

**SECTOR-BASED ENTREPRENEURIAL CAPABILITIES AND THE PROMISE OF  
SECTOR STUDIES IN ENTREPRENEURSHIP**

**Alfredo De Massis**

Free University of Bozen-Bolzano  
Bolzano, 39100, Italy

&

Lancaster University Management School  
Lancaster, LA1 4YX, United Kingdom

Email: [a.demassis@lancaster.ac.uk](mailto:a.demassis@lancaster.ac.uk)

**Josip Kotlar**

Department of Entrepreneurship, Strategy and Innovation

Lancaster University Management School  
Lancaster, LA1 4YX, United Kingdom

Email: [j.kotlar@lancaster.ac.uk](mailto:j.kotlar@lancaster.ac.uk)

**Mike Wright**

Centre for Management Buyout Research  
Imperial College Business School

Exhibition Road

London SW7 2AZ

&

ETH, Zurich

Switzerland

Email: [mike.wright@imperial.ac.uk](mailto:mike.wright@imperial.ac.uk)

**Franz W. Kellermanns**

University of North Carolina–Charlotte

&

WHU (Otto Beisheim School of Management)

Department of Management

9201 University City Blvd

Charlotte, NC 28223

Phone: (704) 687-1421

Email: [kellermanns@uncc.edu](mailto:kellermanns@uncc.edu)

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# **SECTOR-BASED ENTREPRENEURIAL CAPABILITIES AND THE PROMISE OF SECTOR STUDIES IN ENTREPRENEURSHIP**

## **Abstract**

The influence of the industrial sector is a longstanding assumption in entrepreneurship studies, yet the mechanisms through which the industrial sector shapes entrepreneurial phenomena and the processes through which entrepreneurial actors interact with sectors to prospect, develop and exploit entrepreneurial opportunities remain largely under-theorized and little understood. We critically re-examine the notion of “sector” in entrepreneurship research, advancing a more dynamic view of the industrial sectors captured by the concept of sector fluidity and identifying three approaches to move the sector more prominently onto the “front seat” of entrepreneurship theory and research. Defining sector-based entrepreneurial capabilities and examining their importance to advance current understanding of industry-specific determinants, processes and outcomes of entrepreneurship, we set out an agenda for further research aimed at advancing sector studies in entrepreneurship.

## **INTRODUCTION**

Although the definition and role of opportunities in entrepreneurship is the subject of ongoing and lively debate (Alvarez et al., 2017; Alvarez, Barney, & Anderson, 2013; Davidsson, 2015; Dimov, 2011; Klein, 2008), understanding the processes associated with prospecting, developing and exploiting opportunities continues to be a primary concern of entrepreneurship scholarship. Entrepreneurial opportunities come in a variety of forms, including new technologies, information asymmetries and environmental shifts, and are typically viewed as industry-specific. The industrial sector is indeed a key variable in any organization’s business environment. Organizations and individuals interact in numerous ways with peers and competitors, customers, regulators and other stakeholders who altogether are typically perceived as an industry. Such industries can differ significantly in terms of their political, economic, socio-cultural and technological conditions as well as their scope. In turn, these contextual differences are likely to shape the determinants, processes and outcomes of entrepreneurship (Welter, 2011; Zahra & Wright, 2011). Moreover, entrepreneurial opportunities are strongly intertwined with the goals, beliefs, intuition, heuristics, and accurate and inaccurate information that derive from individuals’ experience

within an industry (Gorgievski & Stephan, 2016; Hmieleski & Ensley, 2007; Navis & Ozbek, 2016; Ruvio, Rosenblatt, & Hertz-Lazarowitz, 2010).

Unfortunately, however, we lack consistent and adequate conceptualizations of industry environments for the development of theoretical models and the design of empirical work in the area of entrepreneurship. Moreover, researchers tend to consider industry variables only to the extent that they sensitize their theories to possible situational or temporal constraints or boundary conditions, typically focusing on a simple “top-down process” of how industry variables affect lower-level variables and relationships. Despite the potential influence of industrial sectors on entrepreneurship, and despite industry variables having long been included in studies of opportunity creation, discovery and exploitation, the underlying mechanisms through which the industrial sector shapes entrepreneurial phenomena and the “bottom-up” processes through which individuals, groups of individuals, organizations and industries interact in prospecting, developing and exploiting entrepreneurial opportunities remain largely under-theorized and little understood. This lacuna is of particular concern in the context of widespread environmental change that is seeing the emergence of new sectors that rapidly transform or supplant existing ones.

In this article, we aim to address this gap and in so doing re-invigorate scholarly interest in sectors. We start by examining the pressing need to re-define the notion of “sector” in entrepreneurship research, introducing sector fluidity as a factor with important implications for sector studies in entrepreneurship and identifying three approaches to move sector more prominently onto the “front seat” of entrepreneurship theory and research. We continue by defining sector-based entrepreneurial capabilities and examining their importance to advance current understanding of industry-specific determinants, processes and outcomes of entrepreneurship. We then provide an overview of the articles published in this special issue and conclude by proposing an agenda to inform future sector studies in

entrepreneurship. Doing so adds to the burgeoning interest and emphasis on the importance of context for understanding entrepreneurship determinants, behavior and outcomes (Welter, 2011; Zahra & Wright, 2011).

### **RE-DEFINING SECTOR IN ENTREPRENEURSHIP RESEARCH**

Entrepreneurship research has grown tremendously over the last three decades, and the field's focus has changed substantially over time. Early research in the 1980s was dominated by a phenomenological tradition that put strong emphasis on understanding the role of entrepreneurs and gaining empirical evidence concerning the context in which entrepreneurship phenomena happen, such as the differences in the type and rate of new firm creation among different countries, regions, and industries (e.g., Carland et al., 1984; Gartner, 1985; Venkataraman, 1997). Such emphasis on context fueled criticisms revolving around the question of whether entrepreneurship is a more applied research area, or a distinct and legitimate field of research. Thus, the 1990s and 2000s were dominated by the quest for an agreed conceptual framework that could explain and predict a unique set of empirical phenomena that are not addressed by other fields (e.g., Davidsson, 2005; Shane & Venkataraman, 2000). During this time span, entrepreneurship scholars have increasingly sought to advance new paradigms, theories and schools of thought that could enable the development of formal predictions and rigorous hypotheses and provide "general laws of entrepreneurship which might transcend context" (Hjorth et al., 2008, p. 81).

This shift toward theory-driven research has certainly helped tremendously to develop rigorous and cumulative knowledge about entrepreneurship. At the same time, entrepreneurship scholars started to note that important differences exist in entrepreneurship phenomena across industries (e.g., McDougall, 1989; Zahra, 1996). However, the pursuit of general theories of entrepreneurship might have discouraged scholars from fully considering the impact of industry context in their research. The common approach to deal with industry

effects in empirical research is to use simple statistical control variables, suggesting that context is seldom considered of central interest in entrepreneurship studies and is only loosely integrated in entrepreneurship research designs. In other words, context is typically viewed as differences that should be controlled for rather than theorized. Most recent trends in this literature suggest that the pendulum is swinging back to the field's roots. For example, scholars have recently emphasized how a more contextualized view on entrepreneurship could provide several benefits including better definition and communication of the entrepreneurial phenomena being studied, more grounded theoretical explanations, more accurate empirical tests of theories and their boundary conditions, and stronger implications of theory for entrepreneurship practice (Baker, Gedajlovic, & Lubatkin, 2005; Navis & Ozbek, 2016; Welter, 2011; Zahra & Wright, 2011).

Although scholars have referred to a wide range of contexts, such as social, spatial, temporal and institutional contexts (e.g., Autio et al., 2014; Kotlar, De Massis, Wright & Frattini, 2018; Zahra & Wright, 2011), existing research provides a relatively incomplete conceptualization of industry, especially in relation to what is distinctive about the notion of industry sector in entrepreneurship. Traditional conceptualizations of industry in entrepreneurship studies differentiate industry contexts based on their structure (Geroski, 1990), profusion of technological opportunities (Galbraith, 1973; Zahra, 1996), environmental hostility (Covin & Slevin, 1989; Zahra & Covin, 1995), environmental dynamism (e.g., Khandwalla, 1977; Lumpkin & Dess, 2001) and life-cycle stage (Covin & Slevin, 1990). Common to these conceptualizations is the emphasis on differences in the level of uncertainty that entrepreneurs face when they assess the potential of new products or services, attract investors, secure partners, and capture markets (Graffin & Ward, 2010), or the difficulty in predicting environmental changes and their impact on a new venture (McKelvie, Haynie & Gustavsson, 2011). Most generally, the uncertainty that characterizes

an industry sector is thought to have a major impact on how entrepreneurs prospect, develop and exploit opportunities (e.g., Navis & Ozbek, 2016).

However, existing conceptualizations of industry sectors are not free from limitations, and the renewed interest in industry context in entrepreneurship research raises the need for a deeper look at this issue. For example, a long-standing debate concerns whether environmental uncertainty is an objective concept that can be effectively captured from archival data, such as measures of sales volatility and market concentration, or a subjective perception captured by the judgment of key informants (Ahsan, 2017; Boyd, Dess, & Rasheed, 1993; Navis & Ozbek, 2017). Relatedly, while early conceptualizations and measurements of industry contexts were inherently static, very few studies acknowledge the dynamic nature of the links between entrepreneurship and industrial sectors. For example, a central distinction in entrepreneurship research is between industries with high versus low entry barriers. Entry barriers refer to complex and capital-intensive production processes, as well as strategies adopted by incumbent firms that discourage the entry of new firms in an industry (Bain, 1956; Caves & Porter, 1977; Porter, 1980). Industries with high entry barriers are commonly characterized by high concentration, investments in fixed capital, and the prevalence of cost leadership strategies. However, as global competitive environments become increasingly interconnected and fast-changing, a static view of industries appears increasingly limited. Take, for example, the car manufacturing industry, which is an emblematic case of how an industry traditionally characterized by high entry barriers is becoming the scenario for high levels of entrepreneurial activity driven by fluxes of resources from other sectors, such as electric battery technologies from the laptop industry or self-driving technologies from Silicon Valley stars like Google, Tesla, and Uber. Similarly, the mobility of human resources is increasingly acknowledged as a main driver of entrepreneurship (e.g., Mawdsley & Somaya, 2016; Sørensen & Sharkey, 2014). Finally,

most existing entrepreneurship research focused on top-down influences of industry characteristics on entrepreneurial behavior. Notable exceptions include Feldman, Francis, and Bercovitz (2005), who theorize that entrepreneurs are a critical element in the formation of high-tech industry clusters, and characterize such industries not as static but rather as complex adaptive systems where external resources are developed over time. Similarly, Navis and Ozbek (2016) theorize that the cognitive and behavioral attributes of entrepreneurs (i.e., narcissism and overconfidence) have an influence on how entrepreneurs perceive opportunities in novel or familiar contexts as well as their propensity to pursue and ability to realize opportunities in these contexts. In other words, not only the industry context has an influence on entrepreneurship, but entrepreneurship itself also influences industrial sectors (Welter, 2011). Thus, the industry sector cannot be simply considered as an exogenous factor that influences the entrepreneurship behaviors and outcomes, and a deeper examination of the dynamic bottom-up processes through which individuals, organizations and industries interact in prospecting, developing and exploiting entrepreneurial opportunities deserves more careful examination.

#### **A “SECTOR LENS” ON ENTREPRENEURSHIP THEORY AND RESEARCH**

As discussed above, we have emphasized how the entrepreneurship literature has moved over time from a more practice-oriented and phenomenologically-driven approach, toward the development of more general, or universalistic theory of how entrepreneurs or entrepreneurial organizations prospect, develop and exploit opportunities. As the pendulum swings back and scholars increasingly recognize the need for a more contextualized understanding of entrepreneurship (e.g., Welter, 2011), the field is now confronted with the new challenge of not only “controlling” for industry effects in empirical studies, but also finding creative ways to integrate industry context in entrepreneurship theories.

We identify three approaches to accomplish this, which correspond to increasing levels of integration between theory and context. First, scholars can integrate industry contexts by adopting a *contingency perspective*, which adds complexity and nuance to universalistic propositions and hypotheses by implying interactions between the variables of interest and industry variables in determining entrepreneurship determinants, behaviors and outcomes (Lumpkin & Dess, 2001; Zahra, 1996). Put differently, a contingency perspective suggests that the relationships between antecedents, dimensions and outcomes of entrepreneurship will be different across different industry contexts. Thus, researchers adopting a contingency perspective typically select a universalistic theory and then specify how the factors specified by the theory will interact with the industry context to result in entrepreneurship determinants, behaviors and outcomes.

Second, *configurational perspectives* provide a further step in integrating theory and context by adding complexity to their links. Configurational perspectives have a broader focus than contingency ones, as they consider synergistic effects and higher-order interactions that cannot be fully captured by bivariate interaction effects (Doty & Glick, 1994). Configurations are indeed defined as unique patterns of factors that are maximally effective in achieving a desired outcome (Delery & Doty, 1996; Dess, Lumpkin, & Covin, 1997; Miller, 1987; Venkatraman & Prescott, 1990). Configurational perspectives build on the logic of equifinality in suggesting that more than one unique configuration of the relevant factors can result in maximal performance (Doty & Glick, 1994). Therefore, the focus is on multivariate combinations of factors that may have more predictive power than bivariate contingencies (Dess, Newport, & Rasheed, 1993). For example, Dess et al. (1997) showed that entrepreneurial strategy making was most strongly associated with performance when it was combined with both the appropriate strategy and environmental conditions.

Contingency and configurational perspectives are currently the dominant approaches used to integrate industry context and theory in entrepreneurship research. However, a further step of integration seems possible and desirable, hereafter we refer to this third option as a *dynamic view of industrial sectors*. We draw on three well established concepts in the entrepreneurship research literature to establish this dynamic view. First, we build on *opportunity-based perspectives on entrepreneurship* (Alvarez et al., 2017; Alvarez et al., 2013; Davidsson, 2015; Dimov, 2011; Klein, 2008; Shane, 2012; Shane & Venkataraman, 2000), which define entrepreneurship as the identification, evaluation, and exploitation of opportunities (Shane & Venkataraman, 2000) and thus focus research attention on the processes through which individuals prospect, develop and exploit opportunities by creating new organizations or within existing ones. Second, we draw on the notion that entrepreneurship requires the *creation of new ways to combine resources to develop innovative outcomes* (Alvarez & Busenitz, 2001; Galunic & Rodan, 1998; Shane, 2012). Specifically, prior research suggests that entrepreneurial opportunities are closely linked to the existence of resource heterogeneity: when different agents have information about and access to resources that other agents do not, they can destroy the existing equilibria and prospect new entrepreneurial opportunities (Casson, 1982; Kirzner, 1979; Schumpeter, 1939). Finally, we build on the idea that entrepreneurship depends primarily on the *ability of entrepreneurs or enterprises to constantly search knowledge across different domains in order to prospect, develop and exploit opportunities* (Levinthal & March, 1981; March & Simon, 1958; Nelson, 1982).

The combination of these arguments with a *dynamic view of industrial sectors* lead us to introduce the concept of *sector fluidity*, defined as the extent to which information, knowledge and resources can flow freely across industry boundaries. Sector fluidity puts emphasis on how the rapid transformations of global competitive environments is a driving

force of change, leading toward new and unprecedented environments where industries become increasingly interconnected. The observation that industrial sectors are increasingly dynamic suggests that boundaries and entry barriers no longer represent an essential element of an industry. At the same time, this concept points to the important role of entrepreneurial actors in constantly destabilizing existing industry boundaries and keeping industry sectors from settling down to a state of equilibrium by engaging in arbitrage of resources across different sectors and rapidly redeploy resources from one sector to meet the requirements of another sector. This notion resembles the emphasis on “creative destruction” introduced by Schumpeter (1934) and prominently present in current organization and management literatures (e.g., Ilinitch, D’Aveni, & Lewin, 1996; Schreyögg & Sydow, 2010; Teece, 2007; Wiggins & Ruefli, 2005).

The notion of sector fluidity, in turn, points our attention to the processes and mechanisms, or dynamic capabilities (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997; Zahra, Sapienza, & Davidsson, 2006), that enable entrepreneurial actors to successfully prospect, develop and exploit opportunities within and across sector boundaries. The concept of dynamic capabilities has been increasingly invoked in the entrepreneurship literature. For example, prior studies show that dynamic capabilities enable new business creation (e.g., Bowman & Ambrosini, 2003), new market entry (e.g., King & Tucci, 2002), and the commercialization of new technologies (e.g., Marsh & Stock, 2003). However, current understanding of the specific dynamic capabilities that enable and sustain entrepreneurship is nascent at best (Zahra et al., 2006). This special issue focuses on sector studies in entrepreneurship. As such, we feel it important to advance our understanding of entrepreneurial dynamic capabilities that specifically relate to the industry context of entrepreneurship. We call this construct *sector-based entrepreneurial capabilities*:

**Definition:** Sector-based entrepreneurial capabilities are the capacities (i.e., processes and routines) of an entrepreneurial actor (entrepreneurs, entrepreneurial teams and

enterprises) to prospect, develop and exploit opportunities by reconfiguring human, social and financial resources within and across industry sectors.

Recently, Pisano (2017) drew attention to the distinction between dynamic capabilities that are highly specific to an industrial sectors and general-purpose capabilities that can be applied to different contexts. Drawing on this distinction, we suggest that sector-based entrepreneurial capabilities can be of at least two types: the first type focuses on leveraging highly-specific resources to an industrial sectors to prospect, develop or exploit opportunities in another sector or range of sectors, and the second type focuses on leveraging general-purpose resources to prospect, develop or exploit opportunities within the entrepreneurial actor's current sector.

We propose that sector-based entrepreneurial capabilities are important for all facets of the entrepreneurial process as well as to understand its outcomes. Indeed, the resource-based view indicates that firms within an industry contain heterogeneous sets of resources (Barney, 1991). We adapt this fundamental assumption and argue that sector-based entrepreneurial capabilities involve the reconfiguration of resources that an entrepreneur can access in different industries, or the creative reconfiguration of resources existing within a sector. Here, it is important to note that sector-based entrepreneurial capabilities do not require entrepreneurial actors to have control of resources, but only access to resources that can provide the potential for a competitive advantage (Kellermanns et al., 2016). These resources include, but are not limited to, the experiences and knowledge the entrepreneurial actor possesses and is exuberated by the risk the entrepreneurial actor has to bear. These unique resource sets that the entrepreneurial actor is endowed with provide distinctive insights into the opportunity creation and discovery processes. Thus, entrepreneurial actors with a high level of sector-based entrepreneurial capabilities will have a competitive

advantage and likely enjoy performance benefits (Crook et al., 2008; Newbert, 2007), which will likely extend to the opportunity exploitation process as well.

The ability to generate benefits from sector-based entrepreneurial capabilities is not limited to a single entrepreneurial individual, but the resource pools of entrepreneurial teams and enterprises also have the potential to generate unique sector-based entrepreneurial capabilities. For instance, we know that the start-up composition of entrepreneurial teams affects new venture performance (for a recent meta-analysis see Jin et al., 2017). The underlying logic is that the resource bundle provided by the entrepreneurial team exceeds the sum of the individual resources (Stewart, 2006). This effect may be particularly salient for sector-based entrepreneurship, where the competitive advantage due to unique knowledge within and across industry-sectors and the subsequent leverage of resources with the help of this knowledge is particularly important (for the importance of leveraging resources see also Eddleston, Kellermanns & Sarathy, 2008).

Lastly, it is worth noting that these relationships are likely affected by the sector fluidity introduced above. High sector fluidity will likely encourage radical innovation in a sector as new ideas from other sectors are introduced that have the ability to significantly change the structure of an industry. At the same time, high fluidity not only encourages entry into the sector, but also has the potential to significantly devalue the sector-based entrepreneurial capabilities of individuals, entrepreneurial teams or enterprises with a narrower set of backgrounds. Conversely, low sector fluidity is likely to enhance the value, inimitability and rareness of the resource set and thus makes sector-based entrepreneurial capabilities more valuable to the entrepreneurial actor.

In the next section, we summarize the articles published in this special issue, which provide important initial insights into the relevance and impact of sector-based entrepreneurial capabilities.

## ARTICLES IN THE SPECIAL ISSUE

Following a general call for papers, we received forty-two articles for the special issue, of which five papers successfully negotiated the standard *Entrepreneurship Theory & Practice* review process for publication in this special issue. The papers are summarized in Table 1. The sectors covered range from high tech such as TIME (Telecom, Information Technology, Media, and Entertainment; McKelvie, Wiklund, & Brattström, 2018) and IT hardware (Recker, von Briel, & Davidsson, 2018), through service sectors notably female and male professional sport (Micelotta, Washington, & Docekalova, 2018; Radaelli, Dell'Era, Frattini, & Messeni Petruzzelli, 2018), to more traditional primary sectors notably agriculture (Nordqvist, Fitz-Koch, Carter, & Hunter, 2018). The papers adopt a variety of methodological approaches including literature reviews (Nordqvist et al., 2018), theory building (Micelotta et al., 2018) and quantitative empirical studies (McKelvie et al., 2018; Radaelli et al., 2018).

The papers contribute to our understanding of sector-based entrepreneurial capabilities by revealing a number of sector-specific influences on the entrepreneurial process and its outcomes. Importantly, McKelvie et al. (2018) demonstrate that the drivers of new firm innovation are also likely heterogeneous within sectors, and not just different across sectors. Specifically, the authors emphasize that heterogeneous perceptions of the industry environment among new venture managers in the same industry help explain differences in external and internal knowledge development as well as innovation outputs in new ventures. Nordqvist et al. (2018) conclude from their review of the literature that within-sector specific dynamics shape the entrepreneurial process but the dimensions of these dynamics need to be understood from a multi-level perspective relating to individuals, organization and the environment. However, Recker et al. (2018) show that sector-specific attributes are independent of entrepreneurial agents, pointing to the important role of technology specificity

and relationality as external enablers of entrepreneurial processes and identifying the mechanisms through which these factors enable or constrain the stages of the entrepreneurial venture creation process. Radaelli et al. (2018) study entrepreneurial opportunities that originate from the fluidity of human resources in the professional football industry. Their findings suggest that the most appropriate forms of entrepreneurial human capital may vary across sectors but in some sectors both the flow and the stock of human capital may be important. There is then a need to understand the flow of new entrepreneurial talent within and between sectors, but Radaelli et al. (2018) caution that there is also a need to be able to socialize or integrate new talent when it joins a new organization. Finally, Micelotta et al. (2018) examine the intersection between industries and gender issues, showing that the persistence of industry-specific gender imprinting shapes the cultural values, beliefs, norms and orientations of an industry and creates specific liabilities relating to identity, conformity and differentiation that pose challenges for entrepreneurs in these sectors.

*Table 1 about here*

The next section proposes a future research agenda aimed at advancing a coherent understanding of sector-based entrepreneurial capabilities, based on three main questions: (1) what are sector-based entrepreneurial capabilities and how do they differ from resources as well as other types of dynamic capabilities? (2) What are the antecedents of sector-based entrepreneurial capabilities? and (3) How do entrepreneurs, entrepreneurial teams, new ventures and established companies vary in their sector-based entrepreneurial capabilities, and what are the consequences of these differences?

### **FUTURE RESEARCH DIRECTIONS**

Taken together, the papers in this special issue underscore the importance of sector-specific antecedents, characteristics and outcomes of entrepreneurship, and point to the potential of sector-based entrepreneurial capabilities as concept that can advance our

understanding of how processes through which entrepreneurs prospect, develop and exploit entrepreneurial opportunities vary within and across industries. However, much has to be done in order to fully realize the potential of sector-based entrepreneurial capabilities for entrepreneurship theory and practice. We believe that achieving such potential requires further clarifying what exactly sector-based entrepreneurial capabilities are, their antecedents and consequences. We discuss these future research directions below.

Sector-based entrepreneurial capabilities focus on reconfiguration of resources within and across industry sectors in order to prospect, develop and exploit opportunities. Future studies that consider different types of resources and how their recombination within and across sectors relate to the entrepreneurship process can therefore contribute to our understanding of what sector-based entrepreneurial capabilities are. Sector-based entrepreneurial capabilities are likely to be based on search and transfer processes. First, search refers to problem-solving processes through which firms identify and recombine resources to develop new products and services (e.g., Nelson & Winter, 1982). Although existing literature on search focuses primarily on knowledge resources, future research is needed to extend this perspective to consider other types of resources such as human, social and financial capital. Interestingly, this literature emphasizes that while resources existing within a given context can lead to incremental improvements of existing products and services, spanning environmental boundaries can lead to breakthrough innovations (Ahuja & Morris Lampert, 2001; Fleming, 2001; March, 1991; Rosenkopf & Nerkar, 2001; Stuart & Podolny, 1996). However, Jung and Lee (2015) noted that the benefits of boundary spanning search depend on the type of knowledge searched. Extending this argument, it would be interesting to study the extent to which the benefits of searching resources within a given industry or across different industries change depending on the type of resources searched. Second, future research is needed to identify and examine sector-based entrepreneurial

capabilities in terms of the transfer processes used to mobilize resources across industry sectors. These may include, for example, routines for replication and brokering (Hansen, 1999; Hargadon & Sutton, 1997; Szulanski, 1996) that entrepreneurs can use to copy, transfer, and recombine resources within and across sectors. Also, these processes may include learning processes, such as vicarious learning (Bresman, 2013) through which groups working in different business units and organizations in different industries can effectively capitalize on one another's resources to prospect, develop and exploit new opportunities.

Moreover, existing definitions of industry may be obsolete or not sufficiently adequate to deal with the increasing fluidity of sectors. Take, for example, the tech industry in Silicon Valley where worker mobility gives the tech industry high fluidity. It creates a culture in which human, social and financial resources move fast from one business to another. In this environment, human resources routinely jump from one job to another, looking to get in on the next ground-breaking product or service. This fluidity facilitated flows of information and know-how between individuals, firms, and industries, and supported unanticipated recombinations of resources thereby being a key driver of the Silicon Valley's rapid innovation over the past three decades. We therefore encourage future scholars to reconsider industry definitions and take into account how sector fluidity may affect sector-based entrepreneurial capabilities.

Future research also needs to study how sector-based entrepreneurial capabilities relate to type of resources. In relation to human resources, much attention on worker mobility is focused on geographical movements, but movement within and between sectors may be important in enabling new entrepreneurial firms to access human and social capital they need to shape, develop and exploit entrepreneurial opportunities (Wright, et al., 2018). Work by Radaelli et al. (2018) raises the need for further research that explores both which aspects of human capital are transferable between which sectors, and also the vexed question as to how

entrepreneurial firms in particular sectors can actually identify and attract the human capital they need.

Social capital may be strongly sectorally related (Gedajlovic et al., 2013) but recent developments have emphasized the importance of considering the ecosystem in the development of entrepreneurial activities (Autio et al., 2014; 2018). Strengthening the sector-based entrepreneurial capability of an enterprise may thus mean the creation and integration of a host of different elements that provide human, social and financial capital. For example, it is an overall ecosystem that appear to contribute to success in entrepreneurial activities for the German Mittelstand (De Massis, Audretsch, Uhlaner & Kammerlander, 2017). Moreover, the processes and dynamics may change when different level of analysis, such as the entrepreneur or the entrepreneurial team, are considered. However, as yet we have little fine-grained analysis of the nature and life-cycle of different sectoral ecosystems and how their elements differ across the entrepreneurial stages from opportunity prospecting through opportunity development to opportunity exploitation. Related to sectoral benefits of social capital, family firms have been found to be more dominant in some industries than others. This suggests that certain sectors allow family firms to over-proportionally benefit from the unique family firm specific resources (i.e., familiness) that they can create. Indeed, it further suggests that successful family firms might be able to generate family firm specific sector-based entrepreneurial capabilities that propel the firm through the generations and could explain the many world-class and innovative leaders amongst family firms (De Massis et al., 2017; Simon, 1996).

Various early stage government schemes have been targeted at particular sectors, especially high-tech sectors, but many sectors with potential entrepreneurial opportunities may fall out with these schemes. The growth of different forms of crowdfunding presents new opportunities for early stage ventures to obtain funds to formulate, test out and develop

opportunities that may not otherwise attract finance (Belleflamme, Lambert & Schwienbacher, 2014). Further attention is needed to the informational and other characteristics of different sectors and how these are related to success and failure in attracting funding. As the market has evolved, it has attracted repeat investors as well as entrepreneurs who launch multiple campaigns (Buttice et al., 2017) and further analysis is needed of the sectoral attributes of these serial crowdfunders and whether learning is more effective in some sectors than in others.

Incubators and accelerators are typically focused on helping entrepreneurs to develop their ideas around the start-up phase. Some of these organizations are generalist, while others are sector focused (Pauwels, et al., 2016). Accelerators and incubators are heterogeneous but there are some indications of a move to more sector-specific incubators and especially among the more recent phenomenon of accelerators (Wright & Drori, 2018). Accelerators are oftentimes viewed as focusing on ICT and other high tech sectors but further research is needed that explores which sectors are likely to benefit most from the different types of these organizations.

It is well-known that firms in high tech sectors face funding constraints (Lockett, Murray & Wright, 2002). Firms in knowledge intensive sectors oftentimes have greater demands for sunk cost investment. Generating revenues beyond the development into the exploitation stage is likely to be lengthy because of their complex products/services. As their assets are also likely to be intangible, raising growth funding beyond the start-up phase is likely to be difficult since assessment of risk and future growth is challenging for investors. Hence, a second valley of death or equity gap may be created beyond that usually associated with the phase between identification of an opportunity and start-up. Further fine-grained research is needed to explore which sectors and at which stages of their development is the second valley of death prevalent in order to identify possible ways that it may be filled.

While a variety of methods can be used to address these issues, we believe that experiments and qualitative research can be particularly useful to gain a deep understanding of sector-based entrepreneurial capabilities. Overall, there is need to question dominant research methods, such as deductive quantitative analyses, but at the same it seems important to overcome the epistemological and institutional limitations of these methods, which tend to favor the universalistic, contingency or configurational perspectives preventing the development of sectoralized/contextualized theory. Future qualitative studies are particularly needed to explore how sectors are intertwined and how sector fluidity cuts across levels of analysis. Applying a sectoral lens in entrepreneurship theory thus requires a multi-sector perspective, which can be challenging as we need to sample across multiple sectors, levels, and domains. In sum, the gap in multi-sector analysis partially also results from the neglect of (more) qualitative or mixed methods, which allow capturing the diversity and richness of the sectors(s) and the facility of switching between them.

*Table 2 about here*

Besides the nature of sector-based entrepreneurial capabilities and associated resources at each stage in the entrepreneurial process, we need to know more about where sector-based capabilities come from. Building on the contextual perspective relating to entrepreneurship (Welter, 2011; Zahra & Wright, 2011), we envision that these antecedents concern industry, firm, group and individual influences (Table 3, row 1) which, in turn, may be interrelated.

In Table 2 we focused on the nature and impact of sector-based entrepreneurial capabilities and resources at each stage of the process of developing an entrepreneurial venture. But sector-based entrepreneurial capabilities also have consequences which research is needed to explore at industry, firm, group and individual levels as shown in Table 3 row 2. We would note that while there may be positive outcome effects of sector-based

entrepreneurial capabilities, entrepreneurship may have a dark side (Wright & Zahra, 2011). In other words, we also need to know more about the negative aspects of sector-based entrepreneurial capabilities such as when industries and firms fail to adapt to changing environmental conditions and individuals become entrenched in a particular way of doing things.

*Table 3 about here*

## **CONCLUSION**

This paper starts from acknowledging the need for a re-definition of the notion of “sector” in entrepreneurship research. We have identified three approaches to move sector more prominently onto the “front seat” of entrepreneurship theory and research. We have defined sector-based entrepreneurial capabilities and briefly examined their importance to advance current understanding of industry-specific determinants, processes and outcomes of entrepreneurship, also introducing sector fluidity as a factor with important implications for sector studies in entrepreneurship. We have clarified how the articles published in this special issue provide initial insights into the relevance and impact of sector-based entrepreneurial capabilities, and propose an agenda for future research by delineating a number of important research questions that need to be addressed if sector studies in entrepreneurship are to move forward. As existing notions of sectors become progressively obsolete and inadequate in current entrepreneurial environments, we believe that this research agenda has increasing relevance and impact.

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**Table 1. Papers in the Special Issue**

<b>Title</b>	<b>Authors</b>	<b>Sector</b>	<b>Research question</b>	<b>Methods</b>	<b>Key findings/conclusions</b>	<b>Implications for entrepreneurship theory and practice</b>
Externally acquired or internally generated? Knowledge development and perceived environmental dynamism in new venture innovation	McKelvie, Wiklund, & Brattström	TIME sector (Telecom, Information Technology, Media, and Entertainment)	How do internal and external knowledge, in combination with managers' perceptions of the environment, influence innovation in new firms?	Regression analysis on secondary data covering 316 new ventures in the TIME sector in Sweden.	Greater investments into acquiring external knowledge increase new venture innovation. Higher perceptions of environmental dynamism reduce the innovation returns on investments into external knowledge acquisition. Greater effort in developing internal knowledge increases new venture innovation. The perceived dynamism of the environment does not moderate the influence of internal knowledge generation on new venture innovation.	The study underscores the importance of within-sector determinants and dynamics, rather than across-sector determinants, of new firm innovation.
Industry gender imprinting and new venture creation: Theorizing women's leagues liabilities in the sport industry	Micelotta, Washington, & Docekalova	Women's professional leagues in four team sports: baseball, basketball, soccer and indoor volleyball.	How does gender imprinting affect the creation of new ventures not aligned with the dominant gender? What liabilities do entrepreneurs encounter as they interact with industry constituencies?	Multiple case study using qualitative data on 21 entrepreneurial ventures launched in women's professional sports leagues in the US.	Evidence from multiple case studies reveals three liabilities that plagued their entrepreneurial journeys: a liability of identity, a liability of conformity and a liability of differentiation.	The study extends research on industry-specific liabilities that new ventures encounter. The study reveals how the achievement of optimal distinctiveness can be a major challenge for entrepreneurs as they assess and respond to the social evaluations of industry constituents.
Entrepreneurship in the agricultural sector: A literature review and future research opportunities	Nordqvist, Fitz-Koch, Carter, & Hunter	Agricultural sector	What are the main themes within agricultural entrepreneurship research?	Systematic literature review of 76 empirical articles published between 1980 and 2015.	The article identifies empirical studies on the antecedents and outcomes of entrepreneurship at the (1) individual level; (2) firm-household level; and (3) environmental level.	The literature review underscores the potential contribution of embracing sector context to a greater extent in their future studies in order to generate new

			Which are the key contextual aspects of this sector through which entrepreneurship scholars can learn more about entrepreneurship in context?		The literature review identifies three key contextual dimensions of the agricultural sector: identity, family, and institutions.	and meaningful insights into entrepreneurial action. A multilevel perspective is needed to explain how sector-specific dynamics shape the entrepreneurial processes. Research questions related to three context-specific dimensions of the agricultural sector (entrepreneurial identity, family entrepreneurship and institutions and entrepreneurship) that have potential to deepen our understanding of the role of context for entrepreneurship as well as how and why context impacts, or is impacted by, entrepreneurial activities.
Entrepreneurship and human capital in professional sport: A longitudinal analysis of the Italian soccer league	Radaelli, Dell'Era, Frattini, & Messeni Petruzzelli	Italian "Serie A" soccer professional league	What is the entrepreneurial value of human capital? How can sport organizations successfully orient the discovery and deployment of new talents?	Regression analysis using secondary data on individual players, coaches, and teams of soccer clubs in Italy in the period 1995-2013, for a total of 342 observations.	The number of new talents has a negative impact on championship ranking. The acquisition of new players through short-term loans has a negative impact on championship ranking. Team managers with a greater number of past accomplishments have greater capacity to exploit the existing human capital of the roster, leading to higher championship ranking. However, in teams with more accomplished managers, the acquisition of new players has a more negative effect on	In contrast to traditional focus on the relationship between stock of human capital and firm performance (i.e., strategic human resources perspective), the study points to the importance of "flows" of new talents as a source of success. Organizations with more proactive, risk-taking, innovative and aggressive orientations in managing human capital do not always outperform rivals (with comparable stock of human capital). The relationship is context-dependent, especially in relation to socialization tactics

					championship ranking, especially in the case of new players acquired through short-term loans.	used to integrate new talents and existing human resources. The “flow” of human capital – represented by the discovery and introduction of new talents in the organization, provides the basis for venturing into new market niches, enabling mid-table teams to immediately become a championship contender.
Digital technologies as external enablers of new venture creation in the IT hardware	Recker, von Briel, & Davidsson	IT Hardware Sector	How and when do digital technologies enable new venture creation processes?	Conceptual paper.	The article identifies two conceptual dimensions (specificity and relationality) that characterize digital technologies. The dimensions of technology are linked to six mechanisms (compression, conservation, expansion, substitution, combination, and generation) that enable venture creation processes. Taking the IT hardware sector as a particularly suitable context, the article presents stage-specific propositions about the influence of enabling digital technologies on sector-level start-up activity.	The article highlights the role of digital technologies as external enablers in entrepreneurial processes. The theory development emphasizes the process nature of venture creation, providing an alternative to the notion of “opportunity” in order to study the influence of external, actor-independent factors on start-up activity. Taken together, the article demonstrates that focusing on a narrow sector context can facilitate theorizing about entrepreneurship that is of value to the focal context and beyond it.

**Table 2. Future Research Questions on Sector-Based Entrepreneurial Capabilities in Relation to Resources and Stages of the Entrepreneurial Process**

<b>Resources</b>	<b>Stages of the entrepreneurship process</b>		
	<b>Prospecting opportunities</b>	<b>Developing opportunities</b>	<b>Exploiting opportunities</b>
Human capital	How mobile is entrepreneurial human capital within and between sectors? How can entrepreneurs socialize talent attracted from within and across their sector?	To what extent can and do entrepreneurs attract human capital across sectors in order to develop opportunities? What is the role of sector fluidity?	How does the nature of the human capital attracted across sectors for opportunity exploitation differ from that relating to earlier stages? To what extent and why are such differences influenced by sector characteristics?
Social capital	How and when can entrepreneurial actors develop the appropriate sectoral ecosystem to facilitate their entrepreneurial activities? Are there differences between different types of entrepreneurial actors, namely, entrepreneurs, entrepreneurial teams and enterprises? What are the interrelations among effects at different levels?	How do sectoral ecosystems evolve to facilitate the development of opportunities? What is the nature of social capital used and created in this process? How does this process unfold at different levels of analysis (entrepreneur, entrepreneurial team, enterprise)?	What new (temporary) organizational forms are most effective in enabling entrepreneurial actors to enter sectors with dominant incumbents? Are there differences between different types of entrepreneurial actors, namely, entrepreneurs, entrepreneurial teams and enterprises? How can we explore the multilevel complexity of such influences?
Financial capital	How do the most effective funding sources for enabling prospecting for opportunities differ across sectors? In which sectors are different types of crowdfunding more effective for opportunity prospecting?	To what extent do incubators and accelerators need to be sector rather than generalist to be effective in providing financial and other support? How do different types of financial resources and/or different sources of funding lead to differences in the opportunity development process across and within different sectors?	What sector-related constraints (e.g. relating to knowledge intensive sectors) are there on accessing growth finance to avoid a 'second valley of death'? Which types of sectors determine greater, lesser or no challenges for exploiting entrepreneurial opportunities?

**Table 3. Research Questions on Antecedents and Outcomes of Sector-Based Entrepreneurial Capabilities**

	Level of Analysis			
	Industry	Firm	Group	Individual
<b>Antecedents</b>	<p>What industry factors such as failure or declining performance in the industry, major industry changes, emergence of new industries, decline of existing industries, etc. are antecedents of sector-based entrepreneurial capabilities?</p> <p>How do trends in related industries influence the development of sector-based entrepreneurial capabilities in a focal industry?</p> <p>How do network relationships within and across industries influence the development of sector-based entrepreneurial capabilities?</p>	<p>What firm level factors, such as performance (positive or negative), ownership, management, age, size are antecedents of sector-based entrepreneurial capabilities?</p> <p>How do firm resources (e.g., human capital, social capital and financial capital) influence the development of sector-based entrepreneurial capabilities?</p> <p>How do strategic alliances and other arrangements between firms to exchange and share knowledge and resources influence the development of sector-based entrepreneurial capabilities?</p>	<p>What group structures (e.g., team composition, structural power distribution, tenure, friendship and family ties, trust, incentive systems, autonomy, distribution of knowledge, etc.) are antecedents of sector-based entrepreneurial capabilities?</p> <p>How do group-level psychological attributes (e.g., Conflict, affect, cohesiveness, social integration, emotions, etc.) influence the development of sector-based entrepreneurial capabilities?</p> <p>How do group processes (e.g., planning, decision making, communication patterns, knowledge sharing, vicarious learning, etc.) influence the development of sector-based entrepreneurial capabilities?</p>	<p>What individual factors, like education, experience, integration skills, etc. are antecedents of sector-based entrepreneurial capabilities?</p> <p>How do acquisition, retention and training of highly-skilled employees influence the development of sector-based entrepreneurial capabilities?</p> <p>How do star scientists and technology gate-keepers influence the development of sector-based entrepreneurial capabilities?</p>
<b>Outcomes</b>	<p>To what extent are there industry level outcomes of sector-based entrepreneurial capabilities in terms such as (lack of) renewal and disruption, cross-fertilization, spillovers, etc.?</p>	<p>To what extent are there firm level outcomes of sector-based entrepreneurial capabilities in terms such as entrepreneurial orientation, flexibility (or lack thereof), path dependencies, growth, performance, etc.?</p>	<p>To what extent are there group level outcomes of sector-based entrepreneurial capabilities in terms such as collective cognition, new venture decisions, group learning, team performance, etc.?</p> <p>In what circumstances do entrepreneurial teams with different</p>	<p>To what extent are there individual level outcomes of sector-based entrepreneurial capabilities in terms such as career development, entrenchment, start-up intentions, entrepreneurial success, etc.?</p> <p>In what circumstances do entrepreneurs with different</p>

	<p>In what circumstances do different types of industries lead to greater or lesser outcomes of sector-based entrepreneurial capabilities? How do sector-based entrepreneurial capabilities influence related industries?</p>	<p>In what circumstances do different types of firms generate greater or lesser outcomes of sector-based entrepreneurial capabilities? How do sector-based entrepreneurial capabilities influence the boundaries of a firm?</p>	<p>characteristics generate greater or lesser outcomes of sector-based entrepreneurial capabilities? How do sector-based entrepreneurial capabilities influence changes in group characteristics, psychological attributes and processes in a firm?</p>	<p>characteristics generate greater or lesser outcomes of sector-based entrepreneurial capabilities? How do sector-based entrepreneurial capabilities influence the ability to acquire and retain highly-skilled employees and star scientists?</p>
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