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Monopolistic Advantages and Leadership of Ecosystems in the Digital Era

By

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Abstract

Focusing on the ecosystem organized around a large platform firm in the digital era, we examine the following research questions: What are the advantages of ecosystems and how we can measure their performance? Our aim is to understand these questions which have been set aside in prior research. First, we argue that following Pierro Sraffa, monopoly rather than perfect competition is the adequate characterization of the generic environment of ecosystems in the digital era. Then following Stephen Hymer, we argue that good performance of ecosystems can be reflected not in competitive advantage but in monopolistic advantage. We also argue that the members of an ecosystem connecting to a platform behave as if they adopted a joint-profit maximization principle as their objective function. Second, we explain how the business environment of an ecosystem, which is a subset of the generic environment, is neo-Schumpeterian, where both entrepreneurship and routine matter and high uncertainties are inevitable. In our view, ecosystems leadership is about how cooperation among agents connecting to the platform should be stabilized in a neo-Schumpeterian business environment.

Keywords

Monopolistic Advantage, Leadership, Ecosystem, Multisided Platform, Digital Era, Neo-Schumpeterian Environment, Uncertainty

1. Introduction

We focus on the ecosystem (e.g., Adner 2017; Helfat and and Raubitschek 2018; Jacobides *et al.* 2018) organized around a large platform firm, or platformer, which constructs a multisided platform to create value for its members in the digital era where drastic environmental change is a rule. As for the ecosystem as a basic unit of analysis, we ask, What are the advantages of ecosystems and how we can measure their performance? In particular, our

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treatment of ecosystem advantage relates to an unsolved problem in prior research: How can platformers extend their reach to new markets by leveraging their existing capabilities and ecosystem? (McIntyre and Srinivasan 2017).

The mode of theorizing on which we rely is a qualitative and inductive approach that sheds light on a few cases of ecosystems (Eisenhardt 1989). In other words, it is a mode based on observations in the real world, putting more emphasis on realism than on reproducibility (Makadok *et al.* 2018). We stress explanation of processes in which a phenomenon occurs (Elster 1989), rather than seeking the laws that directly link cause to outcome, unlike mainstream economics which does the job mathematically or quantitative research in strategic management which does it statistically. We believe that theory ought to be credible by being able to regard it as a world that could be real in the sense that it is compatible with what we know about such general laws. This requires inductive inference to fill the gap between theory and reality, where subjective judgment on similarity and salience matters (Sugden 2000, 2009).

In addition, we use a dynamic approach by taking into account change over time (e.g., Schumpeter 1934, 1950; Nelson and Winter 1982; North 1990, 2005). In examining the advantages of ecosystems, it would be necessary to characterize the environments in which ecosystems operate. We explore what attributes the generic environment of the digital era in the real world has and then reflect these to the theory world by describing the changing process from perfect competition to monopoly.

More specifically, focusing on the phenomenon of the success of a few platformers in the digital era such as Google, Amazon, Facebook, and Apple known as GAFAM the Four (Galloway 2017), we aim to understand the mechanism by which components of the environment interact to produce this phenomenon. Further, it is necessary for us to clarify the boundary conditions representing when this mechanism works and when it does not work. Next we begin our discussion of the advantages of ecosystems and how we can measure their performance.

2. Back to Hymer: Monopolistic Advantage as a New Metrics for Evaluating Ecosystems' Performance in the Digital Era

Generally speaking, the theory of strategy regards competition as the rule and consequently put at the center stage how firms establish and sustain competitive advantage in changing environments (e.g., Adner 2006, 2012; Amit and Shoemaker 1993; Barney 1986, 1991; Bingham and Eisenhardt 2011; Felin *et al.* 2015; Gavetti 2012; Gavetti and Rivkin 2007; Grant 1996; Helfat and Peteraf 2009; McGrath 2013; Peteraf 1993; Pisano 2017; Pitelis and Teece 2010; Porter 1980, 1985, 1996; Powell *et al.* 2011; Rumelt *et al.* 1991; Siggelkow 2011; Teece 2007; Wernerfelt 1984; Winter 2003). Rather, reinterpreting Sraffa (1926) we would like to stress that to treat monopoly as the rule would be more appropriate in the digital era, provided that platformers have changed market structure drastically against the background of a variety of supreme assets and unprecedented level of network effects (e.g., Evans and Schmalensee 2017; Hagiu 2014; Hagiu and Yoffie 2009; McAfee and Brynjolfsson 2017; Rochet and Tirole 2003; Seamans and Zhu 2017; Tirole 2016). This makes it possible for ecosystems to emerge. Along with such change in how to depict the generic environment in the digital era, we ought to reconsider the advantages of ecosystems in terms of monopoly rather than competition.

We should ponder how we can make a shift from competitive advantage to monopolistic

advantage using metrics for evaluating ecosystems' performance. At the outset, let us start from going back to the original idea by Stephen Hymer that had a significant influence in the literature of the theory of multinationals and international business. In his schema (Hymer 1976), firm-specific monopolistic advantages due to market imperfection is an important factor in explaining FDI by US multinationals. His work led to the hypothesis that US companies would increase FDI rapidly to retain a presence in the face of economic success of West European countries and Japan (Hymer and Rowthorn 1970). Basically, it is likely that the multinational company experiences disadvantages due to the failure in communicating with local regions and institutional and cultural differences even if it aims to develop overseas operations through FDI. But if it has monopolistic advantages enough to overcome these difficulties relative to the local companies, it might well establish lucrative positions and acquire more rents through FDI than otherwise would be the case (Kindleberger 1969, 2002; Pitelis 2002). But unlike the era of Hymer, we must take into account network effects against the background of scale and the digital technology.

As Hymer himself argued, "the restless competitive period does not usually last long. After a while it is more than likely that certain stability will be achieved and that the industry will adopt some formula for sharing the market" (1968/1990, p. 27). To be sure, the restless competitive period ended through fundamental transformation from perfect competition to imperfect competition (Williamson 1985). However, platformers achieve a higher level of increasing returns than the level possible at that time, armed with the scale and supremeness of various assets and network effects. But rather than becoming a perfect monopolist, it seems more likely that they share the market among a few in one way or another.

Unfortunately, certain stability will not last so long. New entrants and emergent platformers appear all the time, which shakes ecosystems as a whole and threatens the monopolistic position of incumbent platformers to facilitate the shift from the old path to the new path and to penetrate novel technologies that they develop in the population. The incumbent platformers, if sensing the danger against such threats agilely, tend to confront this by executing M&A strategy swiftly, rather than the stand alone type of innovation driven by internal R&D based on huge financial power known as what can be referred to as the Schumpeter hypothesis. This will be discussed more later. For now we propose the following summary statement:

The Metrics for Evaluating the Performance of Ecosystems. *Good performance of ecosystems can be reflected in monopolistic advantage.*

3. Joint-Profit Maximization of Ecosystems in the Neo-Schumpeterian Environment

3.1 Joint-Profit Maximization as an Objective Function of Ecosystems

Competition among ecosystems in which a platformer plays a significant role and benefits from a high level of increasing returns due to the scale and supremeness of assets and network effects is totally different from perfect competition in which individual firms follow a simplistic principle of profit maximization. Both types can be represented as "competitive", but because ecosystem competition is characterized by market imperfection it would be more appropriate that this would be approximated as a monopoly rather than as a perfect

competition. Our view is similar to that of Sraffa (1926) because we agree with him that monopoly should be the rule. And we ascribe the behavioral principle of ecosystems to joint-profit maximization (Fellner 1949) in the process of competition among a few, which consists of firms with monopolistic position in the relevant market and other constituents connecting to a platform. We propose the following summary statement:

The Behavioral Principle of Ecosystems. *The members of an ecosystem connecting to a platform behave as if they adopted a joint-profit maximization principle as their objective function.*

We consider a joint-maximization principle to be key in order for platformers not to slip down from the monopolistic position once established and simultaneously to make the position stronger. When saying that the members of an ecosystem adopt the behavioral principle of joint-profit maximization, we assume that all the constituents connecting to the platform seek maximization of their total profits jointly as if they cooperated somewhat in a monolithic fashion. But the problem is how to stabilize cooperation among the members connecting to the platform. Of course, abstraction like what has been done in the framework of cooperative games would be far from reality, supposing that an enforceable agreement can be achievable through *ex ante* negotiation among a set of agents. Thus, a formula is needed that leads to joint-profit maximization through stabilizing cooperation among them. As discussed later, we refer to this as an issue of ecosystems leadership.

In the context of ecosystems competition, a few strong contenders for dominance that survive in the process of natural selection by the market (Alchian 1950) must prevent themselves from dropping down from the fairly advantageous position already established and come closer to the title by creating new combinations with or without training wheels. The ambidextrous and realistic rationale of monopolistic advantage equipped with both defense and attack is qualitatively different from the single-minded and even unrealistic rationale of competitive advantage that offers the competitive environment open to anyone who can have the ticket for participating in the tournament leading to the championship. This is shown in Figure 1. The point that we are trying to make is that there is indeed a closed, quasi-monopolistic market out there to which privileged access is exclusively limited to a few platformers.

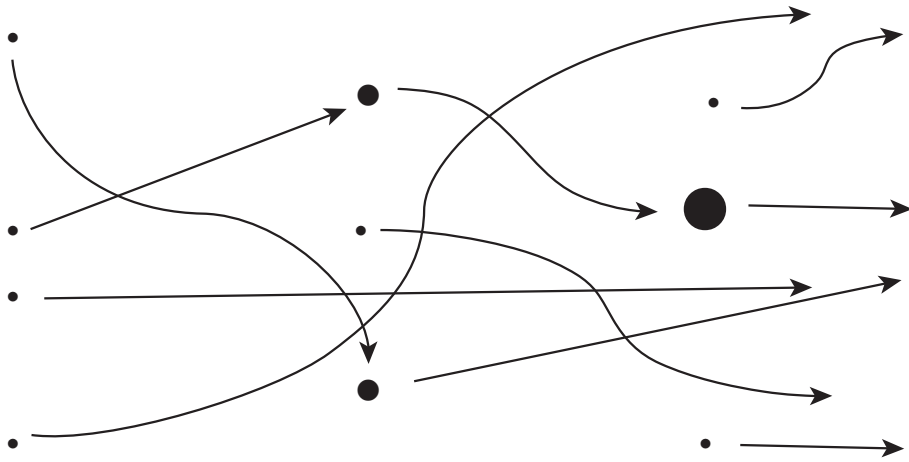
A majority of entrepreneurs and small firms must be subjected to severe market forces. They cannot clear the high wall that demarcates the world of monopoly in which a few platformers establish monopolistic advantages from that of competition in which they have hard times. On the other hand, platformers have to protect their advantageous monopolistic position and continue making their own ecosystem more attractive, sometimes relying on the acquisition of emergent or entrepreneurial firms that might threaten the foundation on which ecosystems can prosper and grow.

3.2 From the Schumpeterian Environment to the Neo-Schumpeterian Environment

We have proposed monopoly (Sraffa) as the characterization of the generic environment of ecosystems in the digital era on the one hand, and monopolistic advantage (Hymer) as the performance metrics of ecosystems on the other hand. In addition, we will dig deeper into the business environment of ecosystems which is a subset of the generic environment. In doing so, we take the work of Barney (1986) as a point of departure, which seeks a general framework of competitive environments. According to Barney, the Schumpeterian

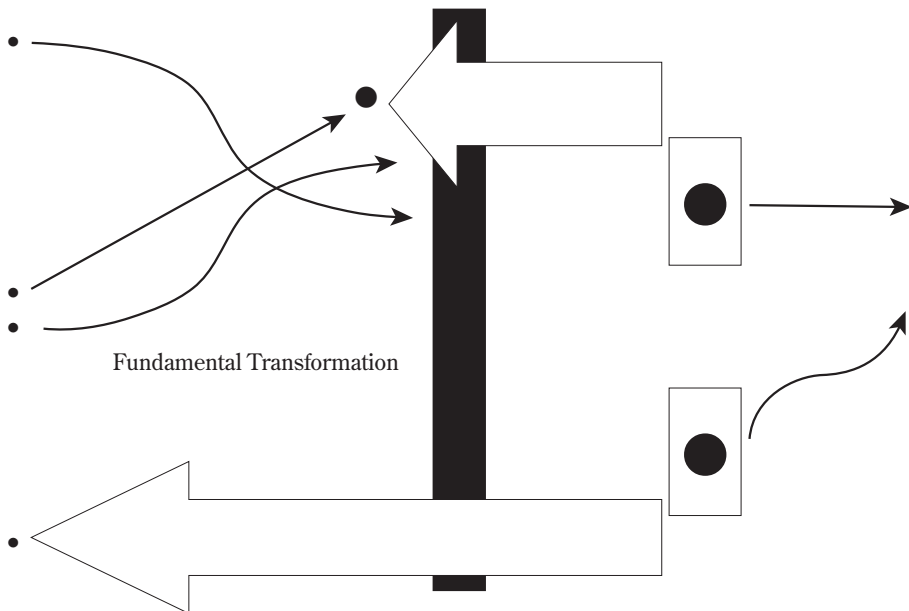
Figure 1. Monopoly Matters in the Digital Era

(I) The World of Competition (Myth?) in the Non-Digital Era



The size of a ball represents the scale of a firm. A firm can enter the market at any time and move in any direction.

(II) The World of a Few Ecosystems (Quasi-Monopoly) in the Digital Era



The emergent or entrepreneurial firm is limited to the area in which new entry can frequently occur. Ecosystems (white rectangles) organized by platformers (largest balls) can move in any direction and acquire any firm that has technologies that could threaten their monopolistic positions, shown by the white arrows.

competition is similar to when luck impacts on firm profitability because of uncertainty resulting from the lack of *ex ante* perfect information regarding what the competitive environment will be in the future.

In particular, the Schumpeterian competition and its related terms have been frequently used in the modern context (e.g., McAfee and Brynjolfsson 2017; Wiggins and Ruefli 2005). But the problem is that whenever the environment can be tied with high-level or radical uncertainty (e.g., Faulkner *et al.* 2017; Knight 1921; Langlois and Robertson 1995; Shackle 1979) and has an unstable and unpredicted nature, the work of Schumpeter (1934) is cited and such environment is almost automatically labeled as Schumpeterian without caution. But in our view, such treatment is equivalent to prosecuting the end of history via characterization of the changing environment over time. We caution against being blind to the development of theory and reality (practice) yielded since the era of Schumpeter. In this sense, it is incorrect and misleading. We take a more nuanced stance that it is necessary to elaborate and refine in what sense the Schumpeterian competition can and cannot work in the context of the digital era, and this requires us to examine Schumpeter and his successors.

At the outset, we would like to point out that in the subsection where Barney attempted to conceptualize Schumpeterian competition (1986, pp. 795–796), he only referred to Schumpeter (1950) and emphasized that creative destruction as an engine of capitalism produces instability. This is surely one of the two big scenes in Schumpeter. But Schumpeter (1950) carefully prepares the other feature that we should not miss. It is that the great upset in which uncertainty is mitigated by routinizing innovations and the computability and planning of the large bureaucratic organization surpasses the scintillation and charisma of the entrepreneur who enjoyed honor. Notice that the main title of the book starts with the term “capitalism” implying innovation dynamics and the term *socialism* follows, which connotes planning. The entrepreneur *per se* who gives dynamism to the market by creating innovations has the *raison d'être* because the environment is uncertain. Yet, as innovations become routinized with the aid of computability in bureaucracy, the entrepreneur gradually loses his or her grounds. Ironically, entrepreneurial capitalism comes closer to planned socialism with progressive rationalization (Langlois 2007).

It is the Neo-Schumpeterian school that, from an evolutionary economics perspective, refines the way in which we can understand economic change by highlighting the issues on the dynamics of capitalism and the routinization of innovation that Schumpeter scrutinized (e.g., Brette *et al.* 2017; Gavetti and Levinthal 2004; Levinthal 2006; Winter 2006). Nelson and Winter (2002) admit that the environment in which Schumpeterian competition occurs can be dominated by monopolies. Taking this seriously, the conceptualization that Barney attempted in the name of Schumpeter would be inadequate in that it sets aside the effect of the routinization and planning of innovation.

To make matters worse, Barney lacks a thoughtful examination of the nature of uncertainty. In particular, the uncertainties in the digital era are considerably far from what characterize the world of choice which consists of computable things that mainstream economics has assumed. Rather, as Shackle (1979) argues, setting aside the theory world, the real world of choice is essentially filled with ignorance. To be sure, it is unlikely that as there would be the scientific foundations on which we would be able to get computable probabilities, every single phenomenon in the real world could be digitized (Keynes 1921).

As for the context of management, evidence-based management (EBM), which requires evidence such as data and objective facts, cannot work properly without the insights of an expert or the judgment of a leader (Teece and Leih 2016). It would be impossible for us to

represent completely the details of contract or evidence in an objective way. That is to say, we cannot solve either the Polanyi's paradox (Autor 2015) or the issue of contract incompleteness (e.g., Grossaman and Hart 1986; Hart 1995; Hart and Moore 1990) today even when the digital technology and the machine that embodies it to a considerable extent have developed. Even in the era of digitalization that seems omnipotent, the issue of unknown unknowns which are left unknown to anyone occurs ubiquitously (Faulkner *et al.* 2017; Runde 2009).

Thus we refer to the business environment of a few ecosystems in the digital era as "neo-Schumpeterian". The generic environment in the digital era offers the landscape of monopoly where a high-level of increasing returns is available. And it is characterized by the digital technology, institutions, and the enjoyment of network effects by ecosystems whose center is occupied by multisided platforms. A subset of the generic environment is the business environment of ecosystems regarded as neo-Schumpeterian. We define it as follows:

The Neo-Schumpeterian Business Environment of Ecosystems. *The business environment in which the dynamics of capitalism works as strategic entrepreneurs engage in creating innovations and simultaneously the progressive monopolization of markets occurs as their organizations routinize innovations through huge investment in R&D and M&A. On the other hand, the environment requires humans to engage in cognitive activities such as insight, judgment, and the discovery and formulation of problems because of the problem of unknown unknowns that will remain in the future. In the environment, the effect of radical uncertainty, which prevents complete contract or perfect calculation from being achieved, can be more or less mitigated by digital technology, but on the contrary it will increase due to the emergent complexity as for this novel technology.*

Next we will examine what kind of leadership platformers should demonstrate for joint-profit maximization of ecosystems in the neo-Schumpeterian business environment and derive some strategic implications for strategic entrepreneurs. In doing so, we will shed light on the hegemony battle between the old and the new over dominant technology, the effect of platformers on the agents' cognition and action in ecosystems, and the effect of institutions on the establishment and sustenance of ecosystems, what we call institutional support.

4. Ecosystems Leadership

4.1 The Countervailing Strategy against the Shift of Technological Path

Let us start with why platformers tend to countervail the threat of innovation with M&A. Table 1 shows the paradigmatic cases of the M&A that GAFA attempted. What lies behind these cases?

In examining the issue, the idea of the tradeoff between exploitation and exploration by March (1991) is key. Even large platformers with enormous market value do not own all the capabilities and resources that they need. From a prescriptive perspective to show what should be a good choice, the strategy of designing the ambidextrous organization toward doing exploitation and exploration at the same time would be desirable (e.g., O'Reilly and Tushman 2008).

However, we would like to scrutinize the issue from a descriptive perspective to

Table 1. Paradigmatic Cases of M&A by GAFA

<p>Google (Alphabet) YouTube (video sharing, 2006) Double Click (online advertizing, 2007) Deep Mind Technologies (AI, 2014) Halli Labs (AI, 2017)</p>	<p>Amazon Zappos (online shoe and apparel retailer, 2009) Kiva Systems (robotics, 2012) 2lemetry (IoT, 2015) ClusterK (cloud technology, 2015)</p>
<p>Facebook Instagram (photo sharing, 2012) WhatsApp (mobile messaging, 2014) Oculus (VR, 2014) Ozlo (AI, 2017)</p>	<p>Apple NeXT (hardware and software platform, 1997) Siri (voice control software, 2010) Polar Rose (facial recognition, 2010) Lattice Data (AI, 2017)</p>

highlight the mechanism working behind the phenomenon in the real world. In doing so, we believe that two ideas are tremendously powerful. One is the idea of innovators' dilemma (Christensen 1997). Christensen illustrates that by engaging in qualitative research with focus on the HDD (hard disk drive) business, the incumbent firm tends to go beyond the aspiration level of the user by paying too much attention to the improvement of the existing product. Yet, the new entrant establishes the foundation for success by engaging in disruptive innovation to develop a new product which is epoch-making but inferior in quality to the existing product.

The other is the idea of the innovation gap between the incumbent firm and the new entrant (Igami 2015). Inspired by the original study by Christensen, Igami attempts to analyze empirically the effect of cannibalization, preemption, and heterogeneous sunk costs. He argues that the incumbent firm has a strong incentive for preemption and cost advantages, although it is unwilling to engage in innovation due to the substitution effect of the cannibalization between the old and the new product within the firm. In terms of sunk costs, the incumbent firm loses enormously if the new entrant enters the market, whereas the new entrant gains modestly if it succeeds in entering the market. In other words, the size of the financial resources available to the incumbent firm to make entry deterrence possible is much larger than that of the financial resources that the new entrant can invest for making its new entry successful. Taking into consideration the competition effect, the incumbent firm has a strong incentive for preemption by investing huge amounts of money to M&A to protect its monopolistic position and mitigate the threats of potential new entry.

The idea that Igami shows is of utmost importance in understanding the monopolistic advantages of ecosystems in the digital era. As a result of the shift from the old path to the new one, which is inconvenient for the incumbent firm by the new technologies or products that the new entrant has developed, this shift rocks the monopolistic positions of the incumbent firm to its foundation. Igami empirically analyzed such inconvenient truth with the aid of a series of powerful apparatus in economics.

From a slightly different perspective, we would like to understand the story of the inconvenient shift for the monopolistic platformer in the digital era. The platformer has changed the landscape of ecosystems totally by achieving an unprecedented level of increasing returns, armed with the considerable scale of supreme human and physical assets and strong network effects. This can be paraphrased as what is referred to as LOF

(landscape of fear) in ecology. It represents the phenomenon in which the victim fears the existence of the predator and consequently changes its behavioral pattern and this effect diffuses into the population to the extent that it changes the landscape of the ecosystem as a whole (Laundré *et al.* 2010).

We should pay considerable attention to the fact that the incumbent platformers such as GAFAs are surely strong predators, but they are like timid victims in the sense that they become oversensitive to the promising new entrant and the emergent platformers that succeed in creating breakthrough innovations. In this light, our understanding is somewhat different from the original story of LOF. We derive the proposition as follows:

Proposition 1. *The more defensively the monopolistic platformer which could be taken as a strong predator acts, the more successful it becomes. Thus it attempts to acquire the new entrant or the emergent platformer, which could be taken as weak victims. And it establishes and sustains monopolistic advantage by maximizing the joint-profit of the ecosystem.*

Before potential competitive factors that would change the landscape of monopoly are totally actualized, they would attract considerable attention from the incumbent platformer that regards the shift of technological path as a threat, and thus the platformer would crush them at a very early stage. As a result, the landscape becomes more monopolized. Thus we refer to this idea as the “reverse theory of LOF in ecosystems.” On the other hand, let us call the strategy epitomized in Proposition 1 the “countervailing strategy of the shift in technological path.”

4.2 The Behavioral Strategy Oriented to Coherence

The M&A strategy by which the incumbent platformer attempts to acquire the promising new entrant or the emergent platformer at the very early stage would be more or less defensive, since the sustainable monopolistic advantage along with the old technological path is to be attained and an innovation that causes the shift from the old to the new path is inconvenient for the monopolistic platformer. Moreover, a negative nuance implied in the strategy is that leadership should be demonstrated for sustaining the monopolistic position. This might lack affinity for what is discussed in the literature about leadership with particular emphasis on cooperation and shared values (e.g., Barnard 1938; Selznick 1957). Yet prior research on ecosystems has left unexamined the issue of the rules governing their membership and relationships (Jacobides *et al.* 2018). In the following, we take notice of the positive role that the platformer plays in facilitating cooperation and interactions in the ecosystem.

In our view, the platformer plays a role of coordinator. As Aoki (1984) constructs a model in the context of the firm management, the manager coordinates various stakeholders’ cooperation to yield organizational quasi-rents and distributes the rents among the members as a neutral coordinator. Such role would be of importance in the context of ecosystems as well. In order for the platform to be multisided, it would be indispensable to produce network effects among agents consisting of the ecosystem. Multi-sidedness is not inevitable at all, but requires the platformer to diligently engage in managerial efforts on many fronts such as managerial coordination (Aoki 1984; Chandler 1977; Coase 1937; Milgrom and Roberts 1992), persuasion of members on the basis of visions (Witt 2000; Gavetti 2012), and mitigation of organizational conflicts (Cyert and March 1963).

The platformer must play a role of strategic entrepreneur, which can be called keystone

organization (Iansti and Levien 2004) in maximizing the joint-profit of the ecosystem. The success of the ecosystem impinges on how much the agent contributes to the platform on which the members of the ecosystem make their investments, and on whether or not coherent strategies can demonstrate leadership (Teece and Linden 2017). More concretely, maximizing the benefits of the ecosystem by increasing the contributions by the agents with complementary roles, designing the best ecosystem structure, and setting rules adequate for the benefit of the system as a whole rather than short-term self-interests are needed (Jacobides *et al.* 2018; Teece 2018). For these to be achieved, it would be necessary to design and innovate business model in the context of high interdependencies among the agents and to develop integrative capabilities that strengthen indirect network effects (Helfat and Raubitschek 2018, Propositions 4 and 6).

Referring to the ecosystem strategy *à la* Adner, to align the agents for attaining activities necessary for actualizing value propositions and to secure their roles in the ecosystem would be necessary (Adner 2017). In doing so, the platformer must formulate the problem of what values are to be offered and to whom and when and construct a new theory for solving the problem (Felin and Zenger 2017). Theory tells us what is and what is not consistent with the vision of the platformer and thus contributes to coherence of activities in the ecosystem. Such coherence is needed for maximizing the joint-profit of the ecosystem consisting of the agents with a diverse set of theories. From this we derive the following proposition:

Proposition 2. *To prosper further, the monopolistic platformer develops integrative capabilities that strengthen indirect network effects and plays a role of strategic entrepreneur. In doing so, it gives coherence to the ecosystem by way of its vision and attempts to establish and sustain the monopolistic advantages by maximizing the joint-profit of the ecosystem.*

In this respect, the case of Roppongi Hills (hereafter, RH) is illustrative (e.g., Elberse *et al.* 2008; Hagiü 2014). RH is a composite facility consisting mostly of business offices, residences, tenant shops, and artistic and cultural facilities. Thus it has contributed to assemble people with different backgrounds to the complex. Mori Building Company (hereafter, MBC), which manages RH as a platformer, gives coherence to the ecosystem whose center is occupied by RH. MBC demands the tenant shops to differentiate from other shops outside RH by assorting a stock of goods that can be purchased exclusively within RH (Hagiü 2014). For example, if an advanced screening of a movie is held at the TOHO Cinemas RH, shops and restaurants in the ecosystem are sometimes required to prepare for offering special items connected to the movie.

In general, a novel vision cannot be accepted by people with ease, because most people do not have distant foresight enough to predict what consequences unusual actions far from the status quo will produce (Gavetti and Melon 2016). As Powell (2018) argues, people have a tendency of absence-neglect in that they take notice of what exists in close proximity but neglect what is absent. That is why the great leader must persuade such ordinary people and actualize the future far from the present that they can hardly imagine or the absent future that they tend to neglect. For the cognitively distant opportunity to be realized on the basis of vision, the leader must change the beliefs of people legitimized in the given context and make them understand the potential value of such opportunity (Gavetti 2012). This requires cognitive leadership by which communication is facilitated to penetrate vision into people (Witt 2000). Thus leadership for changing cognition matters (Foss 2001, 2007).

At the end of the day, theory requires psychological realism on strategic decisions (Gavetti *et al.* 2005; Gavetti *et al.* 2007; Hodgkinson and Healey 2011; Powell 2017, 2018; Powell *et al.* 2011; Puranam 2012). In this regard, theory of behavioral strategy establishes realistic assumptions about the cognitive, emotional, and social action of humans and aims to understand strategic management of organizations. In a nutshell, humans do matter. We refer to the idea reflected in Proposition 2 as a “behavioral strategy oriented to coherence.”

4.3 The Strategy of Institutional Support

Cross-border movement of resources has been accelerated in the digital era. Even if the platformer would enjoy network effects by solving the chicken-and-egg problem at the early stage and participate in the digital disruption game in the global market where it manages to establish the monopolistic position, this is not sufficient to secure the quiet life for the platformer. As noted, it has to deal with several issues when necessary to establish and maintain its monopolistic advantages by agilely acquiring the new entrant and the emergent platformer that would be potential threats and attain coherence by persuading the agents who resist its sound vision. It also needs to design the governance rule to prescribe who can participate in the platform and how the participants interact (Hagiu 2014). If it does not succeed in designing such institutions agilely and rightly, what has been done might be quite far from demonstrating ecosystems leadership.

Following the Hymer schema mentioned above, when the incumbent platformer which has had good performance in a country attempts to go overseas on the basis of its success, it is more likely that the platformer would be able to earn rents if its monopolistic advantages are large enough to outweigh the disadvantages due to institutional differences between its home country and the host country where the platformer starts business operations. Conversely, from a viewpoint of the host country, to enlarge such disadvantages due to institutional differences as much as possible would result in entry deterrence of the incumbent platformer coming from overseas that would be undesirable to the development of the emergent ecosystem whose center is occupied by the emergent platformer of the host country. But this option cannot be restricted to the dimension of formulating corporate strategy, and rather inevitably relates to what can be regarded as the design of institutional environments by the government. Thus the issue here requires a wider scope of discussion that includes the government as an institutional designer, unlike the two strategies shown above such as the countervailing strategy of the shift in technological path and the behavioral strategy oriented to coherence.

Such inclusive perspective with focus on institutions originates from theory of integrated strategy (Baron 1995, 2001) and an institutions-based strategy view (Ahuja and Yayavaram 2011; Ahuja *et al.* 2018). The former has an integrity, representing the market strategy to confront the competition and the non-market strategy to deal with collective actions of the government and the industry (Baron 1995). The latter, on the other hand, sheds light on the formal and informal associations that relate to the governance and facilitation of organizational actions and practices as well as the multilateral relationship between the institutional envelope consisting of the norms and regulations supported by those associations, corporate strategy, performance and industrial structure (Ahuja *et al.* 2018). It is clear that both views take into account the effect of institutions on strategy.

In examining the role government plays in deterring entry of the incumbent platformer coming from overseas, we particularly pay heed to the two factors below. First, we would like to indicate the possibility that the government would be susceptible to influence

activities. The government as an institutional designer sometimes allows a particular stakeholder to engage in influence activities in designing and implementing institutions for market intervention. But it is likely that this would distort the effective working of institutions by reacting to private, rather than social, incentives (Baron 2001; Ahuja *et al.* 2018; Oberholzer-Gee and Yao 2018).

Second, the enforceability of institutions should be noted. In the context where institutional void (Khanna and Palepu 1997; Micelotta *et al.* 2017) occurs, it would be insufficient for the government to design formal institutions such as laws and regulations in order to support markets. Desirable outcomes cannot be expected only if institutions exist physically (Ahuja *et al.* 2018). In this regard, at cognition level people have beliefs that a desirable outcome will be attained by the aid of an institution and then at action level choose a strategy, and some stable outcome emerges in society and then this reinforces the existing institution. Institutions are supported by such recursive process (Aoki 2001, 2010). Putting it differently, it is not sufficient that institutions exist physically (or objectively) and thus in order for them to be enforceable, individuals cognize them internally (or subjectively) and this should be reflected in their strategic choices.

The emergent platformer can engage in influence activities to directly ask for the government's institutional support for deterring the entry of the incumbent platformer from advanced countries into its local market. Thus it can devote itself wholly to playing a role of agent to change the rules of the game (North 1990) by making the government impose a set of severe regulations on the incumbent platformer in terms of entry and introduction of foreign capital through influencing the government's decisions. On the other hand, if it has reached the point where it can enjoy to some extent network effects, it might be able to prevent the incumbent platformer from entering its market successfully. In this case, the role of the government would be restricted to the indirect institutional support that defeats the incumbent platformer's ambitions to enter into the country by creating and sustaining institutional environments favorable to the ecosystem emerged locally in the country.

As long as discussion would be limited to the context of entry deterrence in the cross-border competition among ecosystems, it is likely that early timing would be key for success because the following prediction is tenable: as for a platform, on the one hand, the earlier the timing of start-up becomes, the more the number of user who acquires the related apps becomes, and as for the users locked in the platform, on the other hand, the higher the switching costs, the longer the time they use the platform. Thus, agility is of utmost importance.

Further, localness is critical as well. For the incumbent platformer overseas, disadvantages due to the institutional differences between the home country and the host country result from the absence-neglect that it cannot sense the local opportunity and needs far from its commonsense. Conversely, the emergent platformer in the host country can sense the local opportunity and needs that the incumbent platformer from an advanced country cannot take notice of. Such focus on localness leads to the superfine offerings of goods and services as a point of differentiation.

In this light, we would like to carve out the importance of localness by way of the successful case of Didi Chuxing (hereafter, Didi) in China (e.g. <https://www.wired.co.uk/article/didi-chuxing-china-startups-uber>). Didi organized a workshop for the migrant drivers coming from rural villages who did not have a smartphone in order to show them how to use it. As a result, this increased the number of registered drivers. In 2014, the company grew to beyond a million. It also secured many registered drivers successfully by offering consid-

eration money as a profit for the drivers because the Chinese government took a stance that ride-hailing should be taken as an action based on the benevolence of consumers rather than as a lucrative business. Thus it prohibited drivers to profit from set prices.

Didi received an investment from Alibaba, Tencent, Baidu, and Bank of Communications Limited and has constructed good relationships with local governments at present. It offers a variety of services such as the arrangement of contracted drivers for bus and private vehicles. In this light, it has succeeded in agilely developing businesses by taking advantage of localness (https://jp.reuters.com/article/didi_uber_idJPKCN10E0BL). Viewed from the demand side, on the other hand, it was possible for the users of Didi to enjoy the benefits from a new service by way of familiar apps in the sense that they could call a vehicle with Tencent's WeChat and make a payment with Alibaba's Alipay. The number of users of Didi thus went beyond 0.1 billion in 2014.

Uber, which entered the market in China in February 2014, had to start with penetrating its unique apps to users. And the alliance with Baidu in December made it possible for the company to offer an app using the map of Baidu and thus penetration in Chinese markets went smoothly. But in January 2015, the Chinese government banned an unauthorized service of arranging private vehicle with apps. The timing was such that Didi Kuaidi, which is Didi's former body, was founded by merging Didi Dace backed by Tencent and Kuaidi Dache backed by Alibaba, respectively. After that, the government made domiciliary searches in the offices of Uber China in the name of the supervision of illegal taxis (<https://jp.globalvoices.org/2017/05/29/45608/>).

In the end, Uber China was acquired by Didi in 2016. The triumph of Didi can be ascribed to the fact that the company could successfully secure the number of users and that of registered drivers enough to yield network effects by moving earlier than the market entry of the competition. It can be said that Didi's agile efforts to enlarge its installed base worked well in the context of entry deterrence in cross-border competition among ecosystems. Namely, by leveraging network effects of the emergent ecosystem in China and taking into account localness, Didi succeeded in deterring the entry of Uber into the Chinese market. But notice that in doing so the Chinese government also offered institutional support indirectly to sustain institutional environments that would be favorable to the emergent ecosystem. We derive a proposition as follows:

Proposition 3. *By leveraging network effects and paying heed to localness, the emergent platformer attempts to deter the market entry of the monopolistic, incumbent platformer overseas with the aid of institutional support by the government and to establish and sustain the monopolistic advantages by maximizing the joint-profit of the emergent ecosystem.*

The availability of the strategy of institutional support depends largely on the ideology of the nation and the policy stance of the government. China is willing to catch up with the state-of-art technology of advanced countries under the slogan of socialist market economy. It also attempts to thoroughly eliminate the threat of new entry by unsolicited foreign capital to protect its huge market of approximately 1.4 billion people. The strategy of institutional support epitomized in Proposition 3 can be paraphrased as the government version of the reverse view of LOF in ecosystems regarding Proposition 1. Taking into consideration the government as a player of the game, the nature of institutional support, whether direct or indirect, depends on the distance between the government and the firm, both of which keep guard on the market entry of foreign capital.

Consequently, whether the government can contribute to the development of the ecosystem in its home country impinges on public entrepreneurship (Klein *et al.* 2010), which relates to a wide lens (Adner 2012) that enables countries to take a general view of the ecosystem as a whole and design and redesign alertly institutional environments by releasing creative resources for national interests. Public entrepreneurship can be regarded as a variant of ecosystems leadership. Of course, a “wider” lens, which enables to look off into the distance, would be needed because the lens with a narrow focus on national interests does not work well if examining a higher level of sustainability (e.g., global sustainability) than corporate, ecosystem’s, or national sustainability.

5. Concluding Remarks

In this paper, we presented some research questions mainly on the behavioral principle and advantages of ecosystems as well as their metrics and examined them. In the generic environment of the digital era, digital technology and institutions complement human cognition (e.g., Clark 1997; Aoki 2010; Malone 2018). And the ecosystem consisting of the platform with network effects plays a significant role. Such environment can be approximated as a monopolistic one where an unparalleled level of increasing return occurs. Further, the business environment of an ecosystem, which is a subset of the generic environment, is sort of neo-Schumpeterian, where both entrepreneurship and routine matters and high uncertainties are inevitable.

And when we characterized the behavioral principle of ecosystem as joint-profit maximization, the problem is how cooperation among agents connecting to the platform should be stabilized. We referred to this as an issue of ecosystems leadership and identified the countervailing strategy against the shift in technological path (Proposition 1) and the behavioral strategy oriented to coherence (Proposition 2), both of which are formulated by the monopolistic, incumbent platformer, and the strategy of institutional support that the government gives the emergent ecosystem (Proposition 3). In this regard, we tackled an unsolved issue in prior research of how the platformer can enter the new market by leveraging existent resources and ecosystems. Of course, the effectiveness of each strategy depends on the context in which strategy is executed.

Moreover, by taking into consideration that a few ecosystems gain enormous economic and political power enough to transcend national borders (e.g., Zingales 2017), we presented the concept of monopolistic advantage as a new metric for evaluating how well ecosystems perform in the digital era. And we highlighted the scale factors such as elimination of interfirm competition in global markets and extension of monopolistic advantage to global markets as well as network effects against the background of digital technologies.

We hope that our research will help to illuminate the nature of the ecosystem formed by the platformer and will facilitate to develop qualitative and quantitative research in this field. In particular, issues such as how monopolistically advantageous the ecosystem is, how plausible the assumption of joint-profit maximization of the ecosystem is, and differences between the performance of the ecosystem’s members and that of non-members are meaningful for doing empirical research and fruitful for practicing evidence-based management of ecosystems.

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