



## Configuring innovative societies: The crossvergent role of cultural and institutional varieties



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### ABSTRACT

The study aims to explore why some societies are more innovative than others in high-technology sectors. Following a crossvergence perspective, we generate nine causal conditions by accommodating both cultural and institutional varieties: uncertainty avoidance, masculinity, individualism and power distance as culture indicators, and union density, skill development, market capitalization to credit, prevalence of cluster and state dominance as institutional indicators. Applying the configurational approach, we conducted fuzzy-set qualitative comparative analysis (fsQCA) on Organization for Economic Co-operation and Development (OECD) member countries. We confirm the equal importance of both cultural and institutional mechanisms as contributors to national innovativeness, and identify equifinal configurations of cultural and institutional varieties as leading to a high-tech society. The implication is that a society can adjust or develop various cultural and/or institutional conditions to maintain or create leadership in innovation.

### 1. Introduction

Why are some societies more innovative than others in high-technology sectors? Two decades ago, a culturalist, Shane (1992), made a landmark attempt to answer this meaningful research question. Embracing Hofstede's (1980) culture dimension theory, Shane, (1992, 1993, 1995) concluded that some societies might have a cultural comparative advantage in inventiveness, and the same cultural values (e.g., uncertainty acceptance, individualism and the lack of power distance) that operate on the national level also operate on the firm level, leading those companies and countries with innovative cultures to invent more than do others. Shane's empirical studies contribute in two aspects: establishing the relationship between national culture and innovation, and exploring the configurational nature of culture (cf., Efrat, 2014; Hofstede, 2006, 2011; Hofstede et al., 1990).

In contrast to culturalists, institutionalists argue for the importance of regulatory, political, and economic structures in contributing to building innovative societies. Given that a nation or state remains the primary unit in governing economic activities (Allen, 2012), scholars have employed a number of concepts and frameworks to describe the feature and form of an innovative society, such as “national innovation systems” (NIS) (Freeman, 1995; Lundvall, 2007; Rothberg, 1995; Samara et al., 2012), “national business systems” (Hotho, 2014;

Whitley, 1992, 1999, 2007), “social systems of innovation and production” (Amable, 2003), or “varieties of capitalism” (Clausen, 2014; Hall and Soskice, 2001; Jackson and Deeg, 2008). In these frameworks, institutional characteristics are deemed as either antecedents or determinants individually, or as causal conditions together that lead to configurational solutions to enhancing innovation.

Nevertheless, the literatures on the cultural perspective and institutional perspective of national innovation performance have developed rather independently, and neither of the approaches has been supported by consistent empirical evidence. One reason might be that scholars tend to conflate culture and institutions in various ways. Culturalists claim that cultural difference is the root of institutional variations (e.g., Javidan et al., 2006). Institutionists argue that culture is under the conceptual umbrella of “institution”. Various streams of institutional theories commonly treat culture – more specifically shared values and non-codified standards – as an important reflection of a country's informal institutions (Holmes et al., 2013; North, 1990; Peng et al., 2008). However, scholars subscribing to the crossvergence view (Ralston et al., 1997) suggest that in fact culture and institution co-evolve and affect each other in a path-dependent way (cf., Ralston, 2008; Witt, 2008) so as to create a unique set of managerial values in a country (Ralston et al., 1993). In light of these views, Taylor and Wilson (2012) called for research on the joint effect of culture and institutions

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on national innovation rates, because the effectiveness of institutions and cultural dimensions are conditional on each other.

Given that the logic linkages between cultural and institutional mechanisms and national innovation co-exist and are co-evolutionary, we follow a configurational approach for theory building, which has been increasingly adopted in business research (Crilly et al., 2012; Fiss, 2007, 2011; Misangyi and Acharya, 2014; Misangyi et al., 2016). In contrast to the variance-based approach, which aims to identify the deterministic condition under which the individual causal effect on the desired outcome is maximized, the configurational approach allows for equifinality and explores multiple causal pathways (or patterns) that lead to the same level of desired outcome (Fiss, 2007; Misangyi et al., 2016; Ragin, 2008). In our context, this approach enables us to capture various configurations of cultural and institutional varieties that work together to enhance national innovation outcome. Existing research has demonstrated the efficacy of the configurational approach for explaining complex social and organizational phenomena (e.g., Fiss, 2011; Misangyi and Acharya, 2014), as it acknowledges the interdependent nature of analytical units, where fit and competitive advantages frequently rest on the complementarities between multiple characteristics (e.g., Fiss, 2007, 2011). Porter (1990) argued that economic activities are embedded in social activities. Since national innovation is an important aspect of economic activities, the core objective and main contribution of this study is to address how “social glue” binds both cultural and institutional elements together to build an innovative society – “one of the major research questions in the social sciences today” (Witt and Redding, 2009: 859).

The remainder of this paper is organized as follows. Section 2 introduces the research background, and, briefly, both culture- and institution-based views on national innovation. Section 3 develops three major research propositions to be addressed by our data. Sections 4 and 5 detail research design and results, respectively. Section 6 brings the paper to a close with some concluding implication points and an overview of study limitations and avenues for future research.

## 2. Literature review

### 2.1. Hofstede's culture dimensions

Culture is “the collective programming of the mind which distinguishes the members of one human group from another” (Hofstede, 1980: 21). In his watershed study, Hofstede (1980) examined four major culture dimensions, namely, *uncertainty avoidance*, *masculinity*, *individualism*, and *power distance*, which can be used to detail similarities and differences of systems of societal norms and values shared by major groups of the population in 40 societies. Despite the emergence of other complementary works on culture (Trompenaars and Hampden-Turner, 1997), Hofstede's framework of four culture dimensions has shown high validity and reliability. Some major replications (e.g., Merritt, 2000; Shane, 1995), conducted decades after Hofstede's (1980) work, support the original findings and suggest that the culture dimensions are still relevant today. Most countries' cultures are enduring over time (cf. Inglehart and Baker, 2000), and the persistence of distinct cultural dimensions are found to change together, so that their relative positions remain stable (Hofstede et al., 2010).

Embracing Hofstede's culture dimension framework, Shane, (1992, 1993, 1995) has conducted a number of empirical studies to provide evidence as to whether each of Hofstede's culture dimensions can have a significant impact on national innovation (see details in Appendix A – Part A). Inspired by Shane, (1992, 1993, 1995), other culturists, such as Rinne and Steel, 2012 and Taylor and Wilson, 2012, have further pursued more empirical evidence in a similar vein.

Despite the efforts of previous scholars, the literature is yet to reach a consensus on which of the cultural dimensions promote innovation and whether the effects of these dimensions are consistent and robust

across countries and time periods. The link between certain cultural dimensions and innovation is not well-established at the national level and is contradictory to the theoretical predictions. As culturalists primarily focus on individual values and the willingness to innovate, one might argue that, for such willingness and motivation to transform to action, they need to be combined with certain ways of organizing economic activities that create an environment conducive to undertaking innovation.

### 2.2. Comparative institutional perspective

The comparative institutional perspective addresses differences in socio-economic organization between countries (Hall and Soskice, 2001; Whitley, 1992, 1999; Jackson and Deeg, 2008). An underlying assumption is that countries may differ noticeably in how economic activity is organized and controlled, regardless of the level of institutional development (Whitley, 1999; Hall and Soskice, 2001). Comparative institutional scholars have shown that well-developed economies that have similar institutional development levels differ considerably in the dominant type of firms, their organizational capabilities and interests, and their relations with other economic actors (Whitley, 1999, 2007). National institutional frameworks and policies influence the level of business-funded research and development (R & D) and the technological competitiveness of firms in a country (Carlsson, 2006; Herrera and Nieto, 2008; Senker, 1996), leading to different patterns of innovative activities (Hall and Soskice, 2001). According to Hall and Soskice's (2001) framework, liberal market economies (LME) countries (e.g., the US) specialize in radical innovation, while coordinated market economies (CME) countries (e.g., Germany) focus more on incremental innovation.

A central feature of comparative institutional perspective is that institutions in different societal domains, such as education systems, financial systems and the nature of market relations, are considered to be reciprocally constituted and path-dependent (Hotho and Pedersen, 2012; Whitley, 1992, 1999; Hall and Soskice, 2001). Thus, in well-developed countries, the constituent dimensions of institutions develop in a mutually reinforcing and interdependent way (Hotho and Pedersen, 2012; Whitley, 1992, 1999; Hall and Soskice, 2001). According to Jackson and Deeg (2008: 557), institutions of well-developed countries generally form relatively stable and complementary configurations that help reproduce a distinctive economic logic, or particular “strategies, routine approaches to problems and shared decision rules that produce predictable patterns of behavior by actors within the system”.

The present study focuses on five specific institutional dimensions in accordance with the comparative institutional framework developed by Whitley (1998, 1999), of which four dimensions are highlighted: the skill-development system, the characteristics of the financial system, the role assumed by the state, and the norms and values that resonate in work relations. Since the remaining dimension of “norms and values” largely refers to cultural indicators, we replace it with Hofstede's four cultural dimensions discussed above. Five specific indicators of institutional dimensions, namely, *union density*, *skill development*, *market capitalization to credit*, *prevalence of clusters* and *state dominance*, are detailed in Appendix A – Part B.

Researchers have found evidence of the specificity of national business systems and have concluded that various institutional dimensions collectively produce distinct ways of economic coordination, in accordance with the complementary patterns posited by the comparative institutional perspective (Hotho, 2014; Schneider et al., 2010). Nevertheless, the results also point to a neglected fact that those countries sharing the combination of institutional conditions for achieving strong innovation performance apparently belong with the same cultural cluster (Hotho, 2014; Ronen and Shenkar, 2013). Whilst institutionalists have predominantly focused on the comparison of one business system with another (Whitley, 2000), there are cases where

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