

Multinational Corporations' Responses to Changing Intellectual Property Regimes: Knowledge Protection or Knowledge Sharing?

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Abstract: *This paper develops a multi-level conceptual framework to explain how multinational corporations (MNCs) from both developed and emerging economies respond to the global strengthening of intellectual property (IP) regimes. Adopting a co-evolutionary perspective, the study extends existing literature by integrating the knowledge-based view with institutional theory. It explores MNC strategies through propositions encompassing country-, industry-, and firm-level factors. The framework highlights that IP regimes have strengthened due to the transition to knowledge economies, international trade agreements, and domestic innovation policies in emerging economies. MNCs navigate these regimes by balancing internal knowledge sharing and external linkages, influenced by IP regime strengths, strategic priorities, industry dynamics, firm capabilities, and home/host country mismatches. Emerging economy MNCs, facing latecomer status and asset disadvantages, are likely to leverage external linkages more extensively. While conceptual, the study sets the stage for empirical testing, offering valuable insights into MNCs' strategic responses to evolving IP landscapes.*

Keywords: Multinational corporation; intellectual property; knowledge management; R&D; geographic location; Institutional context; knowledge protection

JEL Classification: F23, O34, L24

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Introduction

Intellectual property (IP) laws around the world have grown significantly over the past few decades, providing important issues for multinational corporations (MNCs) as they manage knowledge abroad. IP rights—including patents, copyrights, trademarks and trade secrets - grant certain exclusive rights over intangible knowledge assets (Peng et al., 2017). As these regimes are strengthened through legislative reforms, trade agreements, and improved enforcement mechanisms, they make knowledge sharing across borders more complex for MNCs (Zhao, 2006).

While more robust IP protections allow MNCs to appropriate returns from proprietary knowledge and prevent uncontrolled diffusion, excessive restriction can isolate subsidiaries, stifle external learning and impede capability development vital for competitiveness (Alcácer and Zhao, 2012; Alcácer and Delgado, 2016). As IP regimes grow more stringent worldwide, a crucial challenge therefore stems from balancing internal knowledge sharing to leverage expertise across locations, with carefully controlling external spillovers to prevent imitation by competitors (Kumaraswamy et al., 2012).

Several factors have driven the regime shift toward stronger IP protections globally. The transition to knowledge-based economies in many advanced nations has placed greater emphasis on intangible assets, propelling IP issues to the forefront of policymaking (Sell, 2003). The push by Western countries, notably the U.S., to implement stricter IP rules worldwide through trade agreements has accelerated this trend (Sell, 2010). Emerging economies like China and India have also strengthened domestic IP laws to incentivize indigenous innovation and climb the technology ladder (Awokuse and Yin, 2010).

These developments present a dilemma for MNCs regarding how to optimally manage knowledge across borders. Stronger IP regimes incentivize protection and appropriation of proprietary knowledge to prevent imitation, supporting knowledge sharing within the MNC but restricting flows externally (Lee et al., 2010; Lee and Hemmert, 2021). However, extensive knowledge protection can isolate subsidiaries and impede learning, especially from host country networks (Fu et al, 2020, Zhao et al., 2020). MNCs must balance internal knowledge transfers to leverage specialized expertise globally with external knowledge linkages to augment capabilities in diverse locations (Tippmann and Monaghan, 2018, Tippmann et al, 2023). This challenge has intensified given the rise of globally distributed knowledge networks, where innovation relies on harnessing geographically dispersed competencies (Frost and Zhou, 2005).

Extant international business and strategy research has investigated how multinational firms navigate these tensions regarding proprietary knowledge protection versus diffusion as formal IP rules and norms evolve globally. This literature elucidates effects of country environments, industry dynamics, firm characteristics and

strategic objectives on MNCs' posture regarding openness versus control over intellectual assets across borders (Zhao, 2006). However, significant scope remains for more holistic and integrative perspectives spanning these contingencies.

While prior research has examined how MNCs are influenced by national IP environments (Zhao, 2006; Keupp et al., 2009), significant gaps remain in understanding their strategic responses as regimes converge globally. Much of the literature treats IP regimes as exogenous constraints, without considering how MNCs may proactively shape their evolution (Peng et al., 2017). Also, there is limited multi-level analysis of how IP-related pressures manifest at country, industry and firm levels simultaneously (Chung, 2014). Dynamics between developed and emerging economy MNCs have been underexplored, although the implications of stronger IP may differ vastly across this divide (Liu et al., 2011). In addition, prior studies have focused predominantly on patents, with less attention to other IP tools like trademarks and trade secrets (Fosfuri et al., 2008).

This paper aims to address these gaps by developing a conceptual framework linking the global strengthening of IP regimes to the knowledge management strategies of MNCs. It adopts a co-evolutionary perspective, positing that MNCs and institutions interact recursively, rather than the latter merely imposing external constraints (Cantwell et al., 2010). The analysis further encompasses the multi-level interplay between country, industry and firm factors shaping strategic choice. Lastly, differentiation between developed economy and emerging economy MNCs is incorporated as a contingency.

The paper is structured as follows. Section 2 introduces the theoretical framework that provides a foundation for understanding the interdependent relationship between MNCs and IP regimes. Section 3 examines the worldwide rise of IP systems and the tendencies towards increased IP safeguards, providing insight into the factors driving this change. Section 4 focuses on the creation of a conceptual framework that examines the complex relationship between many elements at the country, industry, and firm levels. It specifically explores the differences between MNCs from developed and emerging economies as a contingency. Section 5 provides an analysis of the conceptual framework, revealing useful insights into how MNCs handle the dilemma between protecting and sharing knowledge. The paper finishes by providing a concise overview of the primary discoveries and constraints of the investigation.

Theoretical framework

To understand how MNCs have responded to growing strength of IP regimes worldwide, this research integrates two theoretical perspectives: the knowledge-based view that describes how knowledge resources give competitive advantage to businesses, and institutional theory which tackles how institutional contexts impact organiza-

tional strategies and structures. This section reviews relevant constructs and premises from each theory, laying the groundwork for the conceptual framework developed in later sections.

Knowledge-based view

The knowledge-based view (KBV) states that information is the most important strategic factor for competitive advantage in the modern economy (Grant, 1996; Spender, 1996). It adopts and develops the resource-based paradigm, which states that organizations gain advantage by holding rare, and non-substitutable resources (Barney, 1991; Barney et al., 2001). Intangible knowledge-based assets have these characteristics, underpinning firm strategy and performance.

The KBV conceptualizes the organization as an institution for producing, integrating and implementing knowledge (Kogut and Zander, 1993; Nonaka, 1994). Knowledge constitutes the fundamental productive resource, transcending traditional variables like land or physical capital. Competitive advantage stems from continuously creating new knowledge, and leveraging it across boundaries through transfer and recombination (Kogut and Zander, 1993; Grant, 1996).

Capabilities to effectively generate, assimilate and exploit knowledge become central to value-creation. Firms must balance knowledge integration across internal units with flexibility for local adaptation (Kogut and Zander, 1993). Managing knowledge flows and transfer costs thus becomes vital. Beyond explicit knowledge, tacit know-how embedded in individuals and routines provides a further source of advantage (Polanyi, 1966).

Within this perspective, IP rights like patents, trademarks and trade secrets allow firms to appropriate returns from knowledge assets and prevent uncontrolled diffusion (Teece, 1986; Liebeskind, 1996). However, excessive focus on knowledge protection over reuse risks inertia. Firms face tradeoffs between sharing knowledge internally versus restricting external spillovers to competitors (Kogut and Zander, 1993). Maintaining secrecy versus codifying and licensing knowledge also entails balancing costs and benefits (Teece, 1986).

For multinational corporations (MNCs), these tensions amplify across borders and subsidiaries (Kogut and Zander, 1993). Governing knowledge sharing versus protection is crucial but challenging, as dispersed units possess differentiated competencies. Overall, the KBV provides a rationale for why IP regimes that strengthen protections globally could profoundly influence MNC knowledge management strategies. It also suggests that firms require capabilities to dynamically resolve tensions between knowledge integration versus restriction.

Institutional theory

Institutional theory shows how organizational strategies and structures are formed by regulative, normative and cognitive features of their institutional settings (Scott, 1995, 2008). Formal standards, societal norms, and taken-for-granted assumptions dictate expected organizational shapes and behaviors, which enterprises conform to obtain legitimacy (DiMaggio and Powell, 1983; Meyer and Rowan, 1977).

From this lens, IP regimes constitute a critical formal institution governing knowledge markets and strategy. Patent, copyright and trademark laws impose regulative pressures on firms to protect knowledge assets. IP environments also encompass normative pressures, as infringing on others' legitimate protections violates social norms. Shared cognitive beliefs further reinforce IP, as actors take the legitimacy of property rights over intangible knowledge for granted (Peng et al., 2017).

Institutional theory suggests that most firms will conform to prevailing IP regimes to gain legitimacy, rather than actively resist (Oliver, 1991). However, strategic responses vary along a continuum from passive conformity to compromise to manipulation (Oliver, 1991). Firms with greater power and resources can more actively influence institutional pressures, rather than just acquiesce (Lawrence, 1999).

Multinational firms must additionally contend with institutional plurality across countries (Kostova and Roth, 2002). Responses to IP regime pressures may differ across subsidiaries depending on strategic priorities, legitimacy needs, and local requirements. Overall, institutional theory provides insights into how MNCs respond to IP regimes as an external institutional force. It also suggests potential for more active influence by large MNCs, rather than just passive conformity.

Integrating perspectives: A co-evolutionary lens

This paper synthesizes the KBV and institutional theory to elucidate MNC responses to strengthening IP regimes globally. It adopts a co-evolutionary perspective positing that firms and institutions recursively influence each other over time (Lewin et al., 1999; Cantwell et al., 2010). Co-evolution sees MNCs not just as passive respondents, but also active change agents shaping their institutional contexts via lobbying, negotiations and partnerships.

Neither firms nor institutions fully determine the strategies pursued in isolation; their interaction shapes evolution (Cantwell et al., 2010). Strengthened IP raises pressures for firms to protect knowledge, but they make strategic choices in navigating tradeoffs. Powerful MNCs can also proactively influence IP lawmaking and enforcement worldwide, molding regimes to benefit their interests.

From a co-evolutionary view, firms and IP institutions interact dynamically, both responding to and shaping the other. This differs from institutional theory's emphasis on external constraints, or the KBV's firm-centric focus, to examine their interplay.

This paper applies this perspective to propose that MNCs balance conforming with IP regimes against leveraging knowledge flows for capability-building. Their strategic priorities and resources determine responses, from compliance to proactive influence.

This theorization provides a backdrop to conceptualize MNC strategies vis-à-vis ascendant IP regimes. The KBV establishes why intellectual property is central to knowledge-based competitive advantage, and the tensions between sharing and protecting knowledge. Institutional theory suggests IP regimes create regulative, normative and cognitive pressures that shape firm behaviors and structures. A co-evolutionary lens illuminates how MNCs both respond to these institutional forces and endeavor to influence them based on strategic objectives. The interdependent dynamics between MNC strategies and IP regimes can thus be holistically examined.

By synthesizing the knowledge-centric view of the firm with the context-driven insights of institutional theory under a co-evolutionary lens, this paper advances current theory by moving beyond static analyses to conceptualize a dynamic, reciprocal relationship where MNC strategies and global IP institutions mutually shape one another over time. Having laid this theoretical groundwork, the next section develops the conceptual framework and propositions explicating MNC responses to IP strengthening across borders. The multi-level perspective spanning country, industry and firm factors is elucidated, along with potential differences between developed and emerging economy MNCs. Throughout, the interplay between knowledge resources and IP institutions is analyzed from a co-evolutionary standpoint.

Global ascendance of IP regimes and trends toward IP protections

IP regimes globally are undergoing a spike in strength, spurred by the expansion of knowledge economy, trade agreements, and innovation goals of emerging giants. This section looks into these drivers and discusses how MNCs negotiate the complicated terrain of national IP environments, altering their knowledge management methods as the global IP tidal rises.

Drivers of regime strengthening

Over recent decades, IP regimes around the world have broadly shifted toward stronger protection and enforcement. This ascent has been fueled by three key drivers: (i) the transition to knowledge economies, (ii) trade-related IP agreements, and (iii) increased policy emphasis on innovation in emerging economies. This ascendant global IP regime has profound implications for how MNCs manage knowledge across borders, which the next sections will explore. This section elaborates on these trends and causal mechanisms.

- i. knowledge economy transition:* The rising importance of knowledge as an economic input has placed IP at the center of policymaking in advanced nations. As intangible assets like patents, trademarks, copyrights and trade secrets supersede physical capital in value-generation, appropriate institutions to protect these knowledge assets become critical (Hall, 2011). Developed countries have led this progression into “knowledge economies” where codified information and intellectual capital constitute the key resources (Powell and Snellman, 2004). In this milieu, firms derive competitive advantage from proprietary knowledge that provides differentiation and barriers to imitation (Cockburn et al., 2000), requiring robust IP for appropriation (Liebeskind, 1996). Consequently, governments have instituted stronger IP laws and enforcement to facilitate knowledge-based industries and technologies, from software to biotechnology (Cohen et al., 2000). The strategic significance of intangible assets has made IP a high-priority trade issue as well, evident in international IP agreements (Sell, 2003). Therefore, the intrinsic dynamics of knowledge economies provided an impetus to advanced nations for constructing more formidable IP edifices domestically and globally.
- ii. international trade agreements:* A second salient factor propelling stronger worldwide IP standards has been concerted efforts by Western countries to integrate IP provisions into international trade treaties. Multilateral agreements like the World Trade Organization’s (WTO) Trade-Related Aspects of Intellectual Property Rights (TRIPS) have played a key role (Peng et al., 2017). TRIPS instituted minimum IP standards globally, compelling developing nations to implement reforms like patent protection for pharmaceuticals despite controversies over access to medicines (Musungu and Oh, 2005). Regional and bilateral deals have proven even more potent vehicles to ratchet up IP protections abroad, with European and particularly U.S. policymakers pushing stringent rules via treaties like the Anti-Counterfeiting Trade Agreement (ACTA) (Sell, 2010). Free trade agreements (FTAs) between the U.S. and partners have also consistently expanded IP requirements through “TRIPS-plus” provisions (Morin, 2009). Growing public resistance has somewhat constrained this approach lately, but international accords were instrumental in exporting tighter IP standards worldwide.
- iii. innovation focusses in emerging economies:* Strengthening of IP regimes has emanated not just from Western pressure but also domestic policy shifts in emerging economies, notably China and India. Despite reservations about IP historically, these countries have radically reformed national laws to create environments more conducive to innovation, responding to competitive pressures and technology ambitions (Awokuse and Yin, 2010). China’s accession to the WTO in 2001 mandated compliance with TRIPS, catalyzing sweeping legal reforms and enforcement campaigns to crack down on rampant counterfeiting (Liang and Xue, 2010). India enacted new patent laws in 2005 that permitted protections for pharmaceuticals and agrochemicals, overcoming its longstanding opposition (Sampat, 2010). Both

countries' policymakers have actively built out IP institutions to spur indigenous innovation capabilities, balancing incentives for knowledge production versus diffusion (Liu and Weingast, 2018). Therefore, while coercive isomorphism has shaped IP strengthening in emerging economies, normative pressures and voluntary mimicry have also been at work, as these nations themselves endeavor to climb the technology ladder (Awokuse and Yin, 2010; Tansey, 2016). Domestic innovation policies have aligned with – and further advanced – the global IP regime trajectory.

MNC responses to national IP environments

The global ascendance of IP regimes, fueled by the macro-level drivers discussed previously, imposes both constraints and incentives on multinational corporations. Given the constraints and incentives embedded in formal national IP institutions, they can exert significant influence on the competitive and knowledge management strategies of MNCs that span these diverse regimes.

A broad stream of international business scholarship has investigated how MNCs respond to varied national IP environments around the globe. Much of this research adopts strategic choice or institutional theory perspectives (Crescenzi et al., 2014), viewing IP regimes as an exogenous characteristic shaping firm behaviors rather than something mutable by MNCs themselves (Peng et al., 2017). It suggests MNCs will conform to institutional pressures for protection or diffusion imposed by national IP policies and norms. Empirically, studies find that MNCs adapt knowledge flows, boundary decisions and investment choices based on the strength of host country IP rights.

For example, Zhao (2006) showed that stronger patent regimes in host countries promote inward FDI and technology transfer by multinationals, as they can better protect core competencies abroad. However, this holds mainly for investments targeting the host market; regimes have little impact on export-oriented FDI. Scholars have also examined how IP environments influence alliance preferences and collaborative R&D with local partners. Keupp et al. (2009) established that weak appropriability regimes encourage formation of joint ventures (JVs) over wholly owned subsidiaries, mitigating risks of unwanted knowledge leakage.

The following table summarizes the relevant literature on MNC responses to changing IP regimes:

Table 1: Main related literature

Author/Year	Focus	Results
Oliver (1991)	Theoretical - Strategic choices regarding institutions like IP	Firms make strategic choices along a continuum from conformity to proactive influence regarding institutions like IP.
Mansfield (1994)	Technology transfer	Only technologies >9 years old transferred given weak historical IP.
Anand and Delios (1997)	Technology transfer by Japanese MNCs to China	Only latest technologies transferred to wholly-owned subsidiaries pursuing global mandates, showing strategic choice.
Cockburn and Henderson (1998)	Relationship between "absorptive capacity" and drug development success	Pharmaceutical companies with better "absorptive capacity" achieve higher success rates in drug development, indicated by co-authored scientific papers.
Oxley (1999)	Entry modes of US telecom equipment firms	More licensing and alliances under weak IP regimes to mitigate risk.
Anand and Khanna (2000)	Entry modes in the software industry	Licensing and JVs prevailed under weak IP; integrated FDI with stronger regimes due to codified knowledge.
Cohen et al. (2000)	Motivations for patenting among US manufacturing firms	Patenting decisions among US manufacturing firms driven by appropriability concerns, such as imitation risk, rather than just research incentives.
Sell (2003)	Lobbying by pharmaceutical MNCs	Shaped international IP agreements to gain advantage globally.
Hall et al. (2005)	Correlation between market value and patent records of US public firms	Positive correlation between the market value of US public firms and their patent records, indicating patents as an important appropriability mechanism.
Branstetter et al. (2006)	R&D activities by US MNCs in China	Increased R&D after China's patent reforms, indicating conformity to stronger IP.
Crescenzi et al. (2007)	Impact of diverse international contexts on MNEs	MNEs may benefit from learning effects when operating in diverse international contexts.
Liu and Buck (2007)	Competitive advantages for some MNEs in challenging IPR environments	Some MNEs from emerging markets gain competitive advantages through experience managing knowledge in more challenging IPR environments.
Slangen and Hennart (2008)	Strategic incentives for knowledge sharing abroad despite protection hurdles	Dutch MNEs engage in more outward foreign direct investment and alliances in countries with IPR systems dissimilar to their home, indicating strategic incentives for knowledge sharing abroad despite protection hurdles.
Liu et al. (2011)	Early internationalization of Chinese firms	Focused on older technologies until domestic IP protection strengthened.
Albert and Xu (2016)	Impact of changing IP laws on managerial decisions	Stricter IP enforcement leads firms to invest more in R&D, outsource less abroad, and rely less on trade secrets.
Peng et al. (2017)	Theoretical - Institutional theory explains conforming responses to IP regimes	Highlights potential for co-evolution.
Elia et al. (2019)	Location choices of IT firms	Target developed markets for accessing knowledge, developing countries for cost efficiencies based on modest in-house IP.
Bruno et al. (2022)	Innovation performance of highly innovative MNEs in different IPR protection regimes	Innovation performance enhanced for highly innovative MNEs in strong IPR protection regimes, enabling more knowledge sharing internally without leakage.

Research in emerging economies reveals MNCs selectively deploy older versus newer technologies based on IP risks. Mansfield (1994) estimated that U.S. firms would transfer only older vintages of technology to India due to weak appropriability. Branstetter et al. (2006) found that royalty payments and R&D activities by multinationals in China increased after patent reforms, suggesting firms shared more advanced capabilities (Papageorgiadis et al., 2019).

Therefore, studies widely concur that MNCs adapt knowledge strategies to navigate institutional constraints and incentives around IP protection across host countries. However, some limitations exist, mainly:

- IP strength is generally treated as an unambiguous, discrete variable, whereas regimes have multiple nuanced dimensions around different rights.
- Analysis is often static rather than co-evolutionary in nature.
- There is limited multi-level analysis distinguishing country, industry and firm effects.
- Much research centers on developed economy MNCs despite their different characteristics versus emerging market firms.

This paper aims to address these gaps by developing a more contextually embedded, multi-level and co-evolutionary framework to understand MNC responses to globally ascending IP regimes. In particular, differentiation between developed and emerging economy MNCs will be an important contingency. The next section reviews existing literature related to this theme.

Conceptual framework development

This section depicts the conceptual framework and delineates key components and relationships. Propositions are advanced connecting the global strengthening of IP regimes to MNC knowledge management strategies. Potential moderating factors at the country, industry, and firm levels are proposed. Testable propositions distinguish between developed economy and emerging economy MNC responses.

Collectively, the ten propositions presented in Figure 2 offer specific, testable predictions regarding the differential knowledge management strategies (such as contractual modes, internal sharing, external linkages, institutional engagement) of developed and emerging economy MNCs in response to varied IP regime strengths. These empirically verifiable propositions form the core testable implications of the multi-level and co-evolutionary framework, setting a clear agenda for future quantitative (for example, panel data analysis, econometric modeling) and qualitative (such as case studies, process tracing) empirical research, and serving as a guide for strategic action in dynamic IP environments.

Framework for MNC knowledge governance under varied IP

This framework summarizes key dimensions that show how MNCs configure knowledge protection versus sharing approaches under different IP regimes. Table 2 illustrates the key dimensions and different variables of the framework.

Legal protections, enforcement, scope and stability determine the strength of IP institutions. However, MNCs face varied conditions across geographic spheres based on home and host country contexts. Industry appropriability regimes also moderate governance choices based on knowledge attributes and competitive dynamics. Additionally, firm resources, experience and international footprint affect strategic responses. Finally, overarching motives guide proprietary knowledge deployment.

Together, these contingencies explain variation in MNC knowledge sharing and protection strategies as formal IP systems globally ascend. For instance, firms may allow greater diffusion under weak IP regimes in developing hosts and for incremental innovations with low competitive sensitivity. However, they will emphasize protection for radical, tacit knowledge in emerging markets with limited appropriability, especially where efficiency seeking motives dominate.

Table 2: Dimensions and variables under different IP regimes

Dimension	Variables
<i>IP Regime Attributes</i>	Strength of legal protections Enforcement effectiveness Scope of rights Stability
<i>Geographic Spheres</i>	Home country regime Developed host countries Emerging host countries Supra-national institutions
<i>Industry Dynamics</i>	Knowledge tacitness Technological opportunity Competitive rivalry
<i>Firm Factors</i>	Technological resources Political resources Managerial capabilities Internationalization
<i>Strategic Priorities</i>	Knowledge seeking Market seeking Efficiency seeking Strategic asset seeking

This framework indicates that beyond just institutional constraints, industry dynamics, firm capabilities and strategic objectives shape MNC governance choices. It provides an integrative scaffolding to investigate knowledge protection versus sharing approaches as global IP landscapes evolve. Focused analysis of specific conditions and their intersections represents a fruitful avenue for future research.

Conceptual framework of MNC knowledge management strategies

Figure 1 illustrates the conceptual framework that explores the complex tactics used by MNCs to effectively handle knowledge within the dynamic landscape of IP regulations. At its essence resides the fundamental dilemma: to share or to shield knowledge?

The choice between these two alternatives is impacted by the degree of IP safeguarding in different countries, which has a substantial impact on the dissemination and utilization of knowledge. The conduct of MNCs is influenced by three main parts of institutional theory: regulatory, normative, and cognitive pressures. These characteristics play a significant role in directing MNCs as they navigate the convoluted landscape of international business.

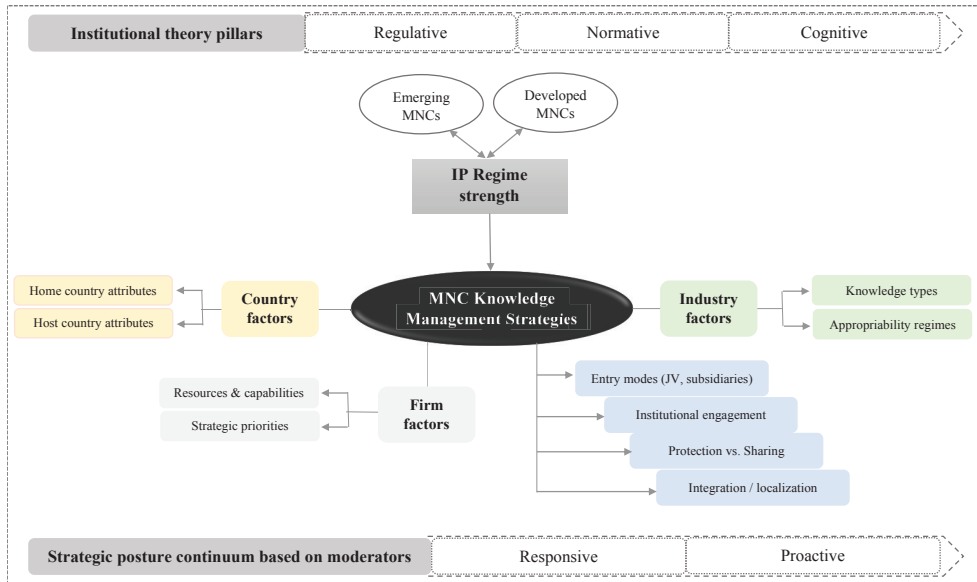
In addition to this basic conflict, the framework expands to include crucial decision points that influence the knowledge management approach of MNC. The choice of entry modes, such as joint ventures or wholly-owned subsidiaries, dictates the initial degree of control and ability to acquire knowledge in a foreign country. The intricate equilibrium between the worldwide dissemination of knowledge and the customization to local contexts is of utmost importance, necessitating deliberate decisions concerning the amalgamation and localization. In addition, MNCs have the option to actively participate in institutional frameworks, which could potentially impact the process of creating IP rules through lobbying or collaboration.

However, these decisions are not made in isolation. Various elements that moderate the outcome are influential, and they can be classified based on the setting, industry, and specific qualities of the firm. Cultural, legal, and political differences among countries (Home and Host country attributes) need flexible tactics. The nature of knowledge itself (Knowledge types and appropriability regimes) inside distinct businesses influences the ease of copying and thus the ideal protection or sharing method. Also, each MNC's unique resources and capabilities and strategic priorities, for example: risk tolerance, growth ambitions, play a significant influence in creating its knowledge management choices.

The framework emphasizes also the critical distinction between developed and rising MNCs. Their inherent variations in resources, experience, and risk appetite need unique tactics. Notably, the two-way arrows between these categories indicate the co-evolutionary character of the interaction between MNCs and IP institutions. While MNCs respond to existing IP regimes, they also possess the power to affect their development and evolution over time.

The framework acknowledges the variety of alternative strategic postures chosen by MNCs in response to the interplay of these factors. Ranging from "responsive" adaptation to "proactive" development of the environment, MNCs can pick their level of interaction with IP institutions, thus adding complexity and dynamic to the global knowledge landscape.

Figure 1: Conceptual framework



The conceptual framework centers on two core constructs:

1. *Strength of IP regimes*: This refers to the extent of legal protections and enforcement mechanisms instituted within a country’s formal institutions around intellectual property, including patents, trademarks, copyrights, and trade secrets (Zhao, 2006; Peng et al., 2017). Relevant dimensions include law/policy scope, term lengths, enforcement infrastructure, and sanctions.
2. *MNC knowledge management strategies*: These encompass choices made by multinational firms regarding how to govern knowledge flows across borders, leverage knowledge resources internally versus externally, and appropriate returns from proprietary knowledge (Kogut and Zander, 1993; Tippmann and Monaghan, 2018.; Tippmann et al, 2023). Strategies span contractual modes, integration/localization decisions, knowledge transfer mechanisms, and institutional engagement.

The conceptual framework proposes that as IP regimes globally strengthen (the key environmental shift), MNCs will adapt their knowledge management strategies in response. This may entail greater internal knowledge sharing but more restricted external flows. However, strategic responses vary based on other contingencies.

Overall, the framework adopts a co-evolutionary perspective, recognizing MNCs as not just passive responders but active agents potentially shaping IP institutions themselves (Cantwell et al., 2010). Their strategic priorities and resources determine whether posture is reactive or proactive. Institutional influences and firm strategy co-evolve over time.

In addition, Figure 1 indicates important moderating factors, mainly:

IP regime attributes: Effects will differ based on the specific attributes of protection within a regime - whether patents, trademarks, trade secrets etc. Regulatory changes versus enforcement efficacy also mediate impacts.

Industry characteristics: Knowledge management strategies will vary based on industry regimes (tight vs. weak appropriability) and knowledge types (tacit vs. explicit).

Firm resources: MNCs with greater resources and influence will play a more active role in shaping IP institutions. Advanced economy MNCs will be more proactive.

Home vs. host country contrast: Greater IP regime distance between home and host countries will influence MNC posture as will strategic priorities.

Development stage: Emerging economy MNCs will leverage more external linkages owing to latecomer status despite weaker IP at home.

Discussion and analysis

By deconstructing the framework through the lens of our research on MNC responses to shifting IP regimes, we may acquire deeper insights into the knowledge protection vs. knowledge sharing issue they face.

- *Central phenomenon and the conceptual framework:* Figure 1 establish MNC Knowledge Management as the central phenomenon, stressing its vital significance in the face of altering IP landscapes, and the elements impacting these methods. Examining the numerous parts within this framework becomes crucial to understanding the subtleties of MNC decision-making.
- *The driving forces:* Regulating and institutional theory pillars and strategic posture continuum indicate the external pressures driving MNC decisions. From the regulating, we observe home country qualities and IP regimes acting as restraints or incentives. The institutional theory pillars – isomorphism, path dependence, and legitimacy – further explain how these external pressures influence the strategic posture continuum taken by MNCs, ranging from full isolation to open knowledge exchange.
- *Moderating factors and internal dynamics:* Moderating factors go deeper into the internal dynamics affecting MNC tactics. Factors including industry type, business size, and technological capability reduce the impact of external forces. Additionally, the kind of knowledge (official versus informal, local versus global) plays a vital influence in defining knowledge flows and appropriation tactics.
- *Processes and characteristics of knowledge:* Processes and characteristics of knowledge emphasizes the intrinsic complexity of knowledge itself. The nature of knowledge (tacit vs. codified), its ease of imitation, and its strategic significance all influence how MNCs choose to protect or distribute it.

- *Bridging the divide:* Differences between developed and emerging MNCs emphasizes the necessity for context-specific analysis. Emerging MNCs with less established brand awareness and technological capabilities could prioritize knowledge protection to shield their competitive advantage. In contrast, developed MNCs with better reputations and resources might be more comfortable with information sharing, using collaborative networks and global knowledge flows.

To better govern knowledge under varied IP conditions, the first step lies in identifying the key attributes of IP regimes that shape MNC knowledge governance approaches. The framework next maps variability in IP conditions across different geographic spheres where MNCs operate. This elucidates the scope and stability of protections firms face across principal locations. The framework incorporates industry-specific appropriability regimes based on the dimensions indicated in table 3. Together these shape each industry's IP intensity and reliance on formal protections (Hall et al., 2014; Hall, 2011), in addition to resources and capabilities influencing MNC approaches. Strategic objectives shape how MNCs balance openness and control over knowledge across varied IP landscapes.

Table 3: Analysis and key steps

Step	Dimensions
Identify key dimensions of IP regimes	Strength of legal protections (patent, trademark, copyright laws) Enforcement effectiveness (monitoring, prosecution, penalties for infringement) Scope of rights (subject matter covered, term length) Policy stability and consistency
Map IP conditions across geographic spheres	Home country regime Developed economy host environments Emerging economy host contexts Supra-national institutional influences (WIPO, WTO)
Classify industry knowledge regimes	Knowledge tacitness (explicit vs tacit elements) Technological opportunity (prospects for continuous innovation) Competitive rivalry (number of capable competitors)
Identify relevant firm resources and capabilities	Technological resources (radicalness, patent holdings, R&D intensity) Political resources (lobbying expertise, regulatory influence) Managerial experience (IP strategy know-how) Firm internationalization (global footprint and dispersion)
Consider strategic objectives and motives	Knowledge seeking aims (source host location expertise) Market seeking motives (adapt existing knowledge to local contexts) Efficiency seeking goals (leverage standardized knowledge globally) Strategic asset seeking intent (acquire new capabilities from partners)
Map integrated knowledge governance approaches	-

Globally, the framework maps how MNCs integrate decisions on protecting versus sharing knowledge into coherent governance approaches under varied IP conditions. This framework systematically integrates multiple boundary conditions spanning in-

dustry, country, firm and strategic factors to explain variation in MNC knowledge governance as formal IP regimes strengthen globally.

In this context, some propositions delineate potential relationships between the global ascent of IP regimes and MNC knowledge strategies (see Figure 2). They also surface important nuances based on industry, country, and firm factors.

Propositions 1-6 establish basic techniques MNCs may use to negotiate ascendant IP regimes, including internal knowledge exchange, localized sourcing (Reuber et al., 2023), contractual entry modalities, and institutional participation. They draw from and extend recent study on how multinationals modify knowledge management and governance based on host country IP conditions (Zhao, 2006; Oxley, 1999; Keupp et al., 2009). Propositions 7-10 differentiate between advanced and emerging economy MNCs (Luo and Tung, 2007).

Proposition 1 is logically anchored in the awareness and expertise with utilizing information worldwide under robust appropriability that these advanced economy MNCs have acquired. Empirically, Branstetter et al. (2006) observed U.S. multinationals boosted sensitive technology transfer to reforming nations as IP was enhanced. Analyzing MNCs' integration decisions across diverse host IP settings will help evaluate this proposition.

Proposition 2 reflects uncertainty from weaker IP countries home institutional context. Qualitative case studies on developing economy MNCs reveals reliance on expatriates for knowledge protection (Elia et al., 2019). Surveys can analyze differences in staffing tactics between advanced and emerging MNCs across host IP situations.

Proposition 3 corresponds with findings that MNCs strategically restrict information sharing under weak appropriability (Mansfield, 1994). Analysis of intra-firm staff and knowledge transfers can test it across R&D centers in various nations.

Proposition 4 predicts MNCs will choose for older technology vintages and localized sourcing (Reuber et al., 2023) at production plants in weak IP countries. Feinberg and Gupta (2004) showed weaker regimes enhanced localized content in Indian subsidiaries. Case research on technology selection and supply chain design decisions help test this proposition.

Proposition 5 expands Oxley's (1999) observation that poor IP increased JV chances. Large sample examination of ownership choices across target nations helps analyze how institutional factors change governance.

Regarding proposition 6, existing work documents IP lobbying by advanced MNCs (Sell, 2003). Process analyses can trace interactions between MNCs and national/regional lawmakers during reform initiatives.

Figure 2: Propositions

P1	MNCs from countries with stronger IP regimes will exhibit greater willingness to transfer proprietary knowledge across borders to subsidiaries
P2	MNCs from countries with weaker IP regimes will be more cautious about sharing knowledge abroad and rely more on expatriates
P3	For R&D facilities in countries with strong IP protections, MNCs will favor concentrated knowledge inflows from headquarters and limited local embedding
P4	For production facilities in countries with weak IP protections, MNCs will favor older vintages of technology transfer and localized sourcing
P5	MNCs will adapt contractual modes for foreign expansion based on host country IP regimes, favoring joint ventures where protection is weaker
P6	MNCs will lobby host country governments and institutions to shape IP laws and enforcement to better suit their strategic interests
P7	MNCs from emerging economies will leverage external linkages for capability development more extensively than advanced economy MNCs, despite IP risks
P8	Emerging economy MNCs are likely to leverage diaspora networks for knowledge access despite weak appropriability in their home countries
P9	Emerging economy MNCs will be relatively more reliant on hiring local talent in foreign subsidiaries to acquire knowledge
P10	Compared to advanced economy MNCs, emerging economy firms will be less inclined to file for IP protections abroad given weaker experience at home

Proposition 7 can be explained by their technological shortcomings. Studies demonstrate dependency of enterprises on licensing and diaspora networks (Awate et al., 2015). Surveys can assess external linkage width between developed and emerging MNCs.

For proposition 8, research reveals extensive diaspora ties by IT enterprises (Nanda and Khanna, 2010). Content analysis of alliance databases can measure diaspora partnerships across kinds of MNCs.

The compensation for internal deficiencies, highlighted in proposition 9, is confirmed in case studies (Elia et al., 2019). Analysis of expatriate hiring patterns can assess variations between advanced and emerging MNCs.

Proposition 10 shows that MNCs may be slower in filing IP protections abroad owing to minimal experience at home. In this context, survey data suggests less IP orientation among enterprises (Jing et al., 2023). Examination of patenting applications across host nations by MNC origin can help assess this proposition.

Overall, the framework conceptualizes MNCs as balancing conformity to IP regimes with actively managing knowledge flows across borders for capability development. While they adapt strategies based on IP protections, they also endeavor to shape institutions based on priorities and resources. Their posture along this continuum between responsiveness and proactivity is contingent on several country, industry and firm factors.

The propositions remain conceptual in nature at this stage and require empirical validation. This framework incorporates co-evolutionary dynamics between MNC strategies and IP institutions. It also adopts a multi-level lens spanning the country, industry and firm levels. The explicit comparison between emerging and advanced

economy MNCs similarly provides new angles relative to extant literature focused predominantly on the latter. As such, it advances conceptualization of how MNCs tackle globally ascendant IP regimes going forward.

Furthermore, substantial future research is needed to empirically test the framework across a broader range of emerging economies, including regions in Latin America and Africa, to ensure greater generalizability and relevance for global MNE strategists.

Conclusion

This review synthesized key elements analyzing how MNCs balance proprietary knowledge sharing versus protection as formal IP regimes evolve worldwide. Collectively, the literature reveals a complex picture, with significant variation based on country contexts, industry dynamics, firm strengths and strategic motives. While institutional theories provide insight into regulative pressures, resource-based perspectives illuminate how MNCs leverage differentiated capabilities to navigate regimes. Adopting a co-evolutionary lens helps integrate these effects and explain reciprocal dynamics between IP institutions and MNC strategies.

However, substantial further research is needed to develop a robust, contextualized understanding. While groundwork is established, focused analysis examining nuanced firm responses across specific types of IP rights and divergent geographic and industry environments remains limited. Comparing developed versus emerging economy MNC strategies as home countries transition merits particular attention. There are also unanswered questions around how firms influence policymaking amid IP strengthening, highlighting co-evolutionary processes between MNCs and institutions.

For corporate strategists, this framework offers a vital guide for dynamically calibrating the knowledge sharing-protection tradeoff, and for policymakers, it highlights the reciprocal nature of IP institutions and firm behavior, suggesting a need for more nuanced, context-specific regulatory design that considers country, industry, and firm factors.

With global IP continuing to flux, investigating multinationals' strategic tradeoffs between knowledge sharing and protection across borders remains a fruitful avenue for scholarship. Integrating international business and strategic perspectives with institutional lenses can provide wider insight into these complex but crucial dynamics. Firms must dynamically calibrate openness and control over proprietary assets as external IP regimes shift worldwide.

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Code Availability

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Authors' Contributions

Soraya Sedkaoui: Conceptualization, methodology, writing original draft, writing review and editing, supervision.

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