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journal homepage: [www.elsevier.com/locate/econmod](http://www.elsevier.com/locate/econmod)Entrepreneurship, institutions and skills in low-income countries<sup>☆</sup>Zuzana Brixiova<sup>a,b,\*</sup>, Balázs Égert<sup>c,d</sup><sup>a</sup> University of Cape Town, South Africa<sup>b</sup> Institute of Labor Economics (IZA), Germany<sup>c</sup> OECD Economics Department, University of Paris X-Nanterre, France<sup>d</sup> CESifo, Germany

## ARTICLE INFO

## JEL classification:

L26  
J24  
J48  
O17

## Keywords:

Model of start-ups and strategic complements  
Institutions  
Education  
Low-income countries  
Threshold regression

## ABSTRACT

This paper develops a model of costly firm creation in an economy with weak institutions, costly business environment as well as skill gaps where one of the equilibrium outcomes is a low-productivity trap. The paper tests the implications of the model using a cross-sectional dataset including about 100 countries. Both theoretical and empirical results suggest that to move the economy into a productive equilibrium, complementarity matters: reforms to improve the business environment tend to be more effective in creating productive firms when accompanied by narrowing skill gaps. Similarly, more conducive business regulations amplify the positive impact on firm creation of better education and reduced skill mismatches. To escape a low-productivity trap, policymakers should thus create a pro-business framework and a well-functioning education system.

## 1. Introduction

For a number of years, policymakers in low income countries have included productive entrepreneurship as a key part of their strategies for inclusive growth. In contrast to necessity (or subsistence) entrepreneurship aiming at survival, opportunity entrepreneurship can help people escape poverty and contribute to development (Bruton et al., 2013).<sup>1</sup> In many LICs, however, opportunity entrepreneurship and its contribution to growth and job creation have been limited. One of the reasons is the overall weak business environment and large skill gaps, especially when compared to more advanced economies.

The attention on entrepreneurship as a driver of growth and productivity has heightened with the low global growth and the slowdown in world trade. To guide efforts aimed at stimulating entrepreneurship, the Global Entrepreneurship Monitor (GEM) group has developed the ‘Entrepreneurship Enabling Conditions’ framework, which clusters factors conducive to entrepreneurship into: (i) basic requirements (e.g. institutions, infrastructure, macroeconomic stability

and human capital); (ii) efficiency enhancers (e.g. better education, goods and labor market efficiency, financial sector development, technological readiness and market size) and (iii) innovation and entrepreneurship policies (Herrington and Kelley, 2013).

Relatedly, this paper examines the role of institutions, the business environment and skills for firm creation and performance in low income countries.<sup>2</sup> It presents a model of start-ups in an economy with a rigid business environment, skill gaps, and matching frictions. The model builds on Brixiová (2013) and Brixiová and Égert (2012). Similarly to Bah and Fang (2015) it emphasizes the business environment. The paper is related to the literature on education and entrepreneurship, recently applied to Malawi by Kolstad and Wiig (2015). It builds on Redding (1996) and Snower (1996) who model strategic complements in production and related externalities. It shows how an economy can end up in a low-productivity equilibrium, where the overall less productive informal sector provides most of employment. The results of the model are tested on aggregate data for entrepreneurship, governance, business environment and education

<sup>☆</sup> The authors are especially thankful to Robert Fairlie for helpful comments. They also thank Emerta Asaminew and Andreas Wörgötter for discussions and Zorobabel Bicaba for help with cross-country regression. An earlier version was presented at the 2015 IZA – Kaufmann Foundation Workshop on Entrepreneurship (Washington DC). The views expressed are those of the authors and do not necessarily reflect those of their institutions of affiliation.

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<sup>1</sup> Papers that view entrepreneurship as part of the solution to poverty include Anderson et al. (2010), Brixiová and Asaminew (2010), McKague and Oliver (2012), Bandiera et al. (2013), Bruton et al. (2013) and Tobias et al. (2013).

<sup>2</sup> Focus is on productive entrepreneurship, as its shortage constrains LICs’ income catch up with advanced economies. The concept of the business environment utilized in this paper includes both basic institutions and infrastructure as well as greater product and labor market flexibility and access to finance.

<http://dx.doi.org/10.1016/j.econmod.2017.02.020>

Received 3 June 2016; Received in revised form 7 February 2017; Accepted 18 February 2017

0264-9993/ © 2017 Published by Elsevier B.V.

for a large set of countries. Both theoretical and empirical results show that to move the economy into a productive equilibrium, complementarities matters: reforms to the business environment are more effective in creating productive firms when accompanied by narrowing skill gaps and vice versa.

The rest of the paper is organized as follows. Section 2 gives a literature overview and establishes the paper's contribution relative the literature. Section 3 presents stylized facts on entrepreneurship, institutions, business regulations and education. Section 4 presents the model, the results and model sensitivity analysis. Section 5 tests the model on a large set of cross country covering developing, emerging and advances economies. Section 6 finally provides some concluding remarks.

## 2. A brief review of literature

This paper develops a model of entrepreneurial start-ups in an economy with frictions in the labor and product markets and with a sizeable informal sector, as is the case of many low-income countries. The model builds on several strands of the literature. First, it extends the framework of Brixiová and Égert (2012) for transition economies and Brixiová (2013) for developing countries to the case of low income countries by modeling: (i) imperfect competition (and information) in the labor market for skilled workers, and (ii) frictions in product markets. The model focuses on the creation of new firms as driver of job creation, productivity increase and growth.

Second, in line with Redding (1996) and Snower (1996), we model entrepreneurs' search for business opportunities and workers' training as strategic complements with both exhibiting economic externalities as incentives for undertaking them interdependently. The model shows that in low-income countries where institutions are weak and exchanges in the labor market for skilled workers are sparse, labor and product market failures lead to suboptimal outcomes. The large informal sector and the lack of institutions blur entrepreneurs' information about available workers and discourage them from creating firms. In turn, insufficient firm creation discourages workers from acquiring skills. Together with the rigid business climate, these frictions impede highly-productive private firms to employ skilled labor. In the absence of government coordinating policies, the economy may be 'trapped' in a low-skill and low firm creation equilibrium.

The paper also draws on two strands of literature on endogenous growth theory: (i) on human capital accumulation as in Lucas (1988) and Stokey (1991), and (ii) on innovation and productivity improvements driven by new firm entrants, as in Acemoglu and Cao (2015) and Bena et al. (2015).<sup>3</sup> Similarly, Hausmann and Rodrik (2003) show that because of high social value to discovering costs of new activities, policymakers should encourage investment in productive entrepreneurship. Against this background, we study how, in low-income countries, weak institutions and education systems can impede both the creation of highly productive firms and accumulation of human capital. Lastly, our paper is related to the literature on firm entry barriers and firm size distribution pioneered by Jovanovic (1982), Evans and Jovanovic (1989) and Hopenhayn (1992). Our contributions to this strand lies in shedding light on factors contributing to firm size distribution in low-income countries, with the bulk of firms being small and operating in the informal sector.

The model reflects several stylized facts of the urban labor markets in low income countries, such as the existence of a dual economy where a small modern industrialized sector coexists with a large informal sector with little capital and low marginal productivity of labor. It examines which policies help develop the highly productive formal

SME sector. In sum, the model in this paper focuses on start-ups of highly productive private firms in the formal sector, as their absence is an important constraint to productivity and job growth in a number of low income countries (see, for example, Auriol (2013) and Klapper et al. (2006)).

The empirical contribution of the paper is to shed light on the fact that weak institutions and skill/education shortages are complementary with regard to the creation of new businesses. A string of papers has studied the relationship between institutions and regulations on the one hand and firm entry on the other hand (Desai et al., 2003; Troilo, 2011; Estrin et al., 2013 and Bripi, 2016). Other papers looked at how education influences entrepreneurship and firm growth (Elert, 2012; Lee, 2014). Still, to the best of our knowledge, the empirical literature raising the issue of complementarity between education and institutions and regulation is non-existent. In this paper, we try to fill this gap with an empirical analysis for a large panel of countries including developing, emerging and advanced economies.

## 3. Stylized facts

This section presents several stylized facts on the quality of the business environment, education and new firm creation.<sup>4</sup> The business environment can be captured by several indicators. A measure that captures framework stability is the quality of regulations. Panel A of Fig. 1 suggests that higher regulatory quality is associated with higher new firm density, which proxies new firm creation. More generally, higher cost of starting a business and weak property rights can be particularly damaging to entrepreneurship: they hinder entrepreneurship either at the very start by barring entry or by raising the risk of losses directly through expropriation and indirectly due to increased uncertainty. A broad measure of uncertainty is political instability. There is indeed a strong connection between higher political instability and less firm creation and thus reduced entrepreneurships (panel B of Fig. 1).

Other measures of framework uncertainty include the degree of corruption and the strength of the rule of law. Admittedly, these factors increase uncertainty about future outlook. Greater corruption means higher transaction costs (through bribes and other forms of payments). It also means that laws and rules are applied with discretion and that they can be discriminative and that there is no play level field for businesses. It may also imply that laws are not enforced or are interpreted on a case-by-case basis. This is captured by the rule of law indicator. Panel B of Fig. 1 indicates that increased uncertainty stemming from higher political uncertainty, more corruption and weaker rule of law are associated with a lower new business density. Panel C also shows that these effects do not change if splitting the sample into pre- and post-crisis periods.

The data plotted below indicate that more low-income countries operate in a low-quality institution environment. Defining low-income countries as countries having per capita income below 5000 USD (constant PPP) at any point in time,<sup>5</sup> it appears that all these countries are in the bottom half of the distribution regarding regulatory quality. These countries also score badly in terms of political instability, the extent of corruption and the strength of the rule of law. Most of them are clustered below zero and only a few countries in few instances exhibit a little more stability (panel D in Fig. 1). These observations suggest that policy interventions aimed at improving the framework conditions could substantially encourage firm creation and entrepreneurship. Firm entry is one of the main drivers of productivity growth. New firms increase competition, which promote a more efficiently allocation of resources across and within firms. Productivity growth is

<sup>3</sup> Acemoglu and Cao (2015) develop a framework for the analysis of growth driven by both entry of new firms and productivity improvements by existing firms, where entry of new firms leads to more radical innovations.

<sup>4</sup> The data presented hereafter cover developing, emerging and advanced economies. We also present data for developing countries separately.

<sup>5</sup> Alternative definitions of developing countries in terms of per capita income (3000 and 7000 USD, respectively) yield very similar results.

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