for inducing relational outsourcing than firm-level absorptive capacities. In other words, MNEs' home country environments exert a stronger influence on their governance responses to R&D tax incentives than their absorptive capacity in host country, highlighting the enduring role of home-country institutions in shaping firms' relational governance strategies abroad.

4.6.2 Policy Implications

This chapter offers relevant policy insights by reframing R&D tax incentives as institutional mechanisms for influencing how MNEs conduct innovation activities in host countries. First, the findings demonstrate that well-designed R&D tax incentives can do more than increase total R&D spending: they can reshape the governance of innovation. By lowering transaction costs and reducing knowledge inappropriability, tax credits can encourage MNEs to shift from R&D internalization toward externalization, particularly quasi-internalization or relational outsourcing. Policymakers should therefore view R&D tax incentives not merely as subsidies to increase R&D investment levels but also as strategic tools to stimulate collaborative, trust-based innovation ecosystems. This means that a stable, predictable, and transparent program regime – such as Canada's SR&ED scheme – is important to giving MNEs the confidence to invest in long-term external R&D relationships.

Second, the moderating effects related to home country IP protection highlight the importance of external capabilities developed in MNEs' countries of origin. MNEs from weak-IP environments are more likely to engage in relational R&D governance abroad in response to tax incentives, as they rely on informal and trust-based mechanisms in home country. This finding suggests that policymakers should view domestic IP regimes not only as instruments for protecting innovation but also as systems that shape MNEs' long-term relational capabilities.

However, the impact of labour productivity and prior outsourcing experience in shaping MNEs' responsiveness to R&D tax incentives should not be underestimated. Governments can help MNEs build these capabilities through workforce upskilling, vocational training in advanced technologies, and support for pilot outsourcing projects that help MNEs to build governance capabilities. These complementary measures equip MNEs to absorb external

knowledge effectively, ensuring that public funds translate into innovation performance rather than simple cost reductions.

Therefore, the findings suggest that tax incentives should not be designed in isolation. Effective innovation policy should recognize that MNEs' responses to fiscal incentives are conditioned by their external capabilities, which are shaped by home-country IP regimes and host-country absorptive capacity. Thus, policymakers should coordinate fiscal instruments with institutional development initiatives that foster balanced IP protection and capability-building programs (support for training and experiential learning). Such an integrated approach creates a self-reinforcing policy mix: tax incentives lower immediate transaction costs to address market failures, while well-designed IP regimes and capability-building initiatives enable MNEs to exploit external knowledge flows. As such, our analysis calls for a more strategic design of incentive programs considering the governance structure of foreign R&D investment.

4.6.3 Limitations and Future Research

The BRM dataset used in this study is a high-quality source of firm-level observations. Its nationwide scope provides comprehensive insight into the R&D governance choices of MNEs in Canada and is one of the few datasets that clearly distinguishes between arm's-length and non-arm's-length contracts. Nonetheless, several limitations create opportunities for future research.

First, the BRM lacks information on MNEs' home-country operations. The analysis therefore focuses exclusively on Canadian subsidiaries, which is appropriate because relational R&D outsourcing decisions are made locally. Still, home-country performance and strategic priorities may also influence MNEs' governance shifts abroad. Because firm identities are anonymized, it is impossible to merge BRM data with external sources to capture parent-level activity. Future research could integrate parent-level data to examine how home-country conditions shape foreign R&D governance.

Second, the absence of information on MNEs' global operations limits our ability to account for their full international footprint. For this reason, the analysis of the IP protection differences assumed that MNEs operate in only two countries – Canada and their home country.

In reality, MNEs may operate in multiple countries with varying institutional environments. Future studies should extend this analysis by including data on MNEs' broader global presence to assess how multi-country operations shape the relationship between innovation policy and R&D governance choices.

Third, the classification of arm's-length and non-arm's-length contracts follows the Income Tax Act and may not fully capture all forms of nonrelational and relational R&D outsourcing. Therefore, differences in the nature of knowledge flows – whether primarily codified or tacit – are theoretical inferences from prior studies rather than directly observed in the data. These constraints open opportunities for future work that draws on more fine-grained contract-level or process-level data.

Finally, this study is based on the Canadian context. Canada ranks second among G20 countries in maintaining a fair business environment and 14th globally in IP protection. SR&ED is also one of the most generous R&D tax incentive programs globally. As such, more research is needed to investigate whether the impact of R&D tax incentives on relational R&D outsourcing also applies to emerging countries with institutional environments that differ from Canada's.

4.7 CONCLUSION

Countries increasingly use R&D tax incentives as formal innovation policies to shape how MNEs govern their overseas R&D activities. This chapter contributes to this conversation by demonstrating that R&D tax incentives can shift MNEs' R&D governance from internalization toward relational R&D outsourcing, an indicator of quasi-internalization. The relationship is premised on the IP regulatory institutions of the host country offering the incentive and MNEs' absorptive capacity. This chapter highlights several conditions under which the enabling effect of R&D tax incentives is strengthened. It also sheds light on a new avenue of research for IB scholars. Further research is needed to understand how various institutional configurations and MNEs' absorptive capacity jointly shape MNEs' governance decisions across different sectors and institutional contexts.

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CHAPTER 5 GENERAL CONCLUSION

This dissertation investigates how investment facilitators shape the sequential growth of multinational enterprises (MNEs) in host countries. Although existing MNEs are pivotal drivers of sustained economic development, much of international business (IB) research has stressed MNEs' entry strategies over their post-entry growth behaviours (Dunning & Lundan, 2008; Tan, Su, Mahoney, & Kor, 2020). This dissertation fills the gap. Particularly, the core argument advanced in this dissertation is that the sequential growth of MNEs – a process encompassing subsequent investment, subsidiary expansion, and changes in governance structures – is not only a function of internal capabilities but is also influenced by dynamic, host-country institutional instruments known as investment facilitators (Sauvant, 2015, 2016, 2020; Cardinale, 2018).

As such, this dissertation comprises three interrelated essays, each addressing a distinct dimension of sequential growth. Specifically, Essay 1 examines MNEs' subsequent investment decisions, Essay 2 investigates the growth trajectory of R&D subsidiaries, and Essay 3 explores the shift in R&D governance from internalization to quasi-internalization. These essays offer a holistic framework for understanding MNEs' post-entry strategic behaviour in response to host-country investment facilitators.

5.1 THEORETICAL CONTRIBUTIONS

In terms of theoretical contributions, this dissertation contributes to three core bodies of literature in IB: the FSA/CSA framework, Penrosean growth theory, and internalization theory. Each essay expands and integrates these perspectives to shed light on how investment facilitators – targeted government policies or actors – interact with firm-level dynamics.

First, this dissertation extends the FSA/CSA framework by integrating with the attention-based view (ABV) through Essay 1 (Chapter 2). Earlier versions of the matrix treat host CSAs as objective, structural determinants of internationalization (Rugman & Verbeke, 2001; Osabutey, Papanastassiou, Jin, Navare, & Agyapong, 2023; Chen, Li, & Shapiro, 2015). I instead argue that host CSAs affect investment only when they capture managerial attention, shifting the explanatory focus from structural availability to attentional salience. The attention-based FSA/CSA framework thus adopts a microfoundations approach (Felin, Foss, & Ployhart, 2015;

Foss & Pedersen, 2019; Ocasio & Joseph, 2005), in line with Ambos, Andersson, Drogendijk, Lunnan, and Scott (2025) modular explanation that links macro-to-micro and micro-to-macro processes. In particular, I trace how the macro-level availability of host CSAs leads headquarters managers to allocate attention (guided by local experience and government signalling) and how these micro-level attentional choices generate macro-level investment outcomes, such as MNEs' subsequent investments. As such, this dissertation also enriches the ABV by theorizing how external institutional actors, notably government agencies, can deliberately direct managerial attention. I propose that MNE headquarters focus on different host CSAs at different investment stages and that policy environments actively shape what is noticed, interpreted, and acted upon. In doing so, this dissertation demonstrates how institutional forces interact with micro-level decision processes to drive the sequential growth of multinational enterprises.

Second, this dissertation advances the Penrosean growth theory by revealing how policy instruments interact with subsidiary resources through Essay 2 (Chapter 3). I find empirical evidence that R&D tax incentives complement productive resources: the positive interaction between SR&ED credits and R&D funding shows that incentives amplify growth for subsidiaries already rich in financial resources, consistent with Penrose's (1959) view of finance as a versatile, combinative asset. At the same time, the negative interactions with partnership experience and R&D patents point to a compensatory role: these incentives deliver stronger growth benefits to subsidiaries with limited managerial ties or weaker technological capabilities, effectively offsetting capability constraints and creating the slack needed for expansion. Hence, these findings show that policy incentives can act both as resource multipliers and corrective mechanisms, strengthening the ability of well-funded subsidiaries to scale while helping resource-limited ones overcome barriers to growth. By integrating these insights, this dissertation shows how targeted government policies can enhance the versatility of R&D subsidiaries and shape the growth trajectory of MNEs' R&D activities.

Moreover, additional analysis on domestic R&D firms shows that R&D tax incentives consistently boost local firms' growth, with especially strong effects for firms that already have substantial R&D funding, extensive partnership experience, and strong patenting activity. The results, therefore, indicate that R&D tax incentives play distinct roles across firm types: for MNE R&D subsidiaries they both amplify abundant resources and compensate for internal managerial

constraints, but for domestic firms, they are effective for firms that are both well-resourced and technologically capable. This divergence highlights the importance of context-specific theorization when assessing how policy instruments shape firm growth.

Furthermore, this dissertation builds on internalization theory and institutional theory to explain how innovation policies shape MNEs' R&D governance in host countries through Essay 3 (Chapter 4). Internalization theory holds that MNEs internalize R&D to protect proprietary knowledge in the face of market failures (Buckley & Casson, 1976; 2009), while institutional theory shows that R&D tax incentives can lower transaction costs and mitigate knowledge inappropriability (North, 1991; Demircioglu, Audretsch, & Link, 2024). Therefore, I argue that when external transaction costs are partially alleviated, R&D tax incentives shift governance choices away from full internalization and toward outsourcing.

Particularly, this dissertation advances our understanding of quasi-internalization by distinguishing relational outsourcing – long-term, trust-based R&D outsourcing – from arm's-length, nonrelational outsourcing. I operationalize quasi-internalization as relational outsourcing. I show that incentives have a stronger impact on relational than on nonrelational outsourcing, because repeated interactions lower the marginal cost of scaling external R&D and facilitate tacit knowledge flows (Cantwell & Santangelo, 1999; Liu, Luo, & Liu, 2009). The effect intensifies when the host country has strong IP protection, which assures contractual compliance, and when MNEs possess absorptive capacity, which enables them to integrate external knowledge and manage contractual hazards (Bertrand & Mol, 2013; Mayer & Salomon, 2006). Therefore, this dissertation identifies conditions under which R&D tax incentives lead MNEs to adopt relational outsourcing, allowing a more nuanced analysis of MNE R&D governance.

5.2 EMPIRICAL CONTRIBUTIONS

Empirically, this dissertation provides new evidence on the micro-foundations of MNEs' sequential growth using both qualitative and quantitative approaches. Essay 1 uses qualitative content analysis of public announcements of MNE investments (114 initial, 105 subsequent) in the U.S. manufacturing sector (2020–2024) to illustrate the practical relevance of the attention-based FSA/CSA framework. Qualitative content analysis is a research method that is often used in psychology, anthropology, and sociology studies (Zhang & Wildemuth, 2009). International

business scholars have employed the method to mainly conduct literature reviews (Nielsen, Welch, Chidlow, Miller, Aguzzoli, Gardner, Karafyllia, & Pegoraro, 2020). This dissertation showcases a different opportunity for qualitative content analysis. The method can be used to identify managerial attention and help us better understand MNEs' investment decisions.

Essays 2 and 3 draw on Statistics Canada's Business Research Microdata (BRM) to investigate the effects of R&D tax incentives on subsidiary growth and governance decisions. Essay 2, in particular, employs a dynamic multilevel regression model that captures both the hierarchical structure of the data and the time-dependent nature of subsidiary growth. The model includes random intercepts for Canadian provinces, industries, years, and home countries, thereby accounting for unobserved heterogeneity such as province-specific innovation climates, industry effects, macroeconomic shocks, and country-of-origin influences. It also incorporates a lagged dependent variable to reflect the path-dependent, cumulative growth processes described by Penrose (1959). This model design thus provides a rigorous test of how R&D tax incentives and subsidiary characteristics combine to shape both the immediate and longer-term trajectories of multinational R&D subsidiaries.

The key novelty of Essay 3 lies in its dependent variables. It constructs (1) an outsourcing-to-internalization ratio, capturing whether R&D outsourcing expands faster than in-house R&D, and (2) a relational-to-nonrelational outsourcing ratio, distinguishing trust-based, quasi-internalized partnerships from arm's-length transactions (Narula, Asmussen, Chi, & Kundu, 2019; Asmussen, Chi, & Narula, 2022). Both ratios are log-transformed, so a positive coefficient indicates that the numerator (outsourcing or relational outsourcing) grows faster than the denominator (internalization or nonrelational outsourcing), whereas a negative coefficient signals the reverse. These measures thus test not only whether outsourcing occurs but also how it evolves in response to R&D tax incentives. Meanwhile, the fixed effects panel regressions interact R&D tax incentives with the key moderators and incorporate time, province, sector, and home-country fixed effects to absorb unobserved heterogeneity. This specification isolates the dynamic relationship between policy incentives and the evolution of R&D governance, offering a clearer view of how institutional conditions steer MNEs toward quasi-internalization.

5.3 POLICY IMPLICATIONS

The findings of this dissertation carry several important implications for policymakers seeking to maximize the benefits of FDI. First, Essay 1 shows that government initiatives act not only as financial incentives but also as attentional cues, shaping investment by what managers notice and interpret as strategically relevant. Even modest incentives can have disproportionate influence if they are highly visible, clearly communicated, and framed within a broader national strategy. Policymakers should devote as much effort to signalling and promotion as to financial design. Also, the evidence highlights the need to tailor policy to firm heterogeneity. Investment incentives that enable market entry are especially valuable for MNEs with weaker firm-specific advantages (FSAs), while firms with stronger FSAs respond best to co-development initiatives that align with national priorities such as sustainability or technological upgrading. This dual strategy ensures that incentives not only attract new investors but also channel the expansion of established MNEs toward sectors critical for long-term competitiveness.

Essay 2 offers important guidance for policymakers seeking to strengthen a country's industrial and innovation base (Benito & Meyer, 2024). R&D tax incentives may have limited impact on initial R&D location choices, which depend more on fundamentals like market size and talent (OECD, 2000), but they are highly effective in supporting sequential engagement by established subsidiaries. By lowering the cost of follow-on investments through design features such as performance-based conditions and deferred credits, these incentives enable long-term R&D projects to scale and embed locally, suggesting they should be framed not only as entry inducements but as growth enablers. Effectiveness, nonetheless, varies with subsidiary-level characteristics: Canada's SR&ED program, for example, disproportionately benefits subsidiaries with abundant financial resources and weaker managerial or R&D capabilities. This indicates that to better target subsidiaries with stronger innovation outputs, eligibility criteria of the incentive could be refined to reward capability-building investments.

Essay 3 reframes R&D tax incentives as institutional mechanisms that influence how MNEs organize R&D in host countries. It shows that well-designed tax incentives do more than raise overall R&D spending: by lowering transaction costs and knowledge inappropriability, they shift governance from full internalization toward quasi-internalization or relational outsourcing,

stimulating collaborative, trust-based innovation ecosystems. Stable and transparent programs such as Canada's SR&ED scheme are especially effective in giving firms the confidence to form long-term external R&D partnerships. Importantly, the moderating effects reveal that weak home-country IP protection is a more powerful enabler of relational outsourcing than firm-level absorptive capacity. This highlights the need to view domestic IP regimes not only as instruments for protecting innovation but also as systems that shape MNEs' long-term relational capabilities. Meanwhile, host governments can strengthen MNEs' absorptive capacity through workforce upskilling, advanced-technology training, and pilot partnership programs so that MNEs can better absorb external knowledge and manage uncertainties in the country. Thus, Essay 3 argues that tax incentives should be embedded in an integrated policy mix: 1) tax incentives to eliminate immediate transaction costs, 2) balanced IP regimes and 3) capability-building programs to ensure that public funds translate into innovation outputs rather than mere cost savings.

Therefore, this dissertation offers key insights on how policymakers can leverage investment facilitators to foster MNEs' sequential growth. Particularly, investment incentives – such as R&D tax incentives – can act as powerful growth enablers, but their impact varies with the characteristics of recipient firms. They are most effective when embedded in an integrated policy mix and when highly visible and well-communicated to capture managerial attention.

5.4 LIMITATIONS AND FUTURE RESEARCH

Despite its contributions, this dissertation has limitations that suggest avenues for future research. The attention-based framework in Essay 1 emphasizes host CSAs and treats FSAs as static at the time of investment, even though FSAs can also attract managerial attention and shape expansion decisions. Future work could examine how evolving subsidiary-level FSAs or headquarters-developed capabilities redirect attention toward different CSAs, and whether the co-evolution of FSAs and CSAs alters the balance among asset-augmenting, asset-exploiting, policy-enabled, and policy-aligned investments. Also, qualitative content analysis illustrates the framework's practical relevance, but it does not constitute a formal statistical test. Future studies using large-sample quantitative or mixed-method designs could assess whether the attentional patterns observed in this dissertation are generalizable across industries and countries, thereby clarifying the boundary conditions of the proposed framework.

Both Essays 2 and 3 use the Business Research Microdata (BRM) compiled by Statistics Canada, which offers nationwide coverage of R&D subsidiaries and uniquely distinguishes between arm's-length and non-arm's-length contracts. Nevertheless, several data constraints suggest avenues for future research. First, the BRM does not include information on parent firms or their global operations. Because firm identities are anonymized, I cannot merge the data with external sources to capture headquarters-level data and home-country conditions. The analyses thus treat each subsidiary as if it operates within a two-country (home–host) framework, although many MNEs are embedded in far more complex global networks. Future studies can examine how headquarters and multi-country institutional environments shape both the growth and governance of R&D subsidiaries.

Second, the Canadian context of the BRM raises questions about the generalizability of the findings. Canada has a strong business environment, and its SR&ED tax incentive is among the most generous in the world. Future research should therefore examine whether the observed relationships – between tax incentives, subsidiary characteristics, and governance shifts toward quasi-internalization – hold in countries with different policy regimes. Also, the classification of contract types is based on definitions in the Canadian Income Tax Act and thus cannot capture every nuance of R&D external transactions shaped by relationships and social ties, leaving room for more fine-grained, contract-level studies to deepen our understanding of how MNEs' R&D governance choices evolve in diverse contexts.

5.5 CONCLUSION

In sum, this dissertation contributes to IB scholarship by showing that the evolution of MNEs in host countries is an institutionalized process. Sequential growth emerges not only from the deployment of internal resources but also from strategic responses to enabling institutions – investment facilitators – that guide managerial attention, reduce market uncertainty, and thus co-shape the pace and direction of MNEs' expansion in the country. By highlighting how policies such as R&D tax incentives influence subsequent investment, subsidiary growth, and R&D governance choices, the dissertation deepens our understanding of MNE post-entry behaviour and offers practical guidance for policymakers seeking to foster sustainable, innovation-driven economic development through foreign investment.

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CHAPTER 6 CURRICULUM VITAE

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| Case Studies | Volkswagen: A New Electric Vehicle Battery Plant [with Meyer, K. and Lewis, M.]. Ivey Case Publishing: W38419, 2024 Chervon Inc.: The road from local supplier to global competitor [with Gao Wang and Weiru Chen], 2015, ChinaCases.org: CI – 315 – 080. |