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Globalization Strategies of Multinational Enterprises: Unraveling the Nexus of Firm-Specific Advantages, Institutional Environments, and Political Dynamics

Stratégies de globalisation des entreprises multinationales : Démêler le Nexus des Avantages Spécifiques à l'Entreprise, des Environnements Institutionnels et des Dynamiques Politiques

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par

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Globalization Strategies of Multinational Enterprises: Unraveling the Nexus of Firm-Specific Advantages, Institutional Environments, and Political Dynamics

ABSTRACT

This dissertation focuses on Multinational Enterprises (MNEs), employing the core concept of Firm-Specific Advantages (FSAs) from internalization theory and integrating perspectives from institutional research. It delves into the impact of institutional characteristics within the home regions of globally leading R&D-investing MNEs on their ability to diversify income across triadic regions. We extensively analyze the influence of MNEs' home-region orientation on the value of their switching-option portfolios, evaluating the role of political ties, particularly nonmarket strategies, in the cross-region transferability of innovative FSAs. MNEs equipped with innovation based FSAs emerge as potential candidates for globalization but face challenges related to bounded rationality and reliability. To address these questions, we employ empirical research methods and advanced econometric tools, such as Correlated Random Effects model and Instrument Variable model. We highlight the key role of the home-region institutional environment in shaping MNEs' global reach. Moreover, the dissertation introduces a regional classification scheme into Real Options Theory (ROT), broadening its application and deepening the synergy between International Business Theory (IBT) and ROT, offering insights into intra-region versus inter-region expansion. We examine how state ownership can facilitate or hinder a company in overcoming institutional distance and fostering the application of innovation-based Firm-Specific Advantages (FSAs) in host regions. Simultaneously, we investigate the contingent nature of this effect using the Institutional Pressure Theory. Significant

findings encompass the influence of home-region institutional characteristics on Multinational Enterprises' (MNEs) globalization strategies and the moderating role of the quality of the home region's institutions and the disparity between institution distances in host and home regions on the values of MNEs' switching-option portfolios. Noteworthy is the nuanced relationship uncovered, wherein state ownership initially hinders cross-region transferability but paradoxically enhances it at extreme levels. Political connections compensate for adverse impacts, emphasizing their crucial role in fortifying the transferability of innovative FSAs.

Keywords: globalization, FSA (Firm Specific Advantage), institution, real option, political connection

Stratégies de globalisation des entreprises multinationales : Démêler le Nexus des Avantages Spécifiques à l'Entreprise, des Environnements Institutionnels et des Dynamiques Politiques

Résumé

Cette thèse se concentre sur les Entreprises Multinationales (EMN), utilisant le concept central des Avantages Spécifiques à l'Entreprise (ASE) issus de la théorie de l'internalisation et intégrant des perspectives de la recherche institutionnelle. Elle explore l'impact des caractéristiques institutionnelles au sein des régions d'origine des EMN leaders mondiales investissant dans la R&D sur leur capacité à diversifier les revenus à travers des régions triadiques. Nous analysons de manière approfondie l'influence de l'orientation régionale d'origine des EMN sur la valeur de leurs portfolios d'options de commutation, évaluant le rôle des connexions politiques, en particulier des stratégies hors-marché, dans la transférabilité transrégionale des ASE innovants. Les EMN équipées d'ASE basés sur l'innovation émergent comme des candidats potentiels à la globalisation mais font face à des défis liés à la rationalité limitée et à la fiabilité. Pour répondre à ces questions, nous utilisons des méthodes de recherche empirique et des outils économétriques avancés, tels que le modèle d'effets aléatoires corrélés et le modèle à variables instrumentales. Nous mettons en lumière le rôle clé de l'environnement institutionnel de la région d'origine dans la formation de la portée mondiale des EMN. De plus, la thèse introduit un schéma de classification régionale dans la Théorie des Options Réelles (TOR), élargissant son application et approfondissant la synergie entre la Théorie du Commerce International (TCI) et la TOR, offrant des perspectives sur l'expansion intra-régionale versus inter-

régionale. Nous examinons comment la propriété étatique peut faciliter ou entraver une entreprise dans le dépassement de la distance institutionnelle et la promotion de l'application des ASE basés sur l'innovation dans les régions d'accueil. Simultanément, nous explorons la nature contingente de cet effet en utilisant la Théorie de la Pression Institutionnelle. Les résultats significatifs englobent l'influence des caractéristiques institutionnelles de la région d'origine sur les stratégies de globalisation des EMN et le rôle modérateur de la qualité des institutions de la région d'origine et de la disparité entre les distances institutionnelles dans les régions d'accueil et d'origine sur les valeurs des portfolios d'options de commutation des EMN. À noter, la relation nuancée révélée, où la propriété étatique entrave initialement la transférabilité transrégionale mais l'améliore paradoxalement à des niveaux extrêmes. Les connexions politiques compensent les impacts négatifs, soulignant leur rôle crucial dans le renforcement de la transférabilité des ASE innovants.

Mots-clés : globalisation, ASE (Avantage Spécifique à l'Entreprise), institution, option réelle, connexion politique

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RÉSUMÉ SUBSTANTIEL/ INTRODUCTION

1.1. Stratégies de globalisation et avantages spécifiques à l'entreprise non liés à la localisation

Pendant une période prolongée, la communauté universitaire a manifesté des idées fausses concernant l'étendue de la globalisation économique. Intuitivement, on présumait que la réduction des coûts de transport et le renforcement de la coopération économique internationale augmenteraient le degré de globalisation économique. Cependant, Ghemawat (2001) a découvert que le manque de données économiques complètes sur des aspects tels que le commerce a conduit à une surestimation répandue des niveaux de globalisation tant parmi la population générale que parmi les chercheurs. Afin d'évaluer précisément l'étendue de la globalisation des entreprises, Rugman et Verbeke (2004) ont introduit le concept de globalisation des entreprises. Ils soutiennent que la globalisation des entreprises nécessite une dispersion équilibrée des ventes à l'échelle mondiale, englobant les régions du Triade : les Amériques, l'Europe–Moyen-Orient–Afrique (EMEA) et l'Asie-Pacifique (APAC). L'accent sur l'équilibre dans la globalisation est essentiel en raison de ses implications significatives pour divers domaines de la recherche en commerce international. Il est également pertinent pour le discours managérial plus large concernant la formulation de stratégies optimales et de structures de gouvernance, ainsi que les implications de performance pour les entreprises multinationales (EMN) (Rugman & Verbeke, 2004).

Dans le domaine du commerce international (CI), le discours sur les stratégies de globalisation des entreprises multinationales (EMN) a traditionnellement tourné autour de la localisation des avantages spécifiques à l'entreprise (ASE).

L'innovation a toujours été considérée comme une ASE non liée à la localisation, posée pour faciliter la réalisation de la globalisation par les EMN (Casson, 2018 ; Kirca et al., 2011 ; Rugman & Verbeke, 2008 ; Verbeke & Asmussen, 2016). Théoriquement, les ASE non liées à la localisation peuvent être exploitées soit au niveau régional, soit au niveau mondial. Par exemple, les lois nationales sur les brevets, les normes ou les réglementations environnementales régionales peuvent limiter l'applicabilité mondiale des ASE, agissant comme des barrières protectionnistes à l'échelle régionale (Rugman, Kirton & Soloway, 1999 ; Rugman, 2005). Cependant, la recherche empirique a contredit cette notion en révélant que l'innovation a tendance à être une ASE liée à la région (Rugman & Sukpanich, 2006). Simultanément, nos observations indiquent que même parmi les EMN investissant le plus dans la R&D à l'échelle mondiale, seule une petite fraction a véritablement réalisé la globalisation, car la plupart opèrent principalement à l'intérieur de leur région.

Rugman et Verbeke (2004) ont proposé que la présence mondiale limitée des entreprises multinationales (EMN) puisse être attribuée au défi de redéployer les avantages spécifiques à l'entreprise (ASE) des firmes au-delà de la région d'origine des EMN. Les gestionnaires des EMN doivent se familiariser avec les conditions limites institutionnelles à la fois dans le marché régional d'origine et celui d'accueil pour améliorer la capacité de redéploiement des ASE. Les gestionnaires des EMN peuvent améliorer stratégiquement la capacité de redéploiement géographique des ASE basées sur l'innovation de plusieurs manières. Par exemple, les gestionnaires devraient rassembler méticuleusement des portfolios complets de droits de propriété intellectuelle (DPI) localement valides et se conformer à d'autres réglementations locales régissant la (non) déployabilité des DPI sur les marchés étrangers. Ils peuvent déconseiller certaines activités dans les pays

d'accueil, telles que compter sur le financement de la R&D du gouvernement hôte ou investir dans des technologies sensibles qui confinent exclusivement les DPI à des emplacements spécifiques. Étonnamment, ces stratégies sont fréquemment négligées par les gestionnaires des EMN, même au sein des plus grandes EMN (par exemple, Ferrante, 2020 ; Goh, 2015 ; Cohen & Rogers, 2020). De plus, ils doivent être conscients du moment et du lieu où l'application opportune des DPI, par opposition à une internalisation complète ou une application constante des DPI, est stratégiquement la plus bénéfique. La capacité de discerner comment et quand utiliser de telles stratégies exige un haut niveau de perspicacité institutionnelle pour atténuer la rationalité limitée et restreindre la tendance naturelle à toujours appliquer les DPI lors de la rencontre initiale d'une violation (Prud'homme & Tong, 2024).

1.2. Caractéristiques institutionnelles de la région d'origine et stratégies de globalisation

Dans le contexte des fondements comportementaux des théories du Commerce International (CI), la capacité à redéployer les Avantages Spécifiques à la Firme (ASF) est intimement liée à la rationalité limitée et à la fiabilité limitée démontrées par la direction des Entreprises Multinationales (EMN). Les gestionnaires des entreprises multinationales (EMN) sont confrontés au défi d'accéder et de traiter les informations nécessaires pour améliorer à la fois la demande et l'offre (appelées rationalité limitée). De plus, ils doivent résoudre les obstacles liés aux conflits potentiels d'intérêts personnels ou basés sur l'identité avec les partenaires locaux (appelés fiabilité limitée) dans leurs régions d'origine. Naviguer efficacement dans ces défis permet aux Entreprises Multinationales (EMN) d'améliorer efficacement la capacité de redéploiement de leur réserve

d'avantages spécifiques à la firme (ASF), entraînant des économies d'échelle et de champ, ainsi que des efficacités dans la capitalisation sur les différences nationales au sein de leurs régions d'origine (Verbeke et Asmussen, 2016 ; Verbeke et Kano, 2016).

Les chercheurs en commerce international reconnaissent largement les défis auxquels sont confrontées les entreprises multinationales (EMN) lorsqu'elles naviguent entre des institutions formelles diverses et s'adaptent à des conditions variables liées à la qualité réglementaire, à l'État de droit et à l'efficacité gouvernementale (Kostova, Roth et Dacin, 2008 ; Meyer, Mudambi et Narula, 2011). Le degré de similitude dans les arrangements institutionnels entre les pays au sein d'une région triadique crée des pressions variables sur les gestionnaires des entreprises multinationales (EMN) pour maximiser la capacité de redéploiement des ASF, découlant des défis de traitement de l'information et des conflits avec les partenaires locaux. Dans les industries axées sur la technologie, les institutions formelles jouent un rôle crucial dans la protection des droits de propriété intellectuelle (PI), l'application des contrats de licence et l'établissement de normes industrielles pour stimuler le progrès technologique (Brander, Cui et Vertinsky, 2017 ; Papageorgiadis, McDonald, Wang et Konara, 2020). La poursuite d'opportunités de marché à travers des pays aux institutions nettement distinctes nécessite un traitement approfondi de l'information et une considération attentive des coûts de coordination et de gouvernance (Hitt, Hoskisson et Kim, 1997).

Un cadre institutionnel solide au sein de la région d'origine donne aux entreprises multinationales (EMN) des dépenses substantielles en R&D. Cela leur permet de capitaliser sur les institutions nationales et celles des autres pays constitutifs de la

région, en abordant efficacement les défis liés à la rationalité et à la fiabilité limitées. La présence d'institutions de haute qualité dans la région d'origine facilite et assure une communication et des accords fluides avec les fournisseurs, distributeurs et partenaires régionaux, tout en protégeant les innovations contre l'imitation par les concurrents régionaux (Khanna et Palepu, 2000 ; Papageorgiadis et al., 2020). Par conséquent, ce contexte renforce considérablement la capacité des EMN à améliorer la redéployabilité des avantages spécifiques à la firme (ASF) à travers les frontières nationales au sein de leur région (Enright, 2005).

Tout comme la qualité des institutions de la région d'origine, la qualité des institutions du pays d'origine peut aider les entreprises à développer des avantages spécifiques à la firme (ASF) qui sont redéployables au sein de la région d'origine et à acquérir une expérience organisationnelle paneuropéenne. Les entreprises multinationales (EMN) originaires de pays dotés d'institutions nationales solides sont moins susceptibles de faire face à des risques tels que l'expropriation d'actifs en dessous de la valeur marchande, des contraintes pour poursuivre des opportunités commerciales en raison d'une exécution de contrat inefficace, une diffusion non autorisée d'actifs exclusifs, des transactions corrompues locales, ou des problèmes de liquidité résultant de retards ou d'évitements de paiements par les clients locaux (Delios et Beamish, 1999 ; Chan et al., 2008 ; Zhou et Poppo, 2010). Malgré l'interdépendance institutionnelle transfrontalière au sein de chaque région, il subsiste un certain degré de variabilité entre les pays en termes de dimensions institutionnelles, donnant lieu à un effet de pays d'origine (Anand et al., 2021 ; Arregle et al., 2013 ; Cuervo-Cazurra, Luo, Ramamurti et Ang, 2018 ; Witt, 2019). De plus, en étendant la logique basée sur des considérations de légitimité, les entreprises multinationales (EMN)

allouant des ressources substantielles à la recherche et au développement (R&D) provenant de pays avec une qualité institutionnelle supérieure par rapport aux normes institutionnelles régionales peuvent tirer parti de leur légitimité accrue comme avantage stratégique. Cet avantage non seulement les autorise à étendre leurs opérations au sein de leur propre région, mais les positionne également favorablement pour une expansion internationale. Au sein de leur région d'origine, la légitimité renforcée facilite une portée plus large des activités dans l'ensemble de la région, transcendant les frontières nationales. Dans les régions où leur pays d'origine présente une qualité institutionnelle plus élevée, ces EMN sont bien positionnées pour cultiver de manière plus efficace des avantages spécifiques à la firme (ASF) liés à la région par rapport à leurs homologues originaires de pays de la même région présentant une qualité institutionnelle inférieure. Cette approche nuancée leur permet de naviguer dans les complexités régionales et de capitaliser sur leur fondation institutionnelle supérieure pour renforcer leur position concurrentielle, favorisant l'efficacité et l'adaptabilité dans la poursuite des objectifs stratégiques.

1.3. Institution et Valeurs de l'Option de Commutation

Alors que les discussions sur la globalisation dans le domaine du Commerce International (CI) sont croissantes, une distribution équilibrée des ventes à travers la triade, bien que probablement avantageuse pour la performance soutenue d'une Entreprise Multinationale (EMN), n'est pas nécessairement cruciale pour toutes les EMN, tant sur le plan théorique qu'empirique. Par exemple, les entreprises peuvent chercher à établir une position dominante sur leur marché domestique et peuvent montrer peu d'intérêt à poursuivre une distribution équilibrée basée sur les régions de la triade. D'un autre côté, les théories dans le

domaine financier, telles que les options réelles, mettent l'accent sur les discussions sur les implications de performance de l'entreprise, et la recherche théorique et empirique pertinente dans ce domaine est relativement mature. Les études basées sur les options réelles suggèrent que la configuration et l'organisation du réseau de filiales d'une EMN influencent sa capacité à exploiter la valeur des options de commutation (par exemple, Belderbos et al., 2014 ; Lee & Makhija, 2009a). Pour une EMN, un réseau multinational offre des options précieuses pour changer de source, de production ou de distribution, offrant ainsi une flexibilité opérationnelle et stratégique pour répondre aux changements environnementaux. Ces études indiquent que la capacité de changer constitue une autre source d'avantage concurrentiel intégrée dans le réseau des filiales d'une EMN, allant au-delà de l'application des ASF aux opérations dans des pays individuels (Ghemawat, 2007 ; Kogut, 1984, 1985).

La valeur de l'option de commutation dépend du coût de changement entre les alternatives situées dans différents pays des régions d'origine et d'accueil, analogue au coût d'inversion d'une action individuelle ; ainsi, plus l'irréversibilité se manifeste par des coûts de changement plus élevés, plus la valeur de l'option de commutation est faible (Belderbos & Zou, 2007, 2009 ; Williamson, 1991 ; Fisch et Zschoche, 2012b). L'irréversibilité se réfère à la présence de coûts irrécupérables dans un projet d'investissement qui ne peuvent être recouvrés si l'entreprise décide de changer d'avis ultérieurement (Dixit & Pindyck, 2000). L'irréversibilité influence significativement les coûts irrécouvrables associés aux actifs investis individuellement, donnant lieu à l'émergence de coûts de changement lorsque, dans la poursuite de la flexibilité opérationnelle, une entreprise passe entre deux actifs ou plus. Ce phénomène est particulièrement prononcé dans les cas où l'entreprise fait face à un niveau plus élevé d'irréversibilité de l'investissement. Le

degré d'irréversibilité amplifie les coûts irrécouvrables inhérents aux projets individuels, entraînant ainsi une élévation des coûts de changement globaux encourus par l'entreprise lorsqu'elle opte pour de telles transitions stratégiques. En essence, la relation entre l'irréversibilité de l'investissement et les coûts de changement souligne l'interaction complexe entre la prise de décision stratégique, les coûts irrécouvrables et la nécessité impérative d'adaptabilité dans un environnement commercial dynamique.

L'irréversibilité de l'investissement émane de trois sources notables. Premièrement, elle découle des coûts liés à la redéployabilité des Avantages Spécifiques à la Firme (ASF) (Kim & Kung, 2017). Deuxièmement, une forme prédominante d'irréversibilité implique l'engagement de ressources, englobant l'investissement de temps, d'efforts et de capital. Ces investissements deviennent irrécupérables en cas d'échec. Enfin, une manifestation notable de l'irréversibilité concerne la divulgation d'informations ou de connaissances exclusives, telles que le savoir-faire technologique, dans un accord de licence avec une autre entreprise. Ce type d'irréversibilité est aggravé par le défi inhérent de retirer les informations et connaissances partagées une fois divulguées, mettant en évidence les complexités liées à la protection des actifs intellectuels au sein d'arrangements collaboratifs.

Les coûts associés au redéploiement des actifs se démarquent comme un contributeur significatif à l'irréversibilité de l'investissement (Kim & Kung, 2017). Le concept de redéployabilité des actifs occupe une position centrale dans la littérature sur la globalisation, étant largement reconnu comme un facteur crucial pour le succès des Entreprises Multinationales (EMN) dans les régions d'accueil (Rugman & Verbeke, 2004, 2008 ; Rugman & Sukpanich, 2006). La redéployabilité

des actifs, étroitement liée au contexte régional, fait référence à la capacité d'un actif à être efficacement réutilisé par une entreprise dans une région entière, plutôt que d'être confiné à un seul pays.

L'exploitation réussie de certains actifs dans une région peut être réalisée avec des investissements de liaison minimaux dans divers pays de cette région. Cette facilité d'exploitation est souvent attribuée à la "proximité" relative ou à la similitude de ces pays, en particulier en termes d'institutions (Flores & Aguilera, 2007 ; Rugman and Verbeke, 2005). Le potentiel de redéployabilité d'un actif, un facteur significatif dans le modèle de Vahlne et Johanson façonnant l'allocation des ressources au niveau de l'entreprise, peut connaître des fluctuations en fonction de l'évolution des conditions environnementales. Ces changements influent ensuite sur l'engagement de ressources et, par conséquent, sur les résultats stratégiques de l'entreprise (Vahlne & Johanson, 2017).

Une région géographique est caractérisée comme un groupe de pays physiquement contigus et voisins (Arregle, Beamish & Hebert, 2009 ; Ghemawat, 2017 ; Qian, Li & Rugman, 2013). La continuité physique et la proximité inhérentes à de telles régions favorisent un sentiment d'unité et de caractéristiques partagées (Banalieva & Dhanaraj, 2013 ; Qian et al., 2013). De plus, les efforts politiques et économiques visant à intégrer les pays avec une proximité géographique ont abouti à une réduction de la distance institutionnelle entre ces nations (Banalieva & Dhanaraj, 2013 ; Verbeke & Asmussen, 2016).

L'impact d'une faible distance institutionnelle au sein d'une région sur la redéployabilité et le potentiel d'exploitation économique des actifs existants pour les Entreprises Multinationales (EMN) s'avère négligeable (Rugman & Verbeke, 2004 ; Rugman & Sukpanick, 2006 ; Rosa, Gugler & Verbeke, 2020). Par

conséquent, de nombreuses EMN adoptent stratégiquement les régions géographiques comme unité pour formuler des stratégies régionales (Jeong & Siegel, 2020 ; Rugman & Verbeke, 2007). Au contraire, les EMN s'aventurant dans les régions d'accueil rencontrent une "pointe" notable dans la distance institutionnelle et une forte baisse de la redéployabilité des actifs par rapport aux acteurs régionaux. De même, les acteurs régionaux explorant au-delà de leur région d'origine font face à une "pointe" de distance institutionnelle interrégionale par rapport aux distances prévalentes entre les pays de leur région d'origine (Flores et al., 2015). Comme la redéployabilité des actifs joue un rôle essentiel dans l'irréversibilité de l'investissement (Kim & Kung, 2017), l'expansion dans une région d'accueil expose les EMN à une augmentation de l'irréversibilité de l'investissement, entraînant par la suite une hausse des coûts de changement. Cela se traduit, à son tour, par une diminution de la valeur des options de commutation.

La distance institutionnelle peut être définie comme des institutions différentes ou des disparités dans le degré d'institutionnalisation. Le degré d'institutionnalisation est défini comme la distinction dans les degrés d'ambiguïté ou d'incertitude institutionnelle (Phillips, Tracey & Karra, 2009 ; Cuervo-Cazurra & Genc, 2011). Le domaine du Commerce International (CI) reconnaît que l'impact de la distance institutionnelle sur les coûts d'adaptation, attribués à un manque de compréhension des institutions dans les pays régionaux d'accueil (Schwens, Eiche, & Kabst, 2011), n'est pas déterminé uniquement par sa valeur absolue. De plus, la direction de la distance institutionnelle joue un rôle crucial dans la définition des stratégies d'Investissement Direct Étranger (IDE) adoptées par les entreprises. Lorsque la qualité institutionnelle dans le pays de destination de l'Investissement Direct Étranger (IDE) est inférieure à celle du pays d'origine, les

Entreprises Multinationales (EMN) font face à une imprévisibilité réglementaire accrue, souvent caractérisée par des changements fréquents et imprévus dans les politiques gouvernementales, une intervention gouvernementale dans les opérations commerciales et des mécanismes insuffisants pour faire respecter les lois et les contrats (Slangen & van Tulder, 2009). Dans de telles circonstances, les Entreprises Multinationales (EMN) optent généralement pour réduire leurs investissements dans les pays de destination (Xu, Pan & Beamish, 2004 ; Hernández & Nieto, 2015) et réduire la proportion d'investissements irréversibles dans leur portefeuille (Altug, Demers & Demers, 2000 ; Rodrik, 1991). À l'inverse, les entreprises ont tendance à augmenter à la fois la quantité d'investissements et la part d'investissements irréversibles dans les pays de destination.

La qualité institutionnelle régionale, caractérisée comme un cadre institutionnel qui fournit une quantité substantielle de biens publics et dont les réglementations sont jugées dignes de respect (Haldenwang, 2016), sert non seulement de milieu institutionnel le plus approprié pour établir un ordre politique équitable (Peter, 2010, pp. 4-10), mais aussi pour favoriser la prospérité économique et l'efficacité (Best, 2005). La qualité des institutions au sein de la région d'origine, influencée par l'effet d'apprentissage institutionnel, joue un rôle essentiel dans la détermination de la capacité des Entreprises Multinationales (EMN) à s'engager dans une concurrence équitable sur les marchés régionaux d'accueil et à fournir des produits et services de haute qualité, acquérant ainsi une légitimité dans les régions d'accueil. Les parties prenantes perçoivent les entreprises légitimes non seulement comme plus méritoires, mais aussi comme plus significatives, prévisibles et dignes de confiance (Suchman, 1995 ; Meyer & Rowan, 1991: 50). De plus, en raison de la nature sociale des comportements d'investissement, la valeur des actifs peut être réduite en raison d'une légitimité

perçue (Zuckerman, 1999). Lorsqu'une entreprise est considérée comme illégitime par les parties prenantes, elle rencontre des difficultés à récupérer les coûts lors de la revente ou du désinvestissement des actifs. En essence, l'irréversibilité de l'investissement s'amplifie (Pindyck, 1988), entraînant une diminution des valeurs des options de commutation.

1.4.Connexions politiques et transférabilité des ASF

Comme discuté précédemment, l'environnement institutionnel façonne de manière significative les stratégies de globalisation et la performance des Entreprises Multinationales (EMN). Cette observation va clairement à l'encontre des hypothèses formulées par la théorie traditionnelle de l'internationalisation concernant les principes d'une économie de marché libre. Les Entreprises Multinationales (EMN) naviguent de manière complexe à la fois dans les stratégies de marché et hors marché au sein de l'environnement international complexe. Cette complexité survient car les entreprises font face non seulement aux conditions du marché, mais aussi aux défis hors marché. Malgré la recherche antérieure axée sur la stratégie de marché, l'émergence de problèmes géopolitiques significatifs, tels que la guerre commerciale entre les États-Unis et la Chine et le conflit entre l'Ukraine et la Russie, a conduit à un accent accru sur la stratégie hors marché.

Les connexions politiques, y compris les connexions politiques et la propriété étatique, se distinguent en tant que stratégie hors marché prédominante. Les connexions politiques sont définies comme les relations forgées entre les entreprises et les acteurs politiques (Faccio, 2006). Conformément à la théorie traditionnelle de l'internationalisation, les Avantages Spécifiques à la Firme basés sur l'innovation émergent comme un catalyseur principal et les outils les plus

couramment utilisés pour faciliter la globalisation. Malgré le rôle central des Avantages Spécifiques à la Firme basés sur l'innovation, les perspectives institutionnelles de la littérature sur le Commerce International mettent en évidence une contrainte notable sur sa redéploiement géographique. Cette contrainte découle de la distance institutionnelle, conduisant à une focalisation régionale prédominante parmi les entreprises. Les enseignements de la littérature sur les connexions politiques indiquent trois aspects qui peuvent façonner la redéployabilité de l'innovation dans la région d'accueil. Sojli et Tham (2017) révèlent que les connexions politiques des EMN peuvent aider à surmonter la distance institutionnelle, facilitant ainsi l'application réussie des ASF basés sur l'innovation sur les marchés d'accueil. Cependant, des recherches alternatives suggèrent que ces effets sont conditionnels (White, Fainshmidt, & Rajwani, 2018b).

La recherche de Genin, Tan et Song (2021) a montré que bien que la propriété étatique puisse apporter davantage de ressources matérielles et d'exposition informationnelle à l'innovation technologique de pointe à l'entreprise, elle entraîne également des pressions institutionnelles dans l'entreprise. En raison des demandes institutionnelles contradictoires du gouvernement étatique et des actionnaires privés. Ces demandes contradictoires entraîneront une complaisance de la direction et compenseront l'avantage innovant de l'entreprise résultant de l'accès à des ressources privilégiées. La pression institutionnelle a été initialement proposée par Pfeffer et Salancik (1983). Selon la théorie de la pression institutionnelle, les entreprises font face à des demandes différentes, parfois contradictoires, de l'intérieur et de l'extérieur de l'organisation. Les demandes externes incluent les mandats gouvernementaux, les pressions des pairs, les effets du modèle de rôle sous incertitude symbolique. Les demandes internes comprennent les pressions normatives, les exigences de rentabilité à court terme

des investisseurs financiers institutionnels, la croissance à long terme, et les objectifs d'influence sociale et économique des actionnaires étatiques.

Pache et Santos (2010) soutiennent que les connexions politiques agissent comme des représentations internes, que ce soit intentionnellement ou involontairement, à travers lesquelles l'influence du gouvernement étatique imprègne l'organisation. Ces connexions témoignent d'allégeance au gouvernement étatique qu'elles représentent, défendant constamment les logiques institutionnelles approuvées par le gouvernement. Par conséquent, les représentations internes établies par le biais de connexions politiques offrent une voie alternative pour que la gouvernance étatique façonne le paysage institutionnel interne d'une entreprise. Cette influence, agissant de concert avec la propriété étatique formelle, démontre les façons multifacettes dont les entités étatiques impactent la gouvernance organisationnelle. Reconnaître l'importance des connexions politiques en tant que vecteurs d'influence institutionnelle est primordial pour comprendre les dynamiques complexes entre l'État et les entités corporatives dans le contexte plus large des structures de gouvernance. Les chercheurs institutionnels soutiennent que des demandes contradictoires sont plus susceptibles de survenir en présence de référents institutionnels fragmentés (Pache & Santos, 2010). Du point de vue de l'entreprise, la fragmentation se rapporte à la mesure de la dépendance à l'égard d'actionnaires étatiques, institutionnels et individuels non coordonnés. La présence simultanée de nombreux actionnaires non coordonnés, chacun adhérant à ses logiques distinctes concernant un comportement efficace (Whetten, 1978) ou légitime (Ruef & Scott, 1998), élève la probabilité d'attentes institutionnelles concurrentes. Pfeffer et Salancik (1983) constatent qu'il est plus facile pour l'actionnaire gouvernemental d'imposer ses demandes institutionnelles à l'entreprise si la

structure des référents institutionnels non coordonnés est très fragmentée ou concentrée. Par conséquent, lorsque la propriété étatique est soit excessivement élevée, soit excessivement faible, la pression institutionnelle sur l'entreprise diminue, entraînant une meilleure transférabilité des Avantages Spécifiques à la Firme basés sur l'innovation. La dynamique de cette relation dépend des effets modérateurs des connexions politiques.

1.5. Lacunes de recherche et contributions

Nous proposons des avancées théoriques dans le domaine de la littérature sur la mondialisation. Les cadres théoriques antérieurs se sont principalement concentrés sur la non-localisation des avantages spécifiques à l'entreprise (FSAs), postulant que cette non-localisation découle des disparités dans les caractéristiques institutionnelles entre les régions. Cependant, les ramifications précises de ces disparités restent souvent ambiguës, manquant à la fois de rigueur théorique et de validation empirique. Notamment, Rugman & Verbeke (2004) ont même suggéré que, théoriquement, les implications en termes de performance du statut de mondialisation ne sont pas clairement définies. Par conséquent, il persiste un notable manque d'exploration dans la littérature sur la mondialisation concernant les implications en termes de performance, qui constituent des considérations vitales pour les entreprises multinationales (MNEs).

Cette ambiguïté théorique s'explique par la complexité inhérente à l'élucidation des résultats de la performance du statut de mondialisation, nécessitant un examen de la relation entre la localisation des FSAs des MNEs et les cadres institutionnels. Cette entreprise demande une intégration complète de la théorie des coûts de transaction et de la théorie institutionnelle, présentant des défis considérables pour identifier des points d'entrée analytiques appropriés. Notre

article s'efforce d'enrichir le corpus existant de la littérature sur la mondialisation de cette perspective nuancée. Dans cette section, nous développerons les contributions théoriques de trois articles distincts et explorerons le développement interconnecté des chapitres correspondants.

La principale importance théorique du premier chapitre réside dans son examen de la signification stratégique des décisions des entreprises multinationales (MNEs) d'étendre leurs activités sur les marchés étrangers. Ces décisions sont considérées comme des choix stratégiques cruciaux et ont été largement étudiées sous diverses perspectives théoriques, comme en témoignent des études antérieures (par exemple, Goerzen & Beamish, 2003; Hitt, Hoskisson, & Kim, 1997). Récemment, des courants de recherche émergents – notamment ceux axés sur l'orientation régionale (par exemple, Rugman & Verbeke, 2004) et la semi-mondialisation (Ghemawat, 2003, 2007) – ont souligné l'importance des régions géographiques, en mettant en avant leur rôle central dans les efforts d'internationalisation des MNEs (par exemple, Arregle, Miller, Hitt, & Beamish, 2013; Banalieva & Dhanaraj, 2013; Banalieva & Santoro, 2009; Collinson & Rugman, 2008; Flores, Aguilera, Mahdian, & Vaaler, 2013; Oh, 2009). L'examen du rôle des régions est crucial pour comprendre les motivations et les stratégies guidant les efforts d'internationalisation des MNEs, car ces derniers peuvent capitaliser sur les similitudes institutionnelles entre les pays de la même région pour atteindre des économies d'échelle optimales. La principale contribution théorique de cet article réside dans l'élucidation de la manière dont les configurations institutionnelles de la région d'origine influencent l'utilisation par les MNEs des avantages spécifiques à l'entreprise innovants (FSAs) dans l'expansion transrégionale. Les régions attirent les MNEs en leur permettant d'exploiter les FSAs liés à la région au-delà des frontières géographiques (Rugman & Verbeke, 2004). Grâce à des expériences

d'internationalisation antérieures au sein d'une région, les MNEs accumulent des ressources qui peuvent être redéployées à moindre coût dans d'autres pays de la même région géographique, en exploitant la proximité et les similitudes de leurs avantages spécifiques à chaque pays (Flores & Aguilera, 2007; Rugman & Verbeke, 2005). Par conséquent, les MNEs peuvent tirer parti de l'agrégation régionale et de l'arbitrage, en tant que principaux moteurs de la semi-mondialisation (Arregle et al., 2013). Des recherches antérieures ont examiné l'impact des configurations institutionnelles de la région d'origine sur l'expansion des entreprises au sein de la région d'origine (Arregle et al., 2013; Arregle et al., 2016), démontrant le rôle crucial de la région d'origine dans la formation des réservoirs de FSAs des MNEs. Notre étude démontre en outre que les configurations institutionnelles de la région d'origine influent non seulement sur la semi-mondialisation des MNEs, mais également sur leur capacité à utiliser les FSAs formés dans la région d'origine pour l'expansion transrégionale ou la mondialisation. Ceci remet en question la dichotomie supposée dans les recherches précédentes entre la non-localisation et la localisation des FSAs (Rugman & Verbeke, 2004; Rugman & Sukpanich, 2006), indiquant que la localisation ou la non-localisation des FSAs est une question de degré.

Dans le deuxième article, nous introduisons les régions à l'étude de l'influence de l'internationalisation sur les valeurs d'option de changement des entreprises multinationales (MNEs). La région triadique, telle qu'utilisée ici, implique "un regroupement de pays relativement similaires les uns aux autres et relativement différents des pays des autres régions" en termes d'institutions (Rugman & Verbeke, 2004; Verbeke & Asmussen, 2016: 1054, italiques dans l'original; Ando, 2024). Les recherches antérieures sur l'impact de l'internationalisation sur les valeurs d'option de changement des entreprises se sont principalement basées

sur l'expansion inter-pays (Reuer & Tong, 2007; Trigeorgis & Reuer, 2017; Ioulianou, Leiblein & Trigeorgis, 2020). Ces études n'ont pas pleinement intégré les perspectives théoriques connexes impliquant des facteurs institutionnels qui affectent la valeur des options (Reuer & Tong, 2007; Trigeorgis & Reuer, 2017). Cependant, les institutions influencent le cycle de vie du développement des options, de l'identification des options d'ombre ou cachées, à la création des options, et à la maintenance et l'exercice des options (Bowman & Hurry, 1993; Trigeorgis & Reuer, 2017). Notre étude introduit l'expansion intra- vs inter-régionale pour incorporer les limites de la génération de revenus des avantages spécifiques à l'entreprise (FSAs) dans différentes régions, comme discuté dans la littérature sur la régionalisation concernant la distance institutionnelle. La redéployabilité géographique des FSAs est une partie cruciale de l'irréversibilité de l'investissement de l'entreprise (Kim & Kung, 2017), qui détermine les coûts de changement du portefeuille d'options de changement de l'entreprise. Ainsi, la perspective de l'orientation vers la région d'origine fournit un terrain contextuel fertile pour théoriser sur les conditions limites dans lesquelles l'expansion internationale contribue, positivement ou négativement, à la performance financière.

Les deux premiers articles ont déjà identifié l'effet restrictif de la distance institutionnelle sur les avantages spécifiques à l'entreprise innovants (FSAs) en tant que moteurs de la mondialisation d'entreprise. Les connexions politiques, en tant que stratégie non marchande, ont été démontrées pour aider les entreprises à surmonter le risque lié à l'étranger résultant de la distance institutionnelle (Fernández-Méndez, García-Canal, & Guillén, 2018; De Villa, Rajwani, Lawton, & Mellahi, 2019). Par conséquent, dans le troisième article, nous avons décidé d'examiner l'impact des connexions politiques sur la capacité de recherche de

rente des MNEs dans les régions hôtes en tirant parti des FSAs innovants. L'innovant FSA est conceptualisé comme un moteur clé et l'outil le plus couramment utilisé pour faciliter la mondialisation. Sa signification réside dans sa capacité à être exploité au-delà des limites de la région d'origine, permettant aux entreprises de reproduire le succès national à travers les frontières nationales sans encourir de coûts substantiels (Rugman & Verbeke, 2004). Cependant, des recherches empiriques ont montré que les FSAs innovants ne peuvent pas être redéployés dans les régions hôtes en raison de la distance institutionnelle (Rugman & Verbeke, 2004; Rugman and Sukpanich, 2006; Arregle, Miller, Hitt, and Beamish, 2013). Le succès à l'échelle mondiale ne découle pas simplement des FSAs innovants, mais de la capacité des MNEs à adapter le déploiement de leurs FSAs existants aux circonstances spécifiques des marchés étrangers, et une distance institutionnelle plus grande entraîne des coûts d'adaptation plus élevés (Rugman & Verbeke, 2005). De plus, des études antérieures ont montré que les connexions politiques peuvent aider les entreprises à surmonter les obstacles à l'expansion géographique causés par la distance institutionnelle en fournissant des connaissances ou perspectives utiles, ainsi que d'autres ressources politiques qui peuvent guider l'entreprise pour prendre des décisions plus éclairées et améliorer sa performance financière (Fernández-Méndez, García-Canal, & Guillén, 2018; De Villa, Rajwani, Lawton, & Mellahi, 2019). Il est évident que les investissements dans les FSAs innovants en tant que stratégie d'expansion géographique et l'établissement de connexions politiques ne sont pas indépendants l'un de l'autre pour les MNEs, mais se complètent. Cependant, aucune étude n'a exploré l'interaction entre les deux. Nos recherches offrent des aperçus précieux aux chercheurs en affaires internationales (IB) intrigués par la manière dont les entreprises multinationales (MNEs) intègrent des stratégies

marchandes et non marchandes pour établir et maintenir des avantages concurrentiels mondiaux.

Les trois chapitres de ma thèse sont étroitement liés par deux thèmes généraux. Nos trois articles visent à examiner la localisation des avantages spécifiques à l'entreprise (FSAs), un concept ancré dans la théorie des coûts de transaction qui trouve une large application dans la littérature sur la régionalisation. La théorie des coûts de transaction fournit un cadre théorique permettant aux entreprises de sélectionner le mode d'affaires international optimal en évaluant les compromis entre les mécanismes du marché et l'intégration. Les entreprises peuvent opter pour l'internationalisation via des transactions sur le marché ou des transactions internes en fonction des coûts de transaction entre différents pays et des avantages des ressources internes. Le premier article explore l'influence des configurations institutionnelles de la région d'origine d'une entreprise sur son expansion transrégionale en exploitant le réservoir de FSAs. Le deuxième article examine comment les configurations institutionnelles de la région d'origine impactent la performance des entreprises à travers la redéployabilité des FSAs en dehors de la région d'origine. Le troisième article explore l'effet des connexions politiques des MNEs sur la redéployabilité géographique des FSAs innovants. Un autre thème concerne l'influence des configurations institutionnelles de la région d'origine sur les stratégies de mondialisation des entreprises. Nous visons à étudier les effets des institutions sur la mondialisation. La théorie institutionnelle et ses dérivés sont primordiaux dans la recherche sur les mécanismes non marchands. L'analyse des environnements non marchands est aussi cruciale que celle des environnements marchands pour les entreprises multinationales (MNEs), car elles naviguent de manière complexe entre les stratégies marchandes et non marchandes dans le milieu international complexe. Cette complexité émerge

lorsque les entreprises sont confrontées non seulement aux conditions du marché, mais également aux défis non marchands, englobant des problèmes tels que le terrorisme, le populisme et les variations dans les pratiques gouvernementales. Nos deux premiers articles explorent respectivement l'influence des configurations institutionnelles de la région d'origine sur l'expansion mondiale des MNEs et leurs implications en termes de performance. Le troisième article examine spécifiquement les stratégies que les MNEs peuvent adopter pour faire face aux environnements non marchands adverses en articulant les microfondements des institutions, rendant ainsi la théorie de l'institutionnalisation plus opérationnelle au niveau de la stratégie de l'entreprise grâce à des mécanismes structurés et spécifiques pour aligner le comportement au niveau individuel, la stratégie au niveau de l'entreprise et l'environnement institutionnel au niveau du pays.

Part II – The research papers

Aticle 1 - The Influence of Home-Region Institutions on Geographic Diversification of MNEs: Empirical Evidence on the Largest R&D Spending MNEs

Abstract

Scholars and practitioners acknowledge that multinational enterprises (MNEs) largely adopt geographic regions as a key location unit for devising their expansion strategies. Research on the specific institutional impact of regions on MNEs' global coverage remains scant. Drawing on internalization theory and prior international business (IB) research on regions, we contend that home-region institutional homogeneity and quality mitigate challenges associated with bounded rationality and reliability that MNEs face within their home region. By so doing, they enhance MNEs' ability to leverage their reservoir of firm-specific advantages (FSA) to cope with discontinuities of institutional distances at regional boundaries. We test our hypotheses with a longitudinal analysis of the leading MNEs in R&D expenditures as privileged cases to examine such effects. Our results confirm the positive impact of home-region institutional homogeneity and quality on the inter-region diversification of MNEs' revenues. Furthermore, the study uncovers that MNEs' inter-region revenue diversification is influenced by the institutional quality gap between MNEs' home region and home country. We discuss implications for future research, practice, and policymaking.

Keywords: institutions, regionalization, multinational enterprises, R&D expenditure

Introduction

In recent decades, there has been a fervent debate with regard to the degree of "true" globalization of multinational enterprises (MNEs) versus the development of an intermediate vision, or "semi-globalization" (Ghemawat, 2003; Rugman and Verbeke, 2007). This latter view, situated between the country-level and global perspective, allows for a more subtle understanding of MNE strategies (Buckley and Ghauri, 2004; Ghemawat, 2003) and their geographic orientation (Arregle, Miller, Hitt and Beamish, 2016; Jeong and Siegel, 2020; Rugman and Verbeke, 2004). Indeed, there is compelling evidence that very few MNEs are truly global and that a large proportion of them focus on only one major continental region (e.g., Asmussen and Goerzen, 2013; Rugman and Oh, 2013; Verbeke, 2013). By concentrating their operations in one main region, MNEs remain locally responsive while leveraging region-specific competitive advantages (Ghemawat, 2003, 2007; Rugman and Verbeke, 2004, 2005) and reducing their "cost of foreignness" (Rugman, 2005; Rugman and Sukpanich, 2006). Although it is now widely accepted that MNEs concentrate their activities in one region, and that they adopt regions as a location unit of analysis to devise their expansion strategies and organizational design (e.g., Demirbag, Glaister and Sengupta, 2019), the influence of home regions on MNEs' coverage across distinct regions is still sparsely understood.

Compared to the concept of countries, the concept of regions is more elusive in the literature (e.g., Ando, 2023; Demirbag et al., 2019). In this research, we adopt the idea of a regional grouping of countries based on continents due to its

numerous advantages, such as well-defined boundaries (Flores, Aguilera, Mahdian and Vaaler, 2013), and managerial relevance (Ghemawat, 2007, Rugman and Verbeke, 2007). Regions here correspond to groups of physically proximate countries, which exhibit smaller institutional distance than at the global level (Arregle et al., 2016; Jeong and Siegel, 2020; Rugman and Verbeke, 2004: 17). Physical proximity indeed fosters a sense of unity and encourages endeavors to integrate nations politically and economically within geographic regions (Banalieva and Dhanaraj, 2013; Qian, Li and Rugman, 2013; Verbeke and Asmussen, 2016). Expanding beyond regions implies notable discontinuities, as the institutional heterogeneity and the intensity of challenges, disadvantages, or obstacles associated with it increase significantly (Beugelsdijk and Mudambi, 2013; Arregle, Miller, Hitt and Beamish, 2013).

Yet, regions differ in both the levels of homogeneity and quality of formal institutions characterizing their constituting countries. Referring to internalization theory and international business (IB) studies focusing on regions, we argue that viable or relatively similar institutions inside home regions help incumbent MNEs tackle the liabilities raised by inter-region foreignness and emulate their home-region success more globally. This is mainly explained by the capacity of home-region institutions to mitigate transaction costs by containing bounded rationality and bounded reliability challenges encountered by MNEs inside their own region (Verbeke and Kano, 2013; Verbeke and Asmussen, 2016). Homogeneous or viable home-region institutions enable MNE managers to access and process information needed to boost demand and supply (i.e., bounded rationality) and to mitigate hurdles relative to self-interest or identity-based discordance with local partners (i.e., bounded reliability) inside home regions. By so doing, a group of viable or relatively similar national institutions within the home region helps

incumbent MNEs efficiently manage their FSA reservoir to obtain economies of scale and scope, and economies in exploiting national differences inside home regions (Verbeke and Asmussen, 2016; Verbeke and Kano, 2016). We argue that these competitive advantages secured within the region, and the organizational experience derived from them (Asmussen, Larsen and Pedersen, 2016) make MNEs better equipped to navigate institutional discontinuities faced when crossing regional boundaries.

To study the impact of home-region institutions on MNEs' inter-regional coverage, our focus is on leading R&D-spending MNEs. Our study empirically tests the home-region institutional homogeneity and home-region institutional quality effect on the ability of MNEs deploying technological FSAs to increase the inter-region diversification of their revenues. Furthermore, we examine whether this ability is influenced by the distance between the formal institutional quality of the home country and that of the home region (i.e., institutional quality gap). To test our set of hypotheses, we have created a unique dataset, which tracks the level of revenue diversification across the Triad regions (i.e., the Americas, Europe, Middle East, and Africa (EMEA), and Asia Pacific (APAC)) of the largest MNEs in terms of R&D expenditure – the most widely used proxy for technological advantage (Caves, 1996; Papanastassiou, Pearce and Zanfei, 2020). We study the population of MNEs, which accounts for around 70% of total private R&D spending in the world over a period from 2013 to 2019. Findings support our premise that home-region institutional characteristics influence top R&D-spending MNEs' ability to expand across regions.

Our results help advance prior work at the intersection of regionalization, institutions, and technological advantages in two main ways. First, we present a

new perspective on how institutions help or hamper global expansion by accounting for regional idiosyncrasies transcending national institutions. While findings and theories on institutional homogeneity, quality, and distance are extensive at the home and host country level (see Xu et al., 2021 for a recent review), our study shows that accounting for homogeneity and quality characteristics of national institutions at the home-region level is necessary to understand MNEs' inter-regional expansion. By being homogeneous and viable, home-region institutions confer MNEs with strong region-bound FSAs and the organizational experience associated with developing and deploying them, which serve as critical advantages while crossing regional boundaries. Our study further demonstrates that home region institutional configurations not only influence MNEs' semiglobalization but also affect their ability to utilize FSAs formed in the home region for cross-regional expansion or globalization. This challenges the dichotomy assumed in previous research between the non-location boundedness and location boundedness of FSAs (Rugman & Verbeke, 2004; Rugman & Sukpanich, 2006), indicating that the location boundedness or non-location boundedness of FSAs is a matter of degree. Second, we respond to recent calls for in-depth exploration of the influence of institutional idiosyncrasies on innovation-internationalization relationships (Juergensen, Narula and Surdu, 2022). Although technological advantages are recognized as a crucial determinant of MNEs' internationalization (Kirca et al., 2011), their relevance to MNEs' ability to replicate regional success in other regions is less apparent. Our findings suggest that, even with technology-based FSAs, barriers to inter-region diversification remain far from negligible. However, the institutional characteristics of the region of origin can help MNEs counter these barriers.

Conceptual background: a regional perspective on institutions

The debate around inter-regional expansion of MNEs

There has long existed an assumption that MNEs could easily expand their activities and revenues globally thanks to the advances in technology, reductions in transportation costs, and trade blocs across the world (e.g., Ghoshal, 1987; Levitt, 1983). A common view among scholars and practitioners was that MNEs pursue "global" strategies in terms of scanning opportunities with a broad geographic deployment of their "non-location-bound" FSAs (e.g., Van Agtmael, 2008; Yip, 2002). In line with this view, MNEs investing heavily in R&D have typically been considered as the main Trojan horses of corporate globalization (Cuervo-Cazurra, Doz and Gaur, 2020; Friedman, 2005). Technology and innovative capabilities tend to be seen as vital "ownership advantages" (Dunning, 1977) or "firm-specific advantages" (FSA) (Rugman, 1981) that can be transferred, deployed, and exploited on overseas markets (e.g., Anand, McDermott, Mudambi and Narula, 2021; Teece, 2014).

In their seminal study of the Fortune Global 500, Rugman and Verbeke (2004) revealed however that most firms are regional. In 2002, only nine MNEs from the Fortune Global 500 had achieved a balanced distribution of their revenues across the globe; and obtained the bulk of their revenues in the home region. A similar investigation, replicated with data from the Fortune Global 500 list released in 2017, confirmed that MNEs were still predominantly home-region oriented, but to a lesser extent than in 2002. Thirty-six MNEs – up from only nine in the Fortune Global 500 list released in 2002 – had their revenues equally distributed across the Triad core economic regions. Furthermore, a vast majority of the Fortune Global 500 firms in 2017 were still home-region oriented in the sense that they registered

most of their revenues in their home region. These findings show that the presumed "non-location-boundedness" of these large MNEs' FSAs is limited, and that most MNEs tend to restrict the geographic scope of their revenues to their home region. Considering these provocative findings, using new methods and data, several studies explored the nuances of geographic scope, and a consensus emerged that most MNEs generate revenues regionally (Rugman and Oh, 2013; Verbeke and Asmussen, 2016).

Empirical evidence as to the challenges of globalizing business activities and prevalent home region bias has triggered a rethinking of mainstream IB theories; in particular internalization theory (Verbeke and Asmussen, 2016; Verbeke and Kano, 2016). Given the relative proximity of countries within the same region, research approaches on regional strategies have considered region- (rather than country-) bound FSAs, whose transfer, deployment, and exploitation within regional boundaries entail more limited spatial transaction costs (Rugman, 2005; Rugman and Oh, 2008; Rugman and Verbeke, 2005, 2007). In this logic, distance between countries is not treated as a continuous variable; instead, the "regional strategy" literature accounts for substantial discontinuities of distance at the regional boundary (Asmussen, 2012; Flores, Herman and Mallori, 2015). The distance between countries forming a region and those outside of it represents a "spike" as compared to intra-regional distance (Beugelsdijk and Mudambi, 2013; Rugman, Verbeke and Nguyen, 2011; Verbeke and Asmussen, 2016). Geographic distances, time zones, economic elements (e.g., trading blocks, common currency), and cultural elements contribute to this discontinuity at the regional boundary. MNEs can develop region-bound FSAs and deploy them for alternative uses at a relatively low cost in other countries within the same region, due to the

proximity and similarities of their country-specific advantages (Flores and Aguilera, 2007; Rugman and Verbeke, 2004, 2005).

Regions as an agglomeration of country institutions

Efforts to uncover and comprehend the impact of institutions on international strategies gained momentum in the 1990s (see Xu et al., 2021 for a review). The number of studies on this topic has grown significantly since then (e.g., Chan, Isobe, and Makino, 2008; Gaur, Delios, and Singh, 2007). Institutions provide the foundation for a society and guide behaviors within it (North, 1990). Formal institutional structures produce and enforce the policies, regulations, and laws on how people, systems, and organizations behave (North, 1991). According to North (1990), political, regulatory, and economic structures allow formal institutions to establish these controls. Formal institutions play a critical role in providing stability, minimizing market failures, reducing uncertainty, and alleviating information complexity in economic exchanges (North, 1990; Williamson, 2000).

The importance of formal institutions for MNEs' decisions regarding internationalization has long been acknowledged and studied with country-specific institutional aspects (e.g., Ronen and Shenkar, 2013; Wan and Hillman, 2006). Research has notably shown that economic and institutional differences between host and home countries significantly influence international strategies (e.g., Demirbag et al., 2010; Kostova, 1999; Shenkar, Luo and Yeheskel, 2008; Xu and Shenkar, 2002). It is widely accepted that MNEs tend to prefer to establish foreign activities in countries "proximate/similar" to their own (Flores and Aguilera, 2007). By so doing, MNEs can mitigate the costs and cognitive burdens caused by grasping and addressing differences in political and regulatory prescriptions across locations (Kostova et al., 2008). It is also accepted that MNEs from countries

with weak institutions tend to be late movers with respect to multinationality compared to MNEs from countries with strong institutions (Luo and Tung, 2007).

While the role of regional areas in MNEs' international strategies is recognized, addressing the regional perspective of institutions poses a more intricate challenge. Unlike countries, regions may lack clearly identified and long-term governance systems (Agnew, 1999: 95; Frisch, Meschede and Blakey, 2010: 5; Ghemawat, 2017: 335-338). Inside regions, national institutional conditions are different from but less independent of each other than across regions (Flores et al., 2015; Ghemawat, 2003). Regional trading blocs or common currencies, for instance, directly reduce intra-regional, institutional distance for insiders. Overarching regional institutional conditions can, through the freer flow of human and financial resources as well as goods and intellectual property, foster more commonality in cultural values relevant to business and reduce economic distance (Sweet and Sandholtz, 1997; Feng and Genna, 2003). Furthermore, stronger economic commonalities (e.g., shared distribution practices) are likely to increase demand for new regional infrastructure and institutions, thereby reducing the impacts of geographic distance on business (OECD, 2020; Brou and Ruta, 2011). Given these important regional patterns, accounting for institutions at the region-level when devising and implementing expansion strategies is critical to MNEs.

Recently, IB scholars have brought nuances to the concept of "regional responsiveness" however, by positing and showing that the ability to obtain regional economies of scale and scope is contingent upon the institutional characteristics inside the regions (Arregle, Miller, Hitt and Beamish, 2013, 2016; Banalieva and Dhanarja, 2013; Goerzen and Beamish, 2003). Drawing on

institutional theory and on semi-globalization and regionalization research, Arregle et al. (2016) explain and show how regional "institutional complexity" and its two components (i.e., region's institutional diversity and number of countries in a region) influence MNEs' internationalization decisions. Regional institutional complexity appears to be both a challenge and an opportunity for MNEs seeking to derive regional economies of scale and scope as well as the benefits of exploiting national differences within the region. While the study by Arregle et al. (2016) makes a breakthrough empirical contribution to understanding the role of home regions in the MNE's internationalization pattern inside these regions, our study differs by exploring how MNEs can deal with the extra complexity imposed by globalization. Following the influential work by Rugman and Verbeke (2004), we aim to explain how the institutional characteristics inside the MNEs' home region influences their revenue diversification across regions.

Theoretical development: the role played by home-region institutional characteristics

In the following three hypotheses, we focus on the influence of the topography of institutional landscapes at the regional level on the ability of R&D-spending MNEs to extend the geographic scope of their revenues across regions. According to internalization theory (Buckley and Casson, 1976; Rugman, 1981), non-location-bound FSAs, such as technological advantages, can be transferred, deployed, and exploited across borders. Non-location-bound FSAs are expected to offer a key edge for MNEs in foreign markets. In the spirit of recent studies at the intersection of innovation and internationalization (Kim, Wu, Schuler and Hoskisson, 2020; Kirca et al., 2011), here we challenge the assumption that innovative capabilities automatically propagate MNEs globally. Real-world cases show that there persists

a need for linking investments (Rugman and Verbeke, 2005) under the form of local and complementary assets to foster feasibility on the supply side (e.g., IP protection, accessibility to local resources) (Fainshmidt et al., 2014; Paik and Zhu, 2016) or to stimulate interests on the demand side (e.g., Andersson, Dasi, Mudambi and Pedersen, 2016). The need for these linking investments entails a cautious choice as to where the MNEs should expand.

Furthermore, while innovative capabilities and technological advantages are critical FSAs in order to expand abroad, they may entail organizational complexity. Once proven successful at a regional level, the organizational routines and cultures – mostly favoring flexibility and agility to boost and adapt to technological advancements – may be confronted with the need to make adjustments outside of the home region (Kim et al., 2020; Rugman and Sukpanich, 2006). As per Rugman (2005: 197): "the administrative heritage of most MNEs, undoubtedly conducive to home-region market success, may well constitute an administrative rigidity when attempting to penetrate host regions". This is largely explained by the cultural, economic, and institutional discontinuities faced by MNEs when crossing regional boundaries (Arregle et al., 2009). Therefore, rather than having core FSAs such as technological advantages, what matters is the ability of MNEs to deploy their reservoir of (non-location-bound, country-bound, and region-bound) FSAs effectively in given environmental contexts (Priem and Bulter, 2001). We contend in the following set of hypotheses that the region-home institutional characteristics play a significant role in forging R&D spenders' ability to broaden or realign their existing FSAs to overcome liabilities of inter-region foreignness.

Home-region institutional homogeneity

IB scholars widely acknowledge difficulties that MNEs encounter while maneuvering through diverse formal institutions and adapting to various conditions related to regulatory quality, rule of law, or government effectiveness (Kostova and Zaheer, 1999; Kostova, Roth and Dacin, 2008; Meyer, Mudambi and Narula, 2011). The heterogeneity among national institutions leads to different pressures, goals, and practices for MNEs, which may be experienced to varying degrees. In technology-focused industries, formal institutions cover dimensions such as safeguarding intellectual property (IP) rights, enforcing licensing contracts, and establishing industrial standards to drive technological progress (Brander, Cui and Vertinsky, 2017; Papageorgiadis, McDonald, Wang and Konara, 2020). Seeking market opportunities across countries with strongly distinct institutions demands extensive information processing and meticulous attention to coordination and governance costs (Hitt, Hoskisson and Kim, 1997).

A large body of research recognizes that national institutions inside a same region exhibit greater proximity compared to institutions outside those regions (Beugelsdijk and Mudambi, 2013; Rugman et al., 2011; Verbeke and Asmussen, 2016). Yet not all regions show the same level of institutional homogeneity among constituting countries (Arregle et al., 2016). In regions where national institutions are relatively homogeneous, MNEs encounter less challenges in accessing and processing information and less conflicting pressures to exploit their FSAs and expand their coverage regionally. This favorable pan-regional institutional context reduces transaction costs (Rugman, Verbeke and Nguyen, 2011). It helps MNEs develop fungible FSAs within their region, bridge these region-bound FSAs with

necessary local linking investments, and so obtain economies of scale and scope and organizational efficiencies.

We contend that MNEs exploiting growth opportunities at lower transaction costs inside their home region thanks to relatively homogeneous institutions (Rugman, Verbeke and Nguyen, 2011) are better equipped to emulate success in other large regional markets. First, compared to country-bound FSAs, strong region-bound FSAs leading to economies of scale and scope in addition to technological advances are likely to be critical advantages in inter-region market-seeking endeavors. If FSAs could be proven valuable at the regional level, MNEs should have fewer problems upgrading or tailoring them to specific host region characteristics (Rugman et al., 2012; Verbeke and Asmussen, 2016). Furthermore, it is easier for MNEs to adapt existing home-region-level routines and elements of organizational structure to the idiosyncrasies of host regions than to craft them without previous experience in this matter at the home-region level (Verbeke and Asmussen, 2016). Home-region organizational components such as regional head offices or regional value chain (Alfoldi et al., 2012; Ghemawat, 2006; Piekkari et al., 2010; Rubera et al., 2012) can have propagative effects in host regions. Through regional hubs, MNEs learn how to achieve superior flexibility, benefit from arbitrage, avoid exclusive commitment, reduce transportation costs, and capture superior information (Buckley and Ghauri, 2004; Schotter, Stallkamp and Pinkham, 2017). As MNEs are boundedly rational actors (Cyert and March, 1963), institutional homogeneity fosters opportunities for MNEs to build strong region-bound FSAs, and to learn how to efficiently oversee their reservoirs of FSA within and beyond regional organizational structures. Hence,

HYP1: The higher the home-region institutional homogeneity, the higher the inter-region diversification of revenues for the R&D-spending MNEs.

Home-region institutional quality

IB research has also shown that countries widely differ in their level of institutional quality (e.g., Kostova and Zaheer, 1999). Incentives bolstered by viable institutions (e.g., market-oriented changes) are boosters for MNE internationalization (Cuervo-Cazurra et al., 2019) and for global technology transfer (Galang, 2012, 2014; Xie and Li, 2017). Owing to the national institutional quality, MNEs are likely to behave like market organizations, pursue externally oriented development strategies and emphasize the role of innovation in driving internationalization process (Yi, Wang and Kafouros, 2013). Seeking market opportunities and intellectual property exploitation across countries with viable institutions implies that managers can rely on competitive markets, impartial laws, and efficient enforcement mechanisms (Cuervo-Gazurra and Dau, 2009; Williamson, 2002).

Consistent with our semi-globalization perspective, we focus on institutional quality at the regional level (Arregle et al., 2013; Chan et al., 2008). A healthy institutional context within the home-region empowers R&D-spending MNEs to leverage domestic institutions and institutions of other constituent countries inside the region to overcome challenges related to bounded rationality and reliability. By so doing, the transaction costs encountered by MNEs looking to expand their regional coverage are contained. Viable institutions support and secure communication and agreements with regional suppliers, distributors, and partners, and protect innovations from imitation by regional competitors (Khanna and Palepu, 1997, 2000; Papageorgiadis et al., 2020). This context positively influences MNEs' ability to develop strong fungible FSAs within their region, and

to gain experience on how to obtain organizational efficiencies on a regional-level rather than a country-level (Enright, 2005). As developed in the former hypothesis, both region-bound FSAs and the experience associated with their development and deployment are expected to ensure MNEs are well-equipped to cope with inter-regional institutional discontinuities.

Furthermore, we contend that home-region institutional quality gives legitimacy to MNEs in host-regions, which also helps contain transaction costs. Healthy and viable institutions ensure that there is limited uncertainty about legitimate ways of doing business. Comparatively, in regions with fragile or corrupted institutions, MNEs engage in a wide spectrum of strategic actions to overcome institutional flaws (Chan, Makino and Isobe, 2006). What constitutes legitimate organizational activities is therefore less evident (Henisz and Zelner, 2005; Scott, 1995; Suchman, 1995). MNEs from regions with weak institutions are likely to encounter a lack of legitimacy in host-regions and to suffer from a higher liability of foreignness (Stevens and Newenham-Kahindi, 2017; Zhang et al., 2018). To overcome this lack of legitimacy, they may have to possess unique national resources or supplier inputs (Barnard, 2010; Chittoor et al., 2009; Griffin-El and Olabisi, 2018; Kolstad and Wiig, 2012) and social capital (Ado, Su and Wanjiru, 2017). These arguments align with IB literature showing that MNEs established in countries with weak intellectual property rights (IPR) regimes (Luiz et al., 2017; Yoo and Reimann, 2017), or MNEs having direct ties with governments in countries with low policy stability (Shi et al., 2017) face difficulties expanding in countries with stronger institutions. Hence:

HYP2: The higher the home-region institutional quality, the higher the inter-region diversification of revenues of the R&D-spending MNEs.

Home-country and home-region institutional quality gap

As per our previous hypothesis, coming from a home region with relatively lax institutional quality should hinder the ability of R&D-spending MNEs to overcome inter-region foreignness and to expand globally. However, within these regions characterized by, on average, more fragile institutions, there exist countries with comparatively more viable and reliable institutional contexts. Rather than being penalized by the weak home-region institutional context, MNEs from countries with viable institutions can take advantage of their privileged access to domestic institutions to develop stronger region-bound FSAs and pan-regional organizational experience than MNEs from countries with weak or corrupted formal institutions. These latter MNEs are less likely to face hazards such as the risk of expropriation of assets at less than full market value, constraints on the pursuit of business opportunities because of ineffectual enforcement of contracts, unwanted dissemination of proprietary assets, local corrupt transactions, or liquidity risk caused by local customers delaying or avoiding payments (Delios and Beamish, 1999; Chan et al., 2008; Zhou and Poppo, 2010). Hence, despite the cross-border institutional interdependence within each region, there persists a degree of variability across countries in terms of institutional dimensions to generate a home-country effect (Anand et al., 2021; Arregle et al., 2013; Cuervo-Cazurra, Luo, Ramamurti and Ang, 2018; Witt, 2019). National corporate governance institutions and industrial supports remain critical in shaping competitive advantages of domestic MNEs (Jackson and Deeg, 2008; Padgett and Powell, 2012). Countries continue to matter (Buckley and Ghauri, 2004; Rugman and Verbeke, 2005), and a large number of studies present findings indicating that favorable home-country institutional environments facilitate MNEs' internationalization (Xu et al., 2021).

Furthermore, building on the legitimacy arguments from the previous hypothesis, we posit that R&D-spending MNEs from countries whose institutional quality is higher than the regional-level institutional quality may use their relatively higher legitimacy as an advantage not only to expand within their own region, but also beyond it. Inside their home region, their legitimacy facilitates widespread activities throughout the region (rather than exclusively nationally). MNEs from countries with high(er) institutional quality can then develop region-bound FSAs more efficiently than MNEs coming from other countries inside this same region. Hence:

HYP3: The higher the positive distance between home-country and home-region institutional quality, the higher the inter-region diversification of revenues of the R&D- spending MNEs.

Method

Data and sample

Our unbalanced panel dataset consists of 639 MNEs and totals 3,167 MNE-year observations over the period 2013-2019. The MNEs are all included in the ranking of the EU Industrial R&D Investment Scoreboard (Cincera and Ravet, 2010; Cincera and Veugelers, 2014; Coad, 2019; García-Manjóna and Romero-Merino, 2012; Montresor and Vezzani, 2015; Bruno, Crescenzi, Estrin and Petralia, 2022; Lee, 2022). The scoreboard is released annually, and comprises the 2,500 leading firms in terms of R&D expenditure. For instance, in 2018, these firms invested a total of €823.4 billion in R&D, amounting to approximately 90% of the world's business-funded R&D (European Commission, 2019). To compile our database, for each year we selected the MNEs with the highest ranking in terms of R&D expenditure to cover 80% of the total R&D expenditure represented in the scoreboard. In 2013, 422

largest R&D investors accounted for 80% of R&D expenditure made by the top 2,500 investors. Considering that the top 2,500 R&D investors represent 90% of total private R&D expenditure (European Commission, 2022), these 422 R&D investors account for 0.8*0.9= 72% of worldwide private R&D expenditure. In the 2013-2019 period, we observe a de-concentration phenomenon among the largest R&D-spending MNEs, i.e., the sampled MNEs increase from 422 in 2013 to 500 in 2019.1

The database includes MNEs from the three geographic regions in relatively the same proportion: 31.3% from EMEA, 37.7% from the Americas, and 31.0% from APAC. Furthermore, the sampled MNEs are active in 35 industries (GICS industry classification). Most of them are concentrated in five high-tech industries: technology hardware and equipment (13.69%), pharmaceutical and biotechnology (11.82%), automotive industry (9.49%), software and computer services (12.29%), and electronic and electrical equipment (7.00%). This distribution across regions and industries is not overly concentrated and should not affect the generalizability of our findings.

Comprehensive figures on MNEs' geographic distribution of their revenues are not published in any source or dataset. Partial information can be found in Orbis, but due to the lack of homogeneity in reporting the figures, research relying on Orbis tends to make use of dummy variables (i.e., having international revenues or not) (e.g., Chang, Kogut and Yang, 2016). We directly collected data from the annual reports and distributed the revenues' percentages into each of the Triad

[1] Detailed figures are available upon request.

regions by following Rugman and Verbeke (2004)'s seminal approach.2 Furthermore, we collected raw financial and accounting data on the MNEs by using Orbis (i.e., for intangible assets, total assets, and ROA). Besides company information, we collected institutional data on the countries and regions where the MNEs are located. Country-level institutional scores come from the worldwide governance indicators (WGIs) developed by Kaufmann et al. (2010) in the World Bank database (Jensen, Li and Rahman, 2010; Hope, Jiang and Vyas, 2021).

Inter-region diversification

We aim to explain the choice of MNEs to balance their revenues across geographic regions; hence we measure their degree of geographic spread of revenues around the globe. We adopted the Triad regions as suggested by Rugman and Verbeke (2004), attributed the revenues across these regions, and calculated the revenues concentration indicator (Herfindahl–Hirschman Index). Three main geographic regions are considered in our study: the Americas, EMEA, and APAC. The formula is the following:

$$Inter-region\ diversification = 1 - \sqrt{[(Sales\ percentage\ in\ the\ Americas)^2 + (Sales\ percentage\ in\ EMEA)^2 + (Sales\ percentage\ in\ APAC)^2]}$$

Independent and control variables

[2] We were obliged to implement reallocation and extrapolation methods as the annual reports do not always provide a clear view of the distribution of revenues across the three regions. It is important to note that when the annual reports did not provide enough information on geographic distribution for 20% or more of total revenues, we excluded that MNE from our sample; this amounted to 16% of the cases. Furthermore, in case of mergers or acquisitions (M&As), we adopted the name of the new company, i.e., the old companies cease to exist in the year of the M&A and a new entity appears.

Home-region institutional homogeneity. To calculate the variable, we used the worldwide governance indicators (WGIs) developed by Kaufmann et al. (2010). The WGIs cover six dimensions of governance – voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption – and is measured for over 200 countries. In line with prior studies (Knack and Langbein, 2010; Beugelsdijk and Slangen, 2010), we used the average score for the six indicators for each country. Then, as per Arregle et al. (2016), for each region we calculated the bias-corrected weighted mean Euclidean distances of its component countries' institutional score. GDP was used to weight countries in the same region's institutional scores (i.e., individual country's GDP/sum of the regional countries' GDP) to account for varying degrees of economic performance among the countries within the same region (Hejazi, 2007). Each region having different numbers of countries, we followed the method proposed by Kiemann and Kearney (2010) and Arregle et al. (2016) to obtain an unbiased measure of institutional diversity. Then, we obtained the institutional homogeneity by calculating the inverse of institutional diversity. The formula is as follows:

$$\textit{Home-region institutional homogeneity} = \frac{1}{\sum_{c=1}^{N} W_c \frac{\sum_{j=1}^{N} \sqrt{(x_c - x_j)^2}}{N-1}}$$

With *N* number of countries in region *r*

Wc GDP of country *c* in region *r*/GDP of all countries in region *r*

Xc Score of country *c* on formal institutions

Home-region institutional quality. As for the previous variable, we first calculated the country-level institutional score by averaging the six WGIs. High scores mean that countries act positively in the public interest (Baliamoune-Lutz and McGillivray, 2008; Rice and Patrick, 2008). We then obtained the region-level

institutional quality score by measuring the weighted average institutional scores on the six WGIs for all countries in the same region (weights based on an individual country's GDP/sum of the GDPs of countries in the same region) (Arregle et al., 2016). The scores of both home-region institutional homogeneity and quality are listed in Table 1 and Table 2 respectively.

Country-region institutional quality gap. This variable corresponds to the difference between the country-level institutional score and the GDP weighted region-level institutional score. When the variable is positive (negative), the MNE's home country provides a stronger (weaker) institutional score compared to the average of the home region (Erramilli, Agarwal and Kim, 1997; Havawini, Subramanian and Verdin, 2004; Wan, 2005).

We also included firm-level controls. First, the level of R&D intensity is included, with its value obtained from the EU Industrial R&D Investment Scoreboard. R&D intensity is widely used as a proxy of innovation and technological advantage (Caves, 1996; Papanastassiou, Pearce and Zanfei, 2020), traditionally viewed as non-location bound FSAs facilitating global expansion (Rosa, Gugler and Verbeke, 2020; Rugman and Verbeke, 2004). Second, we include return on assets (ROA) as a measure of performance and rely on the Orbis database to allocate values. ROA, which corresponds to earnings before tax/total assets (e.g., Charumilind, Kali, and Wiwattanakantang, 2006; Manos, Murinde and Green, 2007), captures the ability of managers to derive profits from their invested assets. Research has indicated a correlation between globalization and financial performance (Nachum, 2004). When MNEs perform well, they can afford to experiment more with new and riskier strategies; global strategy has been associated with higher risk compared with regional strategy (Elango, 2005; Li, 2005). Third, the intangible assets ratio is

measured by dividing the total value of intangible assets by the total value of assets, with values obtained from the Orbis database. According to previous research, intangible assets are more easily transferable and redeployable on the international scene than tangible assets (Chatterjee and Wernerfelt, 1991). Fourth, we control for the presence in our sample of MNEs which account for most of their sales in host regions (Rugman and Verbeke, 2004). One might expect that these MNEs are less affected by home-region institutional characteristics. Fifth, size corresponds to the logarithm of the total assets value. Larger firms have more financial resources, which is critical to cross-regional expansion. Finally, we control for firm age, as operational experience is likely to facilitate expansion into host regions. This variable corresponds to the year of the MNEs' foundation (Jiang, Chua, Kotabe and Murray, 2011).

Model estimation

Our hypotheses are tested using ordinary least squares (OLS) estimations. One potential concern with OLS estimations is that some of the unobserved firm heterogeneity such as management quality, that is not captured by our control variables, might be correlated with region-level institutional variables. OLS results would then be biased due to the omission of fixed effects and the traditional self-selection problem. When unobserved but relevant time-invariant firm characteristics (or firm fixed effects), such as the quality of corporate governance, are left out of the model, omitted variable bias occurs. Self-selection issues may arise when unobservable firm-level correlated heterogeneity is not controlled (Kosova , Lafontaine, and Perrigotm 2013). To address the concern of potentially correlated unobserved heterogeneity (aside the uncorrelated MNE heterogeneity), we follow Mundlak (1978) and include firm-level means of time varying regressors

in our model. Mundlak (1978) shows that the results from standard fixed effects models can be obtained via random effects estimations when firm-level means of time-varying regressors are added as additional controls. In line with the prescriptions by Mundlak (1978), we do not opt for standard fixed-effect estimations since our dependent variable, inter-region diversification, shows important yearly variation within each specific region and the three explanatory variables change little over time. A standard fixed-effect estimation, which amounts to relying on within-region variation only, would not enable us to identify the influence of the region-level institutional variables on the geographic diversification of MNEs (Wooldridge, 2002). Modelling unobserved correlated firm heterogeneity as a function of firm-level means allows us, however, to introduce some correlation between unobserved heterogeneity and firm-level means of time-varying characteristics, and thus to obtain consistent estimates of coefficients of interests (Petrin and Train, 2010). Furthermore, in our models, the independent variables (and most of the control variables) are lagged one year to partially control for reverse causality (Ioulianou, Leiblein and Trigeorgis, 2021; Reed, 2015).

Results

Table 3 and Table 4 present the descriptive statistics and cross-correlations of the dependent and independent variables. Note that apart from the relatively high correlations between intangible asset ratio and home-region institutional quality, firm age, and country-region institutional quality gap, which are used as covariates in the same model, the rest of the correlations are low or insignificant. Given correlations across the variables, we tested the variance inflation factor (VIF) statistics for the reported regressions. The VIF statistics vary between 1.2 and 4.52,

and the average VIF is 1.75; indicating multi-collinearity does not cause a serious problem for model estimations.

The descriptive statistics reveal that among the leading R&D spenders, the global players – i.e., demonstrating a balanced distribution of revenues across the Triad regions (Rugman and Verbeke, 2004) – only form a minority (16%). 64% of the R&D-spending MNEs remain home-region oriented over the entire period. Although this percentage is high, it is lower than the figure (74%) obtained by Rosa et al. (2020) for the 2017 Fortune Global 500 list. Furthermore, we notice that there is a limited percentage of bi-regional R&D MNEs (6%) and, by comparison, a relatively large percentage of host-region oriented R&D MNEs (13%). For those MNEs, the main market is a region other than their own. Finally, we note a relative stability among the geographic orientations for the total population, with a limited increase in the share of home-region oriented R&D MNEs (i.e., 2%-point range).

The OLS and correlated random-effect models are listed in Table 5. In model 1, we exclusively include the control variables. We test the effect of home-region institutional homogeneity in model 2. Then in models 3 and 4, we add the other two regional level institutional factors, home-region institutional quality, and country-region institutional quality gap. We also compared goodness of fit of models 1 to 4. Adjusted R-squares indicate that adding the regional institutional factors improves the goodness of fit. The correlated random-effect estimations in model 5 are consistent with the model. Hypothesis 1 states that the higher the home-region institutional homogeneity, the higher the geographic diversification of revenues of the MNEs across regions. In models 2 to 5, the effect of home-region institutional homogeneity is positive and statistically significant ($exp(B)= 0.23$, $p<0.01$ in model 5). Thus, Hypothesis 1 is supported. Hypothesis 2 predicts a

positive effect of home-region institutional quality on the inter-region diversification of revenues of MNEs across regions. In models 3 to 5, we observe a positive and statistically significant effect for home-region institutional quality (exp(B)= 0.15, p<0.01 in model 5). These results thus provide support for Hypothesis 2. Hypothesis 3 states that the higher the distance between home-country and home-region institutional quality, the higher the inter-region diversification of revenues of MNEs across regions. The estimations in models 4 and 5 are positive and statistically significant (exp(B)= 0.05, p<0.01 in model 5), thereby providing support for Hypothesis 3. As far as the control variables are concerned, the effects of intangible assets ratio, size, and age on inter-region diversification of revenues are as expected (Chatterjee and Wernerfelt, 1991; Nachum, 2004; Elango, 2005; Li, 2005). R&D intensity negatively influences the inter-region revenue diversification of MNEs; hence supporting the location-boundedness of technological advantages (e.g., Rugman and Sukpanich, 2006).

We tested for the potential impact of omitted variables potentially influencing both the set of inter-region institutional characteristics (independent variables) and the MNEs' inter-region diversification by calculating the impact threshold of a confounding variable (Busenbark, Yoon, Gamache and Withers, 2022; Gamache and McNamara, 2019; Harrison, Boivie, Sharp and Gentry, 2018). This test consists in verifying whether the correlation between the dependent and independent variables does not exceed a certain threshold of r > 0.23, r > 0.31 and r > 0.23 between inter-region diversification of MNEs and, respectively, inter-region institutional homogeneity, quality, and the country-region institutional quality gap. Similarly, we did not identify any control variable surpassing the impact threshold in correlation with both independent and dependent variables. This

suggests that it is unlikely that there is an omitted variable that would invalidate our findings.

Finally, to account for variations caused by using different proxies or sampling criteria, we performed a couple of robustness checks. We altered the measurements of some control variables: we replaced ROA by return on equity, and firm size by the logarithm of revenues, the logarithm of number of employees, and the logarithm of market capitalization. We used an alternative industry classification, i.e., North American Industry Classification System (NAICS). In addition, we reproduced our regressions with various sub-samples: one with the manufacturing industries, one with the service industries, and one excluding the host-region focused MNEs (i.e., MNEs having most of their revenues in host regions). Our three hypotheses remain supported following all the robustness checks.

Discussion and Conclusion

Drawing on the concept of FSA that lies at the heart of internalization theory (Buckley and Casson, 1976; Rugman, 1981) and on institutional research, we studied the key population of top R&D-spending MNEs worldwide and examined whether home-region institutional characteristics contribute to the ability of these MNEs to diversify their revenues across regions. These MNEs with FSAs based on technological advantages are both strong candidates for globalization and organizations highly exposed to difficulties caused by bounded rationality and reliability. We find empirical evidence pointing to the influential role of the home-regional institutional environment in MNEs' ability to attain a global reach for their R&D-driven products or services. This investigation is particularly relevant in the current context of "tech cold war", where regions are racing to impose

worldwide technological standards introduced by their flagship companies (Tung, Zander and Fang, 2023). We make several contributions to research both on region-level institutional characteristics and influences, and on innovation-globalization relationship.

Home-region institutional characteristics – a paradigm shift

Researchers adopting a regionalization perspective have recently started investigating the influence of the institutional characteristics of a region - i.e., beyond the home and host countries - on the internationalization patterns of MNEs. The influence of the level of diversity among countries' institutions within a region has attracted the most attention to date. Banalieva and Dhanaraj (2013) show that, for an internationalizing MNE, home-region institutional diversity reduces its home-region orientation (measured as the ratio of regional revenues (excluding domestic revenues) to foreign revenues). They argue that as regional institutional diversity increases, companies will find "alternative global (not home region) markets more attractive to avoid the growing regional institutional complexity" and save on search and deliberation costs (Rangan, 2000) (Banalieva and Dhanaraj, 2013, p96). Furthermore, Arregle et al. (2016) show that only at moderate levels of regional institutional diversity will MNEs expand internationally inside their home region to take advantage of intra-regional arbitrage (i.e., exploit differences between countries (Ghemawat, 2003)). However, when regional institutional diversity is high, it is difficult for MNEs to develop regionally exploitable FSAs. Both studies tend to assert that institutional diversity in the home region favors expansions in host regions, as it makes the exploitation of FSAs inside the home region less attractive. Our findings suggest instead that MNEs operating from regions with more heterogeneous national institutions are

less equipped to cope with inter-region institutional discontinuities than those from regions with more homogeneous national institutions. Stated otherwise, by reducing the difficulties associated with bounded rationality and reliability, relatively homogeneous institutions in the home region help their regional MNEs gain market power (i.e., strong region-bound FSAs) and organizational experience in terms of FSAs' development and exploitation, which are essential for venturing across multiple regions and reach a global status.

Our study adopts the same triad region scheme as Rugman and Verbeke (2004), but contrary to their findings, we discovered that multinational enterprises (MNEs) can overcome spikes in institutional distance near regional borders through the accumulation of firm-specific advantages (FSAs) within the home region, thus achieving cross-regional expansion and even globalization. This discovery challenges the dichotomy assumed in previous research regarding the location boundedness or non-location boundedness of FSAs (Rugman & Verbeke, 2004; Rugman & Sukpanich, 2006), suggesting that the degree of location boundedness or non-location boundedness of FSAs is variable. Furthermore, our study reveals that institutional configurations within the home region not only impact MNEs' semiglobalization but also influence their ability to leverage FSAs developed in the home region for cross-regional expansion or globalization. This finding challenges the binary assumption made in earlier research regarding the location boundedness or non-location boundedness of FSAs (Rugman & Verbeke, 2004; Rugman & Sukpanich, 2006), indicating that the extent of FSAs' location boundedness or non-location boundedness varies.

Our study further contributes to research on home-region institutional characteristics by examining two additional institutional components: one is linked to the level of institutional quality in the region at large, the other to the distance between the home county and home region in terms of institutional quality. Although these two components are widely used in accounting for institutions in home and host countries (e.g., Kostova and Zaheer, 1999), they have not yet been applied at the regional level. As contended in our study, these two home-region-related characteristics also have great potential to reduce difficulties associated with bounded rationality and reliability: hence reducing transaction costs. Both strong regional and home-country institutions enable MNEs and their managers to obtain economies of scale and to accumulate legitimacy and organizational learning inside their region. With strong regional institutions, managers can more easily access and process information needed to boost demand and supply (i.e., bounded rationality) and are less hampered by self-interest or identity-based discordance with partners (i.e., bounded reliability). They can rely on qualified professionals, reliable communication exchange, impartial laws, and efficient enforcement mechanisms (e.g., Khanna and Palepu, 1997, 2000; Cuervo-Gazurra and Dau, 2009). With stronger home-country institutions compared to regional institutions, managers can take advantage of country-specific advantages within their home region. Institutional quality reduces uncertainty about legitimate ways of doing business; more viable national contexts can then play a leadership role inside the home region and serve as leading models to follow. Quality can thus mitigate transaction costs and liability of foreignness within but also beyond the home region (Stevens and Newenham-Kahindi, 2017; Zhang et al., 2018). When MNEs venture outside their home region, they face a sharp increase in information processing and coordination costs in

addition to greater complexity in learning how to maneuver (Hitt et al., 1997; Kostova and Zaheer, 1999).

Technological advantages and globalization

Technological advantages have largely been considered as critical FSAs for the international expansion of MNEs (Kirca et al., 2011). Yet, IB scholars have provided a certain degree of nuance by emphasizing that technology-based FSAs must be combined with local investments to foster local feasibility and interests (Rugman and Verbeke, 2005). To examine how MNEs with technological advantages are actually able to transfer, deploy, and exploit their advantages on a global scale, we proposed a study of the population of top R&D-spending MNEs and the diversification of their revenues across main regions. In doing so, we contribute to the still limited research on how innovation impacts regional strategies. We extend the research of Banalieva and Dhanaraj (2013) and Cerrato (2009), who show that R&D enables MNEs to reduce the home-region orientation of MNEs and overcome the liabilities of global foreignness. Although insightful, these studies do not examine revenue diversification across regions, and thus the level of corporate globalization as per the definition provided by Rugman and Verbeke (2004).

Interestingly, our findings show that among the largest R&D-spending MNEs, operating worldwide and accounting for roughly 70% of the total private global R&D spending, only a minority attain the status of global MNEs as defined by Rugman and Verbeke (2004). Instead, the ability of top R&D-spending MNEs to achieve this status is contextual and depends on the institutional characteristics in their home region. Homogeneous or viable institutions inside the home region minimize economic challenges faced by MNEs in the forms of contractual hazards (e.g., Blake and Moschieri, 2016; Delios and Henisz, 2000) as well as property rights

and expropriation hazards (e.g., Henisz, 2000; Holburn and Zelner, 2010). Contractual hazards are particularly intense for market-seeking activities, as in the cases we examine, for which the adverse effects of weak institutions are stronger and MNEs must account for local responsiveness when dealing with local suppliers (Beugelsdijk and Slangen, 2010). These results thus contribute to support the relevance of the regional level in the design of international strategies for large MNEs.

Managerial and policy implications

Amidst the rising polarization of innovations and related products and services between geographic regions (Collinson and Rugman, 2008; Banalieva and Dhanaraj, 2013), there is a pressing need for practitioners and policymakers to deepen insights on conditions facilitating or impeding MNEs' exploitation of their technological advantages globally. Top R&D spenders from advanced economies (North America, Western Europe, and Japan), and more recently emerging economies, play a critical role in shaping worldwide races for innovation adoption and geopolitical leading positions in many industries (Anand, McDermott, Mudambi and Narula, 2021). In line with Banalieva and Eddletson (2011) and Mohr et al. (2014), our study shows that inter-region transferability, deployability, and exploitation of technology-based FSAs should not be overestimated. Institutional characteristics inside home regions play a pivotal role in turning top R&D-spending MNEs into Trojan horses of globalization. Furthermore, to support domestic MNEs in their globalization strategies, policymakers must understand that aligning institutions within the home region and striving for robust and viable institutions inside the region and the home country is critical. At both country and regional levels, governance quality in general boosts cross-regional

competitiveness of MNEs. And at regional level, countries need to improve the consistency and alignment of quality among their domestic institutions. In assessing the global competitiveness of MNEs, home-country policymakers should prioritize overall governance quality rather than being confined solely to IPRs.

Limitations and extensions

This study has limitations, which mainly pertain to the data we use. As mentioned in the methodology section, information about the geographic dispersion of MNEs activities is scarce, and when released, it is heterogeneous by nature. The existing regulations do not mandate disclosure of fine-grained data such as sales across countries or geographic segments (Hermann and Thomas, 1997) and even when firms report segment sales, they define geographic segments in an idiosyncratic manner, making comparison across firms difficult (Rugman and Verbeke, 2007). This has a direct impact on the level of research granularity.

First, in their annual reports, MNEs provide information about their revenues worldwide and less about other items such as assets. For this reason, as per prior research (see for instance Asmussen, 2009; Chang, Kogut and Yang, 2016; Wiersema and Bowen, 2011), we adopted a downstream approach of corporate globalization (e.g., market seeking). To advance research in this field, future studies may adopt a complementary approach of resource seeking and efficiency seeking strategies by considering other activities along the value chain such as cross-border knowledge-sourcing activities (Kano, Tsang and Yeung, 2020; Wiersema and Bowen, 2011) or production functions. MNEs also expand abroad to explore technological opportunities (e.g., Huang and Li, 2019; Wu and Park, 2019). Second, still due to the lack of homogeneity in the information released by MNEs,

we have opted for broad regions. Although this segmentation of regions is widely used and recognized as relevant in practice, it would be of great interest to account for other, more refined, regional segmentations (e.g., Arregle et al., 2016). Third, our study focuses on the quasi-population of the largest R&D-investing MNEs. Future research could investigate other – less capitalistic – populations of MNEs (e.g., "born-globals", digitalized service MNEs, start-ups). Finally, the data collected from the annual reports did enable a distinction between MNEs' domestic and regional geographic segments; both being considered as intra-regional category. Given the discrepancies of market size across countries and the greater influence leveraged by institutions inside economically advanced countries (e.g., the United States, China, or Germany), there is merit in delineating domestic orientation from regional orientation (Banalieva and Santoro, 2009). Despite these limitations, we have been able to provide a first attempt at understanding the influence of region-level institutions on MNEs' inter-region coverage. By so doing, we have addressed the call by Verbeke et al. (2018) to account for fine-grained data on the sampled MNEs instead of superficial internationalization characteristics.

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APPENDIX

Table 1. Intra-region institutional homogeneity

Year	Americas	Europe, Middle East, Africa	Asia Pacific
2013	0.16	0.51	0.20
2014	0.16	0.51	0.21
2015	0.16	0.52	0.21
2016	0.16	0.52	0.21
2017	0.16	0.52	0.22
2018	0.16	0.52	0.21
2019	0.18	0.53	0.22

Table 2. Intra-region institutional quality

Year	Americas	Europe, Middle East, Africa	Asia Pacific
2013	0.98	0.72	0.13
2014	0.98	0.73	0.18
2015	0.99	0.72	0.16
2016	1.00	0.70	0.17
2017	0.99	0.69	0.21
2018	0.98	0.68	0.21
2019	0.87	0.69	0.16

Table 3. Descriptive statistics

Variables	Obs	Mean	SD	Min	Max
Inter-region Diversification	3,165	0.44	0.20	0.00	0.68
Home-region institutional homogeneity	3,167	0.29	0.16	0.16	0.52
Home-region institutional quality	3,167	0.64	0.34	0.13	1.02
Country-region institutional quality gap	3,167	0.48	0.55	-1.49	1.47
R&D intensity	2,856	0.11	0.27	0.00	7.26
ROA	3,063	6.29	9.48	-95.72	59.27
Intangible assets ratio	3,051	0.30	0.29	0.00	1.52
Host-region dummy	3,167	0.13	0.34	0.00	1.00
Size	3,072	9.96	1.51	4.40	14.81
Age	3,152	54.82	48.90	-8.00	354.00

All the variables are lagged except the variables *inter-region diversification, host-region orientation* and *age*

Table 4. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Inter-region Diversification	1.000									
(2) Home-region institutional homogeneity	0.211***	1.000								
(3) Home-region institutional quality	0.296***	0.008	1.000							
(4) Country-region institutional quality gap	0.310***	0.263***	-0.205***	1.000						
(5) R&D intensity	-0.036*	-0.067***	0.135***	-0.048**	1.000					
(6) ROA	0.169***	0.016	0.031*	0.044**	-0.256***	1.000				
(7) Intangible asset ratio	0.281***	0.078***	0.387***	-0.018	0.017	0.067***	1.000			
(8) Host-region dummy	0.039**	0.090***	0.176***	0.001	0.048***	0.075***	0.101***	1.000		
(9) Size	-0.036**	0.182***	-0.115***	0.024	-0.256***	0.050***	-0.103***	-0.114***	1.000	
(10) Age	0.185***	0.265***	-0.136***	0.393***	-0.147***	0.063***	-0.085***	-0.071***	0.281***	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Table 5. Regressions

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) RE
Home-region institutional homogeneity		0.31***	0.30***	0.23***	0.23***
		(0.04)	(0.04)	(0.04)	(0.05)
Home-region institutional quality			0.16***	0.20***	0.15***
			(0.03)	(0.03)	(0.02)
Country-region institutional quality gap				0.11***	0.05***
				(0.02)	(0.01)
R&D intensity	-0.02	-0.01	-0.04**	-0.04**	-0.04**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ROA	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Intangible Asset Ratio	0.17***	0.14***	0.07***	0.07***	0.09***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Host-region dummy	-0.02	-0.04*	-0.06***	-0.06***	-0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Size	0.01**	0.01**	0.01**	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)

Age	0.00***	0.00***	0.00***	0.00**	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.28***	0.19***	0.08	0.03	0.08
	(0.07)	(0.07)	(0.07)	(0.06)	(0.07)
Num of Observations	2,672	2,672	2,672	2,672	2,953
Number of Groups					526
Adjusted R-squared	0.3	0.4	0.4	0.5	
Industry FE	YES	YES	YES	YES	YES
Within R-squared					0.00
Between R-squared					0.46
Overall R-squared					0.46
chi2-stat					405.63
Prob>F					0

*** *p<0.01,* ** *p<0.05,* * *p<0.1* ; robust standard errors are reported in parentheses.

Article 2 - Downside Risks and Regionalization Strategies of Multinational Enterprises: the role of home institutional quality and host-home region institutional distance disparity

ABSTRACT

It is widely accepted that the risk exposure of multinational enterprises (MNEs) and their location choices go hand in hand. Studies in the field of international business (IB) applying Real-Option Theory (ROT) have indeed shown that MNEs can mitigate their downside risks. Downside risk, defined as the added value of flexibility, serves as an important performance metric alternative to financial performance, particularly valuable in protracted cyclical downturns and high-risk environments. Downside risk mitigation is achieved through the establishment of a global portfolio of switching options. While insightful, these studies focus on countries as unit of analysis and tend to overlook the influence of regions. In theory, diverse institutions among countries can affect switching option values differently. Cross-regional expansions induce spikes in institutional distance, providing a valuable context to assess its impact on downside risk. In this study, we aim to examine the influence of the home-region orientation of MNEs on their downside risks; as well as the influence of two moderators: the home-region institutional quality and the host-home-region institutional distance disparity. Using a panel dataset of 711 leading R&D MNEs, results support our theoretical hypotheses and suggest that the switching costs (hence the downside risks) between foreign locations is lower inside than outside home regions. The positive influence of home-region orientation on switching costs is magnified by the institutional quality in the home region, and the host-home-region institutional distance disparity.

INTRODUCTION

The objective of this study is to apply Real-Option Theory (ROT) to International Business Theory (IBT), specifically within the regionalization literature. This extends the discussion of resource characteristics within internalization theory, and explores the impact of geographic redeployability of resources on the performance of companies at different status of globalization. International Business Theory (IBT) and Real Options Theory (ROT) are two prominent theories, which are used to understand how the expansion of Multinational Enterprises (MNEs)' activities impacts their performance. Both theories posit that global expansion by companies is undertaken to exploit differences between markets (Ghemawat, 2003, 2007; Belderbos & Zou, 2007, 2009). They also contend that the performance of MNEs in host countries results from the costs of reversing individual choices (Dixit, 1992: 122; Rugman & Verbeke, 2004; Chi, Li, Trigeorgis & Tsekrekos, 2019). Following ROT, the higher the irreversibility of a company's investment, the higher the switching costs and the lower the switching option value or company value (Belderbos & Zou, 2007, 2009; Williamson, 1991; Fisch and Zschoche, 2012b). According to IBT, the ability of assets to be redeployed in host regions without incurring significant costs, known as asset redeployability, determines a company's success in host regions (Rugman & Verbeke, 2004, 2008; Rugman & Sukpanich, 2006). Accounting for the values of switching options due to irreversibility modifies assets' geographical redeployability and therefore, advantages of internalization (Rivoli & Salorio, 1996).

Previous discussions on regionalization strategies within the realm of International Business Theory (IBT) face two main challenges. Firstly, these studies are predominantly grounded in internalization theory, which posits that the global

expansion of companies follows staged development, characterized by a unidirectional trajectory. However, in reality, many companies do not adhere to a unidirectional approach but rather adopt a back-and-forth strategy to exploit differences between regions. Secondly, the core tenet of this theory underscores the challenges encountered by Multinational Enterprises (MNEs) in cross-regional expansion and the firm specific advantages that can be leveraged to overcome these challenges, such as innovation, which emerges as a natural selection within the external environment. Furthermore, this assumption inherently results in regionalization strategies lacking in performance implications (Rugman & Verbeke, 2004). In contrast, Real-Option Theory (ROT) delves into various factors, including internal and external ones, that affect firm performance. Additionally, ROT fundamentally explores the value added by flexibility in companies. Simultaneously, regardless of differing practical objectives and subtle variations in definitions, both IBT and ROT posit that the success of MNEs in host regions depends on the costs of reversing individual actions. Following ROT, the higher the irreversibility of a company's investment, the higher the switching costs and the lower the switching option value or company value (Belderbos & Zou, 2007, 2009; Williamson, 1991; Fisch and Zschoche, 2012b). In contrast, according to IBT, the ability of assets to be redeployed in host regions without incurring significant costs, known as asset redeployability, determines a company's success in host regions (Rugman & Verbeke, 2004, 2008; Rugman & Sukpanich, 2006). Kim and Kung (2017) indicate that the costs associated with redeploying assets and investment irreversibility largely overlap. Therefore, not only can ROT address the limitations stemming from unrealistic assumptions in IBT, but it is also entirely feasible to integrate these two theories.

The aim of this paper is to generate synergies in theory development by integrating Real Options Theory (ROT) and International Business Theory (IBT). Placing real options thinking in the context of the dynamism within corporate inter versus intra-regional expansion settings can potentially enhance our understanding of the impact of regional institutional configurations on switching option value. Secondly, our study contributes to the literature on multinationality-performance by introducing the triadic region scheme. Triadic regions are delineated based on institutional attributes (Banalieva & Dhanaraj, 2013; Verbeke & Asmussen, 2016), implying regional similarities that can reduce costs for Multinational Enterprises (MNEs) when expanding into another proximate country (Qian, Li, Li & Qian, 2008). Therefore, many MNEs adopt triadic regions as strategic units for formulating regional strategies (Jeong & Siegel, 2020; Rugman & Verbeke, 2007). We explain, through the introduction of institutional contingent factors, why some companies can benefit from inter-regional expansions even when considering company-specific advantage as a driver of global expansion, while others may not (Hennart, 2011; Verbeke & Forootan, 2012). Additionally, we address endogeneity issues in the M-P literature by using instrumental variables. This is crucial, considering that mediator variables, such as company-level investments in R&D and brand names, are responsible for P in the first place and, therefore, also lead to increases in M. Last but certainly not the least, we enhance the Real Options Theory (ROT) framework by incorporating institutional factors, a dimension that has received limited attention in existing ROT literature (Reuer & Tong, 2007; Trigeorgis & Reuer, 2017; Chi, Li, Trigeorgis & Tsekrekos, 2019). However, institutions play a significant role in shaping the lifecycle of option development, from identifying latent or concealed options, to their creation, and ultimately to

their maintenance and execution (Bowman & Hurry, 1993; Trigeorgis & Reuer, 2017).

Our theoretical framework is tested using a comprehensive panel dataset that details the activities of the top R&D-spending MNEs listed in the European Scorecard database, consisting of 711 companies over the period 2013 to 2019. Our analysis aligns with our predictions, indicating that greater engagement with home region can lead to a decrease in downside risks. Interestingly, the effects of home-region orientation are stronger for MNEs originating from home regions with weak institutional quality. Further，our findings concompany that when differerences between host and home region institutional distances are high, the negative effects of home-region orientation on downside risks become more pronounced. Overall, the study suggests that institutional distance increases a company's switching costs, thereby diminishing the values of switching options. Additionally, the direction of institutional distance matters. When the institutional quality in the home region is relatively high, Multinational Enterprises (MNEs) gain higher legitimacy in host regions, consequently reducing switching costs. Conversely, if the institutional quality in host regions is higher, MNEs need to invest more in irreversible investments, thereby escalating switching costs.

THEORY AND HYPOTHESES

Real Option Theory and Internationalization

Real Options Theory (ROT) provides valuable insights into decision-making under uncertainty. It considers the flexibility and value embedded in managerial choices, similar to financial options. There is a strong fit between ROT and international

business field because international business provides an ideal context for applications of ROT because uncertainty and irreversibility, the core concepts of ROT. Within the realm of internationalization, ROT has been employed to analyze the strategic decisions of multinational enterprises (MNEs) regarding timing, expansion, and resource allocation. An option to switch arises when a firm can achieve its objectives through alternative means involving different assets, which may vary in effectiveness depending on external conditions. In the context of International Business (IB), switching options emerge from multinational enterprises' (MNEs) capacity to manufacture intermediate or final products at multiple production facilities, such as subsidiaries or contract suppliers, situated in various countries. These products are then distributed across different markets, enabling MNEs to adapt to fluctuating economic conditions (Trigeorgis, 1993). A multinational network offers MNEs valuable options to switch sourcing, production, or distribution, providing both operational and strategic flexibility to navigate environmental changes. Kogut and Kulatilaka (1994) demonstrate that when an MNE's geographic locations exhibit divergent input costs due to fluctuations in exchange rates, having the option to shift production to a location with lower input costs becomes advantageous, particularly in periods of heightened exchange rate volatility.

Importantly, the exercise of a switch option results in favourable performance outcomes because downside risk and potential losses are kept in check as costly discretionary future actions need not be undertaken. Formally stated, downside risk is a probability-weighted function of below target performance outcomes. In contrast to traditional, variance-based measures of risk that incorporate the entire distribution of firm performance, downside risk focuses solely on organizational outcomes below some target value. For instance, the probability of failing to meet

a performance objective or expected loss are two among many formulations within the downside risk family (Reuer & Leiblein, 2000). The rationale for adopting downside risk measures, as proposed by Miller and Reuer (1996), stems from several factors drawn from behavioral decision theory, finance, and management research. Additionally, a downside conceptualization of risk aligns well with real options theory, a theoretical framework used in this study. Real options theory suggests that investments provide firms with the flexibility to avoid downside outcomes and capitalize on emerging opportunities (McGrath, 1997).

One crucial determinant of switching option value, is the switching costs. Even if immediate switching seems attractive, it may in fact be long-term optimal to wait due to switching costs. By waiting, the company maintains its option to switch later, if it becomes sufficiently attractive (Kulatilaka & Trigeorgis, 1994). In the realm of Real Options Theory (ROT), switching costs are defined as the costs associated with restarting, shutting down, and abandoning business operations. Additionally, this definition encompasses all costs directly resulting from the decision to change status (Fleten, Haugom, Pichler & Ullrich, 2020). These switching costs play a role in influencing decisions regarding switching. Holding other factors constant, higher switching costs tend to result in less frequent switching. However, due to the complexity of estimating switching costs, scholars have scarcely considered it while theorizing and testing the influence of multinationality and the value of switching options.

The cost of switching among the alternatives is analogous to the cost of reversing an individual action; thus, the higher the irreversibility as manifested in higher switching costs, the lower the switching option value (Belderbos & Zou, 2007, 2009; Chi, Li, Trigeorgis & Tsekrekos, 2019). Irreversibility refers to the presence of

sunk costs in an investment project that cannot be recouped if the company decides to change its mind later (Dixit & Pindyck, 2000). Due to the impact of irreversibility on the sunk costs of an individual invested asset, switching costs arise when a company, for the sake of flexibility, switches between two or more assets. The higher the investment irreversibility of the company, the higher the sunk costs of an individual project, leading to higher switching costs. A common type of irreversibility is resource commitment in terms of time, effort and capital invested that cannot be fully recovered in the case of failure. Another important form of irreversibility is the divulgence of proprietary information or knowledge such as technological know-how to another company in a licensing agreement, given that information and knowledge is difficult to take back once revealed.

Regionalization & Impacts on Performance

Recent research on regionalization has utilized geographic regions as a framework for categorizing countries into clusters (Arregle, Miller, Hitt & Beamish, 2016; Jeong & Siegel, 2020; Rugman & Verbeke, 2004). A geographic region is defined as a collection of physically contiguous and proximate countries (Arregle, Beamish & Hebert, 2009; Ghemawat, 2017; Qian, Li & Rugman, 2013). The physical proximity and continuity foster a sense of unity and shared characteristics within these regions (Banalieva & Dhanaraj, 2013; Qian et al., 2013). Additionally, political and economic efforts to integrate geographically close countries have led to a reduction in institutional distance between them (Banalieva & Dhanaraj, 2013; Verbeke & Asmussen, 2016).

However, low institution distance within a region does not significantly impact the redeployability and economic exploitation potential of existing assets for multinational enterprises (MNEs) (Rugman & Verbeke, 2004; Rugman &

Sukpanick, 2006; Rosa, Gugler & Verbeke, 2020). Consequently, many MNEs adopt geographic regions as a strategic unit for devising regional strategies (Jeong & Siegel, 2020; Rugman & Verbeke, 2007). Conversely, MNEs expanding into host regions encounter an institutional distance 'spike' and a sharp decline in asset redeployability relative to regional insiders. In turn, insiders venturing outside of their home region encounter an inter-regional institutional distance spike compared to the prevailing distances between countries in the home region (Flores et al., 2015).

Costs associated with redeploying assets are an important source of investment irreversibility (Kim & Kung, 2017). The redeployability of assets is a central topic in the globalization literature because it is considered a key factor for MNEs to succeed in host regions (Rugman & Verbeke, 2004, 2008; Rugman & Sukpanich, 2006). The redeployability of assets is closely linked to the regional setting and is defined as an asset's ability to be successfully exploited by a company throughout a region rather than being restricted to one country. Certain assets can be exploited successfully by a company throughout a region with low-linking investments in a region's countries owing to the relative “closeness” or similarity of these countries in terms of institution (Flores & Aguilera, 2007; Rugman and Verbeke, 2005). The redeployability potential of asset, which in V&J’s model drives company-level resource allocation, may increase or decrease due to changing environmental conditions, thus influencing resource commitment and consequently, performance (Vahlne & Johanson, 2017). In light of these perspectives, we propose that by fully anchoring Real Options Theory (ROT) in regionalization theories can lead to the development of testable propositions regarding the impact of the home and host regional institution configurations on the performance of the company.

Hypotheses

In this section, we present a direct hypothesis and two moderating hypotheses. The direct ypothesis establishes a foundational understanding of the correlation between home-region orientation and the downside risks confronted by Multinational Enterprises (MNEs). It delineates how the geographic redeployability of Firm-Specific Advantages (FSAs) diminishes as MNEs venture into host regions and confront heightened institutional distance. This reduction in redeployability, alongside escalating adaptation costs, contributes to increased investment irreversibility and switching costs, thereby influencing the company's downside risks. The two moderating hypotheses, provide nuanced insights into the influence of home-region institutional quality and host-home region institutional distance disparity, respectively. These moderating hypotheses account for the contextual effects of institutional quality and distance on MNEs' downside risks, enhancing our comprehension of the intricate dynamics between home-region orientation and risk management strategies in international business. The amalgamation of a direct hypothesis and two moderating hypotheses enables a comprehensive examination of the factors shaping MNEs' downside risks, offering valuable insights for both theoretical development and practical applications in international business research.

Home-region orientation and downside risks

Regardless of the geographic redeployment of non-location-bound Firm-Specific Advantages (FSAs), the redeployability of such FSAs can result in economies of scale by exploiting national differences through the distribution of the value chain across borders and subsequently coordinating these geographically dispersed activities (Rugman & Verbeke, 1992; Ghemawat, 2007). However, the attainment of

such benefits depends on the adaptation costs faced by Multinational Enterprises (MNEs) on the demand side and whether the supply side possesses advanced technologies and whether these technologies can be translated into marketable products and services (Banalieva and Dhanaraj, 2013; Hennart, 2014). On the demand side, as MNEs expand into host regions, their exposure to institutional distances increases, resulting in higher adaptation costs (Kostova and Roth, 2002; Kostova et al., 2008). These adaptation costs arise from the need for firms to conform to the legal system, tax laws, political and governmental framework, access to credit conditions, and regulations of the host country. The increase in adaptation costs raises the location boundedness of MNEs' FSAs (Verbeke & Asmussen, 2016).

From the supply side perspective, Bruno, Crescenzi, Estrin, and Petralia (2022) emphasize the role of location choices and institutional distance in the relationship between MNEs' inventive capabilities and innovation performance. They find that this relationship is contingent upon the Intellectual Property Rights (IPR) regime distance between the host and home countries. Overall, innovation performance decreases with the IPR regime distance, as the costs of coordinating and administering Research and Development (R&D) subsidiaries across different regimes increase with the IPR distance (Cui, Narula, Minbaeva & Vertinsky, 2022).

Therefore, as MNEs enter host regions and face a spike in institutional distance, the geographic redeployability of existing FSAs, which also encapsulates the foundational Research and Development (R&D) investments that contribute to the genesis of FSAs, decreases. The costs associated with FSA redeployability, as an important source of investment irreversibility, lead to an increase in

irreversibility, namely, higher switching costs. Consequently, the value of the company's switching options decreases. Therefore, we hypothesize the following:

Hypothesis1. The home-region orientation of MNEs influences negatively the downside risk of MNEs.

Home-region institutional quality as a moderator

IB research has also demonstrated significant variations among countries in their institutional quality levels (e.g., Kostova and Zaheer, 1999). Incentives supported by robust institutions (e.g., market-oriented reforms) serve as catalysts for MNE internationalization (Cuervo-Cazurra et al., 2019) and global technology transfer (Galang, 2012, 2014; Xie and Li, 2017). Due to the quality of national institutions, MNEs tend to exhibit behavior resembling that of market-oriented organizations, pursuing externally oriented development strategies, and emphasizing the role of innovation in propelling the internationalization process (Yi, Wang, and Kafouros, 2013). Pursuing market opportunities and intellectual property exploitation across countries with robust institutions implies that managers can rely on competitive markets, impartial legal systems, and efficient enforcement mechanisms (Cuervo-Cazurra and Dau, 2009; Williamson, 2002).

Aligned with our semi-globalization perspective, we concentrate on institutional quality at the regional level (Arregle et al., 2013; Chan et al., 2008). A sound institutional environment within the home region enables R&D-intensive MNEs to leverage domestic institutions and those of other constituent countries within the region to tackle challenges associated with bounded rationality and reliability. This containment of transaction costs faced by MNEs seeking to expand their regional coverage is facilitated by viable institutions, which foster communication and agreements with regional suppliers, distributors, and partners, and safeguard

innovations from imitation by regional competitors (Khanna and Palepu, 1997, 2000; Papageorgiadis et al., 2020). Such a context positively influences MNEs' capacity to develop robust fungible FSAs within their region and gain experience in achieving organizational efficiencies at a regional rather than national level (Enright, 2005). Consequently, high-quality institutional environments in the home region can stimulate the emergence of advanced technologies that can be harnessed for developing new products and services. According to previous research, these technological advancements can enhance the non-location boundedness or geographic redeployability of FSAs (Banalieva and Dhanaraj, 2013; Hennart, 2014). As discussed earlier, with the enhancement of FSAs' redeployability, the investment irreversibility or switching costs of companies decrease, thereby increasing the value of their switching options. Therefore, we derive the following hypothesis:

Hypothesis2. The effect of home-region orientation of MNEs on their downside risks is positively moderated by the home region institutional quality.

Host-home region institutional distance disparity as a moderator

Regional institutional quality, colloquially, refers to institutions perceived as "right," "good," or "justified." Similarly, when discussing institutional quality, we often refer to an institutional framework that provides a fair distribution of public goods and whose rulings merit adherence (Haldenwang, 2016). Early research on institutional quality or legitimacy has aimed to identify the institutional arrangements most conducive to establishing a "just" political order (Peter, 2010, pp. 4-10; Weatherford, 1992, p. 150). From an economic standpoint, institutional quality adds a principled dimension to our understanding of economic prosperity and efficiency (Best,

2005). The interaction between regional institutional frameworks and firms signals which choices are considered acceptable and feasible (Peng, 2002).

Therefore, we argue that when the institutional quality of the home country or region surpasses that of the host region, it lends legitimacy to multinational enterprises (MNEs) in the host regions. The disparity in institutional quality between the home country or region and the host region relates to whether MNEs can compete equitably in host regional markets and provide high-quality products and services, ultimately establishing legitimacy in host regions (Chan, Makino, & Isobe, 2006). Conversely, when the institutional quality of the host region exceeds that of the home country or region, MNEs are likely to face a legitimacy deficit in host regions and experience a higher risk of legitimacy and the liability of foreignness (Stevens & Newenham-Kahindi, 2017; Zhang et al., 2018). To overcome this legitimacy deficit, companies need to incur higher adaptation costs (Kostova & Zaheer, 1999; Salomon & Wu, 2012).

As adaptation costs rise with the disparity in institutional quality between the host region and the home country or region (hereafter referred to as host-home region institutional distance disparity), the geographical redeployability of a company's FSAs decreases, and investment irreversibility increases. Consequently, the value of the company's switching options decreases due to the rising switching costs. Thus, we propose the following hypothesis:

Hypothesis 3: The effect of the home-region orientation of MNEs on their downside risks is negatively moderated by the host-home region institutional distance disparity.

METHODOLOGY

Our unbalanced panel dataset consists of 711 MNEs and counts 3,809 MNE-year observations over the period 2013-2019. The MNEs are all included in the R&D investment ranking of the EU Scoreboard (Cincera & Ravet, 2010; García-Manjóna & Romero-Merino, 2012; Cincera & Veugelers, 2014; Montresor & Vezzani, 2015; Coad, 2019). The European Innovation Scoreboard includes 2,500 companies, covering 90% of the total R&D investment around the world. To compile our database, we selected the MNEs with the highest ranking in terms of R&D investment in each year. This enables us to cover 80% of the worldwide R&D investment for each individual year. ROT research has demonstrated that MNEs with a high R&D intensity are subject to significant irreversibility or switching costs (Paul & Wooster, 2008; Chi et al., 2019). Therefore, this sample provides an appropriate context for examining the effects of switching costs. The reliability of scoreboard data has been widely concompanyed by international business literature (Cincera & Veugelers, 2014; Montresor & Vezzani, 2015; Coad, 2019). Besides the European Scoreboard, we collected financial data from Orbis, Compustat and Bloomberg. We chose the database that provided the closest information to the actual annual reports. For instance, Compustat and bloomberg are more suitable for financial analysis because they contain more raw accounting data as well as financial ratios.

We rely on the triadic classification proposed by Rugman and Verbeke (2004). we attribute corporate sales among the three regions as follows: the Americas, Europe-Middle East -Africa (EMEA) and Asia Pacific. In order to obtain information on MNEs' sales geographic distribution needed for the purpose of globalization categorization, we collected data from both Orbis and annual reports by hand.

Disclosure of information of geographical sales distribution is required by both International Financial Reporting Standards (IFRS) and the US GAAP.

Dependent variable

We measure downside risks as the Lower Partial Moment (LPM), developed by Bawa (1975) and Fishburn (1977) as general family of below-target downside risksmeasures with a general investor risk tolerance degree (power). The mathematical expression is

$$\text{Downside risks, ROA}_j = \sqrt{\frac{1}{5}\sum_{ROA_j < IROA_j}(IROA_j - ROA_j)^2} \quad (1)$$

Where ROA_j is firm j's ROA and $IROA_j$ is the median ROA for firm j's industry.

Downside risks, as a probability-weighted function of below target performance outcomes, captures asymmetric performance outcomes below the target (industry median) level. This is in contrast to conventional variance-based measures of risk that capture the entire symmetric distribution of firm performance outcomes. Following Reuer and Leiblein (2000), Reuer and Tong (2005), Driouchi and Bennett (2011), Belderbos, Tong and Wu (2014), Ioulianou, Leiblein and Trigeorgis (2020), we specify Downside risks in terms of a firm's annual return on assets (ROA) relative to the median industry target. The advantage of this measure over conventional variance measures lies in our ability to capture poor performance relative to the industry (by measuring mass in "bad" states where $R_t < T$) while maintaining the second moment common to other forms of variance based measures. To the extent that practicing managers "care" about the degree to which they do worse than a target relative to their industry, our second moment below the industry target measure provides a meaningful way of thinking about downside risks. The median ROA for a firm's GICS industry

in the preceding year is used as proxy for this target level (T=median IROA). As is standard in the above cited literature, downside risks are estimated over a 5-year horizon (this is also in line with estimations of other asymmetric performance measures such as firm-specific skewness, e.g., Boyer et al. (2010)).

Main explanatory variables

Home-region orientation. The key explanatory variable corresponds to the percentage of sales allocated in home region of the MNE (Home-region orientation). This measure has been adapted from the seminal work by Rugman and Verbeke (2004), which divide the whole world into three triads, EMEA, APAC and Americas. The measure was also adopted by Banalieva and Dhanaraj (2013). The higher the ratio, the higher the company's home-region orientation.

Home-country institutional quality. The first moderator of home-region orientation effect is home region institutional quality, or GDP weighted average of country level institution quality indicator. To calculate the quality of institutions at the country level, we employed the average score derived from the six Worldwide Governance Indicators (WGIs) for each respective country, following the methodology established in previous research (Langbein & Knack, 2010; Slangen & Beugelsdijk, 2010). Worldwide governance indicators (WGIs), partly based on expert assessments, are developed by Kaufmann, Kraay and Mastruzzi (2010) in World Bank database (Jensen, Li & Rahman, 2010; Hope, Jiang & Vyas, 2021). The indicators are a widely used source of comparative information on institution properties and performance (Haldenwang, 2016). The WGIs cover six dimensions of governance – voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption – and are measured for over 200 countries.

Host-home region institutional distance disparity. When a company undergoes internationalization in its home region, it encounters institutional distances between its home country and other countries within the home region. The average of these institutional distances reflects the overall institutional distance the company faces in the home region, defined as home-region-institutional distance. This distance is calculated as the average of institutional distances between home-regional countries and the home countries of MNEs, weighted by the GDP of each home-regional country. Similarly, when a company engages in cross-national border expansion in a host region, it faces institutional distances between its home country and other countries within the host region. The host-region-institutional distance is calculated in the same manner, as the average of institutional distances between home-regional countries and the home countries of MNEs, weighted by the GDP of each host-regional country. The institutional distance between countries is determined based on the differences in the average World Governance Indicators (WGI) of the respective nations. This measure essentially captures the variation in the degree of institutionalization across countries or regions. Conceptually, institutional distance encompasses differences in both institutions between countries and the varying degrees of institutionalization (Phillips, Tracey & Karra, 2009; Cuervo-Cazurra & Genc, 2011). As there is currently no quantifiable indicator for different institutions, this study focuses on the institutionalization degree level of institutional distance. The average of institutional distances between the company's home country and different countries in the host region is defined as host-region-institutional distance. The difference between host-region-institutional distance and home-region-institutional distance is termed host-home region institutional distance disparity. The mathematical formula is,

$$\text{Host} - \text{home Institutional Distances Disparity}$$

$$= \sum_{host=1}^{2} W_{host} \frac{\sum_{j=1}^{N}(x_c - x_{j)}}{N-1} - W_{home} \frac{\sum_{i=1}^{N}(x_c - x_{i)}}{N-1}$$

With N number of countries in region (j for host region, i for home region)

W_{host} revenues attributed to host region j/total revenues of the firm

W_{home} revenues attributed to home region j/total revenues of the firm

X_c score of home country on formal institutions

X_i score of country i in home region on formal institutions

X_j score of country j in host region on formal institutions

Instrumental variables. To address the issue of endogeneity, a set of instrumental variables (IV) is included in the two-stage least square regressions (2SLS). The actual value of the endogenous regressor, home-region orientation, is replaced by its predicted score from the first stage based on multiple instruments (Kennedy, 2003). Controlling for endogeneity of home-region orientation requires identifying instrumental variables that affect the business expansion out of home triad region while being uncorrelated with downside risks. First, as previous research, we value companies relative to the median company in the industry (Reuer & Leiblein, 2000; Belderbos, Tong & Wu, 2014; Ioulianou, Leiblein & Trigeorgis, 2020). By construction, this measure has the advantage of being neutral to industry shocks that affect companies in the similar way. We followed the approach of Campa and Kedia (2002) and adopted two sets of instruments: industry instrument and company level instruments。Industry instruments capture overall attractiveness of a given industry to home-region oriented MNEs。Industry attractiveness is

captured by the average home-region orientation levels of all the companies within the industry classified by Global Industry Classification Standard (GICS) (INDHOMEPER). The higher the INDHOMEPER, the more attractive the industry is for home-regional MNEs. The second set of instruments is company specific. These include MAJOREX, which is a dummy that takes the value 1 when the company is listed on the major stock exchanges, including NYSE, NASDAQ, Shanghai Stock Exchange, Tokyo Stock Exchange, Euronext Amsterdam and London Stock Exchange, and 0 otherwise. Companies are more likely to expand into host regions if they are listed on major exchanges. s. Listing on major exchanges facilitates a company's acquisition and divestiture by generating greater visibility and reducing information asymmetries (making it easier to raise external financing) through greater analyst coverage. However, companies listed on major exchanges are also likely to have greater liquidity. As companies with higher liquidity might be valued higher, this might also affect relative company performance. We create a dummy variable (MAJORINDEX) that takes value 1 if the company belongs to S&P 500 index, STOXX Europe 600 index, FTSE 350 index, Nikkei 300 index or Shanghai Composite index, and 0 otherwise. This dummy variable (MAJORINDEX) controls for liquidity, as companies belonging to the major indices have higher liquidity. As liquidity impacts both relative company performance and the inter-regional expansion, we include the MAJORINDEX variable in both instrument variable and as control variable.

Control variables

To account for prior research on regionalization and the use of ROT for understanding multinational and location choices, a set of control variables are added to our models. Belderbos, Tong, and Wu (2014) find that the coordination

costs, measured in their study by firm's equity share in its portfolio of foreign affiliates, play moderating role on the impact of multinationality on the value of real options. Because greater equity share facilitates the coordination of switching options and operating flexibility, it is likely to reduce firm's value of real options portfolio (Belderbos & Zou, 2007). To measure equity ownership, we use the ownership data from Orbis.3

Then, we include future growth options (GO) and recent investment (INV), as they are known to have an association with the level of risks (Smit & Trigeorgis, 2004; Trigeorgis & Lambertides, 2014; Kester, 1984; Trigeorgis, 1996; Brouthers, Brouthers & Werner, 2008). Recent capital investments that enhance commitment to the stock of plant and equipment. Growth options refer to future value creation and future expansion of business operations through newly considered investment (Smit & Trigeorgis, 2004; Trigeorgis & Lambertides, 2014). We anticipate that downside risks will be lower, the higher the firm's level of future growth options (GO) as well as its level of recent capital investment (INV). The recent investment is measured by firm i's capital investment growth (increase in Capex) as of year t-1; INV is the (three year period) average capital expenditure at year end minus the beginning-of-period Capex, scaled by beginning-of-year total assets. To account for firm i's growth oppurtunities we estimate variable $GO_{i,t-1}$, which capture firm i's estimate of future growth opportunities at time t-1. Following the market-implied model of Cao, Simin, and Zhao (2008) and Trigeogis and Lambertides

[3] Subsidiary ownership in Orbis includes direct ownership and indirect ownership. Both direct ownership and indirect ownership can give MNEs the right to influence and control subsidiaries, so we use the total ownership obtained by adding the two as a measure of coordination costs. As robustness check, we used both percentage of wholly owned subsidiaries (equity ownership >99%) and percentage of majority-owned subsidiaries (50%<equity ownership<99%) to test the models. The results confirm that our key findings are robust to the choice of subsidiary ownership.

(2014), $GO_{i,t}$ is measured as the difference between the market value of firm i at time t under a no-further growth policy and the perpetuity of steady operating cash flows:

$$V_{i,t} = \frac{CF_{i,t}}{k} + GO_{i,t} \text{ or } GO_{i,t} = V_{i,t} - \frac{CF_{i,t}}{k} \quad (2)$$

Where $V_{i,t}$ is the market value for firm i at time t, $CF_{i,t}$ is the (perpetual) Operating Cash Flow at time t (assuming no further growth) and k is the firm's cost of capital (WACC).

Additionally, previous research also mentioned that the company's financial flexibility , measure in our study with Altman Z-score will have an impact on managerial flexibility (Bancel & Mittoo, 2010; Antonio, José-María & Francisco, 2008). Therefore, we also add financial flexibility as a control. Finally, we also controlled for standard firm level controls (firm size measured by ROA, and R&D intensity), which is consistent with previous research (Ioulianou et al., 2021).

Model estimations

We must carefully account for the longitudinal nature of our database. Instrumental variable estimators can address concerns related to endogeneity. Panel data models can deal with omitted individual MNE heterogeneity control bias and measurement error distortions. To combine instrumental variable and panel data models, we used the STATA command, -xtivreg- (Balestra & Varadharajan-Krishnakumar, 1987; Baltagi, 2013). Furthermore, conventional IV regression technique particularly in its finite sample performance, and that approximations of the distribution of the IV estimators based on asymptotic

theory may yield poor results (see, e.g., special issues of the Journal of Business & Economic Statistics, volumes 14 and 20; Young, 2022). Thus, we implemented bootstrap method, which is one of the most common ways, to refine the approximation for the distribution of the IV regression estimators and related test statistics. Last but not least, in our models, the independent and most of the control variables are lagged one year to partially control for reverse causality (Ioulianou, Leiblein and Trigeorgis, 2021; Reed, 2015).

MAIN RESULTS

Table1 shows cross-sectional correlations. It is noticeable that our key independent variable, home-region orientation, is significantly correlated with downside risks. Given the correlations across the variables, we tested the variance inflation factor (VIF) statistics for the reported regressions. The VIF statistics vary between 1.03 and 1.84, indicating that multi-collinearity does not cause a problem for model estimations (Knoke, Bohrnstedt, & Mee, 2002; Young, 2017: 109-136). Table2 shows descriptive statistics for the main variables. The statistics are consistent with prior research on regionalization in the sense that the sampled MNEs are mostly regional, and a minority of them reach a global status. Only 4.26% of our observations (MNE-year) corresponds to host-region MNEs. Since the sample includes R&D-focused MNEs, the MNEs invest from 0% to 726% of their sales in R&D.

Four models are estimated and reported in Table 3. Model 1 is the baseline model and includes only the control variables. Model 2 includes the instrumented home-region orientation with the set of instruments (average industry home-region orientation, public listing on major exchange, inclusion in major index). A significant negative impact on downside risks is shown downside risks(β=-12.98,

p<0.01). Model 4 estimates the interaction term and supports our second hypothesis regarding the moderating effects of home-regional institutional quality. We depicted the marginal effects of home region orientation moderated by home-region institution quality in Figure 1. The graph illustrates a diminishing trend in marginal effects as home-region institution quality increases. Notably, the overall trend remains negative. This suggests that the institution quality of the home region is pivotal in influencing the impact of home-region orientation. However, it does not modify the direction of the effects. Consequently, our second hypothesis is substantiated.

We also found that financial flexibility can significantly reduce downside risks, which is consistent with prior research (Bancel & Mittoo, 2010; Antonio, José-María & Francisco, 2008). Combined with the coefficients of financial flexibility in Table 3, we could say this is strongly supportive of previously proposed theory that greater financial flexibility leads to higher managerial flexibility (Bancel & Mittoo, 2010; Antonio, José-María & Francisco, 2008). Coordination costs have no significant associations with downside risks. Estimations for company size (lagSize) and past performance (lagROA) are also consistent with previous research (Reuer & Leiblein, 2000; Ioulianou, Leiblein & Trigeorgis, 2021).

Four models are estimated and reported in Table 4. Model 1 is the baseline model and includes only the control variables. Model 2 includes the instrumented home-region orientation with the set of instruments: (average industry home-region orientation, public listing on major exchange, inclusion in major index). A significant negative impact on downside risks is shown downside risks(β=-12.98, p<0.01). Model 4 estimates the interaction term and supports our second hypothesis regarding the moderating effects of host-home region institutional

distance disparity. We further visualized the marginal effects of home region orientation, taking into account the moderating effect of the host-home region institutional distance disparity, as depicted in Figure 2. Our examination of Figure 2 reveals that the marginal effects exhibit an increment with the expanding host-home region institutional distance disparity. Nevertheless, the marginal effects consistently maintain a negative direction throughout the entire process. This observation implies that the host-home region institutional distance disparity plays a pivotal role in shaping the impact of home-region orientation, without, however, altering the direction of the effects. Thus, the hypothesis 3 is supported.

DISCUSSION AND CONCLUSION

Our study explores the influence of MNEs' home-region orientation on the value of their switching-option portfolios. We underscore the significant impact of institution distance, due to different institutions, and differences in institutionalization degrees, on the values of MNEs' switching-option portfolios. Furthermore, we identified a moderating effect of the institutional quality of MNEs' home region on the relationship between home-region orientation and the values of switching options. This is because institutional quality influences the institutional illegitimacy that MNEs face in host regions. These pressures encourage companies to adapt to the market, which in turn alters the company's commitment to host market resources. Consequently, this affects the switching costs incurred due to institutional distance.

Our study offers several significant contributions. Firstly, it incorporates a regional classification scheme into ROT, thereby introducing a geographical dimension. This can be associated with numerous crucial contingency factors such as psychic distance, institutions, and macroeconomic uncertainties. This approach allows

ROT to evolve beyond merely examining the relationship between multinationality and performance, towards a contingency perspective that probes the boundaries of ROT applications. Secondly, we are among the pioneers to integrate institutional perspectives into ROT research. The institution quality of MNEs' home region can influence external institutional pressures and resource commitments, thereby altering switching costs and affecting the values of switching options. The comparison between the institution distances faced by MNEs in host regions and their home region also influences the strategic decisions regarding intra-regional vs. inter-regional expansion for the company. Lastly, we establish connections between parallel concepts of IBT and ROT. These concepts can reinterpret each other, deepening our understanding of the phenomena of intra-region versus inter-region expansion in IBT. This interconnection enriches our understanding of both theories.

Secondly, 在讲 ROT 应用到 international business 领域的研究中， an important challenge is to incorporate related institutional perspectives (Trigeiogis & Reuer, 2017). MNEs' ability to exercise options can be enhanced or constrained by external institutions through mechanism of irreversibility or switching costs though the whole life cycles of switching options (Williamson, 1991; Fisch and Zschoche, 2012b). IBT happens to have a substantial body of institutional literature. Our study integrates established theories and concepts from IBT into ROT. This approach not only enriches the theoretical framework of ROT but also broadens its applicability in the field of international business.

Switching options, embedded in both intra-regional and inter-regional expansion, provide MNEs with the flexibility to redeploy resources and alter operations among different countries in response to changes in external economic

conditions. This study underscores the significance of institutional parameters in both home and host countries. It is found that MNEs operating in host markets with significant institutional distance incur higher switching costs. Therefore, it is advisable for MNEs to prioritize entry into countries with institutions that closely resemble those of their home country. Simultaneously, MNEs originating from home countries with less stringent institutions are likely to face elevated switching costs. As a result, these MNEs should consider registering in countries with relatively stringent institutions. From a policy-making perspective, it is recommended to enhance governance quality, enforce regulations, and improve information transparency. These measures can assist companies in forming country-level advantages, thereby supporting their overseas expansion.

Our research have certain limitations that open avenues for future research. Firstly, our measurement of home-region orientation, which is based on sales, may be subject to critique. This approach aligns with existing research in International Business Theory (IBT), but Real Options Theory (ROT) primarily concerns investment. Although Rugman & Verbeke (2008) have demonstrated a high correlation between the geographic distributions of sales and assets of MNEs, improving measurement validity would require future data collection on asset distribution. Secondly, while we theoretically established the impact of institutional distance on switching costs, we did not empirically verify it. This limitation suggests an opportunity for future research to empirically test this relationship. Additionally, this study theoretically equates the transferability of Firm-Specific Advantages (FSA) in IBT to the switching costs in ROT. Future research could develop measurements and conduct empirical comparisons of these two concepts. Moreover, future studies could empirically verify the theoretical relationship between institutional quality, institutional distance, and

switching costs. These areas of exploration could further enhance our understanding of these complex relationships.

International business theory posits that cultural and institutional distance can hinder multinational corporations from expanding across regions. Therefore, most MNCs stay within the home region (Rugman & Verbeke, 2004). However, it cannot explain why a small number of companies still choose to expand their business outside their home regions. This paper develops a real options portfolio perspective on cross regional expansion. Value of the MNE's switch option portfolios of expansion within home region can be smaller than the sum of the values of individual switching options. Expanding into countries within the home region is sub-additive to the portfolio from a real-option portfolio perspective, since the high correlations of macroeconomic uncertainties between different countries in the same region will cause the switching of MNEs between different countries to become less valuable. Empirical results strongly concompanyed the presence of home-region subadditivity.

ROT indicates that switching options exist when the company can achieve the same objective via alternative means, vacillating in efficacy due to exogenous conditions, but only conditional on imperfect correlations between uncertain factors. In an IB context, switching options arise from an MNE's ability to sell its products in different markets in the face of fluctuating macroeconomic conditions (Trigeorgis, 1993). The previous studies have proven that the more countries MNEs expand enters, the more valuable their switching options portfolios are, but this article proves that the region where MNEs enter is equally important.

We analysed geographic sales distribution in a sample of 711 top R&D investing MNEs around the world over the years 2013-2019. The empirical results gave strong

support for a real options perspective on subadditivity of internationalization within home region. The results support the notion that regional configuration does need to be considered in the process of market configuration by MNEs. This is akin to earlier findings that exchange rates correlations between countries where MNEs have operations will lead to a reduction in the company's real-option values (Belderbos & Zou, 2009). The results provide an alternative explanation for previously reported limited effects of multinational presence on downside risks in MNEs. Early work by Reuer and Leiblein (2000) found no impact of multinationality on downside risks. Tong and Reuer (2007) found an inverted-U shaped relationship between international plant dispersion and downside risks, and argue that with higher dispersion the marginal costs of coordination and utilization of switching options increases. Our findings suggest that a plausible alternative explanation is that MNEs differ in regional configurations.

The limitation of the study is that previous real option studies all used the geographic distribution of investment as the measurement of multinationality. While our home-region orientation measurement is based on sales distribution. Although Rugman and Verbeke (2008) have proven that regional distribution of sales and investments are highly correlated, in order to facilitate comparison with research in the field of real options, we still need to use investment data to verify the results of the research. Secondly, due to the lack of homogeneity in the information released by MNEs, we have opted for broad regions. Although this segmentation of regions is widely used and recognized as relevant practice, it would be of real interest to account for other, more refined, regional segmentations (e.g., Arregle et al., 2016). Third, our study focuses on the quasi-population of the largest R&D-investing MNEs. Future research could investigate other – less capitalistic – populations of MNEs (e.g., “born-globals”, digitalized

service MNEs, start-ups). Finally, the data collected from the annual reports did enable a distinction between MNEs' domestic and regional geographic segments; both being considered as intra-regional category. Given the discrepancies of market size across countries and the greater influence leveraged by institutions inside economically advanced countries (e.g., the United States, China, or Germany), there is merit in delineating domestic orientation from regional orientation (Banalieva and Santoro, 2009). Despite these limitations, we have been able to provide a first attempt at understanding the influence of region-level institutions on MNEs' inter-region coverage. By so doing, we have addressed the call by Verbeke et al. (2018) to account for fine-grained data on the sampled MNEs instead of superficial internationalization characteristics.

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APPENDIX

Table1. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Downside risk	1.000										
(2) Home-region orientation	0.079***	1.000									
(3) Home-region institutional quality	0.132***	-0.342***	1.000								
(4) Host-home-region institutional distance disparity	0.061***	0.436***	-0.429***	1.000							
(5) R&D Intensity	0.408***	0.000	0.136***	0.000	1.000						
(6) ROA	-0.674***	-0.194***	0.033*	-0.083***	-0.255***	1.000					
(7) Coordination cost	-0.024	0.090***	-0.308***	-0.136***	0.028	-0.050***	1.000				
(8) GO	0.024	-0.028	0.036*	-0.012	0.039**	0.039**	-0.019	1.000			
(9) INV	0.224***	0.064***	-0.017	0.001	0.100***	-0.095***	-0.001	0.022	1.000		
(10) Financial flexibility	-0.223***	-0.011	-0.087***	0.024	0.009	0.308***	0.100***	0.110***	0.038**	1.000	
(11) Firm size	-0.304***	0.105***	-0.116***	-0.015	-0.256***	0.052***	0.046**	-0.179***	-0.132***	-0.096***	1.000

**** p<0.01, ** p<0.05, * p<0.1*

All the variables are lagged except the variables Downside risk, Home-region orientation, Coordination cost and Host-home-region institutional distance disparity.

Table2. Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Downside risk	3155	3.40	6.33	0.00	74.73
Home-region orientation	3156	0.60	0.24	0.00	1.00
Home-region institutional quality	3159	0.64	0.34	0.13	1.02
Host-home-region institutional distance disparity	3058	-0.21	0.58	-1.42	1.48
R&D Intensity	2856	10.80	27.40	0.00	725.99
ROA	3052	6.32	9.49	-95.72	59.27
Coordination cost	3153	0.40	0.24	0.00	1.00
GO	2907	-20531.56	260266.20	-6454673.00	4765706.00
INV	3008	0.00	0.02	-0.09	0.48
Financial flexibility	2810	2.19	2.29	-53.60	18.61
Firm size	3074	9.95	1.51	4.40	14.81

Table 3. Two-stage regressions regressing home-orientation on downside risks (moderated by home-region institutional quality)

VARIABLES	(1) OLS	(2) 2SLS	(3) 2SLS	(4) 2SLS
Home-region orientation		-12.983***	-4.239***	-6.932***
		(2.722)	(0.798)	(1.061)
c.Home-region orientation#c. Home-region institutional quality				4.841**
				(1.992)
Home-region institutional quality			0.646**	-2.193*
			(0.285)	(1.283)
R&D intensity	0.036***	0.034***	0.034***	0.032***
	(0.007)	(0.008)	(0.010)	(0.010)
ROA	-0.354***	-0.398***	-0.375***	-0.372***
	(0.031)	(0.024)	(0.020)	(0.020)
Coordination cost	-0.075	0.670	0.595	0.595
	(0.703)	(0.479)	(0.419)	(0.392)
GO	-0.000	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
INV	29.614***	34.736***	31.993***	31.938***
	(8.185)	(8.061)	(7.412)	(9.190)
Financial flexibility	-0.153**	-0.120	-0.130	-0.192*
	(0.077)	(0.082)	(0.079)	(0.100)
Firm size	-0.743***	-0.507***	-0.715***	-0.652***
	(0.118)	(0.095)	(0.081)	(0.079)
Constant	12.889***	19.035***	14.502***	16.456***
	(1.379)	(1.872)	(1.108)	(1.289)
Observations	2,513	2,513	2,513	2,523
Adjusted R-squared	0.5	0.3	0.5	0.5
bootstrap		1000	1000	1000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Two-stage regressions regressing home-orientation on downside risks (moderated by host-home-region institutional distance disparity)

VARIABLES	(1) OLS	(2) 2SLS	(3) 2SLS	(4) 2SLS
Home-region orientation		-12.983***	-5.454***	-6.068***
		(2.656)	(0.942)	(1.243)
c. Home-region orientation#c. Host-home-region institutional distance disparity				-2.783**
				(1.082)
Host-home-region institutional distance disparity			0.916***	2.677***
			(0.213)	(0.860)
R&D intensity	0.036***	0.034***	0.037***	0.037**
	(0.007)	(0.008)	(0.014)	(0.014)
ROA	-0.354***	-0.398***	-0.366***	-0.375***
	(0.031)	(0.023)	(0.021)	(0.021)
Coordination cost	-0.075	0.670	0.405	0.721
	(0.703)	(0.489)	(0.426)	(0.478)
GO	-0.000	-0.000***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
INV	29.614***	34.736***	30.716***	31.063***
	(8.185)	(7.922)	(8.353)	(9.939)
Financial flexibility	-0.153**	-0.120	-0.159	-0.222**

	(0.077)	(0.081)	(0.098)	(0.108)
Firm size	-0.743***	-0.507***	-0.546***	-0.752***
	(0.118)	(0.097)	(0.090)	(0.089)
Constant	12.889***	19.035***	14.870***	16.910***
	(1.379)	(1.802)	(1.227)	(1.420)
Observations	2,513	2,513	2,424	2,433
Adjusted R-squared	0.5	0.3	0.5	0.5
bootstrap		1000	1000	1000

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 1. Average marginal effects of Home-region orientation moderated by Home-region institution quality

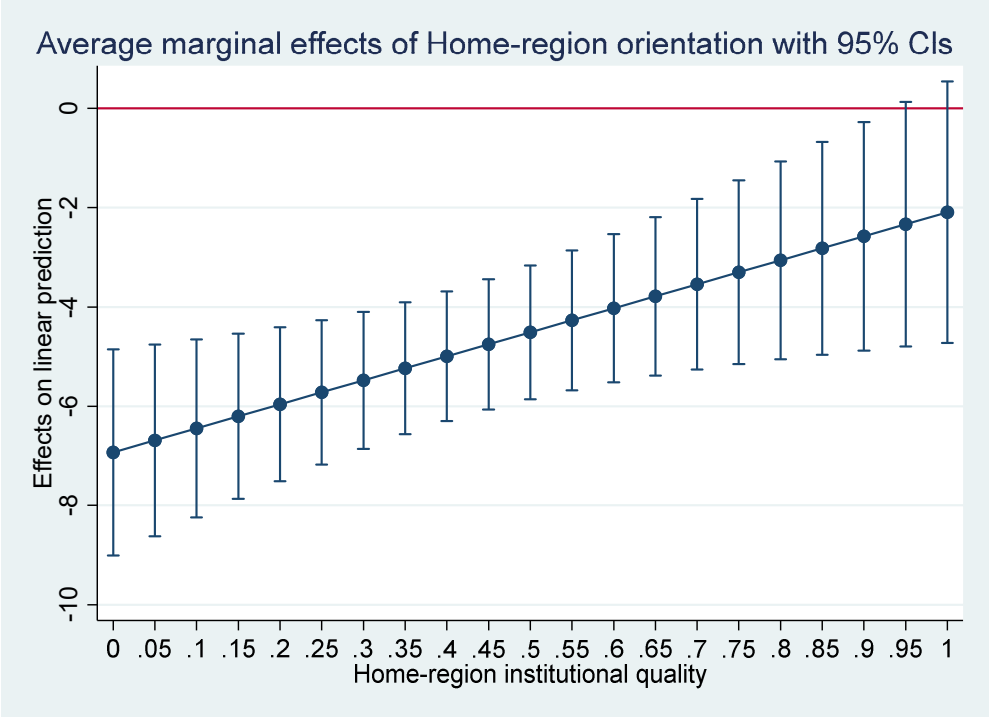
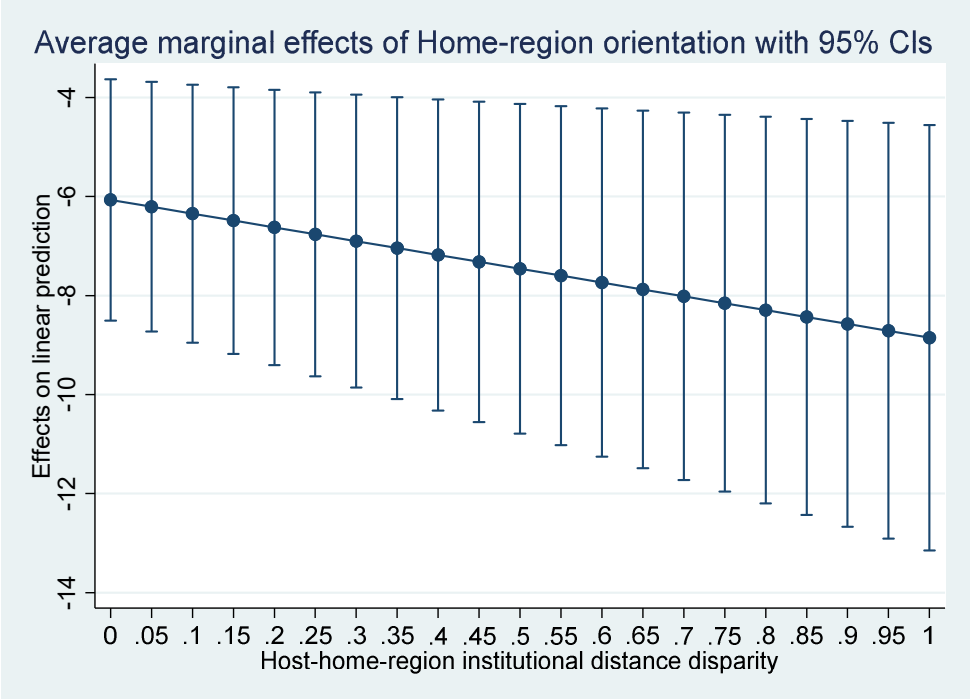


Figure 2. Average marginal effects of Home-region orientation moderated by Home-host institution score distance



Article 3 - State ownership, political connections and transferability of technological innovation: an institutional perspective

ABSTRACT

In the realm of International Business (IB), the transferability of innovative Firm Specific Advantages (FSAs) across regions stands as a pivotal factor in facilitating globalization and fostering multinational enterprise (MNE) success. Despite the significance of innovative FSAs, empirical research highlights constraints on their geographic transferability, attributed to institutional distance. State ownership and political connections emerge as prevalent strategies employed by firms to manage institutional contexts and enhance competitive performance. While these strategies offer access to critical resources and networks, they also introduce institutional pressures and legitimacy challenges. Building on institutional theory, this study examines the impact of state ownership on the transferability of innovative FSAs, moderated by political connections. Contrary to theoretical predictions, empirical analysis suggests a nuanced relationship between state ownership and FSA transferability. The omission of certain control variables, such as trade agreements and political ideologies, may contribute to this inconsistency. Future research will integrate additional control variables to address this issue. Additionally, political connections play a crucial role in mediating the relationship between state ownership and FSA transferability, enhancing our understanding of how firms navigate institutional pressures to achieve global competitiveness while balancing social legitimacy and economic efficiency.

INTRODUCTION

In the domain of International Business (IB), innovative Firm Specific Advantages emerges as a key driver and the most commonly utilized corporate strategy for facilitating globalization. Its significance lies in its capacity to be harnessed beyond the confines of the home region, enabling companies to replicate the success achieved domestically across country borders without incurring substantial costs. Despite the pivotal role of innovative Firm Specific Advantages, empirical research highlights a notable constraint on its geographic transferability, defined as the marketability of innovative FSAs, and the degree to which they can be effectively utilized beyond the confines of the home region, aligning with the theory proposed by Rugman & Verbeke (2004). This constraint arises from institutional distance, leading to a prevalent regional focus among companies. Consequently, the majority of companies maintain a regional presence, with only a select few managing to transcend these barriers and achieve a truly global footprint (Rugman & Verbeke, 2004).

State ownership and political connection are among the most commonly observed strategies used by firms to enhance their competitive position and performance by actively managing the institutional contexts of business competition within which they operate (Mellahi, Frynas, Sun, & Siegel, 2016: 144). In contrast to the more extensively studied innovative Firm Specific Advantages (FSAs), which position a firm to excel in the market environment but are subject to limitations imposed by institutional distance, state ownership and political connections address the broader external landscape, encompassing both market and nonmarket environments. While state ownership and political connections can provide companies with financial and human capital, research funding, and access to inter-organizational networks, all of which are critical for firm innovation

(Li, Xia, & Zajac, 2018; Zhou, Gao, & Zhao, 2017; Jia, Huang, & Zhang, 2019), state ownership can also introduce institutional pressures from the home country government and foster resource dependency (Oliver, 1991). Furthermore, political affiliations with the government can lead to a lack of legitimacy for companies in host regional countries (Cui & Jiang, 2012). Firms' legitimacy-seeking activities are contingent upon their responses to institutional pressures and significantly impact their economic efficiency (Jeong & Kim, Citation2019), thereby resulting in a decline in the transferability of the firm's innovative FSAs.

Political connection, which is defined as the personal relationships between a corporation and government officials (Faccio, 2006), constitutes a pivotal element of corporate strategy across various institutional environments. In instances of state ownership, the majority of politically connected directors are typically appointed by government entities to exert control over these firms (Fan & Wang, 2018). As representatives of the government, these individuals who have been socialized or trained into the institutional logic of the government are likely to be committed to defending it should it face challenges (D'Aunno et al., 1991; Lounsbury, 2001; Pache & Santos, 2010). Consequently, the presence of political connections theoretically should strengthen the impact of state ownership on the geographic transferability of firms and their innovative FSAs.

In the context of cross-region expansion, multinational enterprises (MNEs) not only face economic efficiency deficits due to institutional distance but also encounter legitimacy penalties stemming from the perception of political affiliation in host regional markets (Nason et al., 2018). Intuitively, the corporate strategies facilitating cross-regional expansion, namely institutional elements (state ownership and political connection) and innovative firm-specific

advantages (FSAs), are not mutually independent but involve a trade-off. However, existing research fails to detect the trade-offs between social legitimacy and economic efficiency. To address this gap, this research investigates the impact of state ownership on the geographical transferability of innovative FSAs and the moderating effect of political connection on this impact. The primary objective of this article is to gain a more comprehensive understanding of the extent to which institutional elements (state ownership and political connection) either promote or impede MNEs in expanding into host regions by leveraging their existing innovative FSAs. Through this endeavor, we aim to provide valuable insights to International Business (IB) scholars interested in how MNEs integrate institutional elements (state ownership and political connection) and innovative FSAs to establish and sustain global competitive advantages while achieving a balance between social legitimacy and economic efficiency.

Our theoretical framework is empirically examined using a comprehensive panel dataset documenting the activities of the top R&D-spending multinational enterprises (MNEs) listed in the European Scorecard database, comprising 711 firms spanning the period from 2013 to 2019. Contrary to our theoretical expectations, our analysis does not support the hypothesis that the relationship between state ownership and the geographic transferability of innovative firm-specific advantages (FSAs) is negative and linear. This inconsistency may potentially arise from the omission of certain control variables in the models, such as trade agreements between nations and the political ideologies of both home and host countries, as these agreements could facilitate the geographic expansion of companies into host countries (Fernández-Méndez, García-Canal & Guillén, 2018). As a next step in our research agenda, we intend to incorporate additional control variables to address the issue of omitted variables.

THEORY AND HYPOTHESES

Research on the relationship between State ownership and firm innovation has become prevalent under emerging economies. Most of The extant research has adopted the resource based view (RBV) approach. it is generally recognized that state ownership will bring financial and human capital, research funding, and access to inter- organizational networks, which are critical for firm innovation (Li, Xia, & Zajac, 2018; Zhou, Gao, & Zhao, 2017; Jia, Huang, & Zhang, 2019). However, in fact, firm innovation not only requires funding resources and preferential regulatory treatment also needs the support of institutional logics such as internal norms and corporate cultures. The research of Genin, Tan and Song (2021) found that although state ownership can bring more material resources and informational exposure to cutting-edge technological innovation to the company, it also brings institutional pressures into the company. Due to the contradictory institutional demands of state government and private shareholders. These conflicting demands will lead to management complacency and offset the firm innovation advantage brought about by access to privileged resources.

Although Genin, Tan and Song (2021) is the first to interpret the impact of state ownership on firm innovation from the perspective of institutional pressure research, but their research is based on China, whose political and institutional background is quite special. Thus, the findings are more or less context specific. Moreover, the government's equity ownership and affiliation are only formal political connections, and the author did not consider the impact of informal or personnel political connections on the company's institutional pressure and institutional logics. Institutional pressure was originally proposed by Pfeffer and

Salancik (1983). According to institutional pressure theory, firms address different, sometimes conflicting from inside and outside of the organization. External demands include government mandates, peer pressures, role model effects under symbolic uncertainty. Internal demands include normative pressures, short-term profitability requirements from financial institutional investors, long run growth, and social and economic influence objective from state shareholders. Organizational structures come to reflect such demands institutionalized and legitimized with time. At the same time, organizations are decreasingly structurally determined by efficiency orientation, and decreasingly held together by output controls, which are the most important in R&D activities.

In the same vein with Pfeffer and Salancik (1983), Pache and Santos (2010) proposed that conflicting institutional demands not only affect the company's decision making and strategic response, but also affect the company's organizational structure by affecting the company's hiring and filtering decision. Hiring and filtering practices can introduce internal representations of certain institutional referents, accidentally or on purpose, into the firm. Internal representations are loyal to the institutional referents they represent, and will constantly speak out and defend the institutional logics of the represented referents. Concerning level of institutional pressure caused by conflicting institutional demands, Pfeffer and Salancik (1983) find that it is easier for the government shareholder to impose their institutional demand on firm if the number of uncoordinated institutional referents is very high or very low. The coexistence of multiple uncoordinated referents and their respective institutional logics about what constitutes effective or legitimate behaviour increase the likelihood that institutional expectations may compete with each other. This is because when shareholding structure is centralized, the government shareholder

becomes dominant and can easily enforce prevailing logics. While when the shareholding structure is fragmented, the institutional referents are poorly formalized and characterized by the absence of dominant of actors with the ability to constrain organizational behaviours. Under such power structure, institutional pressure is quite weak, because whenever incompatible demands emerge, they can be easily ignored, since the shareholders have little ability to monitor and enforce their institutional logics.

Genin et al. (2021) argued that institutional pressure diminish organizational resources allocated to technological innovation, but also coerce managers to conform to the status quo and avoid promoting innovative norms. Therefore, for companies with the same organizational resources, companies with higher institutional pressure will invest less in technological innovation. In other words, firms with higher institutional pressure are more dependent on the government's privileged resource investment. In the field of international business, technological innovation is recognized as non-location-bound firm-specific advantage (FSA). Rugman and Verbeke (2008) define Non-location-bound firm-specific advantage (FSA) as firm level competitive advantages, which can be profitably deployed across region。Technological innovation is a widely recognized non-location-bound firm-specific advantage (FSA). Previous research on non-location-bound firm-specific advantage (FSA) and location-bound firm-specific advantage (FSA) found that transferability of technological innovation depends on the attributes of the knowledge bundles that establish it (Singh, 2007): A higher of tacitness of the knowledge, the less geographically transferable it becomes (Kogut & Zander, 1993). A higher level of tacitness may be due to the extent to which an FSA results from linkages with external parties (e.g., governmental bodies, universities, or NGOs) (Kolk & Pinkse, 2008). These linkages

are in general in an MNE's home country (or region), which explains findings that many MNEs are organized on a regional basis (Rugman & Verbeke, 2004).

The research on Tranferability of non-location-bound firm specific advantage (FSA) mainly focuses on the influence of liability of foreignness (LOF) brought by the external institutional environment of the company, as well as the influence of attributes of knowledge itself. Moreover, most extant research uses resource based view (RBV), ignoring the influence of the company's internal institution landscape. Resource based view (RBV) approach highlights the need for fit between a firm's strategic resources and the external market, rather than the internal organizational structure. This has hindered theoretical understanding of the links between state ownership and internal representation, as well as the underlying mechanism of how state ownership can be undertaken to tap into institutional pressure manipulation to spur or impede cross-region transfer of technological innovation.

Political connections, as bridges between businesses and the government, political ties are a key component of corporate political strategy in different institutional environments. In the case of state ownership, most politically connected directors are usually appointed by the government and agencies to gain control over these firms (Fan & Wang, Citation2018). As government representatives, As government representatives, these personnel usually have a very strong adhesion to the government's institutional logics and norms. Thus, they will constantly promote and defend institutional demands proposed by the state government within a firm. Therefore, internal representations can serve as another approach for state governance to affect the company's internal institutional landscape, in addition to formal state ownership. However, the

current literature has yet to unpack the distinction between state governance via internal representations versus state ownership. Consequently, the reasons why some politically connected firms can achieve global success, while the others fail and stay within home regions remain underexplored.

State ownership & innovation

State ownership refers to the proportion of ownership held by the government in a corporation. Through state ownership, the government can exert influence and control over the company (Zhou et al., 2017). Under state ownership, companies are driven by the government to pursue political and economic objectives. Furthermore, as entities extending from the public bureaucracy, state-owned enterprises (SOEs) also play significant roles in expediting the nation's economic progress and implementing and enhancing social welfare initiatives (Cuervo-Cazurra et al., 2014). Specifically, SOEs are mandated to address national economic needs and thereby aid in the governance of state economic development, as they constitute an integral component of the state economic framework as government assets (Cui & Jiang, 2012). In comparison to privately-owned enterprises, companies with substantial state ownership carry heavier responsibilities to fulfill political directives and align their interests with national institutions rather than pursuing socially beneficial objectives like education, healthcare, or maximizing employment rates (Cuervo-Cazurra et al., 2014; Zhang et al., 2011). Literature pertaining to institutional matters suggests that state ownership influences the political association of a corporation with the national government. Consequently, companies with significant state ownership may develop substantial reliance on the government for crucial resources and political backing, albeit at the cost of their perceived legitimacy by national authorities

(Cuervo-Cazurra et al., 2014; Cui & Jiang, 2012; Meyer et al., 2014). Such political reliance and perception not only subject state-owned enterprises to heightened government intervention and institutional pressures compared to private counterparts but also compel them to prioritize political objectives. The emphasis on political goals can undermine the pursuit of economic efficiency by companies, thereby diminishing their efficacy in leveraging innovative firm-specific advantages (FSAs) in foreign markets for rent-seeking purposes.

On the other hand, state-owned enterprises face complex and multilevel agency relationships, thereby encountering significant issues of bounded rationality (Cuervo-Cazurra et al., 2014). Consequently, state ownership may hinder the adjustments made by firms when dealing with foreign markets. This impediment can obstruct the adaptability of innovations to various geographic contexts and constrain their ability to be redeployed across regions. Specifically, in cases where the host regional markets exhibit a significant institutional distance from the firm's home country, multinational enterprises (MNEs) must exert additional effort to establish local legitimacy (Meyer et al., 2014). The pursuit of legitimacy often results in a reduction in the operational efficiency of MNEs. Additionally, the ownership relationship between the company and its home country government also influences the image of the firm as perceived by host-country institutions, thereby further complicating the acquisition of legitimacy by the company.

Both resource dependence and political image have implications for how firms respond to institutional pressures originating from their home countries and host regional countries (Oliver, 1991). A firm's compliance with institutional pressures is influenced by its level of external dependence (DiMaggio & Powell, 1983). The more reliant a firm is on the institution applying pressure, the more likely it is to

conform to rather than resist that pressure (Oliver, 1991). Moreover, firms vary in their capacity to establish institutional legitimacy without being isomorphic. Those capable of projecting a positive image (as perceived by institutional stakeholders) concerning their internal processes, structures, and norms can attain legitimacy through negotiation (Kostova et al., 2008; Westney, 1993). Conversely, firms whose images are viewed negatively are more susceptible to isomorphic pressures, as they lack an alternative mechanism for legitimization. Drawing from these implications of political association, we argue that state ownership can affect firms' ability to leverage innovative FSAs in host regions. Therefore, we propose the following hypothesis,

Hypothesis 1. State ownership of an MNE is negatively related with the cross-region transferability of innovative firm specific advantage (FSA).

Political Connections & Institutional Representation

Inside a firm, institutional pressures manifest themselves as a result of hiring and filtering practice, accidentally or purposefully, bring into the staff members (such as professional members, managers, board members) who adhere to various normative and cognitive templates (D'Aunno et al., 1991; Lounsbury, 2001). Institutional demands of shareholders are conveyed by staff members, executives, board members who adhere to and promote practices, norms, and values that they have been trained to follow or have been socialized into. Staff members who have been socialized or trained into a specific institutional logic are likely to be committed to defending it should it be challenged (Pache & Santos, 2010). Previous research find that staff members, by being part of social groups external to the firm, enact, within firms, broader institutional logics (Friedland & Alford, 1991; Thornton & Ocasio, 1999) that define what actors understand to be the

appropriate goals, as well as the appropriate means to achieve these goals (Scott, 2001).

Political connections are either the most senior officials working in the government, or relatives of the most senior officials, whose adhesion to the national government ideology, political consciousness, and behavioural norms are all deeply rooted. Therefore, while serving as senior managers or board members in the company they are likely to defend their insistence on the institutional demands of the national government. Previous studies have found that the impact of political connections on corporate institutional logics is not contingent on external institutional environments. Bertrand, Kramarz, Schoar and Thesmar (2008) show that politically connected firms in France alter their hiring and firing decisions to help politicians during elections. These firms display higher rates of job and plant creation, and a lower rate of plant destruction, in election years. Connected firms' profits tend to decrease by the proportion of employment in politically contested areas. Wu, Wu & Rui (2012) repots similar results in China. They show that local state-owned enterprises in China with politically connected managers employ more surplus labor. With cross-country data, Dinc (2005) confirms that banks that are subject to political influence tend to increase their lending during election years.

The aforementioned empirical evidences indicate that political connections are actually the internal representation of the state government inside the company. Whether or not the state government is represented inside the firm is critical in deciding how the government's institutional demand is responded by the firm. Because when the government is internally represented, the internal representation is likely to take action to promote the government's demand and

defend it. The intraorganizational dynamics changes, since the presence of internal presentation enhances internal commitment to conflict resolution in favour of the institutional demand promoted by the government. According to the response strategies model proposed by Pache and Santos (2010), the private shareholders are more likely to compromise to the institutional logics of the government. Only in very rare cases, conflicting institutional demands will lead to extreme outcomes, such as breakup or organizational paralysis, due to fundamental discrepancies of understandings of the goal of the firm. Based on the above discussion, political connections should reduce the institutional referent fragmentation of the company in an important way, in favour of the side of the government. Therefore, we propose the following hypothesis,

Hypothesis 2. The relationship between state ownership increases and cross regional transferability of innovative firm specific advantage (FSA) is positively moderated by political connection.

METHODOLOGY

Database

Our dataset is an unbalanced panel data consists of 711 firms involving 3809 firm-year observations over the 2013-2019 year period. The firms are MNEs top ranked by the EU scoreboard R&D investment ranking. Instead of choosing the same firms every year, we to select the top ranked firms for each year. Doing so, we can guarantee that every year the total investment in R&D by fiirm in our entire sample accounts for 80% of the R&D investment in the entire ranking list. The European Innovation Scoreboard ranking includes 2500 firms, covering 90% of the total R&D investment around the world. Therefore, our sample is representative enough for R&D investment. This ranking has been used in a series of research

(Cincera & Ravet, 2010; García-Manjóna & Romero-Merino, 2012; Cincera & Veugelers, 2014; Montresor & Vezzani, 2015; Coad, 2019; Coeurderoy et al., 2021). We construct the database by collecting raw financial and accounting data from Orbis. In addition, we compared financial data from Orbis and Compustat. The data in compustat are all in the local currency. In order to avoid the bias caused by the exchange rate, we will choose Orbis for the data involving the currency unit. In doing so, we reduce data reliability and sample selection issues.

In order to get the information of political connected individuals, we collected the company's top officers (C-level officers, president, vice-president, chairperson, secretary, and directors) and large shareholders (holding more than 10% of total shares) from Orbis database. We excluded top officers who were appointed before year 2013 and after 2019. In order to ensure the accuracy and completeness of the data, I compared the information of managers and directors in Orbis with that from Bloomberg, and found that the data in Oribs is more accurate and complete (including tenure completeness of dates and lists). We then matched the lists of the top officers and large shareholders of the companies with the lists of members of parliament and government members of each state government whose tenure overlaps with the period between 2013 and 2019. Data for members of parliament and government members comes from the "Chiefs of State and Cabinet Members" section of the Central Intelligence Agency's website. To get the historical data on the CIA website, we used the Wayback Machine extension. We also searched for "his/exccellency" and "his/her highness" from the list of managers and directors of Orbis, and then Verify that individuals have held government positions by manually searching and browsing their bios.

Dependent Variable

Cross Regional Transferability of Innovation FSA

The behavioral research on the international expansion of firms has emphasized the benefits of geographic transferability of innovative FSAs (Kogut & Zander, 1992, 1993; Birkinshaw & Hood, 1998; Birkinshaw, Hood & Jonsson, 1998). The concepts of 'time compression diseconomies' (Dierickx and Cool, 1989) and 'absorptive capacity' (Cohen and Levinthal, 1990), will allow us to explain why some expansion processes imply larger benefits than others, even though the resulting international posture may be identical. Dierickx and Cool (1989) introduced the concept of time compression diseconomies: the fundamental mechanism of diminishing returns when everything else equal the pace of processes increases. We posit that the same mechanism applies to companies engaging in rent-seeking behavior in host regions through the utilization of innovative firm-specific advantages (FSAs). Firms can handle and benefit from new expansions, but the amount of new experience they can absorb and put to commercial use (Cohen and Levinthal, 1989, 1990, 1994) is constrained in time.

Following Vermeulen and Barkema (2002), we measure speed of innovative FSA transfer, our key variable of interest, as the revenues generated in host regional markets averaged by the number of years since the year of 2013, divided by R&D expenditures of the current year. This measure is a time-varying construct, updated at each time t to reflect a firm's total revenues reaped in host regions. The higher the value of the Speed variable, the more revnues a firm initiated in host regions during a given time frame. For example, consider a firm that annually spends 100 USD on R&D expenditures. If it generates 100 USD of revenue in host regions in 2013, another 100 USD in 2014, and its third and fourth revenues

of 100 USD each in 2016 and 2017, respectively, it would attain a Speed score of 1 in 2013 and 2014, 0.67 in 2015, 0.75 in 2016, and 0.80 in 2017.

According to the theory of international expansion proposed by Vermeulen and Barkema (2002), another dimension of the geographic transferability of innovative FSA is the scope of innovative FSA transfer, which is measured by the proportion of revenues generated in host regions in the current year to total revenues, divided by R&D expenditures. The significance of the scope of transferability is evident because the larger the proportion of revenues generated in host regions, the stronger the company's ability to leverage innovative FSA beyond the home region, indicating a stronger geographic transferability of innovative FSA. The two-dimensional measure proposed by Vermeulen and Barkema (2002) have also been adopted by subsequent empirical research in the field of International Business (IB) (e.g., Chang & Rhee, 2011; Yang et al., 2017).

Independent Variables

The key independent variable is state ownership. State shares are defined as the shares obtained through investments in the firm by institutions and departments representative of the state (SAMB, 1994: Article 2). According to the Bebchuk, Kraakman and Triantis (2000), ownership identity classification should be abide by two principles. The first principle is ultimate ownership (control), which relates to the idea that the listed shareholder of a company might not be reflective of the true ownership of the company, given that this shareholder might be controlled by another individual or organization. The ultimate owner is the last shareholder of a control chain. In china, for example, the state can exert its controlling influence as the ultimate owner of a firm. Meanwhile, we need to understand there is a potential conflict between the ultimate owner and the other

stakeholders in a firm, if these owners and controllers are of different nature. China is considered a country with relatively low minority shareholder protection. Thus, the ultimate owner could exercise control while retaining only the least fraction of equity claims on the cash flows. This is the key distinctive feature of the ultimate ownership structure distinguishing China from other countries where agency conflicts inside a firm prevail (Bebchuk et al., 2000). The second principle is that same class of identities should share similar motivations and capabilities for setting and executing firm strategy that are associated with each (Boycko, Shleifer & Vishny, 1996; Shleifer & Vishny, 1997; Thomsen & Pedersen, 2000; Chang, 2003). Based on this definition, the current study adopted the refined ownership classification scheme for Chinese MNEs developed by Delios et al. (2006). We classify local government, government ministry, government bureau, industry company (ministries of central government previous to economic reform in 1978), State asset investment bureau, State asset management bureau, Research Institute, State owned bank among the company's shareholders as state ownership identities. Because these owners are ultimately controlled by local, provincial or national level governments in China. The corporate strategies of firms with these owners are influenced by the government, and thus they may have goals other than pure profit seeking, such as implementation of national and local government economic policies and strong social objectives.

In addition to China, our sample contains 31 different countries and areas, including Japan, South Korea, India, Singapore, Hong Kong, Taiwan, the United States, Canada, Brazil, Belgium, France, the Netherlands, Germany, the United Kingdom, Switzerland, Bermuda, Denmark, Spain, Finland, Israel, Italy, Sweden, Norway, Russia, Saudi Arabia, Liechtenstein. For MNEs in countries other than China, we use the official classification scheme in the Orbis database, because no

research has shown that there are government controls other than direct equity holding in countries other than China. Orbis classifies shareholers into 15 types, including corporate, individuals or families, bank, insurance company, mutual and pension fund/nominee/trust/trustee, financial company, private equity firm, public, hedge fund, self ownership, employees/managers/directors, foundation/research institute/ public authority/state/government. For countries other than China, we classify public authority, state and government shareholders as state ownership. Due to the different institutional context in China, Orbis ownership scheme obviously cannot accurately reflect the identities, and accordingly, the motivations and abilities of these various owners to control firm's strategic actions. In addition, it is widely recognized that the official scheme obfuscates the ultimate identity and control of shareholders (Delios, Wu & Zhou, 2006).

Our second independent variable is political connection。We define a company as politically connected if at least one individual in the company served in one of those political positions or has a reported affiliation with another person in one of those roles at any time during the sample period. (we thus treat political connections as time invariant at company level) (Faccio & Hsu, 2017; Faccio, 2006). During the process of Matching, we used the FuzzyLookup function in Excel. FuzzyLookup matching is robust to a wide variety of errors including spelling mistakes, abbreviations, synonyms and added/missing data. For instance, it might detect that the rows "Mr. Andrew Hill", "Hill, Andrew R." and "Andy Hill" all refer to the same underlying entity, returning a similarity score along with each match. Fuzzy Lookup enables approximate matching on data instead of exact matching, making it possible to identify similar matches between two data sets. This feature is also useful for correcting spelling errors, addressing variation and identifying

ambiguity issues in Korean and traditional Chinese names (such as KI-MOON & GHEE MOON, CHANG SANG & CHAHNG SAHNG). The names matching are verified through cross-referencing with the Excel vlookup function. As the ultimate verification, we search the matching results on company websites, reliable news websites (RFI, BBC, CNN etc.) and government websites to confirm that two people with the same name are the same person.

We matched a total of 72 top officers who worked or are currently working as chiefs of state or cabinet members. They come from 39 companies, accounting for 5.5% of our entire sample (total sample size is 711 firms). The sample of Faccio (2006) is consisted of 20202 publicly traded firms from 47 countries. Overall Faccio (2006) found 607 connections involving 541 firms (2.7% of all firms are connected). The proportion of politically connected firms in my sample is higher than Faccio (2006), but stays within a reasonable range. The high proportion of politically connected firms may be due to the fact that our sample is consisted of firms that invest the most in R&D. And these companies are often associated with the country's overall science and technology development strategy. Since only a few connections are working in the company while serving in the government, we choose to use the time invariant dummy variable as the indicator of the political connection.

Control Variables

We include controls, firm specific characteristics that may be related to innovation performance. First, we control for the age of the firm, given that this is a factor that can affect innovation performance (Balasubramanian and Lee, 2008; Withers, Drnevich & Marino, 2011; Kafouros, Wang, Piperopoulos, & Zhang, 2015). Firm age is measured as the number of years since the company was founded (McKelvie,

Wiklund & Short, 2007). To be more specific, we use the logarithm of the number of years (Oxelheim & Randoy, 2003), as the distribution of the raw age variable is skewed (Weinberg & Abramowitz, 2008). Information on the company's year of foundation is collected from Wikipedia and the timeline section of the company's official website. Our second control variable is firm size, which is one of the most important determinants for innovation behavior (Becheikh, Landry & Amara, 2006). In line with previous studies in finance literature, the logrithm of book value of total assets is used as the measure of firm size (Comment & Schwert, 1995). The third control we include is R&D investment, which is measured by the logarithm of the firm's expenditures on R&D activities (Chatterji & Fabrizio, 2014; Santamaría, Nieto & Miles, 2012). In addition, we also include firm level control variables related to internationalization. Following Denis, Denis & Yost (2002) choice, we control for relative EBIT to sales and relative long-term debt to total assets.

Statistical Techniques

To examine the hypothesized U-shaped relationship between state ownership and transferability of innovation firm specific advantage (FSA), we included both linear and quadric terms of state ownership in the models. And in order to examine the moderation effect of personnel political connections on the relationship between state ownership and innovation transferability, we included the interaction term of political connection and state ownership in OLS models, and compare the results.

MAIN FINDINGS

Table1 reports descriptions of political connections the MNEs included in our sample. We found political connections in 15 countries out of 31 countries. In our sample, political connections are mainly concentrated in United Arab Erimates (8

connections from one company), Russia (5 connections from 2 companies) and Germany (4 connections from 5 companies). Faccio (2006) found that connections are particularly common in countries with higher levels of corruption, countries imposing restrictions on foreign investments by their residents, and countries with more transparent systems. Our findings and Faccio's (2006) findings are more or less consistent.

Table2 represents the correlation matrix among all the dependent variables, independent variables and control variables. After examining the correlation between two complementary measurements of cross regional transferability of innovation FSA, SpeedTransferability and GeoSpaceTransferability, we find the two measurements are significantly correlated but the correlation is not high (0.147). The correlation matrix indicates that SpeedTransferability is positively and significantly correlated with political connection (PoliticalConnection), state ownership (StateOwnership), R&D expenditures (lnRD), total asset(Size), age (lnAge), debt to asset ratio (DebtRatio). And GeoSpaceTransferability is significantly negatively correlated with political connection (PoliticalConnection), state ownership (StateOwnership), R&D expenditures (lnRD), EBIT marigin (EBITmaring), total asset(Size), debt to asset ratio (DebtRatio). The significant correlations among the explanatory variables indicated that multivariate analysis was needed to examine the partial effects of the theoretical variables on SpeedTransferability and GeoSpaceTransferability. Firm size (0.224) and debt to asset ratio (0.057) are both significantly and positively connected to political connection, which is consistent with previous findings in economics literature (Faccio, 2006).

We investigated potential multicollinearity problems by examining variance inflation factors (VIFs). The maximum VIF obtained for the five models (presentated in Table3) was 1.91, which is substantially below the rule-of-thumb cutoff of 10 for multiple regression models (Neter, Wasserman & Kutner, 1985: 392). The maximum conditioning index for the full regression models with SpeedTransferability and GeoSpaceTransferability as dependent variables were 29.004 and 29.026 respectively. These values are also below the accepted cutoff value of 30 (Belsey, Kuh & Welsch, 1980: 112). Further, in both cases, the variance decomposition proportions for the largest conditioning indexes were associated with the intercept term, indicating that the regression estimates for our theoretical variables were not adversely affected by the presence of multicollnearity. Heteroskedastic error terms might result from the use of regression estimates (Hanushek, 1974). Breusch-Pagan and Cook-Weisberg test provide evidence of heterskedasticity. Thus, we clustered errors at firm level to correct for heterskedasticity.

Table3 reports the results from the OLS regression models and model including quadratic term of state ownership, involving SpeedTransferability as the dependent variable. Model 1 includes control variables and error term only. In model 2, we added the state ownership. In model 3, we added state ownership and the quadratic term of state ownership to test Hypothesis1. In model 2, the coefficient estimation of state ownership is not significant. In model 3, the estimations of state ownership and the quadratic term are both significant ($p<0.01$ for both).

Table4 reports estimation from the OLS regression models and model including quadratic term of state ownership, involving GeoSpaceTransferability as the

dependent variable. Model 1 is the baseline model involving only the control variables. Model 2 augment model 1 by adding theoretical variable state ownership. In model 2, the coefficient estimation of state ownership is negative and significant ($p<0.01$). Model 3 augment model 2 by including the quadratic term of state ownership. The estimation of state ownership is negative and significant ($p<0.01$), and the quadratic term estimation is positive and significant ($p<0.01$). The findings in Table 3 and Table 4 regarding the relationship between state ownership and the dependent variables are inconsistent with the linear relationship hypothesized in our Hypothesis 1. This inconsistency could potentially stem from the omission of certain control variables in the models, such as trade agreements between nations, as these agreements may facilitate the geographic expansion of companies into host countries.

Table5 estimated four regression models involving SpeedTransferability as the dependent variable. Model 1 is baseline model in which the analysis is restricted to the effects of the control variables. Models 2, 3 augment the baseline model by including the direct effects of the two theoretical variables. Model 4 augment model 3 by including interaction term of the two theoretical variables. A comparison of the adjusted-R square values for models 1 and 2, 2 and 3 indicates that the explanatory power of state ownership is stronger than that of political connections, in terms of variations of geographic transfer speed of innovation firm specific advantage (FSA).

Table6 includes four regression models with GeoSpaceTransferability as the dependent variable. Model 1 is baseline model in which the analysis is restricted to the effects of the control vaibles only. Model 2 and 3 augment the baseline model

through including the direct effects of the two theoretical variables, state ownership and political connections. Model 4 augment model 3 by including the interaction term of the two theoretical variables. We can see the coefficient estimations are quite consistent with those in Table5, only the coefficient of state ownership becomes significant in model 3 in comparison to Table 5.

Our findings for the control variables reveal that R&D expenditure is significantly related to SpeedTransferability ($p<0.01$). Firm size is significantly related to SpeedTransferability ($p<0.01$). And EBIT margin is significantly related to the SpeedTransferability ($p<0.1$). Firm size is positively related to SpeedTransferability, while the other two control variables are negatively correlated with SpeedTransferability. Larger firms transfer their innovation advantages more quickly across regions, and firms investing more in R&D, or less profitability transfer their innovation advantages more slowly across regions. Control variables including firm age, debt to asset ratio are not significantly related to SpeedTransferability.

Based on predictions from political connection and institution literature, Hypothesis 2 posits a positive moderation of political connection on the relationship between state ownership and innovative FSA transferability. The regression coefficients of the interaction term in model 4 from both Table5 and Table6 were significant. Thus, the empirical evidence suggests that the political connections does have significant and positive moderating impact on state ownership and firm's innovative FSA transferability from region to region.

SENSITIVITY & ROBUSTNESS TESTS

In this section, we report the results of a battery of sensitivity tests and robustness checks. In short, these tests indicate that the relationships among cross regional transferability of innovative firm specific advantage (FSA) remain fairly consistent over time, different subsamples (OECD classification of R&D intensive industries, manufacturing & service industries), and different regions (EMEA, Americas and APAC), and is robust to alternative estimation techniques, the use of alternative valuation measures, alternative industry definitions (NAICS industry classification, GICS industry classification).

Robutstness over Time

We examine the robustness of our estimates over time by estimating the cross-sectional regressions for each year from year 2013 to 2019. In models with state ownership and the quadric term of state ownership being the independent variable, the results indicate that negative or curvilinear effects of state ownership on cross-region transferability of innovative firm specific advantage (FSA) have remained relatively stable over time. The subperiod state ownership coefficients are mostly highly significant. But in years 2016 and 2017, the coefficient of state ownership is negative and significant, while the coefficient of quadric term is insignificant. In years 2013, the coefficient of quadric term is significant. In years 2019 and 2018, the coefficients of state ownership and the quadric term are both highly significant.

In models with state ownership, political connection, as well as the interaction term being the independent variables. We find that the estimations of state ownership stays negative and highly significant in each subperiod. By contrast, the moderation effects of political connection are not statistically significant in

any year. This might be due to the small sample size and limited variations of the independent variables in each year.

Alternative Estimation Techniques

We use pooling of cross-sectional and panel data in our tests. A classic concern is transferability of technological innovation is endogenously related in some way to state ownership and political connections. In other words, transferability of technological innovation and state influence could be driven by common firm-specific factors. To address this issue, we estimate a multivariate regression with firm fixed effects. The estimate of state ownership becomes positive and significant, which is consistent to the results of models involving political connection.

Alternative Measures of Firm Size

We control for firm size in the multivariate regression using the book value of total assets. The logic of doing this is that we are attempting to control for those factors that could affect the cross-region transferability of technological innovation, but do not necessarily have anything to do with state ownership or political connection. As shown in Table2, state ownership is positively significantly correlated to firm size (correlation=0.224, $p<0.01$), and so is political connection (correlation=0.201, $p<0.01$). To the extent that there are unobserved factors that affect the cross-region transferability of technological innovation, the influence of these factors will be picked up in our firm size variable.

Alternative measures of control variable, firm size, are logarithm of total sales of the firm, and logarithm of number of employees of the firm. We estimate regression results using the two alternative measures. The coefficients of state

ownership and moderation effects of political connections slightly changed, but remain statistically significant. Thus, our results do not appear to be driven by the choice alternative measurements.

Industry Definition

In all of our models, we include industry dummies, based on GICS industry classification, as control variables to rule out industry specific effects. An alternative is to define industry at the three digits NAICS level. We estimate regression using this alternative industry definition. Again, the results are qualitatively identical. Our results are not sensitive to the definition of industry.

DISCUSSION

Contributions

In the current study, we distinguish between state ownership and political connections, and with an institutional perspective, we analyse the impacts on cross-region transferability of innovative firms specific advantage (FSA) of the two different state governance approaches. We find that, among the MNEs investing the most in R&D activities around the world, state ownership first decreases cross-region transferability of innovative firm specific advantage (FSA), then increases cross-region transferability of innovative firm specific advantage (FSA). While political connections have no significant impacts on cross-region transferability of innovative firm specific advantage (FSA). When both state ownership and political connection are present, political connections compensate for the negative impacts of state ownership on cross-region transferability of innovative firm specific advantage (FSA).

Our results make the following theoretical contributions to the international business literature. First, we contribute to the growing research on non-location boundedness of innovative firm specific advantage (Rugman & Verbeke, 2008; Kolk, A., Pinkse, 2008; Meyer & Su, 2015; Rosa, Gugler & Verbeke, 2020). Our findings explain how different types of state influence lead to different outcomes of technological innovation transferability. Generally, scholars using resource based view, and knowledge based view approaches believe that state ownership exerts either positive or negative influences on transferability of technological innovation across regions, because of privileged access to key resources, or because of overdependence on home country government (Rugman & Verbeke, 2004; Kolk, A., Pinkse, 2008). However, because firms with hybrid ownership structures are characterized by high levels of fragmentation of institutional field, compared to wholly state-owned firms or private firms (Genin et al., 2021; Mariotti & Marzano, 2019). Building on seminal studies of institutional logic and organizational response strategies under institutional pluralism (Oliver, 1991; Pache & Santos, 2010; Zhou et al., 2017), we distinguish between the impact of state ownership and political connections on the transferability of innovative firm specific advantage (FSA).

Secondly, we contribute to the body of research on state governance, organizational change and institutional logic in emerging economies (Buckley et al., 2018; Zhou et al., 2006). We extend the institutional logic framework and organizational change implementation (Pache & Santos, 2010; Oliver, 1999) to disentangle the impact of influences of state government on cross-region transferability of technological innovation.

Thirdly, our analysis contributes to the comparisons between China and the other countries, in terms of state influences on firm innovation outcome. Through introducing previously developed conceptualization and measurement of ownership identities of Chinese firms (Delios et al., 2006) to correct the country effect of China, due to the gap of institutional context between china and the other countries. Research on political connections are mostly conducted under context of one single country, due to radical variances of political systems across countries (Bertrand et al., 2008; Wu et al., 2012; Dinc, 2005; Fan et al., 2007). In order to facilitate cross country comparison, we introduce the internationally standardized conceptualization and measurement of political connection proposed by Faccio (2006).

Practical implications

MNEs are taking the responsibility to become agents of global exchange, and to integrate advantageous resources on global scale. The success of MNEs largely depends on their possession of non-location-bound firm specific advantage (FSA) (Rugman & Verbeke, 2004). Our findings show that state ownership can result in higher cross-region transferability of innovative firm specific advantage (FSA), but the effectiveness of state ownership hinges on whether the firm is politically connected, as well as the level of fragmentation of institutional field internal to the firm. We find that only extremely high or low levels of state ownership can boost technological innovation transferability. Meanwhile, political connections can offset the negative impact of state ownership on technological innovation transferability.

These retults highlight both opportunities and challenges for firms with ambition to redeploy their technological innovations globally. They suggest that

governmental involvement can be a double-edged sword, when firm is politically connected, it can bolster innovation transferability, but moderate level of state ownership in the absence of political connections does not.

Limitations

Our research, while contributing valuable insights, is subject to several limitations that warrant acknowledgment. Firstly, in measuring the redeployability of innovative Firm Specific Advantage (FSA), we rely on the ratio of speed and scope of cross-region expansion over R&D investment as indicators. However, these indicators lack comprehensive justification, and the literature provides limited examples of how to validate such metrics. Secondly, the relationship between institutional pressure and innovation performance, along with its underlying mechanisms, remains underexplored in previous studies, highlighting a gap in our understanding. Moreover, the emergence of geopolitical issues underscores the influence of national relationships on corporate globalization. Consequently, we recognize the need to incorporate political affinity as a control variable in our future research endeavors. Lastly, our examination of political connections reveals certain limitations. Despite our extensive sample size comprising 715 companies, only 21 are identified as politically connected. However, it is important to note that certain types of political influence, such as Chinese politicians establishing offshore investment entities to exert influence on state-owned companies, are not captured within the formal definition of political connections used in our study. Additionally, the involvement of family members of politicians in top management positions within companies remains unexplored due to data constraints. These limitations underscore the complexities inherent in studying

political connections and call for further investigation to better understand their implications on firm behavior and performance.

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Appendix

Table1. descriptive statistics of political connection

Country	Total number of connected firms	Of which				Total number of connections	Of which			
		Directorship		Ownership			Directorship		Ownership	
		%	N	%	N		%	N	%	N
United States	5	100%	5	0%	0	4	100%	4	0%	0
Taiwan	3	100%	3	0%	0	4	100%	4	0%	0
South Korea	1	100%	1	0%	0	1	100%	1	0%	0
Russia	2	100%	2	0%	0	5	100%	5	0%	0
Luxembourg	1	100%	1	0%	0	1	100%	1	0%	0
Italy	2	100%	2	0%	0	2	100%	2	0%	0
Germany	5	100%	5	0%	0	4	100%	4	0%	0
France	2	100%	2	0%	0	2	100%	2	0%	0
China	2	100%	2	0%	0	2	100%	2	0%	0
Austria	1	100%	1	0%	0	1	100%	1	0%	0
United Arab Emirates	1	100%	1	0%	0	7	100%	7	0%	0
Denmark	1	100%	1	0%	0	1	100%	1	0%	0
Japan	2	100%	2	0%	0	1	100%	1	0%	0
Australia	1	100%	1	0%	0	1	100%	1	0%	0
Saudi Arabia	1	100%	1	0%	0	1	100%	1	0%	0

Notes: Total number of connections is the overall number of connections identified in a given country. If two officers of the same company sit as ministers, the number of connections would be two, while the number of connected firms would be one. Ownership and directorship denote whether the company is connected through a large shareholder or through a top officer.

Table2. Pair-wise correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) SpeedTransfera~y	1.000								
(2) GeoSpaceTransf~y	0.147***	1.000							
(3) Politicalconne~n	0.084***	-0.105***	1.000						
(4) StateOwnership	0.211***	-0.171***	0.202***	1.000					
(5) lnRD	-0.133***	-0.554***	0.075***	0.010	1.000				
(6) EBITmargin	0.016	0.034*	0.008	0.006	0.036**	1.000			
(7) Size	0.259***	-0.440***	0.201***	0.224***	0.531***	0.088***	1.000		
(8) lnAge	0.080***	0.013	0.004	-0.086***	0.093***	0.079***	0.260***	1.000	
(9) DebtRatio	0.049***	-0.123***	0.057***	0.064***	0.068***	0.051***	0.339***	0.123***	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Table3. Regressions with geographic transfer speed of innovation FSA as dependent variable

VARIABLES	(1) base model	(2) OLS	(3) quadratic
StateOwnership		0.039	-1.132***
		(0.333)	(0.235)
StateOwnership2			0.008***
			(0.001)
R&D expenditure	-14.971***	-14.964***	-15.027***
	(2.170)	(2.256)	(2.193)
EBITmargin	-0.204*	-0.193*	-0.194*
	(0.113)	(0.101)	(0.111)
Size	11.379***	11.152***	11.824***
	(1.640)	(1.755)	(1.720)
firm age	1.846	2.283	-0.135
	(1.295)	(1.569)	(0.948)
DebtRatio	3.625	4.411	5.716*
	(4.281)	(3.954)	(3.326)
Constant	-15.919**	-15.984**	-7.615
	(7.074)	(7.309)	(7.001)
Observations	3,064	2,963	2,963
Adjusted R-squared	0.4	0.4	0.6
Industry FE	YES	YES	YES
Firm clustered	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Regressions with geographic transfer expansion of innovation FSA as dependent variable

VARIABLES	(1) base model	(2) OLS	(3) quadratic
StateOwnership		-0.001***	-0.001***
		(0.000)	(0.000)
StateOwnership2			0.000***
			(0.000)
R&D expenditure	-0.048***	-0.049***	-0.049***
	(0.004)	(0.004)	(0.004)
EBITmargin	0.002**	0.002**	0.002**
	(0.001)	(0.001)	(0.001)
Size	-0.001	0.000	0.000
	(0.003)	(0.003)	(0.003)
firm age	0.007**	0.004	0.003
	(0.003)	(0.003)	(0.003)

DebtRatio	0.002	0.003	0.003
	(0.012)	(0.012)	(0.012)
Constant	0.378***	0.386***	0.391***
	(0.028)	(0.029)	(0.029)
Observations	3,062	2,961	2,961
Adjusted R-squared	0.4	0.4	0.4
Industry FE	YES	YES	YES
Firm clustered	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table5. OLS regression with geographic transfer speed of innovation FSA as dependent variable

VARIABLES	(1) Base model	(2) State ownership	(3) Full model	(4) Moderation model
Political connection = 1				-9.122
				(10.849)
StateOwnership		0.039	0.015	-0.504**
		(0.333)	(0.328)	(0.200)
0b.Politicalconnection#co.StateOwnership				0.000
				(0.000)
1.Politicalconnection#c.StateOwnership				1.192***
				(0.454)
R&D expenditure	-14.971***	-14.964***	-14.845***	-14.060***
	(2.170)	(2.256)	(2.224)	(2.191)
EBITmargin	-0.204*	-0.193*	-0.183*	-0.179*
	(0.113)	(0.101)	(0.098)	(0.101)
Size	11.379***	11.152***	10.852***	11.035***
	(1.640)	(1.755)	(1.690)	(1.670)
firm age	1.846	2.283	2.211	0.319
	(1.295)	(1.569)	(1.548)	(0.953)
DebtRatio	3.625	4.411	4.808	5.885*
	(4.281)	(3.954)	(3.806)	(3.381)
Political connection			9.904	
			(9.664)	
Constant	-15.919**	-15.984**	-14.262*	-9.310
	(7.074)	(7.309)	(7.288)	(7.183)
Observations	3,064	2,963	2,963	2,963
Adjusted R-squared	0.42	0.45	0.45	0.52
Industry FE	YES	YES	YES	YES
Firm clustered	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table6. OLS regression with geographic transfer expansion of innovation FSA as dependent variable

VARIABLES	(1) base model	(2) moderation	(3) moderation	(4) moderation
Political connection = 1				-0.007
				(0.015)
StateOwnership		-0.001***	-0.001***	-0.001***
		(0.000)	(0.000)	(0.000)
0b.Politicalconnection#co.StateOwnership				0.000
				(0.000)
1.Politicalconnection#c.StateOwnership				0.001***
				(0.000)
R&D expenditure	-0.048***	-0.049***	-0.049***	-0.049***
	(0.004)	(0.004)	(0.004)	(0.004)
EBITmargin	0.002**	0.002**	0.002**	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Size	-0.001	0.000	-0.000	0.000
	(0.003)	(0.003)	(0.003)	(0.003)
firm age	0.007**	0.004	0.004	0.004
	(0.003)	(0.003)	(0.003)	(0.003)
DebtRatio	0.002	0.003	0.003	0.003
	(0.012)	(0.012)	(0.012)	(0.012)
Political connection			0.002	
			(0.014)	
Constant	0.378***	0.386***	0.387***	0.389***
	(0.028)	(0.029)	(0.029)	(0.029)
Observations	3,062	2,961	2,961	2,961
Adjusted R-squared	0.43	0.44	0.44	0.44
Industry FE	YES	YES	YES	YES
Firm clustered	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

CONCLUSION

General Discussion and Conclusion

Using the fundamental concept of Firm-Specific Advantages (FSAs) as central to the theory of internationalization (Buckley and Casson, 1976; Rugman, 1981), and drawing insights from institutional research, our investigation focuses on the core cohort of major multinational enterprises (MNEs) globally invested in research and development (R&D). The main objective is to examine whether institutional characteristics within their home regions significantly contribute to the ability of these MNEs to diversify their revenues across triadic regions. Additionally, we explore the influence of MNEs' orientation towards the home region on the value of their switching option portfolios and assess the impact of political ties, especially non-market strategy, on the interregional transferability of innovative Firm-Specific Advantages (FSAs).

MNEs with FSAs anchored in technological advantages emerge as potential candidates for globalization but face challenges related to bounded rationality and reliability. Our empirical results emphasize the pivotal role played by the institutional environment in the home region in shaping MNEs' capacity to achieve global reach for their R&D-focused products or services. This inquiry holds particular significance in the current context of a "technological cold war," where regions actively compete for global technological dominance (Tung, Zander, and Fang, 2023). Our study significantly contributes to unveiling the complex interaction between regional institutional characteristics, influences, and the connection between innovation and globalization.

We highlight the substantial impact of institution distance on the values of MNEs' switching option portfolios, with the institutional quality of the home region and the disparity between institutional distances encountered in host and home regions acting as moderating factors. Our study introduces the triad regional classification scheme into Real Options Theory (ROT), expanding its application beyond the traditional examination of the relationship between multinationality and performance. The infusion of institutional perspectives into ROT research enriches our understanding of how external institutions shape the values of switching options. This synergy between International Business Theory (IBT) and ROT deepens our knowledge of intra-regional expansion compared to interregional expansion within IBT.

Our results reveal a nuanced relationship, where state ownership initially hinders interregional transferability but paradoxically enhances it at extreme levels. Political ties, on the other hand, serve to offset the negative impacts of state ownership, thus emphasizing their central role in strengthening the transferability of innovative FSAs. The study makes a substantial contribution to the discourse on the non-location boundedness of innovative FSAs, incorporating an institutional perspective and establishing a clear distinction between state ownership and political ties.

Our goal is to provide meaningful insights to researchers in the field of International Business (IB) seeking to study the influence of the non-market environment of MNEs on both their globalization strategies and performance. Additionally, we aim to examine the impact of political ties on the effectiveness of business strategies used by MNEs in host regional markets. Our focus is on understanding the complexities of how MNEs seamlessly integrate market and

non-market strategies to not only establish but also sustain global competitive advantages. In the face of growing global political challenges, our study contributes to addressing significant questions and the major challenges in IB research, shedding light on the structured mechanisms aligning individual-level behavior, firm-level strategy, and country-level institutional environment (Buckley, Doh, & Benischke, 2017).

Theoretical Contributions and Practical Implications

Recent research adopting a regionalization perspective has delved into the complex ways in which institutional characteristics, extending beyond the boundaries of home and host countries, shape the internationalization patterns of Multinational Enterprises (MNEs). While prior research, exemplified by Banalieva and Dhanaraj (2013), suggests that increased diversity of institutions within a home region decreases MNEs' propensity towards their home region, our new findings challenge this perspective. We propose that MNEs operating from regions characterized by more heterogeneous national institutions face increased difficulties navigating interregional institutional discontinuities. In contrast, MNEs operating in regions with relatively homogeneous institutions find it more feasible to overcome challenges related to bounded rationality and reliability. This, in turn, allows them to cultivate robust Firm-Specific Advantages (FSAs) related to the region and organizational experience, prerequisites for successful global expansion.

Expanding the exploration of institutional characteristics from the home region, our study introduces two additional components: regional institutional quality and the distance between the home country and the home region in terms of institutional quality. While these components are conventionally applied to the

analysis of country-level institutions, their application at the regional level represents an novel contribution. We argue that strong regional and national institutions play a crucial role in reducing transaction costs related to bounded rationality and reliability. These institutions enable MNEs to achieve economies of scale, accumulate legitimacy, and foster organizational learning in their region—a critical advantage when expanding operations beyond the home region. Robust institutional frameworks established at the regional and national levels mitigate information processing, coordination, and foreignness costs associated with venturing into new regions.

Technological advantages are widely recognized as crucial Firm-Specific Advantages (FSAs) for the international expansion of MNEs. Our study, focusing on the world's top-ranked MNEs in terms of R&D spending, examines revenue diversification across regions. Contributing to existing literature, we explore how MNEs with technological advantages effectively transfer, deploy, and exploit these advantages globally. Contrary to common assumptions, our results reveal that only a minority of the world's top-ranked MNEs in R&D spending manage to achieve global status. The attainment of this status depends on institutional characteristics prevailing in their home regions. Homogeneous or viable institutions in the home region emerge as mitigating factors, addressing economic challenges, contractual risks, and intellectual property issues faced by MNEs, especially in activities targeting new markets.

Our study makes a substantial contribution to the broader field of real options by integrating institutional perspectives. It underscores the profound influence of external institutions, acting through irreversibility and switching costs mechanisms, on the ability of MNEs to exercise options throughout the life cycles

of switching options. The study advocates for nuanced consideration of regional institutional characteristics, emphasizing that the effectiveness of switching options is influenced not only by intra-regional dynamics but also by interregional expansion dynamics. Policymakers are encouraged to prioritize governance quality, enforce regulations, and enhance information transparency to provide robust support to businesses in developing country-level advantages and facilitate their smooth expansion abroad.

Furthermore, our research significantly contributes to existing literature by introducing institutional perspectives into the examination of state governance, organizational change, and institutional logic in emerging economies. By dissecting the impact of state ownership and political ties on interregional transferability, our study enriches the understanding of how different state governance approaches shape technological innovation outcomes. Comparative analyses, correcting institutional contextual gaps, provide valuable insights into state influences on business innovation outcomes. The results highlight the dual nature of government involvement, where state ownership presents a double-edged sword, and political ties play a compensatory role.

In conclusion, our reach extends to a diverse community of researchers in economics, political science, sociology, and management studies. These disciplines have all made significant contributions to the evolving field of Non-Market Strategies (NMS). However, our research focuses on the dynamics of NMS in the international context, encompassing various countries and regions. This interdisciplinary collaboration is envisioned as a mutually beneficial cross-fertilization process. Our study draws insights from crucial research in these disciplines while aspiring to generate broader interest among social scientists.

This inclusive approach aims to enrich our collective understanding of this subject from diverse perspectives, asserting that the multinational dimension of NMS provides fertile ground for pushing research in International Business (IB) to interact, inspire, and contribute to other areas within business management and the social and behavioral sciences.

Our research contributes not only to theoretical advances within the academic community but also carries substantial implications for managers and policymakers. Amidst the growing divergence of innovations and product landscapes across geographical regions, our study emphasizes the imperative for practitioners and policymakers to understand the conditions that foster or hinder the global exploitation of technological advantages by Multinational Enterprises (MNEs). Decision-makers are encouraged to focus on harmonizing institutions within the home region, emphasizing the cultivation of strong and viable institutions at both the regional and national levels. The central role of governance quality emerges as a focal point for enhancing the interregional competitiveness of MNEs. This study advocates for a strategic shift, suggesting that decision-makers should prioritize improving overall governance quality rather than a singular focus on intellectual property rights when assessing the global competitiveness of MNEs.

For Multinational Enterprises (MNEs) aspiring to globally redeploy technological innovations, the study unveils insightful recommendations beyond traditional discourse. Acknowledging the complex interaction of institutional factors, our research highlights the importance of consistent institutional frameworks within the home region. These frameworks serve as catalysts, facilitating the effective global deployment of technological innovations by MNEs. Additionally, the study

underscores the need for decision-makers to adopt a comprehensive perspective on governance, emphasizing that robust institutions, both at the regional and national levels, play an instrumental role in navigating the complexities of interregional competition.

Finally, this study not only highlights the critical importance of aligning institutional conditions for Multinational Enterprises (MNEs) in their global efforts but also advocates for a nuanced understanding of governance quality. The focus on overall governance quality, as opposed to a narrow focus on intellectual property rights, represents a paradigm shift in policy recommendations. As MNEs continue to navigate the evolving landscape of global innovation, the insights provided by this study offer a valuable roadmap for practitioners and policymakers seeking to foster an environment conducive to the global deployment of technological advantages.

Limitations and Avenues for Future Research

Despite providing valuable insights, our study has certain limitations primarily related to data availability and granularity. To overcome these constraints, future research could refine measurements by incorporating more detailed regional segmentations and broaden the scope to include populations of multinational enterprises (MNEs) beyond the largest R&D investors. Additionally, empirical validation of the established relationships in the study, coupled with an in-depth exploration of the complex interconnections between institutional quality, institution distance, and switching costs, offers perspectives to advance our understanding of these dynamics. Despite these constraints, our study serves as a foundational exploration, shedding light on the influence of regional-level institutions on the interregional footprint of MNEs.

A notable limitation concerns the metric of multinationality. Previous studies on real options have universally used the geographic distribution of investments, while our study relies on sales distribution to measure the orientation toward the home region. Despite the proven high correlation between sales and investments regional distributions by Rugman and Verbeke (2008), to facilitate comparability with existing research in the real options domain, the use of investment data is deemed necessary to validate the results of our study.

Furthermore, the study faces limitations due to the heterogeneity of information disclosed by MNEs, leading to the adoption of broad regional classifications. Although accepted, the incorporation of more refined regional segmentations, as suggested by Arregle et al. (2016), could offer a more comprehensive understanding of the impact of supranational institutional factors on strategic decision-making and performance of MNEs. This approach would also help corroborate or refute our theoretical findings, strengthening the robustness of our results.

In addition to these limitations, our study specifically targets the quasi-population of the largest R&D-investing MNEs. Future research avenues could explore other potentially less capital-intensive populations of MNEs, such as born-globals, digitally serviced MNEs, or startups. This diversification of the sample would enhance the robustness and generalizability of our results, providing a more nuanced understanding of the relationship between institutional factors and strategy across a broader spectrum of MNEs.

A critical aspect deserving further attention is the measurement of the redeployability of innovative Firm-Specific Advantages (FSAs). Currently, we use the ratio of the speed and scope of interregional expansion relative to R&D

investment as indicators of redeployability. However, these indicators require additional justification, and concrete examples illustrating their logic are lacking. Future research should focus on providing a solid theoretical and empirical basis for these indicators to strengthen their validity and reliability.

The link between institutional pressure, innovation performance, and the underlying mechanisms has been a little-explored area in existing literature. A deeper examination of these links is justified to enrich our understanding of how institutional pressures influence the innovation outcomes of MNEs. Future studies could delve into the nuanced dynamics and causal relationships between institutional factors and innovation in the context of large multinational enterprises.

Acknowledging the growing relevance of geopolitical issues, considering political affinity as a control variable in our study becomes imperative. Integrating political affinity into the research framework can offer a more comprehensive understanding of the factors influencing the international strategies of MNEs. Future research should explore the implications of political affinity on strategic decision-making, risk management, and overall performance of firms in the global landscape.

The question of political connections introduces a complex dimension to our study. Although our sample includes 21 politically connected firms out of 715, there is a recognized gap in capturing certain types of political connections. For example, the involvement of Chinese politicians through offshore investment companies and their influence on state-owned enterprises is not formally defined as political connections in our study. Additionally, the inclusion of family members of politicians holding high executive positions, a common occurrence in some

regions, has not been systematically collected in our sample. Future research should address these gaps by refining the definition and scope of political connections, encompassing a broader range of influential relationships and power dynamics in the corporate landscape.

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