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Rui Torres De Oliveira, Daniel Rottig, Marta Indulska

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Blockchain implications for management and international business theories: toward a new paradigm

Rui Torres De Oliveira*

Business School,
SME Centre,
Deakin University,
Melbourne, Victoria, Australia
Email: rui.torresdeoliveira@Deakin.edu.au
*Corresponding author

Daniel Rottig

Lutgert College of Business,
Florida Gulf Coast University,
Lee County, Florida, USA
Email: drottig@fgcu.edu

Marta Indulska

Business School,
University of Queensland,
Brisbane, Queensland, Australia
Email: m.indulska@business.uq.edu.au

Abstract: Blockchains are having a disruptive effect on how organisations transact and operate in domestic and international markets. Indeed, the characteristics of blockchain technology have the potential to upend some of the long-held assumptions that researchers hold about market transactions, the role of institutions, the nature of the firm, and the internationalisation patterns of multinationals. Yet, there is a paucity of research that focuses on the implications of this technology for key management and organisation theories, as well as related international business theories. We focus on these theories because blockchain enables transactions to be conducted between decentralised, autonomous economic actors in domestic and international markets at much lower costs, with less uncertainty, reduced risk, and without central control by governments. We refer to these effects as organisational democratisation. Thus, this situation points to an opportunity for institutional innovation that will lead to the emergence of new ways to organise economic activities.

Keywords: multinationals; blockchain; DLT; transaction costs; institutions; agency theory; multinationals.

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Biographical notes: Rui Torres De Oliveira received Master degree in Civil Engineering, an MBA and a DBA on International Business and Strategy from Manchester Business School, UK. He is a Professor at Deakin University and the Director of the SME Centre at Deakin Business and Law Faculty. His academic interest relates to strategy, digital capabilities, innovation and international business. His work has been published in top journals as: *Journal of World Business*, *Global Strategic Journal*, *Strategic Entrepreneurship Journal*, *Journal of Business Research*, *Small Business Economics*, *Journal of Cleaner Production*, *Industrial Marketing Management Journal*, *Journal of Retailing and Consumer Services*, among other academic journals.

Daniel Rottig is a Professor of International Business and Global Strategic Management in the Lutgert College of Business at Florida Gulf Coast University. He has published extensively in his field and has received numerous awards and award nominations from the Academy of International Business, the Academy of Management and leading publishers. He is a passionate educator whose goal is to help students and executives understand the global business environment and how to strategically manage firms in international markets. He has taught at leading universities around the globe and received several teaching excellence awards. He is an IBM-certified Blockchain Instructor and Practitioner as well as a Certified Global Business Professional (CGBP).

Marta Indulska is a Professor of Information Systems and Director of Research at the University of Queensland, Business School, Australia. She teaches on topics related to the use and management of Information Systems and Information Technology in Business, specifically with a focus on increasing operational efficiency and effectiveness. She obtained her Computer Science Doctorate degree in 2004. Her main research interests include conceptual modelling and business process management. She has published over 100 fully refereed articles in internationally recognised journals and conferences, including in *MIS Quarterly*, *Information System Journal*, *International Journal of Information Management*, etc.

1 Introduction

Recent technological transformation and the fast-paced adoption of new technologies such as blockchain, Artificial Intelligence (AI), internet of things, virtual reality, robotics, cloud and big data analytics (Ahi et al., 2022; Zhan, 2021) have fundamentally disrupted traditional business models and the way economic actors transact with one another and interact with their environment (Lopes et al., 2023; De Oliveira et al., 2023; Toth-Peter et al., 2023). Indeed, the post-pandemic new normal, characterised by 'digital global connectivity' that constitutes 'a golden thread that ties businesses together around the world', has ushered in a 'new era for international business' (Luo, 2022, p.53) that 'will influence MNEs' strategic choices for international operations' (Zhan, 2021, p.209).

For example, new technologies now enable Multinational Enterprises (MNEs) to conduct arm's length transactions, rather than internalising economic transactions in the form of FDI, with considerably reduced transaction costs, higher transparency, less uncertainty and risk as well as improved speed. Indeed, MNEs have employed more

market-based transactions over the past two decades, by building and coordinating networks of primarily interdependent but increasingly also independent firms (see, e.g., Buckley and Ghauri, 2004), which has changed international trade and foreign direct patterns (Zhan, 2021). Yet, the fundamental theories to explain the existence of MNEs and their internationalisation patterns largely remain as originally developed.

We therefore argue that recent advances in global digital transformation and technological innovation require academics to question underlying assumptions of well-established theories due to the fundamental implications that new technologies and global digital platforms and ecosystems may have for these theories (Banalieva and Dhanaraj, 2019; Luo, 2022; Nambisan and Luo, 2021). We focus on blockchain as one disruptive technology that could challenge assumptions we currently hold about the nature of the firm, market transactions, and the role of institutions, because it is considered to be 'one of the most revolutionary technologies of our time' (Ahi et al., 2023, p.3) that 'provides the supreme level of network connectivity when compared to other technologies' (Šilenskytė et al., 2024). We specifically consider public permissionless[1] blockchain and argue that its impacts are particularly important to examine within the IB literature, where MNEs are actively exploring blockchain applications, particularly in the financial (Böhme et al., 2015), healthcare (Mettler, 2016), compliance (Anjum et al., 2017), logistics (Hackius and Petersen, 2017) and data protection (Finck, 2018) contexts.

Ahi et al. (2022, p.6) signalled the potential impact of blockchain on organisational and management theories. This is because blockchain technology can reduce transaction costs for firms while increasing the efficiency of markets and transparency (Catalini and Gans, 2018; Felin and Lakhani, 2018), and can develop trust among economic actors (Tapscott and Tapscott, 2016). As a result, it has implications on transaction costs (e.g., Schmidt and Wagner, 2019; Henten and Windekilde, 2019; Chen et al., 2022), organisational boundaries and structures (e.g., Singh et al., 2023) as well as a number of related international business theories (Banalieva and Dhanaraj, 2019; Luo, 2022; Nambisan et al., 2021).

In this paper, we aim to explore the potential implications of blockchain technology for market transactions and how the related impacts may influence different parties, specifically market agents and institutions. By doing so, we offer a starting point for a new field of research that we term *organisational democratisation*, which we define as *the study of automated or manual actions within the firm that can be triggered without a hierarchical structure and be considered valid and acceptable.* In alignment with the organisational democratisation focus, in this paper we answer the call for greater comprehension of the effects of emerging technologies, such as blockchain, on different theories used in the realms of management and organisation as well as international business research (Šilenskytė et al., 2022). In addition, we explore how digital economy systems and ecosystems (AOM, 2017; Dodgson et al., 2015) might challenge formal institutional settings (Lustig and Nardi, 2015), and institutional innovation (Davidson et al., 2018). We focus on these because they are particularly relevant to firms operating in multiple institutional settings, such as MNEs (e.g., Rottig, 2016).

In the remainder of this paper, we first provide a brief explanation of blockchain technology characteristics and exemplify its business applications. Consequently, we explore the implications of blockchain technology on existing theories, namely: transaction cost economics, agency theory and institutional theory, as well as related IB theories. We conclude the paper with a discussion of implications and a call for further research.

2 Blockchain history and applications

There are many types of blockchain technologies (see, e.g., Šilenskytė et al., 2024) and numerous articles providing an overview of their technology fundamentals. In this paper we specifically focus on public permissionless blockchains, i.e., the original Bitcoin blockchain, further denoted as 'blockchain' unless indicated otherwise. It is not our intent to explain the technology, as many such articles already exist (e.g., Pilkington, 2016). Instead, we summarise blockchain characteristics and provide examples of business applications as a prelude to discussing theoretical implications, the realm of the manuscript.

While its underlying technologies date back several decades, the concept of blockchain was first introduced in a white paper by Nakamoto (2008). It is widely accepted that its introduction, in the wake of financial and economic crises, aimed to establish a true peer-to-peer system for financial transactions free of control by any government or central authority (Collomb and Sok, 2016; Murray, 2018). The publication of Nakamoto's (2008) paper appeared shortly after the collapse of Lehman Brothers in September 2008. As a result, many economic actors lost trust in extant institutions, and in the governments and central authorities charged with establishing and enforcing them.

The potential for blockchain to put into question well established theories stems from this technology's characteristics. Blockchain technology (Iansiti and Lakhani, 2017; Nakamoto, 2008; Tapscott and Tapscott, 2016) is based on a decentralised, distributed and secure public ledger of records. Its design allows autonomous economic actors to share information, contract and transact with one another without the need for intermediaries or government intervention. As a result of this approach, transactions can be conducted between decentralised, autonomous economic actors at lower costs, with less uncertainty and without central control by governments. These possibilities have now advanced beyond hypothetical considerations and many technical solutions that utilise blockchain technology have been proposed and adopted in practice (e.g., Ajwani-Ramchandani et al., 2021; Hoy, 2017; Hughes et al., 2019; Sharples and Domingue, 2016; Skiba, 2017; Zhan, 2021). Blockchain's offering of a transparent and verifiable ledger of transactions has broad applications and is seeing significant growth in finance, healthcare, Internet of Things (IoT) and government contexts (Sunny et al., 2022). Indeed, while the technology has drawbacks, the list of its application areas keeps growing at a steady pace (Renduchintala et al., 2022; Lacity, 2018).

As blockchain use cases grow so do implications for various domestic and international business-related domains, such as global value chains and global supply chain management including international trade (Zhan, 2021) as well as the international transfer of funds. For example, multinationals like Western Union offer international funds transfers for a significant fee (8 to 12%), taking a considerable time (from several days to over a week). With blockchain technology, such transactions can happen in a matter of minutes and with minimal fees (first applications charged approximately 1%, see, e.g., Abra), which has implications for international payments that are frequent in multinationals. Various governments are also investing heavily in the technology and are creating regulatory frameworks for public permissionless blockchains, such as the Bitcoin blockchain, which has not only led to more transparency and confidence among the general public to use this technology, but also signalled further future implications for IB. For example, Estonia, which was named 'The World's Most Digital Country' by Forbes (2018), has adopted blockchain technology to respond to a more connected world and facilitate how its citizens, its government and the public sector transact domestically and internationally (PwC, 2019). In a similar vein, Dubai converted its entire city government to run on blockchain technology in time for the most recent World Expo. They created the world's first blockchain event in the 'World Expo' history, sponsored by Bloomberg and titled 'Blockchain Economy' (Magyar, 2022). More recently, in 2023, the US government regulated public permissionless blockchains and related cryptocurrencies, and so further legitimated and facilitated a more wide-spread adoption of this technology domestically and internationally given that many countries around the globe follow US regulation (Lang, 2023). Several countries and regions have followed suit and enacted legislation for the technology, such as China and the European Union, and an increasing number of countries have made Bitcoin legal tender, for example Australia, Canada and the UK among others.

3 blockchain technology – implications for theory

From a theoretical perspective, blockchain technology has the potential to challenge several well-established theories in the fields of management and international business. First, because it can curtail transaction costs that economic actors, such as firms and multinational corporations, experience in national and international markets, we argue that it brings into question the assumptions of Transaction Cost Economics (TCE) (Coase, 1937; Williamson, 1975, 1979, 1981). Second, because it can result in the disintermediation of economic transactions, mitigate uncertainty and lower the risk of opportunism in free market transactions between independent economic actors, blockchain can eliminate or reduce agency conflicts and related costs. By doing so, we argue that it brings into question the assumptions of agency theory (Jensen and Meckling, 1976). Third, blockchain technology has the potential to challenge institutional theory (DiMaggio and Powell, 1983; Meyer and Rowan, 1977) as it allows firms to become

actors of organisational democratisation and can lead to the development of hybrid forms of institutions, such as semi-formal institutions (De Oliveira and Rottig, 2018). See Table 1 for an overview of these three theories and their key assumptions.

Table 1 Overview of theories

	Transaction Cost Economics	*Agency Theory*	*Institutional Theory*
Definition of the firm	The firm is an arrangement to conduct economic transactions and consists of a governance structure that organises human assets based on managerial fiat (relationship between managers and workers) within an internal boundary (Williamson, 1981)	The firm is 'a legal fiction which serves as a focus for a complex process in which the conflicting objectives of individuals (some of whom may "represent" other organizations) are brought into equilibrium within a framework of contractual relations' (Jensen and Meckling, 1976, p.9)	The firm is 'a natural product of social needs and pressures – a responsive, adaptive organism' (Selznick, 1957, p.5)
Perspective on organisation-environment relationship	Rational-open system perspective (Baum and Rowley, 2002)	Rational-open system perspective (Baum and Rowley, 2002)	Natural-open system perspective (Scott, 2002; Baum and Rowley, 2002)
Key Sources	Williamson (1975, 1981, 1985, 1991) based on the work of Coase (1937) and Chandler (1962)	Jensen and Meckling, 1976 Fama, 1980 Eisenhardt, 1989	Selznick, 1957 Meyer and Rowan, 1977 DiMaggio and Powell, 1983 North, 1990
Key assumptions	Markets and firms are alternative arrangements for conducting economic transactions	Firms consist of a set of contracting relationships among individuals, primarily between managers (agents) who are hired by stockholders (principles) to act on their behalves.	Legitimacy is the key productive resource
	Costs of conducting economic transactions in the market are higher than transacting within the firm due to the costs imposed by uncertainty, bounded rationality, information asymmetry and opportunism	Agency relations between contracting individuals (principals and agents) lead to agency problems (conflicts) and related costs due to hidden actions by agents (moral hazards), information asymmetry (adverse selection), and opportunitistic behaviour by agents that are costly to monitor and observe by principals	Conformity to environmental demands is more important than economic rationality and efficiency

Table 1 Overview of theories (continued)

	Transaction Cost Economics	*Agency Theory*	*Institutional Theory*
	Due to the higher transaction costs in markets, economic transactions are more cost-effectively conducted within governance regimes, which explain the existence of the firm	Through performance-contingent incentives, agency problems and the related costs may be reduced	Conformity to environmental demands entails legitimacy
How Blockchain may challenge assumptions	Due to the potential to reduce the four types of transaction costs by Coase (1937), see table 2, the costs of economic transactions in the market (arm's length) may be lower than transacting within the firm, thus no longer necessitating the establishment of the latter	Due to its monitoring benefits (visibility, tracebility, data security) and the potential to reduce uncertainty and opportunism, e.g. through the application of smart contracts, many types of agency relationships may no longer be needed and those that are needed may no longer result in agency problems and related costs, thus no longer necessitating performance-contingent incentives	Due to the novel mechanism to build trust, connectivity benefits, and the potential to disintermediate economic transactions, the involved actors may by default be legitimated within the network, thus no longer necessitating institutional frameworks to monitor and control conformity to environmental demands
Related theories and perspectives in international business	Internalization Theory (Buckley and Casson, 1976) Eclectic Paradigm (Dunning, 1979, 1980) Theory of Foreign Direct Investment (Hymer, 1976/1960)	Eclectic Paradigm (Dunning, 1979, 1980) Business Network Theory of Internationalization, based on the Uppsala Internationalization Model (Johanson and Vahlne, 1977) and Social Capital Theory (Bourdieu, 1986; Coleman, 1990)	Institutionalization Theory of the Multinational Corporation (Rosenzweig and Singh, 1995; Westney, 1993); Contingency Theory of the Multinational Corporation (Bartlett and Ghoshal, 1989; Stopford and Wells, 1972)

Source: Authors.

Given that several theoretical perspectives of MNEs are based on these theories (for a systematic overview and discussion of theories of multinationals, see, e.g., Forsgren, 2017), we argue that blockchain technology also has the potential to change the assumptions of predominant theories in international business. This is the case for internalisation theory (Buckley and Casson, 1976) and the eclectic paradigm (Dunning, 1979, 1980), which find their roots in transaction cost economics as well as agency theory.

Furthermore, the business network theory of internationalisation, and specifically the perspectives conceptualising MNEs' intra- and inter-organisational relationships and network ties (Dyer and Singh, 1998; Tsai. 2000; Tsai and Ghoshal, 1998; Leenders and Gabbay, 1999) that are based on the interplay between market agents and independent network partners may need to be revisited due to blockchain's potential to lower uncertainty and reduce the risk of opportunism in intra- and interorganisational transactions. In addition, institutional theory-based accounts of MNEs (Rosenzweig and Singh; 1995; Westney, 1993) as well as contingency theory in the realm of MNEs (e.g., Bartlett and Ghoshal, 1989; Stopford and Wells, 1972), which are based on an open system view of the firm and examine the interplay between an MNE and its environment, may be challenged given blockchain's potential to reduce the number of certain institutions as well as develop a hybrid form of institutions. In the following sub-sections, we develop these assertions in more detail.

3.1 Blockchains, transaction costs and the theory of the MNE

To systematically discuss the potential implications of blockchain technology on TCE, as well as on international business theories based on TCE, it is important to examine the potential effects of this technology on the four types of transaction costs identified by Coase (1937). Table 2 summarises these four types of costs and the implications we expect blockchain will have on them.

Table 2 Blockchain's implications for the four types of transaction costs by Coase (1937)

Transaction cost	*Blockchain implications*
1 Costs of Search	Reduction of costs related to firm-external search for information, people and assets as well as the evaluation, validation and verification of this data due to blockchain's ability to validate records and verify transactions that are shared among a distributed, decentralised public ledger that is more secure and less susceptible to malicious alteration than contemporary internet-based databases
2 Costs of Coordination	Reduction of costs related to coordinating economic actors by allowing firms to establish allocentric networks, so-called blockchain markets, which, in turn, may be a conduit to a free market-based coordination of economic transactions among independent actors that are orchestrated in transparent, dependable and accountable manner.

Table 2 Blockchain's implications for the four types of transaction costs by Coase (1937) (continued)

Transaction cost	*Blockchain implications*
3 Costs of Establishing Trust	Reduction of costs related to establishing trust in a free market by identifying and recording opportunistic behaviours of economic actors, facilitating easy access to this information and ensuring this information is immutable. This, in turn, will considerably reduce costs due to these behaviours and thus, allow independent economic actors to establish trust and so transact with one another outside the boundary of a firm.
4 Costs of Contracting	Reduction of costs related to contracting through blockchain-based 'smart contracts' that are immutable, self-enforcing software programs which reflect mutual agreements between economic actors and record/store, verify and self-execute economic transactions based on prespecified rules without the need for intermediaries to validate and enforce these transactions.

Source: Authors.

Coase (1937) regarded these four types of costs as the main motivator for the execution of transactions within the boundaries of the firm rather than in a free market. Accordingly, curtailing the costs could shift the pendulum back to market transactions. Alternatively, it could create a new, hybrid form of conducting economic transactions between hierarchies and marketplaces enabled by blockchain technology.

First, Coase (1937) considered the significant, and often prohibitive, *costs of search* in a free market when compared to the firm. Examples of these costs include finding the right information, people, and assets. Over the last few decades, these search costs have been reduced. The rise of the internet, and the worldwide web in particular, has ensured that information can readily be accessed or searched on the web, or through various applications and web-based platforms. Yet, information on the web cannot be readily verified or trusted, which entails internal and external costs to search through vast external databases and social media platforms and to evaluate, validate and verify this information. Blockchain technology can reduce the costs of search, evaluation, validation and verification given that it allows economic actors to access a system of validated records and verified transactions. These records are shared among a distributed, decentralised public ledger that is more secure and less susceptible to malicious alteration than contemporary internet-based databases.

Second, Coase considered the *costs of coordination*, which can be substantive in a free market compared to within a firm. For example, in the pre-internet era, it would be almost impossible to dynamically bring together and coordinate a large number of specialised economic actors to manufacture a safe, reliable and marketable car if these economic actors have never met or worked with each other before. While the introduction of the internet sparked the rise of virtual organisations, identifying relevant participants as well as coordinating and managing them are significant challenges. Despite the rise of outsourcing of some economic activities, most economic transactions are still conducted within the boundary of the firm where management can control the needed human resources and manufacturing processes, or control suppliers through service-level agreements and thus more cost-effectively coordinate economic actors.

Yet, with blockchain technology, the costs of identifying, legitimising, and coordinating specialised economic actors are considerably reduced due to its shared, decentralised and immutable nature that allows these actors to easily connect and collaborate and do so in a dependable and accountable manner. Given those

characteristics, blockchain technology may lead to the creation of open network enterprises that make partial use of this technology for less complex processes and manufacturing procedures by coordinating specialised economic actions. The result would be a hybrid form of coordinating economic actors and transactions between markets and hierarchies, which we refer to as *blockchain markets*. An example of such a hybrid form of coordinating economic actors and transactions is 'strategy orchestration', a concept introduced by Ruelas-Gossi and Sull (2006). These authors illustrate how firms can become more agile in global markets by coordinating economic actors in an allocentric network that is easy to access for all connected parties but very difficult or impossible to imitate by competitors. Not many firms have been able to implement such 'strategy orchestration' however, given the considerable costs of coordination of economic actors in such a network. Blockchain technology has the potential to allow firms to strategically orchestrate economic actors given that it allows these actors to connect, interact and collaborate in a transparent, reliable and trustful way. In so doing, blockchain markets may be a conduit for firms that are able to establish such allocentric networks – and so strategically orchestrate economic actors– to dissolve as organisational units and structures.

This would result in a move toward a free-market-based coordination of independent actors, with agile actors that are conducting coordinated economic transactions with other agile actors. These *blockchain markets* differ from the traditional *global factory* framework, which we discuss in the following section. Unlike the latter, where an orchestrator typically dictates specifications to international suppliers, *blockchain markets* involve a more collaborative approach in an open innovation fashion (Chesbrough, 2006). This can entail using platforms or ecosystem partners, an approach where the role of other users can include co-creation activities rather than merely adhering to instructions from an orchestrator. In these *blockchain markets*, blockchain reduces the costs of search, coordination, establishment of trust and collaboration, and enables independent economic actors to conduct transactions in the open market more cost-effectively than within the boundary of the firm. Therefore, blockchain can be an important mechanism to loosely the current coupled system, using Nambisan and Luo (2021) terminology, as blockchain will be the semi-formal institutional glue that has been missing.

Third, Coase considered the significant *costs of establishing trust* in a free market when compared to doing so within the boundary of the firm. In the latter, managerial fiat and an employment relationship create trust. In an open market, economic actors may engage in opportunistic behaviours characterised by guile and can do so nearly anonymously, potentially without ever being identified, thus considerably increasing transaction costs. Blockchain technology may reduce these costs in a free market as every transaction by any economic actor is recorded in a public ledger so that those economic actors who are opportunistic can be readily identified. In fact, blockchain technology is widely referred to as the 'trust protocol' (Tapscott and Tapscott, 2016) given that transactions based on the blockchain can be trusted given its secure, decentralised and distributed nature. Furthermore, once opportunistic behaviours by specific economic actors are identified, they are stored within the blockchain and cannot be erased from the database given the immutable nature of blockchains. Opportunistic behaviour, therefore, is detrimental to the reputation and long-term viability of economic actors in a free market, and so the costs related to opportunistic behaviour (and, thus, the costs to establish trust) are likely to be curtailed.

Finally, Coase considered the *cost of contracting*, which is often prohibitive in a free market due to opportunism with guile that may characterise economic actors. Hence, many economic transactions are conducted within the boundary of the firm where no contracts are needed to reduce such costs. The adoption of blockchain technology, however, allows economic actors to contract in a free market at significantly reduced costs through the recently developed concept of 'smart contracts' (Dietrich, 2016) that are part of, for example, the 'Ethereum' blockchain. Smart contracts are immutable, self-enforcing software programs that reflect mutual agreements between economic actors and record/store, verify and self-execute economic transactions. They do so based on prespecified rules without the need for intermediaries to validate and enforce these transactions (such as banks, attorneys, or other market agents). For example, real estate transactions, which traditionally require relators to connect buyers and sellers, banks for escrow transactions and notaries for validating these transactions, could be executed faster without such intermediaries and at reduced cost.

More specifically, smart contracts have two key advantages over traditional contracts from an administrative and temporal perspective. From an administrative perspective, they considerably reduce the bureaucracy involved in contracting between social actors, such as establishing and reviewing draft agreements, negotiating, crafting and recording a final agreement and employing legal counsel throughout this process. In addition, they avoid the need for the creation of receivables and tedious invoicing and reduce human error involved in these procedures given their self-executing nature. From a temporal perspective, smart contracts significantly reduce the bureaucracy and time delay involved in enforcing legal contracts given their self-enforcing nature. For example, a blockchain-based real estate transaction through a smart contract would: (1) legitimise the economic actors involved, (2) ensure that the seller owns the piece of real estate and the buyer possesses the necessary funds, (3) allow for the concurrent (rather than sequential) transfers of the funds and transfer of ownership and (4) ensure an immutable record of the purchase history and current ownership of the respective piece of real estate (without the need for intermediaries, such as realtors, banks or lawyers that oversee escrow accounts, notaries, title agents, etc.) In so doing, blockchain-based smart contracts considerably facilitate the establishment and execution of legal agreements as well as the related administrative and temporal costs of enforcing these agreements and, thus, reduce the cost of contracting among independent social actors (and make the need for intermediaries obsolete.)

In sum, blockchain technology has the potential to considerably reduce the four types of transaction costs Coase (1937) considered in his seminal paper, which are the basis of contemporary TCE. By doing so, it has the potential to allow transactions through the free market to become less costly than transactions within the boundaries of the firm. We therefore propose that:

Proposition 1: *The use of blockchain technology reduces the costs of search, coordination, establishment of trust, and contracting, and so enables independent economic actors to conduct transactions in the open market more cost-effectively than within the boundary of the firm.*

Proposition 2: *The use of blockchain technology reduces the transaction costs related to operating in foreign markets, and so allows independent economic actors to communicate, collaborate, and transact across national borders in the open market rather than within the boundary of the multinational corporation.*

Because blockchain technology lowers these costs, the assumptions of transaction cost economics based on which academia has explained the existence, nature and structure of firms may need to be reconsidered. Furthermore, theories of the MNE that are based on TCE may have to be revisited, given that MNEs may not need to internalise economic transactions due to the high costs of market transactions as internalisation theory suggests, and could instead transact in the open market given the considerable reduction of transaction costs due to blockchain technology

3.2 Blockchains, agency theory and foreign market entry

Agency theory (Jensen and Meckling, 1976) suggests that principals who hire agents incur significant transaction costs (referred to as agency costs) due to different objectives between principals and agents, and difficulty and/or expenses involved in controlling the actions of agents (Eisenhardt, 1989). The principal-agent relationship can be exemplified by lawyer-client, buyer-supplier, or employer-employee relationships (Harris and Raviv, 1978). It also extends to exporter-importer, licensor-licensee, or franchisor-franchisee relations as well as any parties involved in international contractual agreements (such as contract manufacturing, outsourcing agreements, etc). The theory explains that, at a specific time, principals and agents hold different information, and/or one party is in possession of more information than the other (information asymmetry), resulting in different outcomes and incentives. Ultimately, these differences promote opportunistic behaviour (Fama, 1980). This conflict is mitigated using contracts (Eisenhardt, 1989), a method that addresses asymmetry of information problems and is rooted in transaction cost economics (Williamson, 1975).

Because blockchain technology allows economic actors to share information and contract with one another in a secure, recorded, immutable and transparent way within the boundaries of pre-established terms and conditions, information asymmetry is reduced. This, in turn, reduces agency costs. Furthermore, the aforementioned ‘smart contracts’ (Dietrich, 2016) allow for near-standardised and fair negotiations and are self-enforcing. Their execution requires no intermediaries, which further reduces agency costs and allows for more economically beneficial exchanges for all involved. The ‘smart contract’ concept was originally created by Szabo (1997) with the intention to create a digital contract that can be verified and executed automatically by computer protocols. However, Szabo’s idea could not be fully utilised prior to the emergence of blockchain technology. Blockchain is capable of formalising and implementing legal provisions in network nodes, and enforcing these provisions automatically, transparently, and in a recorded, distributed and decentralised manner. Blockchain-based smart contracts, therefore, have key advantages over traditional contracts, and features that traditional contracts are not capable of, such as price negotiation and/or automatic inventory level monitoring (Cognizant, 2016).

A common example of the application of blockchain-based smart contracts can be found in Supply Chain Management (SCM). Large firms, such as Lufthansa or Mercedes-Benz, were among the first to become invested in this new technology. Indeed, Mercedes-Benz’s parent company, Daimler, was an early adopter of blockchain-based smart contracts and launched a US$110M blockchain pilot project: *‘The entire transaction — from the origination, distribution, allocation and execution of the loan*

agreement to the confirmation of repayment and of interest payments — was digitally carried out via blockchain technology in cooperation with the IT subsidiaries TSS (Daimler) and Targens (LBBW)' (Daimler, 2017).

Another example of the potential of blockchain-based smart contracts is illustrated by the following quote: *'Imagine, e.g., a commodity seller publishing a smart contract on a Blockchain platform such as Ethereum that includes exact terms and conditions for product specifications, delivery and payment. Any buyer on the Blockchain can find and act on the contract, acquire the needed product or service, and pay for it without the processing overhead of the early digital marketplaces'.* (Cognizant, 2016, p.3). A self-executing contract eliminates the ambiguity and uncertainty of traditional contracts, thus eliminating the need for intermediaries in the form of agents. When using smart contracts, effective legal agreements are standardised, executed at a negligible cost and are also enforced automatically (Wright and De Filippi, 2015). By eliminating the need for intermediaries in the form of agents, smart contracts have the potential to also eliminate agency costs. Even in economic transactions that require agents, e.g., due to government regulation, blockchain technology ensures transparency and the identification of opportunistic behaviour by all involved economic actors, and thus contributes to a reduction of the agency problem itself, and agency costs. Opportunistic behaviour by agents can be recorded in the blockchain in an immutable manner, thus curtailing the incentive of agents to act opportunistically.

In the context of MNEs and international business in general, several theoretical perspectives are based on agency theory and related agency costs (which constitute transaction costs for economic actors), particularly when examining foreign market entry choices. For example, the eclectic paradigm (Dunning, 1979, 1980) suggests that the internationalisation decisions of MNEs depend on their ownership, location and internalisation advantages. Regarding the latter, e.g., the paradigm assumes that the costs of free-market-based (non-equity) foreign market entry modes are higher for MNEs than using FDI-based (equity) entry modes. The literature on the topic (e.g., Anderson and Gatignon, 1986; Hill et al., 1990), therefore, suggests that MNEs should internalise economic transactions through FDI when expanding internationally. However, if costs in the free market could be reduced, MNEs would be able to enter foreign markets through free-market (non-equity) modes, such as licensing or franchising agreements or through other international contractual relationships, such as offshoring/outsourcing (e.g., Doh, 2005; Farrell, 2005: Levy, 2005). Blockchain technology may make such non-equity-based market entry modes viable by reducing related costs, lowering levels of uncertainty and decreasing the risk of opportunism in international markets, thus decreasing agency costs. MNEs, therefore, may be able to conduct contractual-based foreign market entries rather than equity-based market expansion through FDI as the eclectic paradigm suggests (through its internalisation advantage dimension). Furthermore, in addition to reducing transaction costs, blockchain technology also has the potential to facilitate the coordination of independent economic actors in an ecosystem and so provides a platform for free-market transactions among these actors.

Blockchain may also enable independent economic actors to develop a strong reputation in international markets based on, e.g., reliable and timely completion of contracted tasks. This would allow them to develop strong ownership advantage, another MNE-specific dimension suggested by the eclectic paradigm. In addition, economic actors may be able to easily access the optimal location for either sourcing input factors and/or marketing their products and services through the blockchain. They can do so by

contracting directly with independent suppliers or buyers in international markets, in a manner free of opportunism and uncertainty. In so doing, independent economic actors can leverage location advantage, the third and final MNE-specific dimension suggested by the eclectic paradigm. Accordingly, having the tripartite advantages of ownership, location and internalisation, as suggested by the eclectic paradigm, may not necessarily require foreign market entry through FDI. This is because contractual (i.e., non-equity) modes of foreign market entry can be more cost-effective as a result of blockchain. The assumptions and conclusions of the eclectic paradigm, therefore, may need to be revisited in the context of conducting transactions via blockchain technology.

Another relevant conceptual perspective in the realm of MNEs is the business network theory of internationalisation, which regards an MNE as a network of loosely (i.e., non-hierarchically) interconnected subsidiaries. This theoretical perspective is largely based on the Uppsala internationalisation model (Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1977) as well as social capital theory (Bourdieu, 1986; Coleman, 1990) and its application to corporations and their intra- and inter-organisational relationships and network ties (Dyer and Singh, 1998; Tsai, 2000; Tsai and Ghoshal, 1998; Leenders and Gabbay, 1999).

Business network theory suggests that firms ought to enter foreign markets in a gradual fashion, as suggested by the Uppsala internationalisation model. It also indicates that an MNE ought to coordinate and leverage their network of interconnected subsidiaries, each of which is connected to the respective business networks in the local markets they are operating. By doing so MNEs can access location-specific knowledge, information as well as social networks and relationship ties (as suggested by social capital theory), which can facilitate their further expansion within and across different international markets (see, e.g., Kostova and Roth, 2003; Rottig, 2011).

As suggested by agency theory, however, foreign subsidiaries, if operated as independent economic actors, would be agents to the MNE's headquarters. Information asymmetry between such foreign actors and the MNE's headquarters may lead to opportunistic behaviour and, thus, an agency problem entailing agency costs. Hence, it is more beneficial for MNEs to internalise these foreign actors by operating them as foreign subsidiaries within their network. They can do so by acquiring independent foreign actors or by building them in the form of greenfield ventures, both of which represent FDI or equity-based entry modes.

Blockchain technology, however, may allow an MNE to build a network of independent economic actors in foreign markets through contractual relationships. MNEs therefore may not need to operate a network of subsidiaries. Instead, they may achieve the same objectives and intended outcomes by developing a network of independent economic actors in foreign markets, in a Global Factory fashion (Buckley, 2009). This is made possible by blockchain technology, with coordination, communication and collaboration thus having lower costs and less or no risk of opportunistic behaviours. Indeed, in alignment with various scholars (Ahi et al., 2022; Šilenskytė et al., 2024; Singh et al., 2023; De Oliveira et al., 2020), we argue that blockchain, when correctly utilised, has the potential to enhance governance and monitoring, while mitigating monopolistic approaches for reducing orchestrator exploitation of suppliers. It therefore can enhance checks and balances that are important for corporate purposes and sustainability goals of such networks (De Oliveira et al., 2023).

In sum, blockchain technology has the potential to reduce agency problems by either disintermediating business transactions or reducing agency costs for economic transactions. We therefore propose that:

Proposition 3: *The use of blockchain technology eliminates or reduces agency problems, and thus agency costs for economic transactions that require agents by reducing the level of uncertainty and inhibiting opportunism inherent in these transactions*.

Proposition 4: *The use of blockchain technology lowers the level of uncertainty and decreases the risk of opportunism in international markets, and so allows independent economic actors to enter foreign markets via contractual agreement rather than equity-based (FDI) modes*.

Proposition 5: *The use of blockchain technology allows MNEs (or any economic actors) to develop a network of independent foreign actors through contractual agreements and achieve the same network benefits as traditionally are only possible by internalising foreign actors and operating them as subsidiaries*.

On the basis of these propositions, the assumptions of agency theory may need to be revised to take account of the impact blockchain technology. Furthermore, theories of the MNE that are based on agency theory may have to be revisited, given that MNEs may not need to internalise international business transactions or internationalise foreign actors (incl. foreign agents) and operate them as foreign subsidiaries. Instead, MNEs (or any economic actors) may be able to cost-effectively use contractual agreements with independent foreign actors when entering international markets and thus achieve the same benefits and objectives that traditional theories of the MNE suggest would only arise through FDI foreign market entry.

3.3 Blockchains, institutional theory and the environment of MNEs

Institutional theory (DiMaggio and Powell, 1983; Meyer and Rowan, 1977) suggests that institutions, in the form of 'rules of the game' (North, 1990), reduce uncertainty in an economy. They do so by influencing individuals' and firms' decision-making because the rules signal which actions are legal, legitimate and acceptable and which are not (Scott, 2014). In so doing, institutions reduce transaction costs and opportunistic behaviour while promoting cooperation and exchange of information among economic actors (North, 1990).

Institutions can be formal (such as explicit laws, rules and regulations) or informal (such as cultural values, norms and ethical standards). In either form, they create a set of guidelines regarding acceptable behaviours and are considered fundamental pillars of society. The 2007–2010 financial and economic crisis, referred to as the Great Recession, however, has shown that many public and economic actors have lost trust in government-related institutions and in their enforcement. They were, as a result, exploring alternative ways to conducting transactions, free of control by a centralised authority or government (Janssen et al., 2020). The emergence of blockchain technology (Nakamoto, 2008) during this time provided these actors with a means of doing so.

While it is unlikely that blockchains will completely replace institutions and government oversight of economic transactions (Šilenskytė et al., 2022), changes in several formal institutions are likely needed. Some of these institutions may entirely disappear while others may undergo significant revisions to account for new ways of

transacting. For example, many processes may be automated through AI applications and made readily available to consumers via blockchain technology. Such a change is likely to require 'new rules' for a 'new game' of transacting given the potential of blockchain to disintermediate many economic transactions. As a result, e,g., traditional notaries, voting offices and accountants may be at risk of becoming unnecessary, unless they change their value proposition. As an illustration, Estonia is leading the adoption of digital transformation in Europe and has already implemented several public services that rely on blockchain. The country also enables its citizens to file their income taxes via smartphones and allows entrepreneurs to legally establish and register a new company online in a matter of minutes. In fact, Estonia is regarded as the world's first country to use blockchain technology based on X-Road, a decentralised, distributed system developed in 2001 (Invest in Estonia, 2023).

Developed countries, such as Estonia, that are characterised by a functioning market economy and typically enact a significant number of formal 'rules of the game', or formal institutions (Bandelj and Sowers, 2013; North, 1990). Governments in these countries are considered crucial drivers of coordination within their respective economic systems and take the roles of designing, implementing and upholding the regulatory structure that edifies different economic agents in society (Amable, 2003; Whitley, 1999). In less developed countries, however, institutional pressures by governments can be more than market arbitrators (Ingram and Silverman, 2000; North, 1990, 2006) and can be highly influential in terms of coordinating individual economic transactions and the overall economy itself. An example of this is a government that is directly and actively involved in the investment, production and allocation of resources, and hence becomes an active economic actor, as often occurs in emerging markets (Rottig, 2016; De Oliveira and Figueira, 2019).

Therefore, in developed countries, institutions are considered advantageous because they provide important guidance and guidelines for effective economic transactions (Meyer et al., 2009). In developing countries, however, institutions may be associated with disadvantages as they may hinder economic development and transactions among economic actors (Marinova et al., 2011). For example, in countries where transparency is low, but institutions are highly influential, political officials often maintain significant power and exercise influence over economic transactions. This occurs because such officials can command a group of agents who control critical resources, products, services or pieces of information that are important in terms of securing forms of coordination between private-private, private-public or public-public agents. This, in turn, leads to considerable transaction costs that are typically higher due to either a lack of proper institutions (institutional voids), lack of enforcement of existing institutions or government corruption. Accordingly, blockchain technology may significantly decrease transaction costs between economic actors, particularly in countries that are characterised by low institutional development. Firms, especially non-government-owned private firms in developing countries, may utilise blockchain technology to conduct economic transactions and, by doing so, decrease uncertainty and reduce transaction costs.

In the context of MNEs and the field of IB in general, institutional theory has become a dominant lens to examine the international business environment and compliance of MNEs to the respective 'rules of the game' in international markets to establish and maintain organisational legitimacy (Rosenzweig and Singh; 1995; Rottig, 2016; Westney, 1993).

Several large MNEs have annual revenues and profits that exceed the annual GDP of the countries in which they are headquartered or operating, and some MNEs even employ more people than the population of several nations (see, e.g., the latest Global 500 ranking by Fortune, 2024). Given this trend, the CEOs of the world's largest MNEs become 'statesmen/women' as their corporations become increasingly politicised (Forsgren, 2017). This situation led some to suggest that MNEs need to develop their own societal (and foreign) policies to effectively respond to institutional pressures and expectations in their environment and to better address growing geopolitical volatility (Chipman, 2016).

This view of MNEs evolving from mere economic to more political players due to changes in the external environment is aligned with another theoretical perspective on MNEs, the contingency theory of the multinational corporation (e.g., Bartlett and Ghoshal, 1989; Stopford and Wells, 1972).

Given blockchain's ability to enable MNEs to organise and coordinate actions and transactions within the firm without a hierarchical structure, MNEs become important actors in a new field that we define as *organisational democratisation*. Based on this new perspective, MNEs no longer need to internalise economic transactions in other countries but instead become independent economic actors that can transact and coordinate with other independent organisational actors in international markets, which constitutes a form of institutional innovation (Davidson et al., 2018). Formal and informal institutions of individual countries may, therefore, not be the defining environmental constraints for MNEs or the target for organisational actions directed toward changing these institutions, but entirely different institutions may be developed that guide the interactions of independent economic actors that collaborate, communicate and transact within the blockchain.

Indeed, the widely used dichotomy of formal vs informal institutions may no longer explain the actions and strategies of economic actors conducting transactions in the blockchain as other types of institutions may emerge and become more pre-dominant. An illustration of this can be found in the recently developed concept of semi-formal institutions (De Oliveira and Rottig, 2018). Semi-formal institutions have characteristics of formal and informal institutions; they are explicit 'rules' that are 'recommended' (vs. required) to be followed by organisations, yet their enforcement is conducted via informal (vs. formal) mechanisms, such as societal norms and pressures (rather than legal processes).

Based on this new *organisational democratisation* perspective, opportunistic behaviour in economic transactions among independent economic actors in the blockchain may explicitly be 'frowned upon' by all involved parties (rather than legally enforced by a central entity or authority). In other words, any violation of explicit 'norms' (or rules) that exist to prevent opportunistic behaviour would not be enforced through formal processes but rather informally by identifying and recording economic actors that acted opportunistically in a transparent way accessible to all economic actors within the blockchain, which over time prevents these actors from creating further economic harm to other agents.

Platforms that facilitate collaboration in open environments, in which economic actors from various countries work together toward a common goal, are an example of this concept. To participate in such platforms, firms do not need to sign a formal contract governed by the institutional laws of a specific country, or adhere to its informal norms. Instead, they agree to a set of principles that form the foundation of these platform and any deviations are managed by the blockchain and its interconnected users. This creates a

semi-formal institutional environment in which only some principles are explicitly stated, while others are understood implicitly and enforced by the majority of users without formal declaration. Thus, a collective response would result in economic actors avoiding future transactions with recorded offenders of commonly accepted principles, rather than requiring a formal mandate from a court or regulatory actions from a central entity against these violators. Based on these considerations, we propose that:

Proposition 6: *The use of blockchain technology will lead to institutional innovation, through the elimination or revision of some formal institutions to account for the new way of conducting economic transactions among independent economic actors, leading to an increase of semi-formal institutions*.

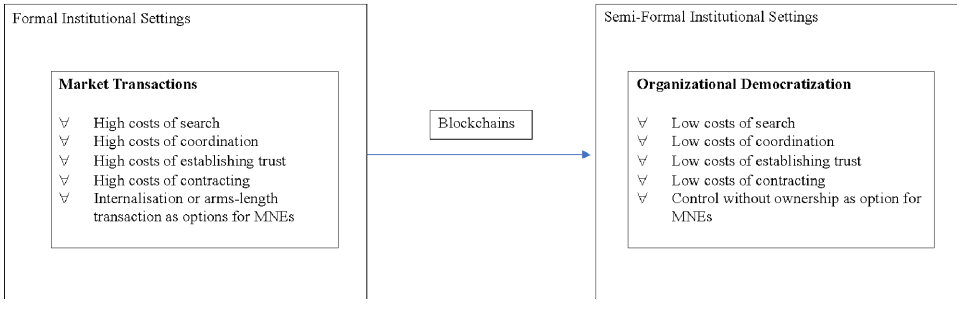
On that basis, blockchain technology may lead to an extension or revision of the assumptions of the institutionalisation and contingency theories of the multinational corporation.

4 Discussion and implications

Firms have only recently started to explore potential applications of blockchain within their business systems. Yet, as this disruptive technology gains momentum, it has many implications for firms domestically and internationally, and for the respective institutional settings of countries in which firms operate. The way that firms interact with each other across borders, and the role of employees, shareholders and institutions all have the potential to change radically. This is why we believe that now is the moment to shift academic discussions on blockchain from their predominantly technical perspective to the context of key management theories as well as related international business theories.

Blockchain technology may enable us to delineate the value of free market exchanges by specialised economic actors. This would allow us to give a different answer to the question of 'why does the firm exist?' and enter the era of *organisational democratisation* (see Figure 1). When Ronald Coase (1937) considered this question nearly 90 years ago, based on a slightly different but complementary explanation, the underlying assumptions of the answer were the same: economic transactions in a free market are more costly, more uncertain and more opportunistic than those conducted within the boundaries of the firm.

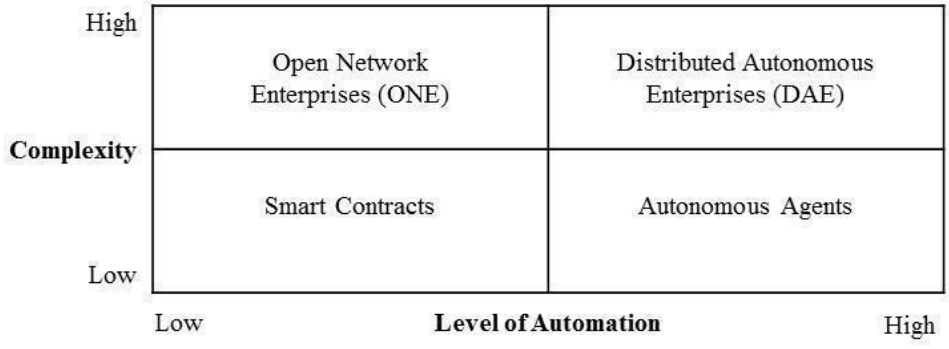
Figure 1 Blockchains and the rise of organisational democratisation



Source: Authors.

Accordingly, scholars may need to revisit and revise the assumptions of transaction cost economics, agency and institutional theories, as well as related international business theories, to account for the disruptive nature of blockchain technology and its effect on how economic transactions will be conducted domestically and internationally. It is increasingly clear that Coase's question, in the face of disruptive technology, requires a finer-grained answer that considers different types of economic transactions depending on the complexity of the involved economic activity and the possible level of its automation. Assuming either high and low levels of both complexity and automation results in four different types of economic transactions, and four different forms of organising them based on blockchain technology. Figure 2, adapted from Tapscott and Tapscott (2016), delineates these four different types of transactions and blockchain applications.

Figure 2 Blockchain application to economic transactions



Source: Tapscott and Tapscott (2016).

The two lower quadrants of Figure 2 concern economic transactions characterised by low complexity. Economic transactions that are not easily automated are conducive to the use of smart contracts. Because smart contracts are partially self-negotiating, amendable, self-executing and self-enforcing, they have the potential to disrupt several traditional intermediaries. For example, attorneys, real estate agents, notaries and accountants. While the purchase of real estate is not a complex transaction, its potential for automation is low because real estate transactions are subjective given that the value is not purely determined based on the market but also based on individual taste of a potential buyer. In this case, contracts are more specific than for other products (e.g., those involved in buying whitegoods for example) as they include a survey of the land and property titles that cannot be as easily automated. Hence, smart contracts could incorporate the objective aspects of the transaction but still allow for individual negotiation and adjustment of the price depending on the buyer and seller. Further, due to the low complexity of real estate transactions, smart contracts could enable transfer of funds from a buyer to a seller at the same time the title of the property is transferred from the seller to the buyer and recorded in the blockchain, thus becoming immutable. In doing so, smart contracts remove the need for involving a bank, setting up an escrow account and involving a notary, and address some existing shortcomings given that 70% of the

world's real estate transactions have either no title recorded, have incomplete records of ownership, or are at risk of alteration by corrupt bureaucrats or totalitarian governments (Heil, 2018).

The second type of economic transaction is characterised by high automation and low complexity. These transactions include buying products online, getting a ride through Uber, DiDi, Lyft or Careem, as well as sending money, transferring remittances across borders or exchanging currencies. All of these transactions are standardised and can be fully automated. Here, blockchain technology holds the potential to directly connect buyers and sellers domestically and globally, and so to eliminate the need for intermediaries within and across borders. For example, Uber is only able to sustain its more than US$155 billion market capitalisation (as of mid-2024) as it controls the funds paid by customers for the ride and disburses them to drivers after subtracting their margin. Blockchain technology, however, can connect anyone in need of a ride to drivers offering this service, potentially for free, and record every transaction and related satisfaction rating.

The remaining two quadrants delineate economic transactions that are characterised by a high level of complexity, leading to two new forms of organising transactions. Economic transactions that are high in complexity but have (relatively) low automation potential may be organised in the form of open network enterprises (an advanced version of the virtual organisation concept). These enterprises may partially resemble traditional firms, with management, employees and organisational charts, yet may take advantage of blockchain technology to coordinate those supply chain and manufacturing activities that can be contracted through the free market rather than within the boundary of the firm. For example, car manufacturers could use smart contracts to coordinate their global supply chain (including design of cars, production of parts, etc.) and marketing/sales activities with independent/autonomous contractors. This approach would enable them to employ only the staff needed to assemble cars. Indeed, Renault (a French car manufacturer), which for years has worked closely with Nissan (Japan) in the form of a strategic network alliance, has started using blockchain technology to coordinate some economic transactions through free markets instead of within the firm.

Last, economic transactions that are characterised by both high complexity and high automation may be organised in the form of Distributed Autonomous Enterprises (DAE) (Hoogervorst, 2018). This organisational form has no CEO, no management and no employees. Rather, it resembles a self-interest-seeking association of independent investors and could be established through crowdsourced funds, which would then be used to invest in other blockchain companies and the underlying technology. The first DAE was established through crowdsourcing two years ago and was able to raise US$ 134 thousand over the first two weeks, funds that are now invested in companies that plan on utilising blockchain technology.

While the above represent possibilities and examples of emerging practice, the implementation of blockchains will be impacted by two main drivers as their large-scale, public dissemination and adoption evolves. The first driver is related to the legitimacy of the technology. Legitimacy is achieved when an organisation obeys social norms, values and expectations (Dowling and Pfeffer, 1975). In cases of a decentralised *modus operandi*, legitimacy is conferred upon, or credited to, the organisation or institutions by its constituents (Perrow, 1970). Legitimacy can be seen as an umbrella evaluation that is based on a cadence of historical events, where such actions '*are desirable, proper or appropriate within some socially constructed system'* (Suchman, 1995, p.574). Hence,

while initial adoption of blockchain technology may be slow due to low levels of legitimacy, over time after preliminary user-friendly blockchain applications are made available, its dissemination may become a societal requirement (much like the availability of ATMs once the initial machines were introduced and gained legitimacy).

The second driver relates to the decrease in transaction costs, as we have discussed in this paper. A decrease in transaction costs in competitive national and international markets is typically transferred to the end users, primarily due to the technology's potential to disintermediate economic transactions and so free the amount of money that is 'stuck' in the middle (i.e., cost or profit margin for the mediary, i.e., the 'agent' in the middle) as well as the potential to reduce costs due to making transactions more efficient. For example, individuals being offered the option to complete their annual tax returns online to instantly receive their tax refund (as is already common practice in Estonia), rather than using an accountant and a slower, paper-based submission process (as is still common practice in most countries) may illustrate how individuals may push for widespread dissemination of blockchain technology.

4.1 Future research avenues

We see several research avenues as being of particular importance. One avenue relates to research on service companies, such as accounting firms, whose core business is market mediation. Efforts must be made to understand how such firms can evolve given the competition that blockchain will create. In other words, we encourage research on the blockchain technology's potential to disintermediate economic transactions with particular focus on those mediaries that control a considerable profit margin and how such mediaries may respond to the competitive threat this new technology poses. In addition, scholars can advance and test our propositions in different settings, e.g., in the general comparative context of multinationals in developed and emerging economies (e.g., De Oliveira et al., 2020) and in specific contexts, such as entrepreneurship in emerging markets (e.g., Alon and Rottig, 2013). Research could further examine how blockchain technology may change the institutional settings of developed and emerging countries, e.g., how formal institutions will need to adapt to ensure that their blockchain-based systems comply with the law, and how the technology may become its own form of institution (e.g., De Oliveira and Rottig, 2018). Research may also focus on how blockchain technology can be used to address prevailing institutional issues in emerging markets, such as to control and potentially mitigate organisational misconduct (e.g., Anand et al., 2023) and on how the technology may be used by MNEs to manage the institutional environment in emerging markets (e.g., Rottig et al., 2019a, 2019b). Moreover, we believe that empirical research on the role of blockchains as a source of economic and social development in developing and emerging countries is timely and has the potential to reveal new knowledge and insights. Another area of research may focus on the organisational arrangements that private versus public blockchains will require, in domestic as well as cross-border contexts. Finally, there is still much to uncover regarding the connection between open innovation mechanisms and open-source blockchains. We foresee that blockchains will transform the way that firms engage in open innovation projects with highly skilled individuals in domestic and international markets, as well as localised and globalised industries. Research in this field and the related contexts therefore seems quite fruitful and holds promise to increase our understanding about the country-, industry- and organisational-level impacts of

blockchain technology on research, development and innovation. Finally, more research is needed on how the combination of blockchain with artificial intelligence and the sharing economy can form a different type of economic arrangement from the bimodal one that we today know: market transactions vs internalisation.

5 Conclusions

This paper initiates a conversation about the impacts of blockchain technology, specifically of the public permissionless blockchain, from a theoretical perspective. We focus on the management and organisation theories of transaction cost economics, agency theory and institutional theory, given the relevance of the characteristics of blockchain to the assumptions that underpin these theories. By extension, we also consider several related IB theories *viz*. internalisation theory, the eclectic paradigm, the theory of foreign direct investment, the business network theory of internationalisation, the institutionalisation theory of the multinational corporation and the contingency theory of the multinational corporation.

In the context of these theories, we explain why blockchains are disruptive of their current theoretical assumptions, and how forms of organising economic transactions based on this new technology may differ from the traditional market and hierarchy approaches. From an institutional perspective, our research explains why institutions may need to adapt to the implementation of blockchains in many of its possible realms of application. While formal institutions are not likely to disappear, blockchain technology will require many 'rules of the game' to be revised and possibly rewritten. We consider this a starting point for a new field of research that we term *organisational democratisation*. Given blockchain technology's disruptive nature, we argue that it has the potential to challenge a number of theoretical assumptions, and so provides scholars with fruitful avenues for future research about the role of this new technology within the scope of explaining and predicting the nature and structure of organising and managing economic transactions in domestic and international markets.

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Note

1 It is important to note that some of the examples used in this paper involve private or permissioned blockchains. This is due to the relatively young nature of the technology and the current lack of widespread confidence in it. However, the theorisation in this study is based on permissionless blockchains, as we believe that both the technology and the trust in it will mature over time.