



Country-level reference point and MNE subsidiary risk-taking behavior

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ABSTRACT

While the existing International Business (IB) research primarily focuses on the risk-taking behavior of multinational enterprises (MNEs) as a whole, this study shifts attention toward subsidiary-level risk-taking behavior. Building on the Behavioral Theory of the Firm (BTOF), it accepts that firm risk stems from performance feedback, as organizations compare their performance with a reference point. Thus, this study proposes a novel reference point for an MNE subsidiary, i.e., a country-level reference point, suggesting that deviations below or above this target represent important performance-feedback signals associated with subsidiary risk-taking behavior. Furthermore, it examines the moderating effect of subsidiary age, explaining why this association becomes more pronounced in older subsidiaries compared with younger subsidiaries. An analysis of a large sample of foreign subsidiaries located in Germany, Italy, France, and Spain supports the hypotheses. This study enriches the literature on subsidiary risk-taking behavior and extends the BTOF by introducing a novel reference point within the subsidiary context. Promising new perspectives for scholars and practitioners are offered and discussed.

1. Introduction

Organizational risk (Palmer and Wiseman, 1999; Luo and Bu, 2018: 638) represents a central issue in the IB literature (Reeb et al., 1998; Ahmed et al., 2002; Van Wyk, 2010). While IB studies typically focus on risky initiatives undertaken by headquarters' (HQ) executives for the entire MNE (see Luo and Bu, 2018, for a review), a corporate entrepreneurship view suggests that risky initiatives by individual subsidiaries represent an important source of risk-taking for the MNE (Strutzenberger and Ambos, 2014; Birkinshaw, 2000). Despite the acknowledgment, however, the study of subsidiary risk has remained largely unexplored (Meyer et al., 2020). Interestingly, the few studies addressing this issue adopt various perspectives,¹ but have paid little attention to one of the most influential theories of firm risk: the Behavioral Theory of the Firm (BTOF) (Cyert and March, 1963; Surdu et al., 2021).

In fact, the BTOF (Cyert and March, 1963) is especially suited to studying subsidiary risk. This theory frames the firm as a set of internal coalitions competing for resources (Gavetti et al., 2012). The MNE, in turn, makes these internal coalitions empirically visible through its geographically dispersed subsidiaries. It therefore offers a unique opportunity to conceptually partition the firm into its internal units (Ghoshal and Bartlett, 1990), and to explore risk-taking behaviors. In this regard, of particular interest is the definition of

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¹ Including agency theory (Johnson and Medcof, 2007), resource dependence theory (Ambos et al., 2010), network theory (Birkinshaw, 1997), resource-based view (Özsoy and Gençtürk, 2003).

a reference point that individual subsidiaries use for their decision-making (Gavetti et al., 2012).

The framing of reference points stands at the heart of the BTOF. Departing from economic rationality, the BTOF builds on the assumption that managers are boundedly rational and make decisions based on simple heuristics, such as performance feedback, in which they compare actual performance with a benchmark or reference point to define the aspiration level. A key question thus arises: *what do subsidiary managers look at and deem relevant as a reference point for their decision-making when taking risks?*

The standard, established BTOF typically adopts a social reference point² represented by the performance of firms in the same industry. The few IB studies applying the BTOF to individual subsidiaries transfer this standard framing to subsidiary units. For instance, Zhang and You (2021) show that performance shortfalls shape foreign subsidiaries' engagement in scale- and efficiency-related production activities, while Deng et al. (2022) show that subsidiary performance shortfalls influence subsidiaries' outward foreign direct investment (OFDI). While these studies demonstrate that the BTOF is highly useful for explaining subsidiary-level decisions under performance pressure, they apply an outward-looking view of subsidiaries, in which subsidiaries are assumed to focus on other stand-alone firms operating in the same industry, hence neglecting the crucial role played by internal coalitions and comparisons among subsidiaries within the MNE itself. Indeed, while industry-level social benchmarks remain relevant for subsidiaries, as they do for stand-alone firms, they are, by themselves, incomplete in the MNE setting, because they miss a structurally distinct comparison layer that the MNE's internal organization creates.

A vast body of IB research suggests that a theoretically important and consequential 'social comparison' for a subsidiary is with its peer subsidiaries inside the same MNE, or co-located units competing within the internal coalition for HQ mandates and resources (Birkinshaw and Hood, 1998; Bouquet and Birkinshaw, 2008; Sewak and Sharma, 2020). These internal peers are especially salient because, although they vie for similar corporate resources, they are simultaneously embedded in a shared administrative and governance context shaped by the MNE (e.g., mandates, transfer pricing policies, internal sourcing arrangements, and HQ constraints), which stand-alone firms in the same industry do not share (Ambos and Ambos, 2009; Xu et al., 2019a). Thus, to the extent that HQs evaluate subsidiaries relative to one another using common corporate templates and criteria, internal comparisons become an organizationally relevant benchmark for how subsidiary managers interpret performance and calibrate risk-taking. Importantly, this internal comparison logic is further sharpened by the host country context, which provides a complementary interpretive frame for what outcomes, i.e., subsidiary performance, mean (Klopf and Nell, 2018; Meyer et al., 2020). Because the host country institutional environment shapes opportunity and constraint sets, the liability of foreignness, and the feasible set of strategic actions available to subsidiaries (Meyer et al., 2020; Klopf and Nell, 2018), comparisons among subsidiaries co-located in the same country become especially meaningful and feasible: they preserve the internal-coalition relevance of HQ mandate and resource allocation while holding constant the national context under which performance is produced. Hence, a country-level internal benchmark is both decision-relevant (because it links directly to HQ allocation and mandate decisions) and more comparable (because it controls for the institutional environment that structures what "good performance" entails). This combination of internal organizational relevance and contextual equivalence is what neither the industry benchmark (which groups the subsidiary with stand-alone firms that share neither the MNE's governance rules nor its mandate competition) nor the historical benchmark (which tracks a subsidiary's own trajectory without revealing where it stands relative to peer units) can provide on its own.

Accordingly, it is reasonable to anticipate that co-located subsidiaries will adopt the performance of their peer units in the same country as a salient and theoretically distinct benchmark or reference point for their decision-making. Thus, in this study, we aim to address this challenge and revise the whole BTOF as applicable to the setting of MNE, as recently called for by Surdu et al. (2021). In particular, we extend the BTOF to subsidiary risk-taking and propose a *country-level reference point*, where subsidiary units compare their own performance with that of other peer units located in the same host country. In other words, we reframe the BTOF's theory of reference points by suggesting that, in the MNE setting, subsidiary units adopt geography, i.e., units located in the same country, as a consequential internal comparison frame to make decisions.

To shed further light on the proposed novel framing of reference points, we also posit that subsidiaries adopting a country-level reference point will take different levels of risk depending on subsidiary age. Age reflects host market tenure, which builds local experience and capacity, enabling subsidiaries to interpret country-specific signals and act under uncertainty more effectively (Carlsson et al., 2005; Cohen and Levinthal, 1990). At the same time, longer tenure tends to strengthen a subsidiary's standing vis-à-vis HQs through accumulated exchanges, often translating into greater discretion and resource access to implement riskier strategic responses to performance feedback (Kumar and Seth, 1998; Peng and Beamish, 2014).

In this study, we build on the performance-feedback mechanism envisaged by the BTOF, according to which (1) performance shortfalls relative to the reference point prompt problemistic search, or an urgency to change and take risks to reverse the negative trend; and (2) performance rising above the reference point generates slack search, or the possibility of taking risks due to excess resources. Combining these BTOF notions with IB research on the co-location of subsidiaries within the same host country, we reframe this BTOF mechanism by positing that HQ and subsidiary managers use co-located subsidiary units as the relevant benchmark. Hence, we predict that subsidiaries adjust risk-taking in response to performance deviations from this country-level reference point: as a subsidiary underperforms or overperforms relative to its co-located MNE peers, it engages in greater risk-taking. Further, we expect these performance-feedback effects to be stronger for older subsidiaries, whose longer host country tenure enhances both the capability and discretion needed to respond more strongly to country-referenced feedback. An empirical test using a large dataset in Europe, comprising subsidiaries in Germany, Italy, France, and Spain, supports our argument.

² An alternative reference point is historical, or the firm's prior-year performance, which we do not focus on in this study.

This study makes three important contributions to the BTOF and IB research. First, it extends the BTOF by introducing a novel country-level reference point for MNE subsidiaries. While BTOF research typically conceptualizes social comparison through external industry benchmarks, and the few IB studies applying BTOF to subsidiaries largely retain this outward-looking logic (Deng et al., 2022; Zhang and You, 2021), we argue that subsidiaries also evaluate performance against peer subsidiaries that are both internal to the same MNE and located in the same host country. This reference point is distinct because it combines internal organizational comparability (arising from shared MNE governance) with host country comparability (arising from exposure to similar institutional and market conditions). In doing so, the study responds to calls to extend the BTOF to IB and subsidiary contexts (Hu et al., 2017; Surdu et al., 2021; Deng et al., 2022) by showing that performance benchmarking within the MNE is not limited to external industry comparisons. Rather, subsidiaries also interpret their performance through internally constructed reference points anchored in the host country, which generate distinct performance signals and offer a richer behavioral explanation of subsidiary risk-taking. Second, the study contributes to subsidiary-level IB research by identifying relative standing among co-located internal peers as a behavioral trigger associated with subsidiary risk-taking. The subsidiary entrepreneurship literature has established that subsidiaries can act autonomously and take risks (Birkinshaw, 1997; Birkinshaw and Hood, 1998; Schmid et al., 2014), yet the motivation behind such action has remained largely unaddressed (Meyer et al., 2020; Contractor et al., 2019). This study shows that divergence from the performance of co-located peers creates a behavioral impetus for subsidiary action. In doing so, it reveals that entrepreneurial risk-taking is not only enabled by structural conditions, but also generated by how subsidiaries interpret and respond to their relative position within the MNE and the host country context. Third, by incorporating subsidiary age, the study specifies an important condition under which the performance feedback exerts a greater impact on subsidiaries' risk-taking. Older subsidiaries respond more strongly to underperformance, suggesting that accumulated host country experience, local knowledge, and discretion are especially important for problemistic search. The absence of a similar moderation for overperformance indicates that problemistic and slack search are not symmetric in the organizational resources they require and in the signals they convey for risk-taking at the subsidiary level of analysis.

2. Theoretical background

2.1. Risk and subsidiary risk-taking behavior

Risk has been extensively studied across fields such as IB, strategy, and economics. Risk, also termed “venturing risk”, refers to “the search for alternative routines and opportunities when the firm is unsatisfied with the status quo” (Gómez-Mejía et al., 2007: 107; Bromiley, 1991). It entails a strategic move involving uncertainty, in which outcomes could range from substantial gains to major losses. Consequently, while typically framed as variability in corporate returns (Luo and Bu, 2018), it encompasses a varied set of strategic choices, such as innovation effort (Giaccone and Magnusson, 2022), R&D spending (Xu et al., 2019b), entrepreneurship (Macko and Tyska, 2009), and foreign direct investment (Luo and Bu, 2018). This definition underscores risk's pivotal role in strategy formulation (Baird and Thomas, 1985), resource allocation (Cavusgil et al., 2020; Vahlne and Johanson, 2017), and decision-making processes (Miller, 1992).

IB scholars have extensively examined risk at the MNE and HQ levels of analysis, exploring decisions such as new market entry and entry modes (Elango and Chen, 2012), foreign direct investment (Buckley et al., 2018), and early-stage internationalization and rapid global expansion (Shrader et al., 2000). These actions highlight the centrality of risk in shaping MNE strategies and their responses to global opportunities and challenges. Despite the research focus on the MNE and HQ as a whole, scholars have recently recognized the subsidiary itself as a significant yet, to date, underexplored area of research. In their literature review, Meyer et al. (2020) point out that, despite the paramount importance of subsidiaries as major economic players globally, only a few studies focus on foreign subsidiaries as the unit of analysis.

Examining risk at the subsidiary level of analysis begins with recognizing that, as convincingly asserted by the seminal work of Birkinshaw and colleagues (Birkinshaw, 1995, 1997; Birkinshaw and Hood, 1998), and succinctly stated by Schmid and colleagues in more recent times (Schmid et al., 2014), “subsidiaries pursue entrepreneurial opportunities for local and global application, often even independently of the parent organization” (Schmid et al., 2014: 201). Subsidiaries are thus actors that, while embedded in the MNE environment and subject to HQ constraints, can make autonomous decisions about strategy and investment. Within this framework, studies on subsidiary risk fall under the domain of subsidiary initiative. Indeed, subsidiary initiatives are defined as “proactive, autonomous, and risk-taking activities that originate outside the home country in a foreign subsidiary of an MNE and are initiated by actors in the subsidiary” (Schmid et al., 2014: 201). Subsidiary initiatives reflect a kind of “dispersed entrepreneurship” (Birkinshaw, 1997), in which risky initiatives are undertaken by a foreign subsidiary outside the home country (Schmid et al., 2014: 202).

IB scholars in this domain have applied several theoretical perspectives (see reviews by Schmid et al., 2014; Strutzenberger and Ambos, 2014; Meyer et al., 2020). For example, scholars applying *agency theory* (Jensen and Meckling, 1976) conceive of subsidiary initiatives as deviations of a subsidiary-agent relative to the HQ-principal's claims. This research stream points to the barriers to a subsidiary's risk-taking: assuming that subsidiaries' actions reflect self-serving local behaviors at the expense of the MNE, these studies elucidate the mechanisms aimed at mitigating the subsidiary's autonomous behavior. Research applying *resource dependence theory* (Pfeffer and Salancik, 1978) emphasizes control over resources as a key source of power and an enabling condition for the subsidiary to take risky initiatives (e.g., Williams and Lee, 2009; Ambos et al., 2010). Studies in this domain illuminate the resources that, once controlled by the subsidiary, can foster its ability to take risky, autonomous initiatives vis-à-vis the HQ. In parallel to resource-dependence studies, research applying *network theory* sees the subsidiary as a unit embedded in internal and external networks, where specialized network structures allow the individual subsidiary to better exploit its resources (Birkinshaw and Hood, 1998).

Other researchers, such as those applying *self-determination theory*, shift their attention to motivational factors, but in so doing, they focus on managerial motives per se, rather than on organizational subsidiary-level factors. For example, [Ambos et al. \(2010\)](#) point to subsidiary managers' basic need for self-determination as a key source of initiative-taking.

In recent times, a behavioral perspective, the BTOF ([Cyert and March, 1963](#)), has emerged as a relevant yet, to date, underexplored framework for studying subsidiary behavior. A key distinguishing point of the BTOF, relative to the previous theoretical perspectives outlined above, is that it helps explain the dynamics of subsidiary behavior more than other theories do (see the literature review by [Surdu et al., 2021](#): 1047). The BTOF focuses more on explaining why and how firm behaviors change over time ([Surdu et al., 2021](#): 1048). This theory is thus especially valuable and relevant in current times, where MNEs and subsidiaries are operating in turbulent environments and are challenged to dynamically adapt and adjust their initiatives based on short-term feedback. In more detail, as we shall argue below, the BTOF may help explain the subsidiary risk-taking behavior as a result of its positioning among its localized peers within the internal context of the MNE. Before fully explicating this goal, a brief overview of the BTOF is required.

2.2. The BTOF and subsidiary risk-taking behavior

The BTOF is well-suited for studying subsidiary risk, as it is grounded in the concept of bounded rationality ([March and Simon, 1958](#); [Cyert and March, 1963](#)). Thus, it is conceptually grounded in behavioral foundations that are consistent with [Birkinshaw's \(1997\)](#) entrepreneurial frame of autonomous subsidiary initiative. In particular, the BTOF suggests that firms break down problems into localized sub-problems, delegating authority to subunits (e.g., foreign subsidiaries) to address them ([Hagen et al., 2024](#)). This view allows for subsidiary autonomy and opportunities for independent decision-making.

In more detail, building on bounded rationality, the BTOF posits that risky initiatives reflect short-term organizational responses to performance feedback: managers compare their short-term performance (ROA) with a reference point, which can be either a social reference point, i.e., the performance of other firms operating in the same industry, or a historical reference point, i.e., the firm's prior-year performance. Deviations from the reference point influence the firm's risk behavior, prompting managers to take risks and adjust their strategies ([Sobrepere i Profitós et al., 2022](#)). Specifically, the BTOF identifies two mechanisms explaining firm risk-taking: *problemistic search*, which operates when performance falls below the reference point; and *slack search*, which occurs as performance rises above this same reference point. Regarding problemistic search, the BTOF accepts that organizations suffer from inertia stemming from habits, culture, and uncertainty aversion ([Moradi et al., 2021](#)). Declining performance (relative to peers) signals problems in the extant strategy, thus triggering a sense of urgency to foster change and risk-taking ([Cyert and March, 1963](#); [March and Simon, 1958](#)). In other words, firms remain stable unless performance failure triggers change. As for slack search, rising performance (relative to peers) generates buffers and slack resources to appease internal coalitions and encourage experimentation ([Sobrepere i Profitós et al., 2022](#); [Xu et al., 2019b](#); [Levinthal and March, 1981](#); [March, 1981](#); [Argote and Greve, 2007](#); [Baum et al., 2005](#)). In both scenarios, deviations from the reference point (i.e., below and above it) over time explain a firm's rising propensity to take action and take risks.

The BTOF is particularly suited to studying subsidiary risk-taking behavior. The BTOF frames risk-taking as a contextually bounded choice, which is relevant for explaining subsidiaries operating in the *context* of an MNE.

Extant research has begun addressing the role of performance feedback in MNEs. In their recently published review of performance feedback in IB research, [Martínez-Noya and Valdés-Llaneza \(2025\)](#) report that this framing represents an emerging topic in the IB literature, with most relevant studies published in the last three years, indicating a clear upward trend in IB research. Importantly, published research mainly focuses on HQ decisions (e.g., [Cheng and Chen, 2025](#)), with only a few studies examining the role of performance feedback in shaping subsidiary decisions; these few studies, which focus on subsidiary units, transfer the long-standing logic of social and historical reference points (originally developed in general BTOF framing) to the MNE, indicating that scholars have not yet substantially begun recognizing the specificities of aspirations and reference targets for subsidiary units. For example, [Zhang and You \(2021\)](#) draw on historical (prior year's performance) and social aspirations (industry peer performance) to study subsidiary decisions in scale- and efficiency-related activities, finding that greater performance shortfalls prompt subsidiaries toward increased efficiency-related risk-taking. [Deng et al. \(2022\)](#) apply the historical and social aspiration levels to study subsidiary outward foreign direct investment into new overseas destinations, showing that greater performance shortfalls relative to these reference points increase the likelihood of subsequent subsidiary foreign direct investment. One exception is the study by [Li et al. \(2024\)](#), which extends the framing of reference points by suggesting, in addition to historical and social aspirations, an alternative reference point for social aspirations, i.e., the average performance of overseas subsidiary peers within the MNE (or the mean ROA of all other subsidiaries in the MNE's overseas portfolio). In examining changes in subsidiaries' ownership, they find that the two social aspiration levels exert different effects: shortfalls relative to industry peers increase the likelihood of ownership reduction, whereas shortfalls relative to internal peers decrease it, suggesting that internal and external benchmarks generate different performance signals ([Li et al., 2024](#)). While extending the reference point at the subsidiary level, however, this study takes the standpoint of the HQ, from which a decision must be made regarding the MNE's ownership stake in the units.

Overall, these studies offer a restricted view of performance feedback for subsidiaries. The standard framing of historical and social aspirations only partially captures the core pillars of their aspirations. In particular, an industry target for social aspirations compares a subsidiary with other firms in the same industry and country. While useful for capturing a subsidiary's competitive positioning in external markets ([Deng et al., 2022](#); [Richard et al., 2009](#); [Gundelach and Nielsen, 2023](#)), such outward-looking benchmarks do not exhaust the performance dimensions that matter for subsidiary decision-making. The internal social aspiration identified by [Li et al. \(2024\)](#), based on the mean ROA of the focal MNE's other overseas subsidiaries, allows subsidiary performance feedback to be assessed against an MNE-internal and geographically dispersed reference group. Accordingly, it captures performance relative to the corporate

parent's broader portfolio of resources and governance arrangements rather than to a location-specific benchmark (Andrews et al., 2023; Farah et al., 2022). While capturing aspirations that are linked to the MNE's internal environment, this reference point does not capture the country-level standard of comparison, which is highly relevant for subsidiaries' functioning. In fact, units belonging to the same MNE, but located in different countries, are exposed to differing situational settings and are hard to compare. Additionally, from the perspective of the individual subsidiary, geographic and institutional distance reduces comparative pressures in daily and strategic operations, rendering such benchmarks less salient in decision making.

Indeed, IB research increasingly shows that MNE subsidiaries are deeply embedded in host country institutional environments, which shape their legitimacy, strategic choices, knowledge acquisition, and performance (Konara and Shirodkar, 2018; de Roo et al., 2025; Meyer et al., 2020; Teodorescu et al., 2022). When multiple subsidiaries of the same MNE are co-located in the same host country, they share not only this institutional context but also the same corporate parent, governance principles and global strategic priorities. Meyer et al. (2011) capture this condition through the concept of "multiple embeddedness," whereby subsidiaries are simultaneously embedded in the MNE's internal network and in their local host country context. It is thus this dual commonality (shared governance and institutional exposure) that makes co-located peer subsidiaries a theoretically meaningful and practically salient comparison group for performance feedback. In what follows, we build on this premise and develop the argument for why and how a country-level reference point becomes behaviorally salient.

3. Theory and hypotheses development

In accordance with the BTOF (Cyert and March, 1963), deviations in subsidiaries' performance from their established reference points affect their risk-taking behavior (Deng et al., 2022; Zhang and You, 2021). In an effort to extend the theory, in the following paragraphs, we first theorize that subsidiaries adopt a country-level reference point, and thus consider the performance of peer subsidiaries located in the same host country. We then formulate hypotheses regarding the risk-taking behavior of subsidiaries with respect to the country-level reference point. Finally, we argue that the predicted effects are moderated by subsidiary age.

3.1. Country-level reference point

Conceptually, we propose that co-located peer subsidiaries within the host country form a country-level reference point against which subsidiaries compare their own performance and adjust their risk-taking behavior accordingly.

A vast body of IB research portrays subsidiaries as actors embedded in an internal MNE coalition, in which they compete for HQ mandates and resources (Birkinshaw and Hood, 1998; Bouquet and Birkinshaw, 2008; Sewak and Sharma, 2020). This internal rivalry makes peer subsidiaries especially salient reference targets because relative performance within the peer set becomes a key signal used to justify claims for resources and strategic discretion. This is particularly important because peer subsidiaries operate under the same corporate governance system and are subject to comparable internal rules and evaluation criteria, such as shared parent systems, mandate architectures, transfer pricing regimes, internal sourcing arrangements, and HQ constraints (Ambos and Ambos, 2009; Xu et al., 2019a), thereby creating a common administrative context that firms outside the MNE coalition do not share. Accordingly, internal peer performance becomes a uniquely interpretable benchmark: it offers a clearer indication of what levels of performance are considered attainable and acceptable under the same corporate umbrella, and it directly guides the allocation processes that shape subsidiary survival and advancement in the MNE.

This internal-coalition logic also aligns closely with the BTOF's foundational view of the firm as a set of coalitions of subunits with partially divergent interests and bounded information-processing capacities (Cyert and March, 1963). Within such a structure, subsidiaries have strong incentives to simplify complex evaluation problems by focusing on comparison sets that are both salient and decision-relevant. Internal peers satisfy these criteria because they are the units most directly implicated in HQ's relative evaluation and resource distribution processes. When HQs rely on common templates and criteria to judge subsidiaries, subsidiary managers reasonably anticipate that their own prospects (e.g., access to resources, mandate retention, or expanded responsibility) depend on how they stack up against other internal units (Bouquet and Birkinshaw, 2008; Sewak and Sharma, 2020). In this sense, internal peer comparisons can both inform decision-making and structure the perceived stakes of performance feedback by linking it to the subsidiary's standing inside the MNE.

In addition to the above argument, not all subsidiaries are equally salient comparison targets, which is where the host country context becomes pivotal. IB research consistently highlights the centrality of host country conditions for shaping subsidiaries' strategies and outcomes (Meyer et al., 2020; Klopff and Nell, 2018) and suggests that co-location influences the intensity and meaning of interactions among peer subsidiaries, with implications for decision-making (Xu et al., 2019a; Sewak and Sharma, 2020; Garg et al., 2022). Host country institutions shape the opportunity and constraint sets subsidiaries face, as well as legitimacy thresholds, liabilities of foreignness, and the feasible set of strategic actions available to them (Meyer et al., 2020; Klopff and Nell, 2018). These country-level conditions therefore affect both what subsidiaries can do and how their outcomes are interpreted. For boundedly rational decision-makers, similarity in national context increases the diagnostic value of peer performance feedback because shared conditions enhance comparability and strengthen the informational content of observed performance differences. In BTOF terms, co-location raises the diagnosticity of social comparison by enabling managers to attribute relative outcomes more credibly to subsidiary actions rather than to country-specific institutional noise. Put differently, a peer subsidiary's performance in the same host country becomes a more meaningful cue about what is feasible under similar constraints and opportunities, and thus a more defensible basis for aspiration formation (Klopff and Nell, 2018; Meyer et al., 2020). This logic is particularly important in the MNE setting, where subsidiaries are expected to perform up to standards while simultaneously adapting to local environments and managing liabilities of

foreignness (Hobdari et al., 2017). When country conditions are held constant, relative performance becomes a more legitimate and actionable signal for subsidiary managers as they evaluate their standing and adjust their strategies.

Importantly, co-location facilitates the social processes through which reference points become salient and influential. Subsidiaries located in the same host country tend to interact more frequently and exchange more information, which increases the visibility of peer strategies and outcomes (Ceci and Prencipe, 2013; Xu et al., 2019a). These proximity-enabled interactions provide channels for observing practices, interpreting local constraints, and learning what works in that context. As subsidiaries gain richer insight into peers' operations within the same context, a natural benchmark emerges: managers increasingly evaluate their own performance relative to nearby peer units whose operating realities they understand and whose outcomes they can interpret with confidence. This combination of higher information availability and stronger comparability reinforces the salience of co-located peers as a strong and cognitively economical comparison set, the kind of simplifying heuristic emphasized by the BTOF under bounded rationality (Cyert and March, 1963). Taken together, we posit that the MNE's internal coalition structure, combined with the host country's role as a shared contextual frame, implies that subsidiaries will rely on co-located internal peers when forming their reference point. Building on this line of reasoning, we propose hypotheses regarding subsidiary risk-taking in two directions: one when subsidiary performance falls below the country-level reference point, and another when subsidiary performance exceeds the country-level reference point.

3.2. *Subsidiary risk-taking: Performance below the country-level reference point*

The realization that a subsidiary's performance is below that of its peer subsidiaries in the same country can act as a powerful catalyst, compelling the subsidiary to take more risk. In accordance with the BTOF, when faced with underperformance, the subsidiary is encouraged to initiate problemistic search to address its underperformance (Audia and Greve, 2006; Greve, 2003; Hamrabadi et al., 2026). The general BTOF logic applies to subsidiaries as it does independent companies. Specifically, according to the BTOF, inertia presents a significant obstacle to subsidiary flexibility and impairs the organization's ability to respond promptly (Hannan and Freeman, 1977; Kelly and Amburgey, 1991). In a sense, inertia hampers decision-makers' capacity to alter firm strategies (Cyert and March, 1963; Hannan and Freeman, 1984). However, when underperformance becomes apparent, it serves as a compelling signal that motivates the pursuit of strategic change. Thus, the subsidiary breaks free from its inertia and embraces new, risky solutions to address the underperformance. This is primarily because risky decisions offer greater potential rewards for the subsidiary (Sobrepere i Profitós et al., 2022), thereby providing a faster route to closing the gap and restoring standing.

The argument above represents the conventional rationale developed by BTOF theorists. However, specific arguments can be developed regarding the MNE subsidiaries.

First, one way subsidiaries typically justify their underperformance is by attributing it to external factors (Deng et al., 2022). Yet, when benchmarking is based on co-located subsidiaries, such justifications become less compelling, since all other members of the reference group operate within the same environment. Because co-located peers face similar institutional constraints and opportunity sets, the performance gap is more attributable to subsidiary choices and routines than to country-level noise. Thus, the subsidiary acknowledges that the problem lies within its own organization. As a result, the subsidiary begins to scrutinize its current strategies and practices, i.e., inertia, in order to find a solution. This attributability of the country-peer comparison increases accountability for action and makes problemistic search more urgent and targeted, encouraging riskier strategic responses that can generate higher upside and accelerate recovery.

Second, subsidiaries play strategic roles within the MNE system, and HQs have expectations of their contribution to the overall success of the system (Andersson et al., 2007; Hu et al., 2017). When a subsidiary underperforms compared with its co-located peers, it can signal to HQs that the subsidiary is struggling to operate effectively in the foreign market, raising concerns about its ability to contribute to the MNE system. In such a scenario, the subsidiary may risk losing resources and support from HQs or face increased control mechanisms (Sageder and Feldbauer-Durstmüller, 2019). In other words, country-peer underperformance worsens the subsidiary's relative standing in an internal tournament for HQ attention, mandates, and resources, where rank shifts are consequential for autonomy and future investment (Andrews et al., 2022). To avoid losing these valuable resources, the subsidiary may choose to take on more risk as a performance-recovery strategy aimed at improving its relative position and protecting (or regaining) discretion within the MNE. Such risk-taking is rational from the subsidiary's perspective because higher-variance initiatives offer a chance to produce visible turnarounds that are salient to HQ evaluators.

Third, co-location increases visibility and peer scrutiny, because interactions and communications among country peers are more frequent and information travels faster (Xu et al., 2019a; Sewak and Sharma, 2020). This visibility amplifies the consequences of falling behind: underperformance becomes harder to hide, more likely to be noticed by both peers and HQ, and more likely to shape how the subsidiary is evaluated in the local coalition. The rapid dissemination of underperformance poses a significant threat to the subsidiary's reputation within its subsidiary group. This reputational damage can further harm the subsidiary's prospects, as fewer subsidiaries may be interested in partnering or collaborating with such an entity (Eccles et al., 2007). Therefore, it becomes critically important for the subsidiary to respond quickly, in order to bridge the performance gap with its peers. To address the situation, the subsidiary may take on more risk by pursuing innovative projects that allow it to showcase its strategies for success while justifying its underperformance. Since these initiatives promise more visible and consequential gains than minor adjustments, they can help the subsidiary catch up faster under high local scrutiny. By doing so, the subsidiary attempts to restore its position and credibility under heightened local scrutiny, which further intensifies problemistic search and risk-taking. Taken together, the above arguments lead us to advance the following hypothesis:

Hypothesis 1. Subsidiary underperformance relative to the country-level reference point is positively associated with subsidiary

risk-taking.

3.3. *Subsidiary risk-taking: Performance above the country-level reference point*

We predict that as a subsidiary's performance rises above the country-level reference point, it will adopt riskier approaches. According to the BTOF, exceeding the reference point is a means of accumulating slack (Levinthal and March, 1981). Slack serves as both a protective buffer against future unforeseen contingencies (Greve, 2003) and a significant catalyst for making risky decisions. This is because slack induces managers to loosen controls and embrace experimentation (Bourgeois III, 1981; Greve, 2003; Nohria and Gulati, 1996). The subsidiary acknowledges that even if risky decisions lead to temporary setbacks or failures, the surplus performance above the reference point serves as a safeguard, mitigating the adverse impacts. Thus, the subsidiary becomes more inclined to take risks, as the performance cushion enables a more daring and innovative approach to business strategies.

In the MNE context, positive deviations become particularly behaviorally consequential when assessed against co-located peer subsidiaries. This is driven by three main factors. First, since co-located peers face similar institutional constraints and opportunity sets, outperforming them is more attributable to subsidiary actions and routines than to country-level advantages. This makes the performance signal more credible and harder to discount, which strengthens accountability: both the subsidiary itself and HQ can interpret the surplus as earned and therefore available for discretionary investment in experimentation. Accordingly, country-peer overperformance does boost confidence and legitimizes the subsidiary's latitude to redeploy slack into risk-taking initiatives under comparable conditions (Chatterjee and Hambrick, 2011).

Second, country-peer overperformance improves the subsidiary's relative standing. The overperforming subsidiary establishes itself as a frontrunner in the local context, thereby increasing its *weight* within the MNE system (Bouquet and Birkinshaw, 2008). This elevated position allows it to attract more resources from HQs (Bouquet and Birkinshaw, 2008), ultimately providing a safety net for the subsidiary to take greater risks. With stronger relative standing, the subsidiary gains greater discretion and bargaining power to pursue bolder initiatives, and it has stronger incentives to do so because risk-taking can help defend and further upgrade its position (e.g., securing higher-value mandates) rather than letting advantages dissipate.

Third, co-location increases visibility and peer scrutiny, making both leadership and slippage more observable within the local subsidiary set (Xu et al., 2019a; Sewak and Sharma, 2020). Because the subsidiary's superior performance is visible under comparable conditions, it also creates stronger expectations (from HQ and from local peers) that the subsidiary will continue to contribute, innovate, and lead. This increased visibility therefore raises the reputational and strategic costs of complacency, reinforcing risk-taking as a way to sustain leadership, demonstrate continued momentum, and signal commitment to the MNE system.

Therefore, based on the above arguments, we advance the following hypothesis:

Hypothesis 2. Subsidiary overperformance relative to the country-level reference point is positively associated with subsidiary risk-taking.

3.4. *Moderating effect of subsidiary age*

We anticipate that subsidiary risk-taking in response to underperformance or overperformance is influenced by subsidiary age. In particular, as performance deviates from the country-level reference point, we expect older subsidiaries to exhibit more pronounced reactions, taking greater risk compared with their newer counterparts.

Research grounded in organizational learning theory (Carlsson et al., 2005) suggests that organizational age captures accumulated experience through which firms develop knowledge, routines, capabilities, and relational resources over time (Huber, 1991; Argote and Miron-Spektor, 2011). In the MNE context, this learning process is especially relevant because subsidiaries accumulate host country knowledge, develop local routines, and build stronger relationships with HQ and other organizational actors, which can increase their discretion and autonomy over time (Birkinshaw and Hood, 1998; Ambos et al., 2011). Thus, subsidiary age provides a broad indicator of accumulated organizational learning, capturing the experience, local embeddedness, internal legitimacy, and decision-making capacity that shape how subsidiaries interpret and respond to performance feedback.

When facing underperformance, well-established subsidiaries respond with a sense of urgency and decisiveness. Through longer host market tenure, they have accumulated locally embedded resources and routines that provide an operational base for implementing riskier changes (Sørensen and Stuart, 2000). Additionally, the autonomy accrued by older subsidiaries affords them greater discretion in decision-making. Thus, older subsidiaries can more readily redeploy accumulated resources and local knowledge into risky, higher-upside initiatives aimed at closing the performance gap. Importantly, because older subsidiaries have accumulated relative standing among their co-located peers (Garg et al., 2022), underperformance threatens their position in the MNE system, raising the stakes and intensifying the incentive to pursue visible turnarounds through risk-taking.

Additionally, and consistent with the BTOF, older firms benefit from an established internal governance infrastructure (e.g., prior compromises, agreements, and norms) that reduces conflict and coordination costs when shifting toward risky actions (Bromiley and Rau, 2022). In contrast, younger subsidiaries lack these developed norms, making it more difficult to build coalitions and agree on risky changes, and thus increasing complexity in decision-making (Bromiley and Rau, 2022; Olcay Costello and Costello, 2009). As a result, older subsidiaries can respond more quickly and confidently to underperformance because they can mobilize support and initiate problemistic search with fewer internal frictions, which facilitates greater risk-taking behavior.

Over time, older subsidiaries may also develop strategic capabilities in how they use their accumulated resources and routines. Longer tenure not only expands the stock of local experience; it also strengthens the subsidiary's ability to recombine, modify, and

redeploy that experience when performance problems require a more substantial response (Kim et al., 2012; Garg et al., 2022). These capabilities play an important role when a subsidiary is underperforming, because performance recovery often requires non-routine adjustments (e.g., reconfiguring activities, reallocating resources, and experimenting with new initiatives) rather than minor fine-tuning (Baum and Dahlin, 2007). In this respect, adaptive capabilities provide the organizational capabilities needed to design and implement such non-routine responses, making them especially consequential in periods of negative performance feedback. In parallel, research on absorptive capacity emphasizes that a deep prior knowledge base improves a unit's ability to recognize, assimilate, and apply new information (Cohen and Levinthal, 1990). When applied to our setting, this logic suggests that older subsidiaries draw on richer host country experience and accumulated operating knowledge, enabling them to extract more diagnostic insight from negative performance feedback (and from observing co-located peers) and to translate that insight into implementable strategic change. In other words, the same country-peer performance feedback carries greater informational value for older subsidiaries than for younger ones, because it can be interpreted and acted upon through a more developed knowledge base. As a result, risk-taking becomes a more feasible and credible response for older subsidiaries: they can pursue bolder initiatives while better managing execution challenges and containing downside risk, making high-variance responses more attractive when performance falls short.

Moreover, as performance declines below the country-level reference point, younger subsidiaries are likely to take less risk than older ones, because, having been newly established, they typically have received support and approval from HQ managers: these top executives are unwilling to admit their mistakes and to immediately discontinue newly established units. Hence, HQ managers tend to provide extra support to younger underperforming subsidiaries, resulting in less pressure from the top to reverse performance trends via risk-taking. Or, said in another way, declining performance can be seen as relatively more acceptable for younger units (which are facing the newness of their business activities), as opposed to established subsidiaries, which are expected to promptly exhibit recovery from bad performance. Thus, older subsidiaries, rather than younger ones, are likely to take on greater risk, as their performance declines relative to their host country peers.

At the same time, older subsidiaries that are above the country-level reference point use their knowledge and freedom to actively seek future benefits through riskier decisions. Overperforming subsidiaries, in pursuit of further building up slack resources, embrace more risk-taking as they are protected by a sufficient buffer to tackle the uncertainties associated with heightened risk. According to the BTOF's slack-search logic, slack relaxes immediate constraints and enables experimentation and innovative search (Bourgeois III, 1981; Greve, 2003; Nohria and Gulati, 1996). Importantly, age makes this response more likely because older subsidiaries can deploy slack more productively. Their deeper host country knowledge and routines allow them to identify higher-quality opportunities, evaluate local uncertainties more accurately, and execute complex initiatives with fewer coordination and implementation problems (Argote and Miron-Spektor, 2011; Nohria and Gulati, 1996). In addition, older subsidiaries typically enjoy stronger internal embeddedness and trust with HQ, which tends to increase the discretion with which slack can be redeployed into higher-variance initiatives rather than being absorbed into routine operations (Li, 2005; Ambos et al., 2011). This greater discretion plays an important role because riskier growth and mandate-seeking initiatives often require latitude to commit resources ex ante and tolerate short-run variance; thus, for older subsidiaries, overperformance is more likely to translate into proactive risk-taking aimed at extending advantage and shaping future roles within the MNE.

Considering the above arguments, we advance the following hypotheses:

Hypothesis 3a. The positive association between subsidiary underperformance relative to the country-level reference point and risk-taking is more pronounced for older subsidiaries.

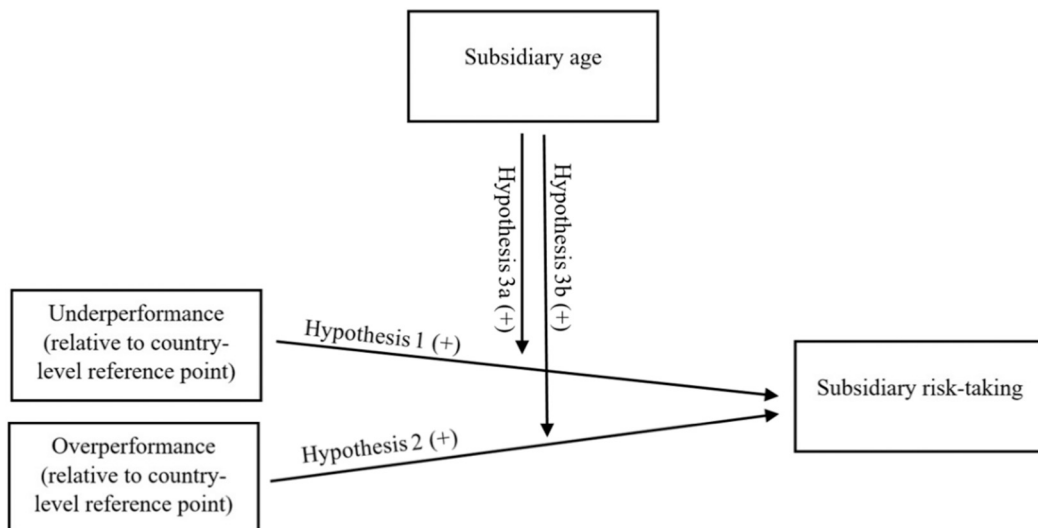


Fig. 1. Hypothesis summary.

Hypothesis 3b. The positive association between subsidiary overperformance relative to the country-level reference point and risk-taking is more pronounced for older subsidiaries.

Fig. 1 summarizes the hypotheses.

4. Method

4.1. Data

To test the hypotheses formulated, our study focuses on a sample of foreign subsidiaries located in four host countries: Germany, Italy, France, and Spain. These countries are selected because they are among the EU's largest host economies and collectively account for a substantial share of EU economic activity, making them strategically important destinations for market-seeking and operational subsidiary investments (Guisan, 2011). Substantively, these large, mature markets offer dense populations of foreign-owned and foreign-controlled firms and substantial commercial presence by multinationals (Basile et al., 2008), which increases the empirical

Table 1
Summary of subsidiaries by home country.

Home Country	No. of subsidiaries	Home Country	No. of subsidiaries
Albania	6	Lebanon	16
Algeria	2	Lithuania	14
Angola	2	Luxembourg	2453
Argentina	15	Malaysia	16
Australia	279	Mali	2
Austria	568	Malta	36
Bahamas	14	Mauritius	15
Bahrain	1	Mexico	144
Barbados	5	Moldova	1
Belgium	1100	Mongolia	1
Belize	1	Morocco	18
Brazil	67	Netherlands	1608
Bulgaria	31	New Zealand	29
Cabo Verde	1	Nicaragua	1
Cameroon	2	Nigeria	2
Canada	569	North Macedonia	4
Chile	31	Norway	185
China	652	Panama	49
Colombia	17	Peru	4
Congo (Democratic Republic)	1	Philippines	2
Costa Rica	7	Poland	67
Côte d'Ivoire	1	Portugal	332
Croatia	17	Qatar	8
Cuba	1	Romania	19
Cyprus	104	Russian Federation	12
Czechia	51	Saint Vincent and the Grenadines	1
Denmark	357	Samoa	4
Djibouti	1	Saudi Arabia	23
Dominican Republic	3	Senegal	1
Egypt	1	Serbia	3
Estonia	14	Seychelles	5
Finland	199	Singapore	127
France	2422	Slovakia	10
Georgia	1	Slovenia	26
Germany	3242	South Africa	51
Greece	43	South Korea	191
Guatemala	3	Spain	679
Hong Kong	149	Sweden	958
Hungary	73	Switzerland	2552
Iceland	14	Thailand	23
India	283	Togo	1
Indonesia	3	Tunisia	14
Iran	6	Turkey	69
Ireland	489	United Arab Emirates	112
Israel	165	United Kingdom	2803
Italy	990	United States	6522
Japan	1837	Uruguay	30
Kazakhstan	1	Uzbekistan	1
Kenya	2	Vanuatu	1
Kuwait	17	Venezuela	2
Latvia	7	Viet Nam	1

Table 2
Descriptive statistics.

Variables	Mean	Std. Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Subsidiary risk-taking	5.948	8.19	1.000															
(2) Industry average performance	3.09	2.659	−0.064*	1.000														
(3) Subsidiary performance	0	14.567	−0.252*	0.000	1.000													
(4) Size	213.525	1504.366	−0.023*	−0.012*	−0.008*	1.000												
(5) Slack	2.615	4.924	−0.011*	0.011*	0.070*	−0.020*	1.000											
(6) First-level	0.274	0.446	0.021*	−0.019*	−0.036*	−0.016*	0.028*	1.000										
(7) Number of co-located subsidiaries	6.726	18.225	0.003	−0.097*	0.002	0.024*	−0.050*	−0.167*	1.000									
(8) Number of non-co-located subsidiaries	4.964	10.999	−0.020*	0.018*	0.018*	0.048*	−0.020*	−0.204*	0.299*	1.000								
(9) Host country market size	2.184e+12	8.380e+11	−0.007*	0.010*	0.000	0.051*	0.092*	−0.002	−0.023*	0.016*	1.000							
(10) Home country market size	5.645e+12	7.394e+12	−0.006*	0.047*	0.007*	0.003	0.046*	−0.073*	−0.047*	0.041*	0.067*	1.000						
(11) Economic distance	9.266	5.278	−0.004	0.017*	0.008*	−0.007*	−0.059*	−0.010*	0.028*	0.016*	−0.161*	0.067*	1.000					
(12) Control of corruption distance	0.904	0.549	−0.012*	−0.011*	0.007*	−0.014*	−0.033*	0.023*	−0.006*	−0.027*	−0.347*	−0.259*	0.421*	1.000				
(13) Political stability distance	0.476	0.357	0.000	−0.043*	−0.013*	0.011*	−0.019*	0.017*	0.007*	−0.023*	0.044*	−0.345*	0.317*	0.236*	1.000			
(14) Subsidiary age	22.116	18.301	−0.111*	0.028*	0.050*	0.087*	0.030*	−0.090*	0.055*	0.080*	0.137*	0.013*	−0.012*	−0.081*	0.003	1.000		
(15) Underperformance	1.959	5.975	0.251*	−0.045*	−0.461*	0.019*	−0.041*	−0.122*	0.138*	0.119*	−0.007*	−0.009*	0.013*	−0.004	0.013*	−0.017*	1.000	
(16) Overperformance	1.959	5.35	0.083*	0.002	0.391*	0.001	0.022*	−0.138*	0.154*	0.133*	−0.008*	−0.010*	0.015*	−0.004	0.015*	0.017*	−0.120*	1.000

Note: * $p < 0.05$.

relevance of studying subsidiary-level performance evaluation and risk-taking behavior. At the same time, focusing on these four Eurozone host countries helps hold constant key supranational features that shape cross-border business (e.g., deep Single Market integration and the common currency) while preserving meaningful country-level variation in institutions and stakeholder environments that can condition subsidiary decision-making (Jackson and Deeg, 2008; Matysiak and Bausch, 2012). Thus, this EU-based sample strengthens internal validity for our country-level logic by reducing confounds tied to major regulatory discontinuities, yet it remains externally relevant because these economies are central reference contexts for how MNEs evaluate, resource, and compare their subsidiaries. This study spans a 10-year timeframe, ranging from 2013 to 2022, and draws its data from the Orbis database. Orbis is a source of information on financial accounts and corporate structures, encompassing a diverse array of firms from around the globe. These entities encompass a wide spectrum, ranging from state-owned enterprises and multinational subsidiaries to affiliates within business groups and financial holdings. Our analytical focus is specifically on foreign subsidiaries. To identify foreign subsidiaries, we utilized Orbis records on the Global Ultimate Owner (GUO) of each firm, allowing us to select subsidiaries with foreign ownership. We focused on those whose GUO is a corporate entity. The dataset was further refined to include subsidiaries whose latest financial statements were from 2022 or later.

Additionally, we supplemented the Orbis data with country-level data from the World Bank and the Heritage Foundation's Economic Freedom Index for several variables. After merging these datasets and removing observations with missing values, our final sample consists of 33,115 foreign subsidiaries: 9809 in Italy, 9391 in Spain, 8451 in France, and 5464 in Germany. The subsidiaries in our sample are owned by GUOs from 102 home countries, indicating substantial variation in parent-country origins. Table 1 reports the distribution of subsidiaries by GUO home country.

Table 3
Regression results. Dependent variable: Subsidiary risk-taking.

Variables	Model 1	Model 2	Model 3
Industry average performance	−0.117*** (0.024)	−0.111*** (0.024)	−0.111*** (0.024)
Subsidiary performance	−0.080*** (0.002)	−0.086*** (0.002)	−0.086*** (0.002)
Size	−0.414*** (0.015)	−0.422*** (0.015)	−0.422*** (0.015)
Slack	−0.019*** (0.005)	−0.021*** (0.005)	−0.021*** (0.005)
First-level	−0.025 (0.053)	0.280*** (0.053)	0.278*** (0.053)
Number of co-located subsidiaries	−0.001 (0.002)	−0.009*** (0.002)	−0.009*** (0.002)
Number of non-co-located subsidiaries	−0.003 (0.002)	−0.013*** (0.002)	−0.013*** (0.002)
Host country market size	6.072*** (2.006)	6.036*** (1.992)	6.037*** (1.992)
Home country market size	−1.597** (0.629)	−1.586** (0.625)	−1.589** (0.625)
Economic distance	0.023*** (0.009)	0.022** (0.009)	0.022** (0.009)
Control of corruption distance	−0.183** (0.074)	−0.205*** (0.073)	−0.205*** (0.073)
Political stability distance	0.036 (0.157)	0.100 (0.156)	0.102 (0.156)
Subsidiary age	−0.323*** (0.025)	−0.302*** (0.024)	−0.303*** (0.024)
Underperformance		0.571*** (0.026)	0.583*** (0.026)
Overperformance		0.854*** (0.025)	0.857*** (0.025)
Underperformance × age			0.085*** (0.023)
Overperformance × age			−0.017 (0.024)
Industry fixed effect	Included	Included	Included
Host country fixed effect	Included	Included	Included
Home country fixed effect	Included	Included	Included
Year fixed effect	Included	Included	Included
Constant	−119.137** (59.559)	−118.401** (59.164)	−118.340** (59.160)
No. of observations	117,040	117,040	117,040
R-squared	0.0735	0.0858	0.0859
F-statistic	310.31***	377.14***	333.71***

Note. Sig level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses.

4.2. Measures

4.2.1. Dependent variable

Subsidiary risk is measured as the standard deviation of ROA over a three-year window, with each year's risk calculated using the ROA for that year and the following two years. For instance, the risk for 2013 is based on the standard deviation of ROA over the years 2013, 2014, and 2015. This is a commonly employed risk metric in the literature (e.g., Martin et al., 2015; Zona et al., 2024; Miller and Chen, 2003). For instance, Miller and Chen (2003) utilize this measure to investigate risk preferences across industry performance levels of US public firms. Similarly, Cirillo et al. (2021) employ the same metric to analyze risk-taking in privately held Italian firms.

4.2.2. Independent variables

Subsidiary performance is measured by the subsidiary's return on assets (ROA) within distinct performance zones. Specifically, we use the average performance of subsidiaries belonging to the same MNE and located in the same host country in a given year as the benchmark for individual subsidiary performance. In this regard, we define two performance zones (as illustrated below in the Analysis section) to which each subsidiary belongs. To measure the moderator, *subsidiary age*, we subtracted the incorporation year from the reference year.

4.2.3. Control variables

We incorporate a set of control variables to mitigate potential biases in the results, adopting a strategy consistent with prior literature. We control for industry variations by incorporating *industry average performance* of foreign subsidiaries, measured as the average ROA of firms within the same industry each year. As different industries exhibit diverse average performance levels among competitors, this control accounts for the varying signals of firm success, a consideration frequently addressed by behavioral scholars investigating risk (e.g., Zona et al., 2024). We also control for *subsidiary performance*, measured by subtracting the average ROA of all firms within the same industry and country for each year from the focal subsidiary's ROA. In controlling for the impact of subsidiary size on risk, we include *subsidiary size* by using the number of employees (in logarithmic form) of each subsidiary. This accounts for organizational resources, a crucial factor given that smaller firms often exhibit different risk levels. Organizational slack is often argued to influence firm performance and risk-taking behavior, as managers utilize surplus resources to invest in innovation, which is critical for firm performance and decision-making (Daniel et al., 2004). We use the current ratio as a proxy to control for the subsidiary's *slack*. Additionally, research indicates that first-level subsidiaries, i.e., those directly owned by the GUO, adopt distinct strategies and decision-making processes (Godfrey and Zhou, 1999). Thus, we introduce a dummy variable, *first-level*, assigned a value of 1 for first-level subsidiaries and 0 otherwise.

To account for the size and structure of the focal MNE's subsidiary network, and, in particular, for the intensity of potential within-MNE comparison and competition, we include two additional controls. We control for the *number of co-located subsidiaries*, measured as the total number of subsidiaries belonging to the same MNE that are located in the focal subsidiary's host country in a given year. We also control for the number of non-co-located subsidiaries, measured as the total number of peer subsidiaries of the focal subsidiary that belong to the same MNE but are located in the other host countries in our sample (i.e., excluding the focal subsidiary's host country) in the same year. These controls capture variation in the density of same-country peers and the broader within-sample network footprint, both of which may shape subsidiary decision making.

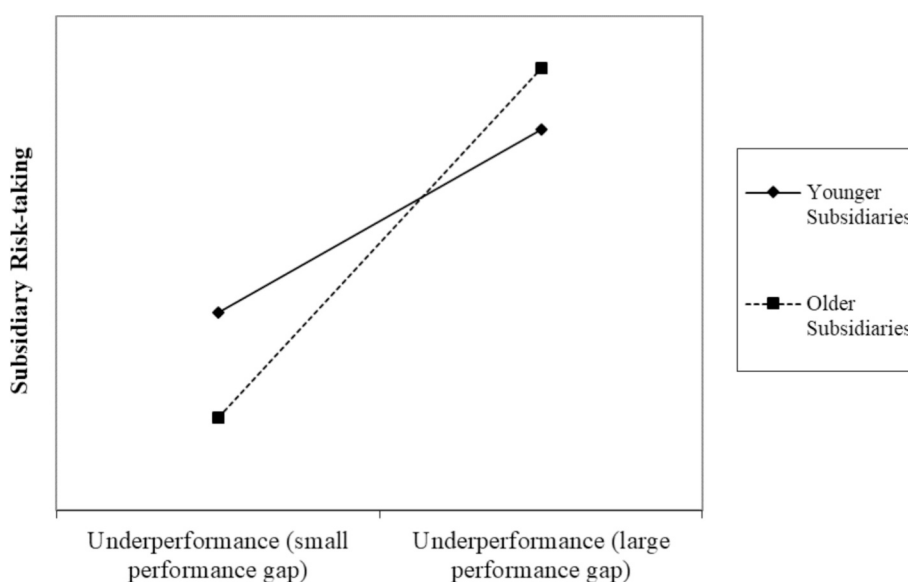


Fig. 2. Interaction effect. Underperformance $\times$ Subsidiary Age.

Additionally, we account for the *host country market size* and *home country market size* using each country's GDP (in logarithmic form). We also account for the *economic distance* between the host country and the country of the GUO. Research has shown that economic distance significantly influences firm decision-making (Liou and Rao-Nicholson, 2019). To account for this, we use the Economic Freedom Index (EFI), a well-established measure in IB research (e.g., Liou et al., 2016; Liou and Rao-Nicholson, 2019). Economic distance is calculated as the absolute difference in the EFI scores between the host country and the GUO country. Moreover, we account for institutional distance between the host country and the GUO using the World Bank's Worldwide Governance Indicators. Specifically, we include controls for *corruption distance* and *political stability distance*, each measured as the absolute difference between the host country and GUO country scores on the respective dimension. Recognizing the diverse roles of subsidiaries within the MNE system, we include two-digit NACE industry fixed effects. These fixed effects capture systematic differences across subsidiaries' economic activities, functions, and responsibilities within the MNE framework. To account for national-level heterogeneity, we also include host country and GUO country fixed effects, which control for time-invariant differences in risk behavior associated with subsidiaries' host country environments and parent-country origins. In addition, all models include year fixed effects to account for common temporal shocks affecting subsidiaries across the sample period.

4.3. Analysis

Following established BTOF research on firm risk-taking, we operationalize subsidiary underperformance and overperformance as

Table 4
Regression results. Dependent variable: Subsidiary risk-taking.

Variables	Median-based reference point		2-year lag		3-year lag		Winsorized DV	
	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Industry average performance	−0.112*** (0.024)	−0.112*** (0.024)	−0.042 (0.029)	−0.042 (0.029)	−0.022 (0.034)	−0.023 (0.034)	−0.109*** (0.022)	−0.109*** (0.022)
Subsidiary performance	−0.085*** (0.002)	−0.085*** (0.002)	−0.070*** (0.002)	−0.071*** (0.002)	−0.062*** (0.003)	−0.062*** (0.003)	−0.080*** (0.002)	−0.081*** (0.002)
Size	−0.413*** (0.015)	−0.413*** (0.015)	−0.371*** (0.017)	−0.371*** (0.017)	−0.337*** (0.021)	−0.337*** (0.021)	−0.401*** (0.014)	−0.401*** (0.014)
Slack	−0.021*** (0.005)	−0.021*** (0.005)	−0.032*** (0.006)	−0.031*** (0.006)	−0.027*** (0.007)	−0.026*** (0.007)	−0.021*** (0.005)	−0.021*** (0.005)
First-level	0.283*** (0.053)	0.280*** (0.053)	0.199*** (0.061)	0.191*** (0.061)	0.187*** (0.072)	0.182** (0.072)	0.267*** (0.049)	0.265*** (0.049)
Number of co-located subsidiaries	−0.010*** (0.002)	−0.010*** (0.002)	−0.002 (0.002)	−0.003 (0.002)	0.004 (0.002)	0.003 (0.002)	−0.008*** (0.002)	−0.008*** (0.002)
Number of non-co-located subsidiaries	−0.013*** (0.002)	−0.013*** (0.002)	−0.012*** (0.003)	−0.012*** (0.003)	−0.008*** (0.003)	−0.009*** (0.003)	−0.013*** (0.002)	−0.013*** (0.002)
Host country market size	5.989*** (1.989)	5.995*** (1.989)	6.161** (2.771)	6.238** (2.771)	8.275** (4.029)	8.418** (4.029)	6.080*** (1.850)	6.081*** (1.849)
Home country market size	−1.615*** (0.624)	−1.617*** (0.624)	−1.673** (0.740)	−1.671** (0.740)	−1.695* (0.901)	−1.701* (0.901)	−1.305** (0.580)	−1.308** (0.580)
Economic distance	0.021** (0.009)	0.021** (0.009)	0.012 (0.010)	0.012 (0.010)	0.001 (0.011)	0.001 (0.011)	0.021*** (0.008)	0.021*** (0.008)
Control of corruption distance	−0.201*** (0.073)	−0.201*** (0.073)	−0.128 (0.084)	−0.126 (0.084)	−0.110 (0.100)	−0.110 (0.100)	−0.202*** (0.068)	−0.202*** (0.068)
Political stability distance	0.093 (0.155)	0.096 (0.155)	0.026 (0.175)	0.028 (0.175)	0.226 (0.196)	0.228 (0.196)	0.036 (0.145)	0.038 (0.145)
Subsidiary age	−0.298*** (0.024)	−0.299*** (0.024)	−0.283*** (0.028)	−0.282*** (0.028)	−0.253*** (0.033)	−0.250*** (0.033)	−0.292*** (0.023)	−0.293*** (0.023)
Underperformance	0.664*** (0.026)	0.677*** (0.026)	0.438*** (0.030)	0.463*** (0.030)	0.396*** (0.036)	0.416*** (0.036)	0.569*** (0.024)	0.581*** (0.024)
Overperformance	0.897*** (0.025)	0.899*** (0.025)	0.720*** (0.029)	0.726*** (0.029)	0.659*** (0.035)	0.664*** (0.035)	0.823*** (0.023)	0.826*** (0.023)
Underperformance × age		0.086*** (0.023)		0.160*** (0.027)		0.125*** (0.032)		0.082*** (0.021)
Overperformance × age		−0.008 (0.024)		0.036 (0.028)		0.036 (0.033)		−0.016 (0.022)
Industry fixed effect	Included	Included	Included	Included	Included	Included	Included	Included
Host country fixed effect	Included	Included	Included	Included	Included	Included	Included	Included
Home country fixed effect	Included	Included	Included	Included	Included	Included	Included	Included
Year fixed effect	Included	Included	Included	Included	Included	Included	Included	Included
Constant	−116.274** (59.071)	−116.370** (59.068)	−119.722 (81.284)	−121.934 (81.270)	−178.887 (116.909)	−182.748 (116.903)	−127.741** (54.928)	−127.680** (54.925)
No. of observations	117,040	117,040	89,790	89,790	64,538	64,538	117,040	117,040
R-squared	0.0886	0.0887	0.0744	0.0748	0.0729	0.0732	0.0904	0.0905
F-statistic	402.74***	356.25***	195.23***	174.44***	107.47***	95.74***	396.03***	350.46***

Note. Sig level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses.

gaps between actual performance and the country-level reference point, thereby capturing the attainment discrepancies central to the BTOF (Cyert and March, 1963; Greve, 2003; Mount and Baer, 2022; Hamrabadi et al., 2026).

We define the country-level reference point as the average ROA, in each year, of peer subsidiaries belonging to the same MNE and located in the same host country. We then follow established BTOF research and construct two performance variables (e.g., Mount and Baer, 2022). *Underperformance* captures the magnitude of the shortfall when a subsidiary's ROA falls below this reference point, and *overperformance* captures the magnitude of the excess when a subsidiary's ROA exceeds it. Formally:

$$\text{Underperformance}_{it} = \text{Country level reference point}_{it} - \text{ROA}_{it} \quad \text{if } \text{ROA}_{it} < \text{country level reference point}_{it}; 0 \text{ otherwise.}$$

$$\text{Overperformance}_{it} = \text{ROA}_{it} - \text{Country level reference point}_{it} \quad \text{if } \text{ROA}_{it} > \text{country level reference point}_{it}; 0 \text{ otherwise}$$

Thus, higher values of underperformance and overperformance indicate larger negative and positive performance gaps, respectively, relative to co-located peer subsidiaries. For stand-alone subsidiaries without co-located peer subsidiaries in the focal host market (17,527 firms), both underperformance and overperformance are assigned a value of zero, as no country-level internal peer comparison is observable for these subsidiaries. However, to account for such differences in the density of country-level peer comparisons, we control for the number of co-located subsidiaries in the host country.

To test the hypotheses, we use fixed effects regressions. To test Hypotheses 1 and 2, we estimate the following model:

$$\text{Risk}_{it} = \beta_1 \text{Underperformance}_{i,t-1} + \beta_2 \text{Overperformance}_{i,t-1} + \beta_3 \text{Age}_{i,t-1} + \gamma X_{i,t-1} + \alpha_s + \delta_c + \theta_h + \lambda_t + \varepsilon_{it}$$

where Risk_{it} is subsidiary risk-taking, and $\text{Underperformance}_{i,t-1}$ and $\text{Overperformance}_{i,t-1}$ capture the subsidiary's negative and positive performance gaps relative to the country-level reference point. $\text{Age}_{i,t-1}$ is subsidiary age, and $X_{i,t-1}$ denotes the vector of control variables. The terms α_s , δ_c , θ_h , and λ_t denote two-digit NACE industry, host country, GUO country, and year fixed effects, respectively.

To test the moderating effect of subsidiary age, we estimate:

$$\begin{aligned} \text{Risk}_{it} = & \beta_1 \text{Underperformance}_{i,t-1} + \beta_2 \text{Overperformance}_{i,t-1} + \beta_3 \text{Age}_{i,t-1} + \beta_4 \left(\text{Underperformance}_{i,t-1} \times \text{Age}_{i,t-1} \right) \\ & + \beta_5 \left(\text{Overperformance}_{i,t-1} \times \text{Age}_{i,t-1} \right) + \gamma X_{i,t-1} + \alpha_s + \delta_c + \theta_h + \lambda_t + \varepsilon_{it} \end{aligned}$$

To reduce concerns about simultaneity, all independent variables are lagged by one year relative to subsidiary risk. Finally, we winsorize the main predictors (underperformance, overperformance, and subsidiary age) at the 1st and 99th percentiles to reduce the influence of extreme observations, and we standardize them to facilitate interpretation.

5. Results

Table 2 reports the descriptive statistics and pairwise correlations for the variables included in the analysis, providing an overview of the sample and preliminary associations among the variables. Underperformance and overperformance are both positively correlated with risk-taking.

Table 3 reports the regression results. Model 1 includes control variables. Model 2 examines the association between underperformance, overperformance, and risk-taking. Model 3 reports the results for the interaction effect of subsidiary age with underperformance and overperformance.

Hypothesis 1 predicts a positive association between subsidiary underperformance relative to the country-level reference point and risk-taking. As shown in Table 3, Model 2, the coefficient for underperformance is positive and statistically significant ($\beta = 0.571$, $p < 0.01$), indicating that subsidiaries exhibit higher levels of risk-taking as their performance falls further below the country-level reference point, providing support for Hypothesis 1.

Hypothesis 2 predicts a positive association between subsidiary overperformance relative to the country-level reference point and risk-taking. Table 3, Model 2 shows that the coefficient for overperformance is positive and statistically significant ($\beta = 0.854$, $p < 0.01$). This suggests that subsidiaries also exhibit higher levels of risk-taking as their performance rises further above the country-level reference point, providing support for Hypothesis 2.

Table 3, Model 3, presents the results concerning the interaction effect between subsidiary age and both underperformance and overperformance. **Hypothesis 3a** predicts that the influence of subsidiary underperformance relative to the country-level reference point is particularly accentuated for older subsidiaries. The analysis shows a significant and positive coefficient for the interaction effect between underperformance and subsidiary age ($\beta = 0.085$, $p < 0.01$). This results support Hypothesis 3a, indicating that older subsidiaries indeed manifest greater risk-taking behavior in comparison with their younger counterparts when their performance falls below the reference point. **Hypothesis 3b** posits that these same older subsidiaries exhibit heightened risk-taking behavior even when their performance surpasses the country-level reference point. The interaction results involving overperformance and subsidiary age do not support this conjecture, with a coefficient that is not statistically significant. Thus, Hypothesis 3b is not supported.

The moderating influence of subsidiary age on underperformance and risk-taking behavior is depicted in Fig. 2. This graphical representation shows not only that subsidiaries increase risk-taking when performing below the country-level reference point, but also older subsidiaries take on more risk than younger subsidiaries under conditions of underperformance.

The control variables yield interesting findings as well. The industry average performance and subsidiary performance are negatively associated with subsidiary risk-taking behavior in all models, and both coefficients are statistically significant. Subsidiary size, slack, and age also have negative and statistically significant coefficients across all models. The coefficient for the first-level subsidiary

is positive and statistically significant in Models 2 and 3, indicating that these subsidiaries are more inclined to engage in risk-taking. In addition, both the number of co-located and the number of non-co-located subsidiaries are negatively associated with subsidiary risk-taking in Models 2 and 3, with statistically significant coefficients. Host country market size is positively associated with subsidiary risk-taking, whereas home country market size is negatively associated with subsidiary risk-taking. Economic distance and control of corruption distance also exhibit statistically significant coefficients: economic distance is positively related to subsidiary risk-taking, whereas control of corruption distance is negatively related. Together, these findings suggest that home–host country distance is relevant to understanding variation in subsidiary risk-taking behavior.

5.1. Robustness tests

We conducted a series of robustness tests to assess the stability of our findings. Table 4 reports the results. First, in the baseline analysis, we operationalized the performance reference point as the average ROA of subsidiaries belonging to the same MNE and located in the same host country in a given year. As a robustness test, we replaced the mean with the median ROA to reduce sensitivity to outliers and skewness (Ref et al., 2024). The results, reported in Models 4 and 5, remain unchanged. Underperformance and overperformance are both positive and statistically significant, and the interaction between underperformance and subsidiary age remains positive and statistically significant. The interaction between overperformance and subsidiary age remains statistically nonsignificant, consistent with the baseline results.

Second, whereas the baseline models lag all independent variables by one year relative to the dependent variable, we re-estimated the models using alternative lag structures (Wilkins, 2018). In particular, we applied two-year lags in Models 6 and 7 and three-year lags in Models 8 and 9 to further mitigate concerns about simultaneity and allow for delayed behavioral responses. The results remain consistent with the main findings. Third, to ensure that our conclusions are not driven by extreme values, we winsorized the dependent variable at the 1st and 99th percentiles (Dixon and Yuen, 1974). Models 10 and 11 show that the results remain consistent with the baseline models, indicating that the reported relationships are not an artifact of a small number of influential observations. Overall, these robustness tests provide evidence consistent with the stability of our main findings.

6. Discussion

This study shifts the lens of IB risk research from the MNE as a whole to the individual subsidiary as a behavioral actor embedded in the internal MNE coalition. The findings show that subsidiaries calibrate their risk-taking against the average performance of co-located peer subsidiaries in the same host country. When performance falls below this country-level reference point, subsidiaries exhibit greater risk-taking (problemistic search); when it rises above, they do likewise (slack search). Subsidiary age strengthens the first of these associations (older subsidiaries react more strongly to underperformance) but does not have a statistically significant moderating effect on the second. Three contributions follow.

First, this study contributes to the BTOF by specifying a theoretically distinct social reference point for performance feedback in the MNE subsidiary context. Standard BTOF research treats social aspirations as external benchmarks (most commonly industry-level peer performance) and the few IB studies applying it to subsidiaries have followed this convention (Deng et al., 2022; Zhang and You, 2021). We theorize a country-level internal reference point constituted by the performance of peer subsidiaries that belong to the same MNE and are co-located in the same host country. Co-located internal peers share the MNE's corporate governance system, resource-allocation rules, and HQ evaluation processes (Bouquet and Birkinshaw, 2008; Sewak and Sharma, 2020), making their performance organizationally meaningful in ways external industry benchmarks cannot replicate; simultaneously, operating within the same host country exposes subsidiaries to the same institutional conditions, opportunity structures, and liabilities of foreignness (Klopf and Nell, 2018; Meyer et al., 2020; Sommeno et al., 2024), making their performance contextually comparable in ways broader MNE-wide internal benchmarks may obscure.

By theoretically establishing and empirically testing the country-level reference point, the study advances the BTOF's applicability to multi-unit international organizations, responding to calls for a more behaviorally grounded account of MNE subsidiary behavior (Zhang and You, 2021; Surdu et al., 2021; Deng et al., 2022). In fact, this study enriches the BTOF by revealing that the reference point construct is more theoretically layered in multi-unit organizations than single-unit research assumes. Whereas standard BTOF treats the benchmark as externally given, the MNE context shows that reference points are actively constituted by the organizational architecture of the firm and the geographic distribution of its subsidiaries, making the construction of performance benchmarks itself a theoretically consequential process.

Second, the study advances subsidiary-level IB research by uncovering the behavioral motivation behind entrepreneurial risk-taking. The subsidiary entrepreneurship literature has made considerable progress in establishing that subsidiaries can and do act autonomously (Birkinshaw, 1997; Birkinshaw and Hood, 1998; Schmid et al., 2014), yet the conditions that motivate a subsidiary to deviate from its current trajectory and pursue riskier alternatives have remained black-boxed (Meyer et al., 2020; Contractor et al., 2019). Drawing on the BTOF, this study shows that as a subsidiary's performance diverges from that of its country-level peers, performance feedback itself becomes the motivation to act, with relative standing among co-located internal peers translating into the impulse for entrepreneurial risk-taking. This adds a behavioral layer to existing accounts of subsidiary initiative, which have so far mainly focused on the structural and relational conditions that make autonomous action possible (Birkinshaw and Hood, 1998; Bouquet and Birkinshaw, 2008; Meyer et al., 2020), rather than the motivational process through which it is triggered. More broadly, the finding reframes the host country as more than a location of activity; it becomes a cognitive frame of reference through which subsidiaries interpret their competitive standing and calibrate entrepreneurial action, opening a new dialogue on how country-

bounded internal comparisons shape subsidiary behavior over time.

Third, the study contributes to the BTOF by demonstrating that subsidiary age conditions the strength of performance feedback, thereby refining our understanding of problemistic search in the MNE context. Older subsidiaries, with deeper host country knowledge, more established governance relationships, and greater accumulated discretion (Cohen and Levinthal, 1990; Sommeno et al., 2024), respond more strongly to underperformance relative to co-located peers, converting a negative country-level gap into risky corrective action more forcefully than younger units. This finding advances the BTOF by showing that problemistic search is not uniform across organizational units; its intensity is shaped by the depth of a subsidiary's embeddedness in its host country. In fact, a subsidiary that has accumulated local knowledge and organizational standing is not only better positioned to diagnose the source of its underperformance relative to peers, but also more capable of mobilizing the internal support and discretion needed to execute a non-routine corrective response. In this sense, subsidiary age specifies the organizational conditions under which performance pressure is more effectively converted into action.

Additionally, the absence of a comparable moderating effect for overperformance carries theoretical importance. It suggests that problemistic and slack search operate through fundamentally different organizational logics in the MNE context. While problemistic search draws on accumulated capabilities, local knowledge, and established relational capital, resources that accrue with age, slack search is enabled primarily by the availability of a performance cushion (Bourgeois III, 1981; Greve, 2003), which appears sufficient to encourage experimentation independently of how long a subsidiary has been embedded in its host country. This asymmetry enriches the BTOF by showing that the two search processes are not mirror images of each other, and that the organizational resources required to act on performance feedback differ qualitatively depending on whether the subsidiary is responding to a deficit or capitalizing on a surplus.

Finally, our study has meaningful managerial implications. For subsidiary managers, the findings reveal that relative standing among co-located peers constitutes a fast, accessible, and contextually grounded signal for decision-making, one that complements industry-wide and historical benchmarks by capturing performance dimensions that are specific to the host country and organizational contexts in which the subsidiary operates. For HQs, the country-level reference point offers a more precise and interpretable tool for evaluating subsidiary performance: by focusing comparisons within the same host country, HQs reduce the noise introduced by cross-country institutional heterogeneity, enabling more accurate assessments of which subsidiaries are underperforming or overperforming relative to a contextually equivalent peer group. In short, the country-level reference point serves as both a behavioral trigger for subsidiary managers and a governance instrument for HQs, enriching the practice of performance management within MNEs.

7. Limitations and future research directions

While considerable care was taken to develop a theoretically grounded argument and a rigorous empirical design, some limitations should be acknowledged. First, subsidiaries within an MNE often perform diverse functions, which may create different expectations for each unit. We account for this issue by including two-digit NACE industry fixed effects, which capture differences in subsidiaries' economic activities and responsibilities. Nevertheless, industry codes cannot fully capture the heterogeneity of subsidiary roles, mandates, and functional responsibilities within the MNE. Future research could examine more directly how country-level comparisons operate across different subsidiary roles and whether they are stronger or weaker for particular functions, such as manufacturing, sales, R&D, or regional coordination.

Second, our study is based on subsidiaries located in four major European host countries. Although this setting provides a useful context for examining country-level internal reference points, the generalizability of our findings beyond these European economies remains an open question. Future studies could extend this analysis to subsidiaries located in more diverse institutional, cultural, and economic environments. Such research would help clarify whether country-level reference points operate similarly across regions or whether their relevance depends on specific host country conditions.

Third, our argument has important boundary conditions. The country-level reference point is most applicable when MNEs operate multiple subsidiaries in the same host country and when HQs evaluate subsidiaries partly through country-level comparisons. It may be less relevant for stand-alone subsidiaries, highly function-specific subsidiaries, or MNEs whose internal evaluation systems are organized primarily around global product lines or functions rather than host countries. Thus, our theory should be understood as applying most directly to settings where co-located peer subsidiaries are visible, comparable, and organizationally meaningful reference points. Future research could examine when subsidiaries rely more strongly on country-level, functional, industry-level, or historical reference points.

Fourth, a limitation concerns the underlying mechanisms through which country-level performance feedback is associated with subsidiary risk-taking. Our theoretical framework provides several mechanisms that help explain why subsidiaries respond to performance gaps relative to co-located peer units. However, our empirical design observes the behavioral outcome of these mechanisms, i.e., subsidiary risk-taking, rather than the mechanisms themselves. Therefore, the dynamics underlying our arguments remain inferred rather than directly observed. Future research could unpack these mechanisms more directly through surveys of subsidiary managers, behavioral experiments on reference point formation, or qualitative comparative studies of how HQs and subsidiaries interpret and act on internal performance comparisons.

Finally, a limitation concerns the use of ROA-based measures. In line with prior BTOF and risk-taking research (Deng et al., 2022), we use ROA to construct subsidiary performance, the country-level reference point, and subsidiary risk-taking. This approach enables comparability across a large sample of subsidiaries, but ROA remains an accounting-based measure and may not capture the full range of subsidiary performance outcomes, such as market growth, innovation, mandate development, or strategic contribution to the MNE. In addition, because our independent variables are based on ROA gaps and the dependent variable captures ROA volatility, potential

mechanical correlation between the performance-feedback measures and risk-taking cannot be fully ruled out. We partly mitigate this concern by lagging the independent variables and measuring risk-taking using a forward-looking three-year ROA volatility window. Still, future research could further validate our findings by using alternative measures of performance and risk-taking, such as sales growth volatility, investment volatility, R&D intensity, innovation outcomes, mandate changes, or survey-based measures of subsidiary risk-taking.

CRedit authorship contribution statement

Afshin Hamrabadi: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Fabio Zona:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

We have no conflicts of interest.

Data availability

The data that has been used is confidential.

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