



# Measurement and structural invariance of entrepreneurial investment climate: A cross-country scale development<sup>☆</sup>



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## ABSTRACT

Testing invariance is important in cross-cultural studies because a lack of invariance may bias empirical results and lead to improper theoretical inferences. This study introduces and validates a scale for measuring entrepreneurial investment climate, consisting of four factors: Societal stability, Labor and Regulations, Quality of Infrastructure, and Ease of Finance. The instrument was developed using World Bank Group data from 51,169 firms and 72 institutional profiles to determine investment climate. Confirmatory factor analyses reveal the validity of the scale and its robustness across country types and time. The study's implications for practice and future research are discussed.

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## 1. Introduction

Most business scholars and politicians readily agree that entrepreneurship is an important source of growth (Busenitz, Gomez, & Spencer, 2000; Reynolds, 1997; Schumpeter, 1934). Amid free-market reforms, greater emphasis on entrepreneurship has driven economic growth in many formerly planned economies (Chow and Fung, 1996). An interesting question, however, is why entrepreneurship arises and drives growth in free markets but not others. If entrepreneurship is the exploitation of opportunities for currently non-existent economic artifacts wherein some future demand can be fulfilled by some future supply (Shane and Venkataraman, 2000; Venkataraman and Sarasvathy, 2000), then something must differ within institutional contexts to motivate

some entrepreneurs to pursue those opportunities and invest the resources they require (Gnyawali and Fogel, 1994).

In this paper, we seek to contribute to the literature by developing a scale to measure entrepreneurial investment climates in cross-cultural applications. We use an enactment perspective of entrepreneurial opportunities by examining subjective perceptions of the investment climate. This approach is beneficial, as it explains how entrepreneurial climates (i.e., the demand side of entrepreneurship) are perceived by individuals (i.e., the supply side of entrepreneurship). Methodologically, we address the measurement limitations of the extant cross-cultural research. Our contribution responds to the demand that researchers pay attention to the lack of equivalence among the measures used across countries (Mullen, 1995; Singh, 1995; Steenkamp and Baumgartner, 1998). This paper thoroughly addresses the issue of measurement and structural equivalence (invariance) in the development of a new scale to assess entrepreneurial investment climates.

The issue of invariance is specifically concerned with the fundamental question of the “comparability” of measures across contexts. Unless researchers can provide evidence of equivalent measurement, differences among findings from different contexts may be a function of the characteristics of different scales, rendering the results not directly comparable (Doll, Deng, Raghunathan, Torkzadeh, & Xia, 2004). Conclusions drawn from

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a scale that does not show equivalence can mislead managers and lead to incorrect statistical inferences. To demonstrate the importance of measurement equivalence, the analogy of physical measurement can be used: it is impossible to directly compare weight in UK pounds (20 oz.) to that in US pounds (16 oz.) because the two pounds are not measured on the same scale.

Despite the numerous calls for cross-national validation of the measures used in international research, little has been done to answer these requests (Murray, Gao, Kotabe, & Zhou, 2007; Netemeyer, Durvasula, & Lichtenstein, 1991). Without assessing measurement invariance, any implications, explanations, or conclusions based on the scale are likely to be ambiguous or erroneous (Steenkamp and Baumgartner, 1998). For example, even if researchers find cross-national differences in some measures, they cannot be certain, without assessing measurement invariance, whether the results are due to true differences among countries or to simple systematic biases (i.e., people in different countries may respond to certain items in a systematically different way). Finally, ambiguity concerning invariance may be improperly used to explain lacking or contradictory results in international research (Mullen, 1995).

To our knowledge, this paper is the first to develop a scale for measuring entrepreneurial investment climates using a complete assessment of invariance. In addition to creating a scale to identify how the institutional profile of a country affects its level of entrepreneurship, we make several methodological contributions to the literature. First, we used a large number of countries to overcome the issues related to a limited sample size (Levine and Renelt, 1992). Second, we tested the scale in different contexts to empirically validate it. Because an investment climate construct developed in the context of one country (e.g., the United States) may lack validity in other contexts (cf. Boyacigiller and Adler, 1991), we have provided empirical evidence that our scale is valid across contexts. Third, we have provided evidence of invariance across different time periods. Cross-national research requires a considerable amount of time and money (i.e., to select the target sample, create the instrument, train the data acquirer, and manage survey administration and data collection); thus, data are often collected across different time periods. However, macroeconomic effects may change perceptions over time, making it important to test the stability of the scale; it is not sufficient to merge data from different time points, as this may lead to invalid statistical conclusions.

The remainder of this paper is organized as follows. We begin by discussing the theoretical foundations of the entrepreneurial investment climate from an individual actor's subjective interpretation. We then define our level of analysis and provide a brief illustration of structural and measurement invariance. Using data developed through the World Bank Group, including information from 51,169 firms in 72 countries, we develop constructs for investment climate. We demonstrate construct equivalence by assessing whether the model holds across different time periods and country types (i.e., well-developed vs. less-developed). We also test for predictive validity. Finally, we examine country profiles for investment climate and discuss the results' managerial implications.

## 2. Entrepreneurial investment climate and the subjective view

The creation of a new organization is not a defining condition of entrepreneurship (Shane and Venkataraman, 2000). The study of entrepreneurship is the "examination of how, by whom, and with what effects, opportunities to create future goods and services are discovered, evaluated, and exploited" (Shane & Venkataraman, 2000; p. 218); this covers not only startup ventures but also corporate entrepreneurship for large and established firms. The field of entrepreneurship has seen significant debate about the

ontology of entrepreneurial opportunities, particularly in terms of whether opportunities are purely objective or are socially constructed (McMullen, Plummer, & Acs, 2007)—in other words, whether entrepreneurial opportunities are discovered or created. This question is important because a purely objective view of opportunities tends to diminish the importance of the individual entrepreneur. Conversely, if opportunity is viewed as strictly created, the importance of context tends to diminish, and total emphasis is placed on entrepreneurial agency. Both views tend to provide an incomplete picture of entrepreneurial opportunities and justify very different responses from a public policy perspective. For example, the former view (that opportunities are discovered) leads one to ask what can be done in the environment to create more opportunities. The latter view (that opportunities are created) leads one to ask what can be done to create more entrepreneurs.

A few points may emphasize the importance of both views. First, entrepreneurs initially perceive and are then willing to act based on their perceptions (McMullen and Shepherd, 2006). Moreover, entrepreneurs are cognizant of the resources they possess and of those that are necessary to pursue an opportunity (Haynie, Shepherd, & McMullen, 2009). As such, entrepreneurial agency is critical for entrepreneurial action. However, a significant part of this willingness to act is based on an understanding of the opportunity's context. Specifically, this willingness to pursue an opportunity includes an implicit understanding of the likelihood that the entrepreneur will appropriate the value created. Coff (1999) notes the following: "Performance is an outcome of a two-stage game. Rent generation is the first stage, and rent appropriation is the second stage". Entrepreneurs who cannot appropriate value will be unwilling to act if the context does not allow them to profit from their entrepreneurial efforts. Occasionally, a particular context is friendlier for entrepreneurial ventures (Leiponen and Byma, 2009); therefore, an opportunity may arise in one context (or country) from which it would be impossible to profit in another context owing to institutional differences.

The benefit of a subjective interpretation of an entrepreneurial investment climate is that it can provide a way to bridge the missing micro–macro link between entrepreneurial perceptions and the institutional context. Studies have found that the entrepreneurial investment climate consists of a supply (micro) side and demand (macro) side (Thornton, 1999). Thornton (1999) has examined the contextual analysis of entrepreneurship in terms of firms and markets and has explained the supply and demand sides of entrepreneurs:

The supply-side school examines entrepreneurship by focusing on the individual characteristics of entrepreneurs, specifying potential mechanisms for agency and change, whereas the demand-side emphasizes the push and pull of context. Clearly, the founding of a firm may be dependent on the individual entrepreneur, as supply-side analysts suggest, but it is also clear that an individual cannot mobilize without an infrastructure (DiPrete and Forristal, 1994; Thornton, 1999).

Much of this research has used a number of proxy variables derived through published government data to empirically explicate the different aspects of investment climate from a macro perspective. This approach has the advantage of providing comparable data over several different countries at a macro level. However, its disadvantage is that it neglects the perceptions of those engaged in economic activity within each specific country and can lead to parochialism (Boyacigiller and Adler, 1991; Dollar, Hallward-Driemeier, & Mengistae, 2005). In other words, this perspective omits entrepreneurial perceptions.

Accordingly, understanding the investment climate within a country requires ascertaining the perceptions of the nation's

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