

THE INSTITUTIONAL ORIGINS OF DYNAMIC CAPABILITIES IN
MULTINATIONAL ENTERPRISES

John H. Dunning
University of Reading
Department of Economics
PO Box 218
Reading RG6 6AA
United Kingdom
e-mail: jill.mturner@virgin.net

Sarianna M. Lundan
Maastricht University
Faculty of Economics and Business Administration
Department of Organization and Strategy
PO Box 616
6200 MD Maastricht
The Netherlands
e-mail: S.Lundan@os.unimaas.nl

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Abstract

This paper will argue that a focus on the institutional underpinnings of MNE strategy and behavior is not only consistent with the emerging literature on dynamic capabilities, but it also serves to highlight the unique role played by MNEs in generating institutional innovation by combining locally embedded capabilities with those that are mobile across borders. Firms shape markets rather than the other way around, because of the role organizational innovation plays in redefining the rules of selection in their operating environment. Of such innovations, some proportion will remain proprietary, while others become diffused more widely in the industry, as the choices made by pioneering firms are imitated by others. The combination of increasing interconnections between geographically dispersed markets and the greater use of market-based transactions have intensified the incentives for MNEs to experiment by engaging in organizational innovation. This is likely to increase the transparency of the origins of firm level capabilities, leading to more specialization and less internalization at the industry level.

1. Introduction

Dynamic capabilities imply a changing ability, capacity and competencies of enterprises to meet supply or demand related challenges exogenous or endogenous to the environment in which they operate. In some cases this involves activities in what we now prefer to call the physical environment, although even then, by implication, it also involves parts of the human environment. In other cases, the uncertainties stem primarily or entirely from the human environment.

The motivation and cognition underpinning dynamic capabilities, and the related incentive structures and enforcement mechanisms within firms, influence what form such capabilities take, and how effective is their implementation. The efficient creation and allocation of dynamic capabilities (defined in relationship to the advancement of specific goals) is generally subsumed within economic models employing concepts such as profit maximization or the discipline of the market. While this may be appropriate in the case of the uncertainties stemming from the physical environment, we believe it is too restrictive to deal with the complexities posed by the human environment, where experimental search might more accurately characterize the objectives of firms.

The balance between the physical and human environment in influencing the value adding activities of firms is changing, and has done so over the past two decades. On one hand, this is due to the growing importance of the human

environment in the activities involving the physical environment, and on the other, it is due to the increasing importance of the creation, transmission, protection and use of knowledge in all value-added activities. Furthermore, the human environment is itself undergoing major changes. These changes have many contributing causes, among which are the changing goals of individuals, firms and countries (Dunning, 2006). Together these have resulted in the increasing volatility, uncertainty and complexity of the human environment and its components, and how these impinge on the physical environment.

An important factor contributing to these changes has naturally been the advent of globalization, which links not only the dynamic capabilities within and between firms, industries and countries, but also their human environments. It is often here, where the greatest differences in the effective creation and deployment of capabilities is shown. For example, both the creation and effective use of firm R&D fundamentally depends on the institutional infrastructure, and of the way in which globalization affects the transfer and dissemination of incentive structures and enforcement mechanisms across national borders.

This means that institutions, which are the main instruments whereby firms and individuals encounter uncertainties in the human or physical environment, must either be explicitly incorporated into any analysis of dynamic capabilities, either as the main driving force underpinning the content and pattern of the exploitation of the resources, capabilities and markets available to firms, or alternatively be considered as a separate factor. We think that the latter approach is the more promising for scholarly research, as it helps to bring into focus the influence and variety of such institutions.

This is where our work on the MNE as the main vehicle of cross-border transfer of capabilities and institutions fits into the discussion. In particular, in our recent work (Dunning & Lundan, 2008a; 2008b), we have examined the role of institutions in affecting both the determinants and effects of the activities of multinational enterprises (MNEs). We have also begun to explore the evolutionary dynamics of the institutional perspective on OLI (Cantwell, Dunning, & Lundan, 2008), and our purpose in the present paper is to take this analysis a step further, and to explore the role of dynamic capabilities in an institutional setting.

The paper is organized as follows. The first section introduces the foundations of the institutional component of our analysis. The following section examines the

concept of dynamic capabilities in the context of the OLI paradigm, concentrating specifically on recent theoretical developments in our understanding of the internalization (I) and ownership (O) advantages of MNEs. The final section examines the links between our institutional approach and that of contemporary evolutionary economists, and the interaction between firm and industry level dynamics. We conclude with a plea for scholarly research that embodies both an institutional as well as an evolutionary logic, in order to fully account for the processes of change in the contemporary global economy.

2. An institutional view on firm capabilities

The definition of institutions we have adopted draws on the work of Douglass North (1990; 1994; 2005) who, perhaps more than any other scholar, has advanced our understanding on institutions at the macro level. North (1990) defines institutions as *formal rules* (e.g. constitutions, laws and regulations) and *informal constraints* (norms of behavior, conventions and self-imposed codes of conduct). Institutions (and their enforcement mechanisms) set the ‘rules of the game’, which organizations, in pursuit of their own learning and resource allocative goals, must follow. In addition to business enterprises, the latter can include for example political organizations or trade unions. An institutional system is complete only when both formal and informal institutions are taken into account. The continuous interaction between institutions and organizations that underpins institutional change occurs at all levels of aggregation, from the individual to individuals acting in organizations, from MNE affiliates to MNE headquarters, and to organizations and society at large, and it is this micro-macro linkage we explore in this paper.

According to North (2005), the challenges posed by the physical environment initially resulted in an institutional infrastructure that was characterized by a collectivist beliefs and personal forms of exchange, where cohesion and enforcement were based on *personal* ties. The more individualistic framework that emerged in response to the newer challenges confronting people and organizations in the human environment gradually led to an evolution towards more *impersonal* forms of exchange, requiring the creation of new types of institutions that enforce cohesion in the context of impersonal ties. This movement from personal to impersonal forms of exchange was essential to achieve economic growth. While the shift involved an

increase in the costs of transaction, these were more than offset by the gains from specialization. At the same time, in any process of institutional change, path dependence plays an important role, whereby the existing institutions and beliefs influence the search for new ways of dealing with uncertainty. This, in turn, sets some limits to the transferability and imitability of particular institutional solutions from one cultural context to another.

While the uncertainties derived from the physical environment declined as institutions were developed to encounter them, the uncertainties in the human environment have multiplied, and continue to grow ever more complex. The assumption that the world is ergodic or governed by a series of probabilities, where knowledge based on past observations will provide a reasonable guide for the future, is seldom valid in the realm of social evolution. In a non-ergodic world, where the systematic relationships may change in unpredictable ways, and fundamentally different kinds of uncertainties may emerge, knowledge derived from the previous states of the world decays quite rapidly. Institutional arrangements that at one point in time were sufficient for dealing with the uncertainties individuals and organizations were confronted with, are no longer able to cope with the uncertainties of a new era.¹

The complexity of the non-ergodic world of continuous change, poses significant challenges for the ability of people to devise new institutions, whether formal or informal, to deal with these uncertainties. In the words of North (2005:6) 'Institutional change can result from change in the formal rules, the informal norms or the enforcement of either of these'. In some cases, acquiring more information within the existing framework will result in better, more effective, ways of encountering uncertainty, but in other cases, new institutions need to be devised. When the efforts to obtain new information and to develop new institutions fail to counter the uncertainty, non-rational beliefs (including religious beliefs), may be used as guidance.

In the realm of value-adding activities, it is clear that developments in the institutional framework have been essential in reducing the uncertainties that firms are confronted with. These innovations encompass institutions that encourage cooperative

¹ Although new uncertainties in the physical environment have emerged as well. The prime example here is climate change, which poses both a fundamental uncertainty in the physical environment and notable uncertainty in the human environment related to the design of new institutions (Brewer & Lundan, 2006).

activity (e.g. through the legal enforcement of contracts), institutions that otherwise lower the transaction costs in markets, institutions that provide incentives for investment in human capital, and institutions that increase the incentives for innovation (e.g. patents).

In North's theory, in spite of its focus on the processes of economic growth and change at the national level, the beliefs held by people play an important role, as they provide the basis on which the external institutional environment is constructed. Ideological conformity is of great use in maintaining order, and it is thus important to the enforcement of informal institutions. At the same time, it is a primary force preventing institutional change, as it curtails conscious experimentation and the cultivation of new ideas.² As we will discuss later on, the notion that the only feasible way to manage non-ergodic uncertainty is by experimentation, and the cultivation of new ideas, has strong links to the literature on evolutionary economics as well as to that on dynamic capabilities.

The following sections will examine the origins and evolution of such capabilities in the context of multinational enterprises (MNEs). We will argue that MNEs are central actors engaging in this iterative process for the development of new institutions. The structural and managerial solutions MNEs have developed for dealing with the problems of impersonal exchange over multiple markets, and the acquisition and recombination of dispersed knowledge, are primary among such innovations. While the MNE itself is an organization in the Northian sense, the methods of organizing and structuring relationships within and between firms, including advances in the design and execution of contracts, and in managing cooperative relationships, can give rise to new institutions as such innovations gradually become diffused to other firms.

3. Dynamic capabilities within the OLI framework

The eclectic or OLI paradigm seeks to offer a general framework for determining the extent and pattern of both foreign-owned production undertaken by a country's own enterprises, and that of domestic production owned or controlled by foreign enterprises. It is not a theory of the MNE *per se*, but rather a paradigm which

² This is also linked to the literature exploring the effects of excessive social capital. See e.g. Florida (2002) and Florida & Gates (2002).

encompasses various explanations of the activities of enterprises engaging in cross-border value-adding activities (Dunning, 2001).

The paradigm avers that in order to engage in cross-border investment, a firm must possess unique and sustainable ownership-specific advantages *vis-à-vis* firms of other nationalities. Such advantages consist of asset specific advantages (Oa), and those advantages (Ot) that arise from the ability of a firm to coordinate multiple and geographically dispersed value-added activities and to capture the gains of risk diversification (Dunning, 1988). Institutional assets (Oi) are a new addition to the paradigm, and cover the range of formal and informal institutions that govern the value-added processes within firms (Dunning & Lundan, 2008a; 2008b). Foreign direct investment will take place, when the enterprise perceives it to be in its best interest to add value to its O advantages rather than to sell them, or their right of use, to independent foreign firms. The market internalization (I) advantages reflect either the greater organizational efficiency or superior incentive structures of hierarchies, or the ability of (large) firms to exercise monopoly power over the assets under their governance. Finally, the spatial distribution of location bound resources, capabilities and institutions (L) is assumed to be uneven and, hence, will confer a competitive advantage on the countries or regions possessing them over those that do not.

Underpinning the paradigm is a theory of the firm that incorporates insights from both internalization theory and what has become known as the resource-based view of the firm. Our recent efforts have focused on incorporating further insights from institutional and evolutionary theory to better explain the dynamics of the paradigm (Cantwell et al., 2008; Dunning & Lundan, 2008a; 2008b). The following subsections will explore these theoretical underpinnings in more detail, with the purpose of demonstrating that our focus on the institutional underpinnings of MNE strategy and behavior is not only consistent with the emerging literature on dynamic capabilities, but that it serves to highlight the unique role played by MNEs in combining locally embedded capabilities with those that are mobile across borders.

3.1 Internalization within networks

In the OLI framework, the mode of foreign involvement (I), answering the question of why a firm would choose to own rather than to sell (or purchase) the right to the use a particular O-specific advantage, is based on the theory of internalization that is closely related to transaction cost economics, although it stems directly from Coase

(1937) rather than from Williamson (1975).³ In addition to incorporating Coasian notions of the friction costs related to infrequent transactions and those associated with finding suitable partners, the internalization scholars have emphasized the difficulties associated with transferring technology over the market as an explanation for why firms would prefer to internalize such transactions. Thus internalization theory departs from the Williamsonian tradition that has tended to focus on the effects of behavioral uncertainty and opportunism on the make or buy decisions of a firm.⁴

Of course, in reality, the make or buy decision is seldom a simple choice between two mutually exclusive alternatives. Between arm's length exchange over the market and administrative fiat within the firm, there lie a wide range of methods of coordination which can be labeled contractual. Some scholars prefer to call intermediate forms such as alliances hybrids (Powell, 1990), while others like Hennart (1993; 2000) emphasize that the different modes of coordination simply represent alternative combinations of two fundamentally different mechanisms; *viz* coordination by prices by the market and coordination by behavior constraints within the hierarchy (Hennart, 1993). Transactions conducted inside hierarchies often embody market-based elements like compensation tied to performance, while many contractual relationships are embedded in social relationships, making them more akin to hierarchical relationships than spot market transactions. Neither form will be able to solve all problems of coordination, and both are subject to diminishing returns in use (Hennart, 2001).⁵

The problems of using hierarchy as a mode of coordination of transactions are well known. They include dulled incentives (since compensation can be only partially linked to output), goal displacement, agency problems and shirking. Increased monitoring and appropriate internal incentive structures can overcome some of these problems, but the identification and implementation of these are not costless, and their effectiveness depends on the extent to which the quality of output can be readily assessed. By contrast, the factors that plague long-term contracting (or any

³ See also Williamson (2003) on the uses and limits of transaction cost reasoning.

⁴ However, in the absence of opportunism, it is not clear why market transactions would not be preferred in the vast majority of cases (Foss, 1996). It also seems evident, that no form of governance is completely free of the effects of opportunism (Hodgson, 2004). Problems arising from information asymmetries, difficulties in communication, and deficiencies in motivation plague contractual relations as well as relations within hierarchies.

⁵ Hennart (1993) emphasizes the distinction between prices and hierarchies as methods of organization, and markets and firms as institutions. While we accept his argument, our use of institutions in the Northian sense prevents us from adopting his terminology.

contracting under uncertainty) include *ex ante* adverse selection and *ex post* moral hazard, each of which is caused by information asymmetries combined with opportunism.

However, such problems are not solved simply by internalizing the transaction. The costs of motivating agents, even if lower than the costs of transacting in the open market, are dependent on the incentive structures within the firm, and thus the formal and informal institutions therein. Under any form of relational contracting, whether governed by the market or undertaken within the hierarchy of a firm, the incentive structures matter to the costs incurred in executing the contract.

A strict interpretation of transaction costs within the ownership boundaries of the firm would suggest, for example, that outsourced call centre employees are no longer part of the coordinating function of the firm. But in practice, a contractual relationship of this type requires monitoring and a periodical realignment of the firm's incentive structures, if, for instance, its customers are unhappy with the service they receive. The firm cannot dissociate itself from its customers any more than it can do so from its suppliers, for example in case their social or environmental standards are found lacking. The value chain is coordinated by one firm, and it is this coordinating role that is central to our understanding of its I advantages (Dunning & Lundan, 2008b).⁶

Indeed, the globally integrated MNE invites us to enquire how large a firm might grow by the governance of activities which are not restricted by ownership, and what this might mean for firms that derive unique competitive advantages based on their shared access to resources? In this context, the word internalization itself seems to become a bit of a misnomer. We have argued that if one views the MNE as a system of interrelated activities, both internal and external to the ownership boundaries of the firm, but that are controlled and managed by it, then internalization refers to both assets it owns, as well as those that are accessed by it (Dunning &

⁶ See also Cantwell (2000:18) on the limits of internalization in defining the boundaries of the firm and the importance of O advantages in explaining firm growth. Restricting the definition of the MNE to activities governed by an employment contract in different countries, as Hennart does, results in a much cleaner definition of the firm, but we believe this definition leaves out many activities resulting from the coordination function of the firm that matter to the assessment of the impact of MNEs.

Lundan, 2008b).⁷ Nonetheless, since particular assets have a value that depends on how they are employed in the value-adding activities of the firm, the I advantage of one firm accessing (but not owning) an asset will be different from that of another accessing (but not owning) the same asset. In this sense, internalization, meaning the control and coordination of activities within a firm rather than as determined by the market, is still an appropriate name, even in the case of the globally integrated MNE.⁸

Furthermore, it is not only failures in the market for technology, but also that of multiple markets along the value chain, which determine the governance options available to the firm.⁹ In an interesting theoretical contribution, Chen (2005) has extended internalization theory to take account of failures that can occur in these latter markets, and particularly those in manufacturing and distribution. To illustrate the importance of his approach, Chen analyzed the choice between licensing and contractual (OEM) production,¹⁰ which had previously not received much attention in the literature, in spite of its growing empirical importance. His purpose was to demonstrate, that the choice of a firm of its organizational arrangements depended not just on failures in the market for technology (the original licensing vs. FDI decision), but also on those in the market for manufacturing (the OEM vs. FDI decision).

Three decades ago, when internalization theory was first developed, contractual relationships were less important to the value adding activities of the firm, and internalization could be used to define the boundaries of the MNE. Today, however, largely due to advances in communication and transportation technology, a much greater share of the activities of large MNEs is conducted over the market than inside the hierarchy. Consequently, we have come to view the MNE as a *coordinated system of value-added activities*, which consists of the internal network of the firm, as well as the larger network external to its ownership boundaries. The latter may

⁷ Relevant here is the distinction made by Dunning (2003b) between the *exchange* and *transformation* functions of the firm. See also Rugman and Verbeke (2003) on reconciling the theory of internalization with the structural complexity of the integrated network MNE.

⁸ Following Hirschman (1970) we have also characterized alliances as a 'voice' strategy, and internalization as an 'exit' strategy (Dunning, 1995).

⁹ For a contrasting view, see Casson (1994; 1998) who argues in the context of free-standing firms that the transaction cost argument should be restricted to intermediate product markets, where it originated, and not extended to include the internalization of capital markets as suggested by Hennart (1994b).

¹⁰ While under a licensing arrangement, the MNE receives a payment for the use of its technology that is applied by another firm to produce the final good, in the latter case the contractual original equipment manufacturer (OEM) receives the know-how free of charge, but the product is marketed by the MNE itself.

involve close coordination with other firms in supplier or customer relationships, or with strategic alliance partners.

3.2 The resource-based view and O advantages

A satisfactory theory of the firm should answer two basic questions. The first is the extent of internalization, or in other words, which activities are carried out within the hierarchy and which are carried out over the market. The second question concerns the scope of the economic activities of the firm, or how it determines the extent of its coordinating function.

For any given range of alternatives, internalization theory is helpful in addressing questions of the first type, or why particular transactions might be internalized, but it does not address the issue of why a firm is faced with a particular set of choices.¹¹ To address the latter issue, several recent contributions have explored the links between transaction cost theory and the resource-based view, proposing that transaction costs are at least partly endogenous, in that they depend on both the characteristics of the transaction and the specific capabilities and resources possessed by a particular firm (Jacobides & Winter, 2005; Madhok, 2002).¹² These scholars have sought to develop a more realistic theory of the firm that accounts for firm heterogeneity, while still acknowledging the influence of transaction costs on firm boundaries.

The resource-based theory of the firm, which builds on the seminal contributions of Penrose (1959), postulates that resources that are valuable, rare, and difficult to imitate are the source of the competitive advantages of firms. The firm's ability not just to possess, but to grow or acquire more assets of this kind, affords it a sustainable competitive advantage over other firms, and this accumulation process has been the focus of a related literature on dynamic capabilities.¹³ In particular, the resource-based view has emphasized the importance of resource heterogeneity and

¹¹ Internalization theory has come to terms with the question of why a similar transaction might be internalized by one firm and not by another by acknowledging that the comparative efficiency of using external and internal transactions depends on factors that are firm specific. See e.g. Hennart (1994a).

¹² Hints of this idea can also be seen in Penrose's focus on intra-firm knowledge generation and learning, and how they influence not only the make or buy, but the whether and how decisions (Pitelis, 2007). See also Dunning (2003a), Pitelis (2002) and Rugman and Verbeke (2002) on the broader legacy of Penrose.

¹³ In addition to the many existing reviews of the resource based literature (Barney, 1991; 2001; Conner, 1991; Peng, 2001; Peteraf, 1993; Wernerfelt, 1995), there is an interesting collection of critical writings edited by Foss (1997), which also includes contributions by evolutionary economists.

mobility barriers in enabling the firm to create sustainable advantages. However, for the most part, much of the resource-based analysis has given relatively little attention either to the quality of intra or inter-firm relationships, or to the incentive structures - both internal and external to the firm - that underpin the accessing, creation and usage of a firm's resources and capabilities.¹⁴

The content and structure of the O-specific advantages of a particular firm may critically affect how particular resources and competences are created, accessed or deployed (Dunning & Lundan, 2008b). For example, while for one firm, an inter-firm collaborative arrangement might make economic sense, for another, the same agreement might be prohibitively costly in terms of monitoring costs. The ways in which governance structures, transaction costs, and resource attributes interact with each other, is essential to understanding why the perceived value of resources and competences that the firm does not own, but to which it has access, can differ between MNEs and other firms.

Unlike market and natural resource based investments, asset seeking investments by MNEs often have value that is dependent on the other assets resources and capabilities owned or controlled by the firm, and the extent to which it can successfully coordinate its system of global activities. Such systemic competencies (and their institutional underpinnings) might make the acquisition of a given asset more valuable to one firm than it is to another.¹⁵ Consequently, even relatively homogenous resources can contribute to the competitive advantage of a particular firm, while highly heterogeneous resources might have limited value to some firms, but significant value to others. This is the case, for example, with technology intensive assets, the effective use of which is dependent on the absorptive capacity of the acquiring firm (Cohen & Levinthal, 1989).

Finally, the heterogeneity of the resources an MNE can possess or draw upon is the consequence of the location specificity of particular kinds of resources. Whether by historical accident or the due to actions of individual entrepreneurs (and selective hiring), resources and capabilities may grow to be immobile and thus location specific. MNEs can access such resources in their home countries, but unlike uninational firms, they can also access immobile resources in host locations. Such

¹⁴ One exception is the work of Oliver (1997).

¹⁵ In this case the resources themselves do not actually have to be unique; it is sufficient that value-adding combinations are unique, and able to be shielded from imitation.

resources may be used locally or eventually become integrated within the firm and transferred across borders. Subsidiary specific advantages of this kind are becoming increasingly important to the value creating activities of MNEs (Cantwell & Mudambi, 2005; Rugman & Verbeke, 2001). Furthermore, since the economic value of many firms is increasingly derived from intangible rather than tangible assets, more importance is being attached not just to differences in resource endowments, but also to the formal and informal institutions in the home and host countries.

3.3 Incentive structures and dynamic capabilities

In addition to the two basic questions addressed in the previous section, the third issue of concern is what happens when one moves from a static framework to a dynamic one. How do firms sustain or upgrade their resources over time? The scholars adopting the resource-based view have approached this question by arguing that the sustainability of an advantage is related to the ability of the firm to erect mobility barriers around its resources.

However, it is the emerging literature on dynamic capabilities that has sought to explain not just how firms protect and exploit existing resources, but how they upgrade and reconfigure their resources to generate future advantages. In particular, these scholars have suggested that conscious experimentation and organizational innovation are required to generate dynamic capabilities (Dosi, Nelson, & Winter, 2000; Teece, 2007; Teece & Pisano, 1994; Teece, Pisano, & Shuen, 1997; Zollo & Winter, 2002). Dynamic capabilities relate to higher-level activities that enable management to ‘sense and then seize opportunities, navigate threats, and combine and reconfigure specialized and cospecialized assets to meet changing customer needs, and to sustain and amplify evolutionary fitness’ (Teece, 2007:1344). At the same time, scholars like Eisenhardt and Martin (2000) have suggested that rather than being highly experimental and innovative, dynamic capabilities are more like ‘best practices’ that can be transferred within and between firms. Consequently, in their view, dynamic capabilities are a necessary but not sufficient condition for sustained competitive advantage.

Our understanding of the essence of dynamic capabilities builds on the definition provided by Winter (2003), which is that they are second or higher order capabilities that extend beyond the capabilities required for the firm to carry out its existing value-adding activities. Dynamic capabilities involve the ability of the firm to create new products or services, and to restructure its activities to achieve a better fit

with the competitive environment. Essential to this definition is that not all adjustments in the face of uncertainty give rise to dynamic capabilities. There is a difference between *ad hoc* improvisation in response to changed conditions, and dynamic capabilities, which incorporate elements of a routine to solve specific problems. The development of such capabilities is likely to incur costs, and such costs are at least partly sunk. We view such costs essentially as the costs of failed experiments. In contrast, the resources temporarily deployed in *ad hoc* problem-solving can eventually be returned to their original uses. Owing to the irreversibility related to investment in dynamic capabilities, relying on *ad hoc* solutions can be an attractive alternative for firms faced with uncertainty.

Owing to their complexity and systemic nature, dynamic capabilities of this kind are not readily transparent, even inside the firm, and as such they cannot be directly copied by other firms. However, we think that due to the need to transfer such capabilities inside the firm, they are likely to become less opaque over time, to the point where they will also become transferable to other firms (either deliberately or inadvertently). Furthermore, we aver that the more market-based transactions are used to comprise the firm's system of value adding activities, the more transparent such capabilities are likely to become, and consequently, the shorter the duration of the advantage thus gained.

The ability of firms to generate successful experiments, and to transfer the knowledge thus gained to their network partners inside and outside the firm is a fundamental capability that underpins competitive advantages. Outside of the literature on dynamic capabilities, similar ideas have been expressed by management scholars such as Hamel and Välikangas (2003), who argue that in the face of turbulent change, the key to corporate resilience is the ability to engage in multiple experiments. In other words, the ability of the firm to generate variety provides a kind of an insurance policy against obsolescence. Hamel and Välikangas also argue, that the regeneration of old incumbents has some merit when compared to letting them simply be replaced by young entrepreneurial companies, since the development of complexity (beneficial or otherwise) requires time and longevity. The key to such regeneration is organizational innovation, and the creation of new business models, as companies like Acer, Zara or Dell have demonstrated, not product innovation (Hamel, 2006).

The incentives that induce people to cooperate, which is an essential precondition to innovation, include both the formal incentives set by management, and the informal norms and values that permeate the organization. In our conception, the firm provides the institutional framework within which the formal and informal rules and incentives that guide the process of knowledge generation and transfer are formed and implemented (Dunning & Lundan, 2008a; 2008b). In addition to the attributes of the knowledge being transferred, we also believe that the success of knowledge generation and transfer depends on the willingness and motivation of both the transferor and the transferee, both of which are likely to be strongly influenced by the incentives that are part of the institutional matrix of a firm.

With few exceptions, the literature exploring knowledge generation and transfer inside MNEs has paid little attention to the issues of motivation and the incentives that induce people to cooperate.¹⁶ The knowledge-based theory of the firm is an exception, as it has addressed the question of incentives and motivation by suggesting that knowledge generation and transfer within the MNE network is likely to be organized by ‘higher order organizing principles’, that will tend to arise only within a hierarchical organization (Kogut & Zander, 1993).¹⁷ Subsequent studies by the same authors further developed the idea that organizational identity is the basis on which knowledge is shared within the firm. The firm itself is perceived to consist of communities of practice, within which the rules and normative boundaries that guide the process of learning are set (Kogut & Zander, 1996; Kogut & Zander, 2003).¹⁸ We believe such insights provide fruitful grounds to advancing our understanding of informal institutions at the firm level, and fit quite with the institutional perspective of MNE activity, although the authors themselves reject transaction costs or market failure as an explanation for the internalization of technology transfer.

To the extent that incentives within the firm (rather than between firms) are easier to set in a mutually beneficial way, agents may be less inclined to cheat on their principals. Similarly, if firms are able to provide better methods of communication than markets, even honest disagreements or misunderstandings might be easier to

¹⁶ Another exception is a theoretical contribution by Gottschalg and Zollo (2007), that directly addresses the issue of motivation.

¹⁷ Some of the organizing principles are also likely to be industry rather than firm specific, cf. the industry recipes described by Spender (1989).

¹⁸ Another way to look the role of social communities in knowledge sharing is to focus on the process of exclusion, and the economics of ‘club’ membership (Lundan, 2003; Sandler & Tschirhart, 1980).

reconcile internally (Ghoshal & Moran, 1996; McFetridge, 1995). Since the process of generating new knowledge is fraught with uncertainty, the ability of a firm to create communities of practice that provide a context for structured experimentation is an important function that might be more difficult to achieve over the market (Spender, 1996).

With these theoretical refinements in mind, we now move on to examine the commonalities between the institutional approach advocated here, and contemporary theorizing on evolutionary economics and dynamic capabilities.

4. The evolution of dynamic capabilities

Like the resource-based view, evolutionary economics (Nelson, 1991; 2002; 2006b; Nelson & Winter, 1982) and the technology accumulation theory of the MNE Cantwell (1989; 1991; 2001) have put emphasis on the path dependency of existing assets and on the accumulation of new assets; and they have done so by examining the process of learning and knowledge dissemination within the firm. Since both theories emphasize the O-specific intangible assets of firms, there is much more interest in the modality of foreign involvement, as this is dependent on the particular kind of knowledge the firm is seeking to exploit or acquire. As their focus is primarily on the growth of the firm, its locational profile might be expected to play little role. However, due to the opportunities offered by globalization, and the possibilities for agglomeration economies and spillovers from firms located in close proximity to each other, the ‘where’ of knowledge transfer is becoming of increasing interest to evolutionary scholars. The wealth of literature published in this area includes empirical studies on technological accumulation within the MNE, and the managerial issues regarding the management of knowledge and subsidiarity of decision making in the MNE network.¹⁹

Both the institutional and evolutionary views seek to explain processes of co-evolution, and share an emphasis on the importance of path dependency. Although the interaction between institutions and organizations is a key factor driving institutional change in North’s theory, his analysis is not very explicit on the issue of how the organizations affected by the ‘rules of the game’ might impact on the evolution of institutions. The evolutionary view, by contrast, has employed the powerful concepts of variation and selection to explain the sources of institutional change over time. The

¹⁹ This has been reviewed recently in Dunning and Lundan (2008b).

lack of a more explicitly articulated dynamic is, we feel, an important *lacunae* in institutional theorizing, as it is precisely through globalization, and specifically through the activities of MNEs, that (some of) this type of co-evolution takes place (Cantwell et al., 2008).

There are two central ideas that link contemporary evolutionary thinking with the institutional theory of North (1990; 2005). The first, which we have already alluded to, is the idea that the only feasible way to manage non-ergodic uncertainty is by experimentation, and the cultivation of new ideas. The links to the evolutionary literature here are quite evident (see e.g. Nelson (2002; 2006a) and Nelson and Sampat (2001)). The second idea is also related to the non-ergodic uncertainty emphasized by North, and that is the need to distinguish between systemic evolution and evolution at the individual level, so that the choices that are manifested on a higher level are not simply treated as an aggregation of a set of preferences and choices at the lower level. This is because there are evolutionary processes involving the mutual formation of expectations, and important dynamics of interactivity from the individual level to the group or social level. While an appreciation of individual psychology is important in uncovering the beliefs that people hold, and on which they base their search for more formal solutions for coping with uncertainty, there is a systemic level to any economy or society that has to be analyzed in its own right, before we can fully understand or appreciate the dynamics of change.

The human or social environment is not designed according to a coherent plan, but instead, it is the result of experimentation by individuals and organizations. Experimentation rather than design is a necessity, since the social environment does not have ‘isolating mechanisms’ which would enable experimentation on a smaller scale, and the translation of the ‘prototype’ to a wider scale.²⁰ For the same reasons, replication (or transfer) in social systems is never complete, although imitation is a common strategy in both social and biological evolution.

The ability of organizations to mould themselves as well as their environment is also the reason why there are no stable species of firm analogous to biological organisms. To the extent that firms are more successful in enhancing their viability²¹ by molding the operating environment in their home country or region, might account

²⁰ On ‘isolating mechanisms’ and social evolution, see Nelson (2006a).

²¹ By viability we mean the ability of the firm to grow at a higher rate than its competitors, on account of either a superior cost position or a higher value offering.

for the observed tendency of many large MNEs to compete successfully on a regional, rather than global basis (Rugman, 2001; Rugman & Verbeke, 2004).

Furthermore, rather than assume that technological change drives institutional change, we need to appreciate the more rapid evolution within the domain of technology as opposed to the social domain, and to explicitly examine the relationship between these two transformational forces in MNE networks (including internal and external MNE networks). It is the process of experimentation by the firm itself that generates increasing returns to adoption, leading to a cumulative process. From the perspective of a single firm, it may be the environment that is changing, but from the perspective of the system as a whole, this is a mutual change process.²² For example, an increase in the number of firms entering into contractual alliances increases the incentive for other firms to do so, partly because the pioneering firms perform a signaling function, and partly because of the different kinds of isomorphic pressures identified by organization scholars (Davis, Desai, & Francis, 2000; DiMaggio & Powell, 1983; Haveman, 1993).

4.1 Industry dynamics

The process of technological change associated with globalization, and particularly the successive stages of technological change involving methods of transportation and communication, have created more opportunities for increasing variety in the forms of cross-border business activity (Cantwell et al., 2008). This is true of the era of the second industrial revolution from the 1870s to the Second World War, examined most notably by Chandler (1990), but it is particularly interesting to examine such dynamics in the post-1960s world. Here technological change, particularly as a result of the information and communications technology revolution, has resulted in the lowering of transaction costs of using the external market. Over time, the improved methods of coordination and control achieved through the new technologies, combined with the advances in transportation, have enabled the outsourcing or co-production of a wide range of functions in the value chain through some form of long-term partnerships or purely contractual relationships.²³ The emergence of the various forms of the network MNE is thus a manifestation of the lowered costs of transacting over cross-border markets, in contrast to the Chandlerian era, where pre-emptive

²² We are grateful to John Cantwell for highlighting the importance of these two points.

²³ The applicability of Chandlerian analysis in the contemporary global economy has been examined recently by Langlois (2003).

capital investment in production capacity and subsequent strategies of diversification resulted in relatively stable global oligopolies.

We think that the ability of firms to encounter uncertainty, particularly fundamental or non-ergodic uncertainty, by engaging in organizational experimentation constitutes a fundamental dynamic capability. In this context, management has little to do with analyzing and optimizing, but rather it is characterized by an evolutionary and experimental search for higher profitability, which is, however, constrained by the path dependencies that accompany prior investments.

An important implication of this line of reasoning is that market structure becomes the endogenous result of innovation and learning (Teece, 1993; 2007). Firms shape markets rather than the other way around, because of the role they play in redefining the rules of selection in their operating environment.²⁴ Rather than product or process innovation, it is organizational innovation and the development of new business models that are likely to have the greatest influence on organizational viability. Of such innovations, some will benefit only the focal firm, while others become diffused more widely in the industry, as the choices made by pioneering firms are imitated by other firms.

We think that the combination of increasing interconnections between geographically dispersed markets and the greater use of market-based transactions have intensified the incentives to experiment, and that by virtue of the nature of their business, MNEs are leading the way in undertaking such experiments. In line with Jacobides and Winter (2005), we suggest that as the transactions coordinated by MNEs come to involve more market-based than hierarchical coordination, this is likely to increase the transparency of the sources of firm capabilities within industry sectors. This is because in industry sectors where market-based transactions dominate, firms are likely to gain easier access to the innovations that have allowed other firms to gain lower transaction costs or to provide higher value. This dynamic is self-sustaining, leading to more specialization and less internalization, as the innovations made by the pioneering firms allow others to reduce the costs of market transactions.

²⁴ In environments where technological change is rapid, appropriability conditions and other supporting institutions also influence whether innovating firms are able to reap the benefits from product or process innovation (Teece, 1986; 2007). However, owing to its systemic nature, organizational innovation may be more difficult to protect, while also being ‘naturally’ shielded by its complexity.

Conversely, in markets where integrated hierarchical solutions are dominant, such as in the period of the emergence of the large industrial firm described by Chandler (1990), the opposite is true. Since the pioneering firms have no incentive to increase the transparency of competitive practices, organizational innovations remain hidden inside integrated firms. Consequently, other firms find it more difficult to identify and imitate such practices. This process is also self-sustaining, since little innovation can take place between firms, and any advances are largely hidden inside integrated firms. While the degree of internalization at the firm level is in part influenced by factors such as experience and reputation that predisposes a particular firm to choose particular forms of governance, market-based transactions are also dependent on the existence and availability of suitable partners.

Exogenous technological change is likely to be required to force an industry to change from being dominated by integrated firms to one where market transactions proliferate, although the influence of institutional innovations external to the industry may also play a role. Such innovations have included for example the development of new financial instruments and changes in anti-trust regulation that have made internalization more or less desirable at different points in time (Cantwell et al., 2008).

Up to this point, our account of the process whereby firm-level choices concerning the degree of internalization influence industry dynamics is broadly similar to that described by Jacobides and Winter (2005). However, further examination of this dynamic process in the context of cross-border value adding activity reveals two important additional dimensions. The first of these concerns the dynamics inside the MNE that result from the innovative activities of subsidiaries, and how their contributions are incorporated to the overall activities of the firm. The second arises from the differences in the institutional environments prevailing in the home and host countries of the MNE.

The fact that modern MNEs are integrated multi-activity firms implies that they have strong incentives to help make organizational innovations more transparent in order to allow for them to be transferred inside the firm. The increasing interconnectedness of markets, and the greater ability of smaller firms to access global markets by linking with MNEs, has created more opportunities for firms to find suitable transaction partners. This in turn has enabled the further splitting of the value chain in multiple locations, and allowed for increasing specialization.

By granting more autonomy to their subsidiaries, MNEs can benefit from the innovative inputs of their entire network. The same is true of the increasing number of market-based relationships elsewhere in the network, where independent foreign firms are called on to take part not just in productive activity, but also in design and research. The cost of such open relationships is that they require a degree of transparency that an integrated firm would not necessarily need to achieve. By increasing transparency, firms put in place a process that encourages further disintegration. Thus in this case, the cross-border dimension of business acts as a catalyst to speed up processes that also occur in a unination setting. The process reverses itself when there are either no more partners to be found, or when technological and institutional change is of a sufficient magnitude that the capabilities being offered on the market require the firm to organize its production in a new way (Jacobides & Winter, 2005).

The second cross-border dimension that is relevant to our analysis is the influence of the institutional environment in the home and host countries of the MNE. Since we are concerned with long-term processes whereby firms co-evolve with their operating environment, it is not only firm heterogeneity that is of interest, but also the heterogeneity in the physical and human environments in which MNEs and their affiliates operate. While firm specific capabilities may be derived from the actions of an entrepreneurial leader and reinforced by a personnel selection process, they are also likely to incorporate aspects of the institutional environment of the home and host countries.²⁵ Indeed, while in a unination context, all of the differences appear to be firm or industry specific, in a cross-border context, it becomes evident that some in fact have geographical origins.

For example, if firms carried no legacy from their home country institutional environments, it would be difficult to explain why success and failure on a global level would not be more randomly distributed, instead of seemingly being confined to regional blocks.²⁶ We think that there are limits to the ability of the firm to mold its operating environment due to differences in customs, languages, norms and values, because they predispose individuals and firms to favor particular kinds of solutions

²⁵ It might also be noted, that similar to there being theoretically higher levels of dynamic capabilities, there are also theoretically lower levels of institutional influence at the regional or local level. Whether such differences are empirically important, will depend on the context.

²⁶ Assuming, of course, that artificial impediments have not created the blocks.

when faced with uncertainty. Since the development of dynamic capabilities involves investment and irreversibility, such differences tend to persist over time. These limits are particularly salient in the customer-facing part of organization, while at the same time, in those parts of the value chain where market-based transactions for intermediate inputs have become prominent, progressive homogenization is likely to take place.

Finally, we would note that in a complex human environment, the ability of firms to influence the rules of selection is also increasingly likely to involve their extra-market activities. These extend beyond the relationships that are involved upstream or downstream in the value-adding process, to those that impinge on the interface between firms and society at large. A case in point is the issue of corporate social responsibility (CSR). The same forces of technological change that have brought about contemporary globalization have also enabled the globalization of civil society. An institutional lens allows us to examine the relevant changes in the operating environment of the firm that impinge on its ability to achieve fitness.

For example, some firms have reacted to the changing norms concerning CSR by advocating voluntary standards and voluntary corporate social reporting. In doing so, these firms are actively trying to shape the external selection criteria of fitness to suit their resources and strategies.²⁷ At the same time, they are adjusting to the reality, that CSR issues have to be actively managed by large firms, whether they seek to turn them into a competitive advantage, or whether they merely seek to reduce the risks to the reputation they have so carefully cultivated. The institutionalized form of the OLI allows us to examine this issue both at the micro and macro levels in the relatively short run, while an evolutionary perspective helps to explain how firms and industries achieve a new equilibrium over time, as particular criteria for fitness become more firmly established.

5. Conclusions: The need for an institutional and evolutionary view on the MNE

For the reasons we have outlined in this paper, we feel it would be of utmost importance for business and economic scholars to incorporate (more explicitly) institutional elements into their research both at a micro and macro level. This would mean that in addition to exploring the effects of MNE activity, focus would

²⁷ For example, the cases of changing CSR strategies in the oil, automotive and pulp and paper industries have been explored in Lundan (2004).

increasingly be placed on examining the *goals* of economic activity, the *determinants* of achieving such goals, and the strategic/institutional mechanisms by which goals and determinants are linked both at the firm and extra-firm level. We would also suggest, that the success or failure of any firm to protect or upgrade its dynamic capabilities could be usefully explored within the OLI paradigm, as our recent efforts have focused explicitly on incorporating both institutional and evolutionary thinking to our model.

The restrictive assumptions made about institutions in traditional economic theory, which have assumed single, profit maximizing objectives of firms, leave little room for the consideration of such issues as environmental sustainability, security, or fair trade, except in terms of their expected impact on the profit opportunities of the firm. Consequently, much of the research has either ignored the role of institutions, or only considered their impact in a static framework. We think that the changing incentive structures of firms and governments in response to globalization, new developmental objectives and a reconsideration of issues of social responsibility, each compel us to ask what goals or viewpoints are the most relevant for the development of dynamic capabilities.

The differences in local institutions and the stickiness in the transfer of best practices implies that the transaction costs are likely to be higher in this domain than in the more conventional forms of technology transfer. Consequently, such spatial barriers need to be built into models dealing with the cross-border access, creation and transfer of dynamic capabilities, which, we believe, rest on the content and effectiveness of the human environment, and notably on institutions of varying kinds at both the firm and extra-firm level.

References

- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barney, J. B. (2001). Is the resource-based 'view' a useful perspective for strategic management research? Yes. *Academy of Management Review*, 26(1), 41-56.
- Brewer, T. L., & Lundan, S. M. (2006). Environmental policy and institutional transparency in Europe. In L. Oxelheim (Ed.), *Corporate and Institutional Transparency for Economic Growth in Europe* (pp. 93-116). Oxford: Elsevier.
- Cantwell, J. A. (1989). *Technological innovation and multinational corporations*. Oxford: Basil Blackwell.
- Cantwell, J. A. (1991). The international agglomeration of technological activity. In M. C. Casson (Ed.), *Global Research Strategy and International Competitiveness* (pp. 104-132). Oxford: Basil Blackwell.
- Cantwell, J. A. (2000). A survey of theories of international production. In C. N. Pitelis & R. Sugden (Eds.), *The nature of the transnational firm*, 2nd ed. (pp. 10-56). London and New York: Routledge.
- Cantwell, J. A. (2001). Innovation and Information Technology in the MNE. In A. M. Rugman & T. Brewer (Eds.), *The Oxford Handbook of International Business* (pp. 431-456). Oxford: Oxford University Press.
- Cantwell, J. A., Dunning, J. H., & Lundan, S. M. (2008). *An evolutionary approach to understanding international business activity: The historical co-evolution of MNEs and the institutional environment*. Rutgers, Reading and Maastricht Universities, mimeo.
- Cantwell, J. A., & Mudambi, R. (2005). MNE competence-creating subsidiary mandates. *Strategic Management Journal*, 26(12), 1109-1128.
- Casson, M. C. (1994). Institutional diversity in overseas enterprise: Explaining the free-standing company. *Business History*, 36(4), 95-108.
- Casson, M. C. (1998). An economic theory of the free-standing company. In M. Wilkins & H. Schröter (Eds.), *The free-standing company in the world economy, 1830-1996* (pp. 99-128). Oxford and New York: Oxford University Press.
- Chandler, A. D. (1990). *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge, Mass.: Harvard/Belknap.
- Chen, S.-F. S. (2005). Extending internalization theory: a new perspective on international technology transfer and its generalization. *Journal of International Business Studies*, 36(2), 231-245.
- Coase, R. H. (1937). The nature of the firm. *Economica*, 1(Nov), 386-405.
- Cohen, W. M., & Levinthal, D. A. (1989). Innovation and learning: The two faces of R&D. *Economic Journal*, 99, 569-596.
- Conner, K. R. (1991). A Historical Comparison of Resource-Based Theory and Five Schools of Thought within Industrial Organization Economics. *Journal of Management*, 17(1), 121-154.
- Davis, P. S., Desai, A. B., & Francis, J. D. (2000). Mode of International Entry: An Isomorphism Perspective. *Journal of International Business Studies*, 31(2), 239-258.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.
- Dosi, G., Nelson, R. R., & Winter, S. G. (Eds.). (2000). *The Nature and Dynamics of Organizational Capabilities*. Oxford: Oxford University Press.

- Dunning, J. H. (1988). *Explaining international production*. London: Unwin Hyman.
- Dunning, J. H. (1995). Reappraising the eclectic paradigm in the age of alliance capitalism. *Journal of International Business Studies*, 26(3), 461-491.
- Dunning, J. H. (2001). The Eclectic (OLI) Paradigm of International Production: Past, Present and Future. *International Journal of the Economics of Business*, 8(2), 173-190.
- Dunning, J. H. (2003a). The Contribution of Edith Penrose to International Business Scholarship. *Management International Review*, 43(1), 3-19.
- Dunning, J. H. (2003b). Some antecedents of internalization theory. *Journal of International Business Studies*, 34(1), 108-115.
- Dunning, J. H. (2006). Towards a new paradigm of development: Implications for the determinants of international business activity. *Transnational Corporations*, 15(1), 173-228.
- Dunning, J. H., & Lundan, S. M. (2008a). Institutions and the OLI paradigm of the multinational enterprise. *Asia Pacific Journal of Management*, 25(forthcoming).
- Dunning, J. H., & Lundan, S. M. (2008b). *Multinational Enterprises and the Global Economy, Second Edition*. Cheltenham: Edward Elgar.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10/11), 1105-1121.
- Florida, R. (2002). *The rise of the creative class*. New York: Basic Books.
- Florida, R., & Gates, G. (2002). Technology and Tolerance. *Brookings Review*, 20(1), 32-36.
- Foss, N. J. (1996). Knowledge-based Approaches to the Theory of the Firm: Some Critical Comments. *Organization Science*, 7(5), 470-476.
- Foss, N. J. (Ed.). (1997). *Resources, Firms, and Strategies: A Reader in the Resource-based Perspective*. Oxford: Oxford University Press.
- Ghoshal, S., & Moran, P. (1996). Bad for practice: A critique of the transaction cost theory. *Academy of Management Review*, 21(1), 13-47.
- Gottschalg, O., & Zollo, M. (2007). Interest alignment and competitive advantage. *Academy of Management Review*, 32(2), 418-437.
- Hamel, G. (2006). The Why, What, and How of Management Innovation. *Harvard Business Review*, 84, 140-140.
- Hamel, G., & Välikangas, L. (2003). The Quest for Resilience. *Harvard Business Review*, 81(9), 52-63.
- Haveman, H. A. (1993). Follow the Leader: Mimetic Isomorphism and Entry into New Markets. *Administrative Science Quarterly*, 38(4), 593-627.
- Hennart, J.-F. (1993). Explaining the Swollen Middle: Why Most Transactions Are A Mix of "Market" and "Hierarchy". *Organization Science*, 4(4), 529-547.
- Hennart, J.-F. (1994a). The 'comparative institutional' theory of the firm: Some implications for corporate strategy. *Journal of Management Studies*, 31(2), 193-207.
- Hennart, J.-F. (1994b). Free-standing firms and the internalization of markets for financial capital: A response to Casson. *Business History*, 36(4), 118-131.
- Hennart, J.-F. (2000). Transaction costs theory and the multinational enterprise. In C. Pitelis & R. Sugden (Eds.), *The nature of the transnational firm, 2nd ed.* (pp. 72-118). London and New York: Routledge.
- Hennart, J.-F. (2001). Theories of the multinational enterprise. In A. M. Rugman & T. L. Brewer (Eds.), *Oxford Handbook of International Business* (pp. 127-149). Oxford: Oxford University Press.

- Hirschman, A. O. (1970). *Exit, voice and loyalty*. Cambridge, Mass.: Harvard University Press.
- Hodgson, G. M. (2004). Opportunism is not the only reason why firms exist: why an explanatory emphasis on opportunism may mislead. *Industrial & Corporate Change*, 13(2), 401-418.
- Jacobides, M. G., & Winter, S. G. (2005). The co-evolution of capabilities and transaction costs: explaining the institutional structure of production. *Strategic Management Journal*, 26(5), 395-413.
- Kogut, B., & Zander, U. (1993). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24(4), 625-645.
- Kogut, B., & Zander, U. (1996). What Firms Do? Coordination, Identity, and Learning. *Organization Science*, 7(5), 502-518.
- Kogut, B., & Zander, U. (2003). A memoir and reflection: knowledge and an evolutionary theory of the multinational firm 10 years later. *Journal of International Business Studies*, 34(6), 505-515.
- Langlois, R. N. (2003). The vanishing hand: the changing dynamics of industrial capitalism. *Industrial & Corporate Change*, 12(2), 351-385.
- Lundan, S. M. (2003). Institutions, exclusivity and foreign investment. In H. P. Gray (Ed.), *Extending the eclectic paradigm in international business* (pp. 93-106). Cheltenham: Edward Elgar.
- Lundan, S. M. (Ed.). (2004). *Multinationals, environment and global competition*. Oxford: JAI (Elsevier).
- Madhok, A. (2002). Reassessing the Fundamentals and Beyond: Ronald Coase, the Transaction Cost and Resource-based Theories of the Firm and the Institutional Structure of Production. *Strategic Management Journal*, 23(6), 535-550.
- McFetridge, D. G. (1995). Knowledge, market failure and the multinational enterprise: A comment. *Journal of International Business Studies*, 26(2), 409-415.
- Nelson, R. R. (1991). Why do firms differ, and how does it matter? *Strategic Management Journal*, 12, 61-74.
- Nelson, R. R. (2002). Bringing institutions into evolutionary growth theory. *Journal of Evolutionary Economics*, 12(1/2), 17-28.
- Nelson, R. R. (2006a). *Economic development from the perspective of evolutionary economic theory*. Columbia University: mimeo.
- Nelson, R. R. (2006b). Evolutionary social science and universal Darwinism. *Journal of Evolutionary Economics*, 16(5), 491-510.
- Nelson, R. R., & Sampat, B. N. (2001). Making sense of institutions as a factor shaping economic performance. *Journal of Economic Behavior & Organization*, 44(1), 31-54.
- Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, Mass.: Harvard University Press.
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.
- North, D. C. (1994). Economic performance through time. *American Economic Review*, 84(3), 359-368.
- North, D. C. (2005). *Understanding the Process of Economic Change*. Princeton, NJ: Princeton University Press.

- Oliver, C. (1997). Sustainable competitive advantage: combining institutional and resource-based views. *Strategic Management Journal*, 18(9), 697-713.
- Peng, M. W. (2001). The resource-based view and international business. *Journal of Management*, 27(6), 803-829.
- Penrose, E. T. (1959). *The theory of the growth of the firm*. Oxford: Basil Blackwell.
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource based view. *Strategic Management Journal*, 14(3), 179-191.
- Pitelis, C. (2007). Edith Penrose and a learning-based perspective on the MNE and OLI. *Management International Review*, 47(2), 1-13.
- Pitelis, C. (Ed.). (2002). *The growth of the firm: The legacy of Edith Penrose*. New York: Oxford University Press.
- Powell, W. W. (1990). Neither market nor hierarchy: Network forms of organization. *Research in Organizational Behavior*, 12, 295-336.
- Rugman, A. M. (2001). *The end of globalization*. London: Random House.
- Rugman, A. M., & Verbeke, A. (2001). Subsidiary-specific advantages in multinational enterprises. *Strategic Management Journal*, 22(3), 237-250.
- Rugman, A. M., & Verbeke, A. (2002). Edith Penrose's Contribution to the Resource-Based View of Strategic Management. *Strategic Management Journal*, 23(8), 769-780.
- Rugman, A. M., & Verbeke, A. (2003). Extending the theory of the multinational enterprise: internalization and strategic management perspectives. *Journal of International Business Studies*, 34(1), 125-147.
- Rugman, A. M., & Verbeke, A. (2004). A perspective on regional and global strategies of multinational enterprises. *Journal of International Business Studies*, 35(1), 3-18.
- Sandler, T., & Tschirhart, J. T. (1980). The Economic Theory of Clubs: An Evaluative Survey. *Journal of Economic Literature*, 18(4), 1481-1521.
- Spender, J. C. (1989). *Industry recipes: The nature and sources of managerial judgement*. Oxford: Basil Blackwell.
- Spender, J. C. (1996). Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal*, 17(Special Issue), 45-62.
- Teece, D. J. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, 15, 285-305.
- Teece, D. J. (1993). The dynamics of industrial capitalism: Perspectives on Alfred Chandler's Scale and Scope. *Journal of Economic Literature*, 31(1), 199-225.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350.
- Teece, D. J., & Pisano, G. (1994). The Dynamic Capabilities of Firms: an Introduction. *Industrial & Corporate Change*, 3(3), 537-556.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Wernerfelt, B. (1995). The resource-based view of the firm: ten years after. *Strategic Management Journal*, 16, 171-174.
- Williamson, O. E. (1975). *Markets and hierarchies: Analysis and Antitrust Implications*. New York: Free Press.
- Williamson, O. E. (2003). Examining economic organization through the lens of contract. *Industrial & Corporate Change*, 12(4), 917-942.

- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991-995.
- Zollo, M., & Winter, S. G. (2002). Deliberate Learning and the Evolution of Dynamic Capabilities. *Organization Science*, 13(3), 339-351.