



# A cross-national study of knowledge, government intervention, and innovative nascent entrepreneurship

Hyungseok (David) Yoon<sup>a,\*</sup>, Namil Kim<sup>b</sup>, Bernard Buisson<sup>c</sup>, Fred Phillips<sup>d</sup>

<sup>a</sup> Leeds University Business School, University of Leeds, Leeds, United Kingdom

<sup>b</sup> College of Business, KAIST, Daejeon, South Korea

<sup>c</sup> IMT (Institute of Management Technology), Dubai, United Arab Emirates

<sup>d</sup> College of Management, Yuan Ze University, Taoyuan, Taiwan, and Stony Brook University, USA

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## ABSTRACT

Which kind of government intervention is needed to transform scientific and technological knowledge into innovative nascent entrepreneurship? We answer this question by drawing upon the knowledge spillover theory of entrepreneurship and institutional theory. We empirically examined the moderating effect of government intervention on the relation between knowledge and innovative nascent entrepreneurship with cross-country panel data on 47 countries from 2002 to 2012. Our results first show that a smaller government sector is required to transform technological knowledge into innovative nascent entrepreneurship. In addition, we found that a larger government sector and more regulation of credit, labor, and business increase the transformation of scientific knowledge into innovative nascent entrepreneurship. We contribute to understanding the role of government in transforming scientific and technological knowledge into innovative nascent entrepreneurship.

## 1. Introduction

National entrepreneurship research has made important contributions by identifying and examining the determinants of different types of entrepreneurship, including opportunity-driven, necessity-driven, formal, and informal entrepreneurship (Acs, Autio, & Szerb, 2014). Despite these valuable contributions, efforts to understand innovative nascent entrepreneurship have been limited. Innovative nascent entrepreneurship introduces a new product or service—specifically, a product or service that is based on knowledge and intangible assets (Audretsch, Bönte, & Mahagaonkar, 2012). Such innovative nascent entrepreneurship requires more attention, as its novel product or services may bring about creative destruction of the current socioeconomic order (Audretsch et al., 2012; Schumpeter, 1912; Soriano & Huarng, 2013).

Knowledge created endogenously results in knowledge spillovers, which allow innovative nascent entrepreneurs to identify and exploit innovative opportunities (Acs, Braunerhjelm, Audretsch, & Carlsson, 2009). Although a strong consensus exists on the relationship between knowledge spillovers and entrepreneurial activity (Acs et al., 2009), our understanding of the relationship between different types of knowledge and innovative nascent entrepreneurship is still lacking. In fact, scientific knowledge derived from basic academic research serves as an

“entry ticket” for innovative nascent entrepreneurship, with its supply-oriented nature (Kim & Lee, 2015; Mansfield, 1991; Mowery & Rosenberg, 1989). In addition, technological knowledge that is demand oriented also serves as a source of innovative nascent entrepreneurial activities (Etzkowitz & Brisolla, 1999; Viotti, 2002). In other words, whereas scientific knowledge is distant from commercialization, technological knowledge is close to commercialization. Although extensive innovation literature argues that the boundary between scientific knowledge and technological knowledge is not as clear as before, mingling scientific knowledge and technological knowledge may be overlooking their key features and characteristics that explain innovative nascent entrepreneurship (Calderini, Franzoni, & Vezzulli, 2007; Heller & Eisenberg, 1998). With this in mind, we examine the effects of scientific knowledge and technological knowledge on innovative nascent entrepreneurship.

Even though knowledge is critical for innovative nascent entrepreneurship, we lack understanding of the boundary conditions for knowledge to result in entrepreneurship. In particular, the available knowledge needs to interact with the institutional environment, so that the knowledge can be transformed into innovative nascent entrepreneurship (Faber & Heslen, 2004; Furman, Porter, & Stern, 2002; Guan & Chen, 2012). In fact, several scholars use institutional theory to examine how government intervention contributes to entrepreneurship

\* Corresponding author.

E-mail addresses: [h.yoon@leeds.ac.uk](mailto:h.yoon@leeds.ac.uk) (H.D. Yoon), [namil.kim@kaist.ac.kr](mailto:namil.kim@kaist.ac.kr) (N. Kim), [bernard@imt.ac.ae](mailto:bernard@imt.ac.ae) (B. Buisson), [fred.phillips@stonybrook.edu](mailto:fred.phillips@stonybrook.edu) (F. Phillips).

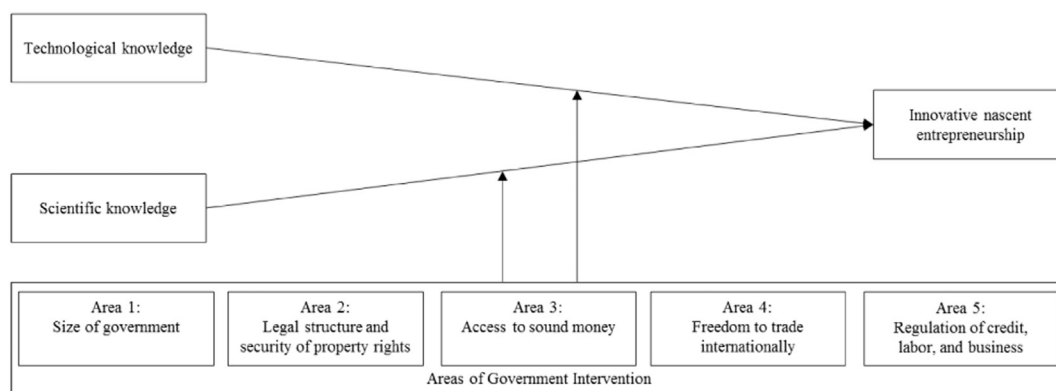


Fig. 1. Conceptual framework.

(Bradley & Klein, 2016; Cullen, Johnson, & Parboteeah, 2014; Dau & Cuervo-Cazurra, 2014; Kuckertz, Berger, & Mpeqa, 2016; Nyström, 2008). Despite their important contributions, the increasing presence of government in stimulating entrepreneurial activity has given rise to a growing need to reexamine the role of government intervention by considering its characteristics. Accordingly, we draw upon institutional theory (North, 1990) to explore which kind of government intervention is needed to transform scientific and technological knowledge into innovative nascent entrepreneurship.

This study contributes to the literature of national entrepreneurship by empirically investigating the determinants of innovative nascent entrepreneurship. We used the Global Entrepreneurship Monitor (GEM) data to measure innovative nascent entrepreneurship at the country level, which is the percentage of the working-age population that are either nascent entrepreneurs or owner-managers of a new business whose product or service is new to at least some customers. This approach helps us to identify how to foster the introduction of novel product or services, which is the core agenda of many national governments, as it is closely related to their national competitiveness (Furman et al., 2002; Yoon, Yun, Lee, & Phillips, 2015). In addition, we contribute to the knowledge-spillover theory of entrepreneurship and institutional theory by examining the moderating effects of “areas of government intervention” on the relation between different types of knowledge (e.g., scientific knowledge, technological knowledge) and innovative nascent entrepreneurship. In fact, this study uses the Economic Freedom Index<sup>1</sup> from the Fraser Institute as a moderator, which measures reductions in government intervention (Angulo-Guerrero, Pérez-Moreno, & Abad-Guerrero, 2017; Kuckertz et al., 2016; Nyström, 2008). We showed that different degrees and kinds of government activity are required for each entrepreneurial source (scientific knowledge and technological knowledge) to result in innovative nascent entrepreneurship.

The next section reviews the relevant literature and develops our hypotheses, followed by an explanation of the data and methodology used in the study. We then present the results of the empirical analyses. Lastly, we discuss the implications of the findings and directions for future research.

## 2. Knowledge and innovative nascent entrepreneurship

As innovative nascent entrepreneurship is based on knowledge (Audretsch et al., 2012), we build and extend upon the knowledge spillover theory of entrepreneurship, which explains that an environment with more knowledge will create more entrepreneurial opportunities (Acs et al., 2009; Acs, Audretsch, & Lehmann, 2013). In fact, Acs et al. (2009) finds a strong empirical relationship between knowledge

spillovers that come from the stock of technological knowledge, measured by the number of patents and entrepreneurial activity. However, according to the literature on the knowledge innovation process, both upstream knowledge (scientific knowledge—measured by number of academic articles) and downstream knowledge (technological knowledge—measured by number of patents) are important in fostering entrepreneurship (Faber & Heslen, 2004; Furman et al., 2002; Guan & Chen, 2012). Likewise, we still lack understanding of the role of different types of knowledge in entrepreneurship. In addition, previous studies do not take into account wide differences in rates among different types of entrepreneurship (e.g., necessity-driven, formal, and informal entrepreneurship). For instance, necessity-driven entrepreneurs, who lack other options for work, are less likely to rely on scientific knowledge or technological knowledge when starting their business than innovative nascent entrepreneurs, who aim to introduce novel and innovative products or services. To address these issues, we develop hypotheses on the relationship between different types of knowledge and innovative nascent entrepreneurship (see Fig. 1).

Innovative nascent entrepreneurship is defined as entrepreneurial activities that introduce knowledge-based new products or services (Audretsch et al., 2012). Two types of knowledge are important sources of innovative nascent entrepreneurship. First, on the upstream spectrum, there is scientific knowledge, which is more focused on exploring and establishing the truth, without having a normative component. Mansfield (1991), and Mowery and Rosenberg (1989) argue that the Industrial Revolution and innovation would not have occurred, or would have occurred much later, without the contribution of scientific knowledge, which offers technical breakthroughs because of its supply-oriented nature. In fact, scientific knowledge aims to achieve technical superiority and create new industries in the long run (Calderini et al., 2007; Etzkowitz & Brisolla, 1999). For this reason, scientific knowledge primarily consists of basic research focused on exploring and discovering phenomena that frequently appears in academic journals. This scientific knowledge, with its orientation toward upstream knowledge production, is perceived as less commercializable than technological knowledge (Cohen & Levinthal, 1989; Gambardella, 1992).

Compared with scientific knowledge, technological knowledge is on the downstream spectrum, which is closer to the commercialization process and the demand side because it involves applied research or development projects, which are usually patented (Carlsson, Acs, Audretsch, & Braunerhjelm, 2009; Etzkowitz & Brisolla, 1999; Lee & Yoon, 2015). In fact, the experimental problem-solving approach emphasized in the production of technological knowledge facilitates the process of translating discoveries into innovative entrepreneurial activity (Fleming, 2001). An experimental and hands-on problem-solving approach generates the benefits of contextual diversity, which enhance the applicability of technological knowledge (Amabile, 1988). In addition, technological knowledge is produced by creating and reusing combinations of diverse technological components, which lead to

<sup>1</sup> After careful examination, the authors find that these data are valid and useable, despite the ideological bias of their source.

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