



Institutions, resources and innovation in East Africa: A firm level approach



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ABSTRACT

This study examines how firm-level resources interact with regional institutional quality to explain innovation in East Africa. We hypothesize that the institutional environment within which the firm operates moderates the effect of firm-level resources on innovative output. We examine the moderating role of institutions with regards to the transformation of firm-level resources including internal research and development, human capital and managerial experience into innovative output using firm-level data from the World Bank Enterprise Survey and the Innovation Follow-up Survey for three countries in East Africa including Kenya, Tanzania and Uganda. We test our hypotheses using a clustered robust standard errors logistic model. We find that the effects of firm-level resources vary depending on the institutional environment and that regional institutional quality positively moderates the effects of the firm-level resources.

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1. Introduction

Innovation has been considered a key driver for economic growth, enhancing competitive advantage and stimulating the productivity of firms (Schumpeter, 1934) in developed and developing countries alike (Chudnovsky et al., 2006; Crespi and Zuniga, 2011). Our study focuses on product innovation, which is defined as the introduction of a new good or service or the significant improvement of an existing product with respect to its characteristics and intended use (Oslo Manual, 2005; Ayyagari et al., 2012; Chadee and Roxas, 2013). Although firms in developing countries operate below the technology frontier with lower levels of managerial and production skills (Goedhuys, 2007; Goedhuys and Sleuwaegen, 2010), individual firms play a key role in developing innovations. While progress has been made in developing countries to improve the general business climate, in terms of property rights, access to finance and enhanced human capital (Alvarez and Barney, 2014), firms in developing countries continue to face a specific set of challenges that influence their innovation activity and the results

thereof (Bradley et al., 2012). These largely pertain to two dominant factors.

The first factor is related to specific firm-level resources and capabilities. As indicated in previous research, firm resources are directly related to “the search for, absorption of and generation of new technology” (Srholec, 2011: 1545). Firm-level resources allow firms to distinguish themselves from their competitors and develop a competitive advantage. According to the resource-based view (RBV) of the firm, this is only possible, however, when resources are valuable, rare, inimitable and non-substitutable (Barney, 1991). The main problem for competitors in imitating a successful resource base is the time it takes to create and develop such resources and the causal ambiguity surrounding these resources, which makes it difficult to identify exactly what resources lead to competitive advantage (Peteraf, 1993). Also in developing countries, firms require resources, competencies and skills, which can be built up through RandD or training, to become innovative and competitive (Goedhuys et al., 2014). However, possessing such resources does not automatically lead to the creation of value (Sirmon et al., 2007; Ndofor et al., 2015). Firms must accumulate, combine and exploit resources in order to extract value from them (Grant, 1991). However, Barney (2001) argued that the value of these firm resources must be understood in the broader context in which the firm is embedded. In other words, even if a firm possesses and uses valuable, rare, inimitable and non-substitutable resources more ‘astutely’ than competitors (Eisenhardt and Martin, 2000), the extent to which it can actually extract value from them is likely to

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also depend on the environment of the firm (Sirmon et al., 2007). Hence, merely possessing and using firm resources is not enough to extract value from them and, in our case, develop new innovative products. This brings us to the second challenge firms in developing countries face.

The second challenge is the role of institutions (Acemoglu and Robinson, 2008). Properly designed institutions can stimulate productive behaviours (Dollar and Kraay, 2003), yet weak institutions often lead to unproductive behaviours (Greif, 2006). Institutions can reduce transaction costs and uncertainty and ease coordination between economic agents (Alonso and Garcimartín, 2013). Institutional quality encompasses (1) the process by which a government is selected, monitored and replaced (2) a government's capacity to effectively formulate and implement sound policies and (3) the economic and social interactions between citizens and the state are governed (Kaufmann et al., 2011). As such, the institutional environment can influence the propensity of firms to innovate in a variety of ways (North, 1990). For instance, weak enforcement of regulations and the absence of intellectual property rights may hinder innovation. Compared to countries in Latin America, Southeast Asia and Middle East and North Africa, countries in sub-Saharan Africa perform poorly in upholding the rule of law, regulatory quality, control of corruption and government effectiveness (Alence, 2004).

In our study, we focus on the *regional* institutional environment within which the firm is embedded. Notwithstanding the importance of country-level institutions, we argue that the quality of institutions will also significantly differ across regions in a country. Regions can be characterized by a specific set of formal (laws, rules and regulations) and informal institutions (norms and values) (cf. North, 1990) that function as durable structures specific to the territory (Boschma and Frenken, 2009). Regions in developing countries are often culturally, politically and economically heterogeneous. In addition, within-country variation in the implementation of formal institutions is also likely to exist in large and complex countries (Shi et al., 2012). In line with Laursen et al. (2012) we contend that the regional environment affects the ability of firms to introduce new innovations. Yet, perhaps more importantly, we argue that poor regional institutional quality within a focal country makes it more difficult to extract value from a firm's resources that are needed to innovate (cf. Zhu et al., 2015). Poor institutional quality, or the presence of weak institutions, has been reported to undermine the functioning of factor markets, increase transaction costs and magnify information asymmetries (Meyer et al., 2009), which has a negative effect on the possibilities to extract value from current resources. Regional institutional quality refers to a situation in which there is low corruption, a strong rule of law and a high degree of regulatory quality within a region. As such, we infer that the extent to which firms can successfully use their resources to innovate is likely to differ between regions due to differences in regional institutional quality. Thus, it is critical that we understand how the regional institutional environment of a firm influences the transformation of firm-level resources into innovative output for firms in developing countries (Martin-de Castro et al., 2013).

Moreover, it has been argued that the linkage between macro-institutional frameworks of national and regional innovation systems is of paramount importance in shaping firms' innovation processes (Cooke et al., 1998; Asheim and Coenen, 2006). Regional innovation systems relate to the creation of policy frameworks that aim at the systematic promotion of learning processes for innovation and competitive advantage in regional economies (Cooke et al., 1998). Regions are important mediums of governance and economic coordination at the meso-level (Lundvall and Borrás, 1997). More importantly, exploring the role of governance structures including regional regulatory and institutional frameworks is vital for deepening the understanding of the innovation pro-

cess (Ekman et al., 2011). In addition, geographical clustering of firms gives rise to non-pecuniary knowledge spillovers that creates a highly innovative environment influencing territorial growth (Garavaglia and Breschi, 2009). Hence, entrepreneurial activity in a geographical area provides a means by which firms exploit positive external spillovers for innovation in a region (Cooke et al., 1998). All of these insights underline the salience of studying innovation in its regional institutional context.

While there are numerous studies examining innovation, most investigate the determinants of innovation in the context of advanced economies (De Jong and Vermeulen, 2006; McAdam et al., 2014). The findings of these studies have limited implications for innovation in developing economies due to the different nature of innovation in developing countries (e.g. Bradley et al., 2012) and disparities in institutional quality at the regional-level. There are virtually no empirical studies examining how regional institutional quality moderates the relationship between firm-level resources and innovative output in East Africa. This may be attributed to the fact that data on innovation in developing countries has been unavailable only until recently or was not collected in a systematic manner (Ayyagari et al., 2012; Goedhuys and Veugelers, 2012). This warrants an investigation into how regional institutional quality influences the ability of firms to extract value from their resources. In our case, value extraction is represented by the innovative output of firms. The rationale behind our choice of the three countries in East Africa is their geographical and institutional proximity, which have been suggested as vital for innovation (Boschma, 2005). Additionally, these three countries embody common characteristics of countries in the East African region particularly with regards to striking disparities in regional institutional quality encompassing differences in the levels of corruption, regulatory quality, government effectiveness and rule of law (Alence, 2004). Our study makes two contributions. First, it sheds light on the micro level relation between firm-level resources and innovation in developing countries, an area of study that has only received scarce attention for a long time due to the absence of firm level data (e.g. Goedhuys et al., 2014). Second, this study deepens the understanding of how the regional institutional environment interacts with firm-level resources to explain the innovative output of firms in developing countries. We argue that regional heterogeneity within countries gives rise to variation in regional institutional quality (cf. Picard et al., 2006). Taking into account the different cultures and governance systems, we expect that the variation in regional institutional quality is likely to influence the relation between firm resources and innovation. As such, our study empirically investigates how the regional institutional environment influences the extent to which firms are able to extract value from their resources for innovative output.

2. Theoretical background

Firm-level resources, defined as the tangible and intangible assets a firm uses (Barney and Arian, 2001), form the basis of differential performance between firms in terms of value creation (Ireland et al., 2003). From the perspective of the RBV, firm-specific resources need to be effectively managed to create and extract value from them (Mahoney, 1995; Ireland et al., 2003; Sirmon et al., 2007). Hence, the managerial ability to manage the resource portfolio into bundles of unique capabilities that can be leveraged within a certain competitive environment is critical for extracting value from firm-level resources (Ireland et al., 2003: 977). Firm-level resources that are known to drive innovation include internal R&D, training, information search, communication facilities, human capital and a variety of input factors (e.g. Tybout, 2000; Goedhuys,

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