Drivers of Entrepreneurship and Post-entry Performance of Newborn Firms in Developing Countries

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The aim of this paper is to provide an updated survey of the "state of the art" in entrepreneurial studies with a particular focus on developing countries (DCs). In particular, the concept of "entrepreneurship" is critically discussed, followed by a discussion of the institutional, macroeconomic, and microeconomic conditions that affect the entry of new firms and the post-entry performance of newborn firms. The reviewed literature bears some policy implications for the support of the creation new firms, like the targeting of policy measures to prospective entrepreneurs that are featured by high education levels, long previous job experience and innovative skills. Specifically, for what concerns DCs, tailored subsidies and supports should be coupled with framework and infrastructural policies able to improve the business environment where new ventures can start and grow.

JEL Classification: L26, O12.

According to Schumpeter (1934), entrepreneurship is a driving force of innovation and, more generally, an engine for economic development (Audretsch, Keilbach and Lehmann 2006; Koellinger and Thurik 2012; for a comprehensive survey, see Van Praag and Versloot 2007). As detailed by Wennekers and Thurik (1999) and Dejardin (2011), new firm formation may play a crucial role in fostering competition, inducing innovation and supporting the emergence of new sectors. Ultimately, new firms may substantially contribute to job creation provided that the net effect of new entrants brings about overall market growth (Malchow-Møller, Schjerning, and Sørensen 2011).

The relationship between the rate of new firm creation and economic development is, however, heterogeneous across countries. The distinction between advanced and developing countries (DCs) is particularly important in this respect. Wennekers et al. (2005) showed that the link between entrepreneurial dynamics and economic performance is not monotonic. On the contrary, they found evidence of a U-shaped relationship between the level of development and the rate of entrepreneurship (see also Ligthelm 2011, 163). This finding suggests that entrepreneurship does not yield the same effects in every place. Based on this contribution, Amorós and Cristi (2008) analyzed the Latin American evidence by adopting an interpretative framework based on Porter's (1990) scheme of country economic development, which identifies three stages: factor-driven, efficiency-driven and innovative-driven. These authors provided further support for the U-shaped hypothesis. In particular, they showed that Latin American countries are clustered in the downward part of the curve.

Such heterogeneous evidence at the aggregate level can be better understood when the focus is shifted to the micro foundations of entrepreneurship. Since the seminal contribution by Baumol (1990), we have known that "Schumpeterian" innovative

entrepreneurs coexist with "defensive and necessity entrepreneurs." The latter are those who enter a new business because of market opportunities and innovative ideas but merely because they need income to survive.[1] For obvious reasons, this type of "survival-driven" self-employment is particularly diffused in DCs (Naudé 2009, 2010; Desai 2009), where poverty and a lack of formal opportunities in the wage sector often push a large number of people into "entrepreneurial" activities ranging from street vending to traditional and personal services (in most cases, within the informal sector of the economy; see Ihrig and Moe 2004; Maloney 2004; Sonobe, Akoten, and Otsuka 2011). The prevalence of survival-driven entrepreneurs in DCs is often associated with the choice to stay small and informal rather than participating in the formal sector of the economy (Desai 2009; Klapper, Amit, and Guillén 2010). This is one of the reasons why the effects of entrepreneurship on the economic performance of DCs appear to be problematic. However, Amoròs and Cristi (2011) study the relationship between entrepreneurship and human development indicators and provide empirical evidence for the hypothesis that although this type of entrepreneurship is rarely able to trigger the economic performance of DCs, it nonetheless contributes to the reduction of inequalities by affecting the wealth distribution in the society. On similar grounds, Naudè, Amoros, and Cristi (2011) posit that the effects of entrepreneurship in DCs should be analyzed by looking at broader and more non-material and subjective measures of human well-being. Their findings suggest that entrepreneurship in DCs may matter for individual and societal development beyond the mere increase of GDP.

The emphasis on the development stage of countries calls for a special attention to the evolution of their industrial structure. Since the seminal contributions by Marshall (1919) and Kuznets (1930), we have known that a country's economic performance is

related to the main sectors in which it shows a comparative advantage. The fortunes of countries as well as the dynamics of entry, exit, and growth are therefore closely related to the relative stage of the lifecycle of their industries (Klepper 1997).

In this respect, the empirical evidence concerning industrial dynamics casts doubt on the progressive potentialities of business start-ups. First, the survival rates of new firms are strikingly low: the available econometric evidence shows that more than 50 percent of new firms exit the market within the first five years of activity (Dunne, Roberts, and Samuelson 1989; Reid 1991; Geroski 1995; Mata, Portugal, and Guimaraes 1995; Audretsch and Mahmood 1995; Audretsch, Santarelli, and Vivarelli 1999a; Johnson 2005).

Second, entry and exit rates are significantly correlated (called "turbulence"; Beesley and Hamilton 1984). This is one of the uncontroversial "stylized facts" of the entry process according to Geroski (1995, 424), who noted that the "mechanism of displacement, which seems to be the most palpable consequence of entry, affects young, new firms more severely" (see also Baldwin and Gorecki 1987, 1991). Indeed, entry and exit rates have been found to be positively correlated across industries in OECD countries (Bartelsman, Scarpetta, and Schivardi 2005) and in DCs (Bartelsman, Haltinwanger, and Scarpetta 2004[2]).

This evidence opens the way to considerations regarding the alleged role of entry as a vehicle for technological upgrading, productivity growth and employment generation. One should be very cautious in seeing entrepreneurship measured as new firm formation as the main driver of development for a DC. If entry were indeed driven mainly by technological opportunities, growing sales, and profit expectations, a negative cross-sectional correlation would be observed between entry and exit rates, particularly over short time intervals.

By the same token, new firm formation may be more or less conducive to technological upgrading and industry growth according to the different sectors in which it occurs. For instance, new technology-based firms (NTBFs; see Acs and Audretsch 1990; Colombo, Delmastro, and Grilli 2004) in advanced manufacturing and ICT services play a different role than small-sized start-ups play in traditional sectors. These considerations concerning the role of the industrial structure are particularly relevant for DCs, where the dominant role of traditional and low-tech sectors renders turbulence more likely and the presence of progressive/innovative entrepreneurs an exception.

Within this context, the rest of the paper is organized as follows. The next section is devoted to the institutional context (which is often the main deterrent to entrepreneurship in the DCs). Subsequently, we move to the microeconomic and personal drivers of entrepreneurship. Then, we discuss the link between ex ante characteristics and post-entry performance of newborn firms, and finally, we briefly conclude.

Contextual Factors and Institutional Constraints

Together with industrial characteristics, as noted above, the growth of a newborn firm is affected by a larger set of variables that involve the general macroeconomic business climate and with a wide range of institutional factors (Acs and Audretsch 1990; Geroski and Schwalbach 1991; Audretsch 1995). Overall, previous research has proven that market failures, the infrastructure endowment, and regulatory and legal conditions are important determinants of the post-entry performance of newborn firms. Although this is true even for the developed countries, a fortiori, these institutional constraints may play a

crucial role in developing countries, with a larger impact moving from the middle-income to the low-income DCs.

At a general level, the growth of small entrepreneurial firms is obviously constrained by the overall state of the economy, and the economic cycle is important for the availability of exploitable business opportunities (Nichter and Goldmark 2009). However, the various entrepreneurial dynamics introduced in the previous section engender a composite response to business cycles. Indeed, in recession phases, the reduction of opportunity-driven Schumpeterian entrepreneurs may well be accompanied by the expansion of necessity-driven ones (Pisani and Pagan 2004).

DCs are also characterized by several market failures that severely hamper the post-entry growth potentialities of entrepreneurial activities. As extensively discussed by Tybout (2000), Aterido, Hallward-Driemeier, and Pagés (2009), and Vivarelli (2012), imperfections in the credit and financial markets, a non-transparent regulatory environment, the lack of infrastructure and the high incidence of bribing are important factors that hinder firms' growth in DCs.

Starting with capital markets, Rajan and Zingales (1998) and Beck et al. (2008) clearly show that firms in financially dependent industries grow much faster in financially developed countries. In contrast, new small firms in DCs are credit and equity rationed in the vast majority of cases because their financial markets are underdeveloped (Ayyagari, Demirgüç-Kunt, and Maksimovic 2008; Lian, Sepehri, and Foley 2011; and below). In fact, capital markets in DCs are characterized by 1) a lower depth (measured, for instance, by a low ratio of bank deposits to GDP; see Paravisini (2008) for the case of Argentina and Banerjee and Duflo (2004) for the case of India); 2) a lower level of competition between financial intermediaries, generating the misallocation of funds (see Banerjee, Duflo, and

Munshi (2003), studying the misallocation of capital in India, and Cole (2009), discussing agricultural credit in India); and 3) higher information asymmetries due to institutional and infrastructural underdevelopment (see Klapper and Love (2011) for a general discussion; Canales and Nanda (2008) discuss lending to small businesses in Mexico).

Similarly, a non-transparent regulatory environment with regard to labor market rules, taxation, red tape procedures, property rights and bankruptcy laws is particularly harmful to firms' growth in DCs and may be fatal for young entrepreneurial activities (Goedhuys and Sleuwaegen 1999; Sleuwaegen and Goedhuys 2002; Beck, Demirgüç-Kunt, and Maksimovic 2005; Lee et al. 2011). For instance, in a recent study, Ardagna and Lusardi (2010) worked with GEM microdata from 37 countries, including eight DCs, and showed that stringent entry regulation, soft contract enforcement rules, and labor market rigidities play an important role in hindering entrepreneurship and strengthening the adverse impact of risk aversion. Moreover, inefficient regulation may hinder the growth of small firms in DCs because they may fear the effects of red tape and higher taxes (De Soto 1989). The regulatory framework often involves counterproductive policy measures that were originally intended to support small firms but actually prevent firms' growth. Indeed, the presence of subsidies addressed to SMEs may push entrepreneurs to keep the size of the firm unchanged - or at least below a given threshold - to maintain eligibility for government funding (Little, Mazumdar, and Page 1987; Mitra and Pingali 1999).

In a developing country context, a prominent role is played by the wide diffusion of bribing, which may abort any chance of growth of a fragile new entrepreneurial activity[3]. For instance, Fisman and Svensson (2007), using data collected from 126 Ugandan firms, show that a 1 percent increase in the bribery rate implies a reduction of 3 percent in firm sales growth. Obviously, corruption may amplify the hampering role of credit constraints

(see above) when it involves bank officials who are responsible for screening the entrepreneurial initiatives (Beck, Demirgüç-Kunt, and Maksimovic 2005).[4]

Finally, the lack of an adequate infrastructural endowment including roads and railways, basic utilities such as electricity and water supply, and ICT networks is singled out by the literature as a significant shortcoming that prevents young and small firms in DCs from growing (Aterido, Hallward-Driemeier, and Pagés 2009; Goedhuys and Sleuwaegen 2010[5]; Ghani, Kerr, and O'Connell 2011).

Having discussed the role of the macroeconomic and institutional conditions, we now move the focus of this study to the microeconomic and personal characteristics that may play a role in determining the entry and post-entry performance of new firms in DCs.

The Microeconomic Determinants of Entry

In the traditional microeconomic textbook narrative, the creation of new firms is driven by profit expectations, economic growth, and technological opportunities (Mansfield 1962; Acs and Audretsch 1989a,b; Geroski 1995), and it is deterred by both exogenous and endogenous entry barriers (Geroski and Schwalbach 1991; Sutton 1991; Arauzo-Carod and Segarra-Blasco 2005). However, the main limitation of the textbook approach is that it focuses on market mechanisms ("pull factors") and may obscure the decision-making process at the level of the individual,[6] thus underestimating the factors behind an entrepreneur's motivation to start a new business. Indeed, some 20th-century authors such as Knight (1921), Schumpeter (1934, 1939), and Oxenfeldt (1943) drew attention to the characteristics of the founder of a new firm. Following their contributions, we are aware that important individual determinants may act as push factors and may be

related both to environmental circumstances and to the potential founder's personal characteristics.

For instance, the specific local/sectoral labor market plays an important role given that the vast majority of new founders (approximately two-thirds of them) were previously employed or located in the same geographical area and the same sector. The rest were young people starting their first job experience, ex-entrepreneurs, or founders moving in from an outside region (Vivarelli 1991; Storey 1994; Cressy 1996; Arrighetti and Vivarelli 1999; Shane 2000; Stam 2007). Therefore, entrepreneurship is strongly characterized by sectoral and locational inertia, and this phenomenon is affected by significant persistence (Fritsch and Mueller 2007).

Within this framework, new firm formation can be modeled as an income choice based on a comparison between the wage earned in the previous job and the expected profit as an entrepreneur starting a new business in the same sector and in the same geographical area (Creedy and Johnson 1983; Vivarelli 1991; Foti and Vivarelli 1994; Audretsch 1995; Geroski 1995; Vivarelli 2004; for DCs, see Lévesque and Shepherd 2004). This means that entry may have a counter-cyclical component and may be induced by industrial restructuring and decreasing real wages rather than by buoyant demand expectations and an appropriate endowment of entrepreneurial capabilities (Highfield and Smiley 1987; Hamilton 1989). Pushing this argument further, founding a new firm may be an alternative to uncertain future career prospects or may even represent an "escape from unemployment" (Oxenfeldt 1943; Evans and Leighton 1990; Storey 1991, 1994; Premand et al. 2012).

Thus, entry may be determined by a set of different environmental factors, including some "progressive" determinants, such as profitability and promising

technological opportunities, and "regressive" determinants, such as low wages and the actual condition of being (or the fear of becoming) unemployed (the latter conditions are particularly likely in a DC context). Moreover, in determining new firm formation, these environmental drivers interact with the potential entrepreneur's personal traits.

Indeed, new firm founders differ with regard to characteristics such as previous work experience, family tradition, financial status, and personal motivation. The founder of a new firm is heavily influenced by his/her own background, with particular reference to his/her previous job experience (Evans and Leighton 1989; Reynolds et al. 2001; Chlosta et al. 2012). The role of the family background in fostering entrepreneurship has been demonstrated in DCs as well. For instance, Djankov et al. (2006a,b, 2007) have shown that entrepreneurs in China, Russia, and Brazil are much more likely to have family members who are entrepreneurs as well as childhood friends who became entrepreneurs, suggesting that the family and the social environment play an important role in entrepreneurship.

Another important stream of literature has investigated the impact of financial constraints on business start-ups, mostly following the work of Fazzari, Hubbard, and Petersen (1988). The fact that wealth, inheritance, and windfall gains spur entrepreneurship suggests that business start-ups are often underfinanced (Parker 2004). Because most new companies need external capital, differences in the ability of capital markets to select and finance the most promising entrepreneurial projects may lead to important differences in the level and quality of entrepreneurship across countries, with DCs obviously suffering a disadvantage in this respect (Kerr and Nanda 2011; Klapper, Amit, and Guillén 2010).

Other studies show that non-economic personal factors may be even more important than environmental variables. For instance, potential entrepreneurs seem to be strongly influenced by specific psychological attitudes, such as a desire to be independent,

a search for autonomy in the workplace, an aspiration to fully exploit previous job experience and acquired ability, and a desire to be socially useful and to acquire improved social status (Creedy and Johnson 1983; Evans and Leighton 1990; Vivarelli 1991, 2004; Zacharakis, Bygrave, and Shepherd 2000).

If one considers the (often dominant) psychological attitudes discussed above, entry mistakes and excess entry can be further justified. In fact, the observed occurrence of these entry mistakes suggests an attitude that can be defined as a "try and see" bet. Accordingly, market churning, turbulence, and early failure observed at a more aggregate level of analysis emerge as normal and expected features of industrial dynamics.

These findings lead to the conclusion that several heterogeneous entry processes are simultaneously at play in the economy and that opportunity entrepreneurs, who bring about innovation and economic growth, should be distinguished from "revolving door" start-ups, which are doomed to early failure and generate only precarious and temporary jobs (Baumol 1990, 2010).

Obviously, this distinction is a fortiori crucial when we focus on DCs, where entrepreneurship and self-employment often generate informal and transient activities that are not very different from "disguised unemployment."

Drivers of the Post-entry Performance of Newborn Firms

Because entrepreneurs are embedded in different institutional contexts and are driven by both progressive and regressive determinants, the post-entry performance of newborn firms and their eventual contribution to economic development may also be diverse. From an empirical perspective, a relatively recent stream of literature has focused

on the drivers of survival (or early exit) and growth of newborn firms (among the early studies, see Reid 1991; Boeri and Cramer 1992; Baldwin and Rafiquzzaman 1995). Within this field of research, it is possible to analyze the relationship between the ex ante features of entry, on the one hand, and both survival and (conditional on survival) the post-entry performance of newborn firms, on the other hand. The following subsections are devoted to investigating what have been found to be the most important ex ante characteristics that affect the post-entry performance of new businesses.

Size and Age

Many studies have identified a positive relationship between start-up size and survival (Audretsch and Mahmood 1995; Mata, Portugal, and Guimaraes 1995; Agarval and Audretsch 2001; for more controversial results, see Audretsch, Santarelli, and Vivarelli 1999a,b[7]). Because entry implies sunk costs (Sutton 1991) and generally occurs at a scale that is lower than the minimum efficient scale (MES), a larger entry size is a signal of commitment and self-confidence and makes both the occurrence of wrong entry decisions and the risk of failure due to diseconomies of scale less likely.

Moreover, a larger start-up size is positively correlated with other factors, such as lower credit constraints and a higher technological capability, which are predictors of a higher likelihood of survival and better post-entry performance. Therefore, a larger start-up size can be considered a reliable indicator of better chances of survival of a newborn firm.

In contrast, a vast number of papers have found (conditional on survival) a negative relationship between start-up size and post-entry growth, thus rejecting Gibrat's Law[8] (Gibrat 1931; Hall 1987; Hart and Oulton 1996; Sutton 1997; Lotti, Santarelli, and Vivarelli 2003, 2009). This evidence means that smaller entrants with a sub-optimal entry

size and with a higher risk of early failure (see above) must grow to survive and reach the MES as soon as possible. However, it is worth emphasizing that the (negative) relationship between size and growth has been found to be significant within the sub-sample of new entrants that struggle to survive (Lotti, Santarelli, Vivarelli 2003). Once market selection is accounted for, long run analyses have shown that a convergence towards Gibrat-like behavior can be detected among the surviving most efficient firms (Lotti, Santarelli, and Vivarelli 2006, 2009; Daunfeldt and Elert 2013). In other words, once small entrants have succeeded in approaching an efficient scale of production, their growth dynamics increasingly resemble a stochastic process in which size and growth are independent.

A firm's age consistently turns out to be positively correlated with survival (that is, the hazard rate is decreasing with age; see Fackler, Schnabel, and Wagner 2013) and negatively with growth (Evans 1987; Dunne and Hughes 1994; Calvo 2006; Coad, Segarra, and Teurel 2013). Experienced, mature firms are more able to address market dynamics and thus are more likely to stay in the market. However, once they have reached (or are very close to) the MES, they do not need to grow very fast.[9]

Although all of the studies cited so far concern developed countries, the evidence from DCs is similar. For instance, Das (1995), examining the Indian computer industry, found a significant negative relationship between firm growth and initial firm size. McPherson's (1996) study of five southern African countries detected a significant negative link between firm growth and both the firm's size and age. Goedhuys and Sleuwaegen (2000) and Sleuwaegen and Goedhuys (2002) analyzed 141 and 129 manufacturing firms in Côte d'Ivoire, respectively, and found negative correlations between firm growth and both firm size and age. Finally, Bigsten and Gebreeyesus (2007) ran GMM-SYS panel estimates covering census-based Ethiopian manufacturing firms over

the 1996–2003 period and showed that the negative relationship between size and age, on the one hand, and firms' employment growth, on the other, is significant and robust to sample selection and unobserved firm heterogeneity.[10]

In summary, a larger start-up size is reassuring in terms of the likelihood of survival and ensuring that job creation linked to the newborn firm is not transitory. In contrast, to survive, smaller new entrants must grow rapidly so they can contribute to employment growth. However, in the latter case, the job creation effect related to the surviving and fast-growing small entrants must be compared with the massive job losses due to the early failure of most small newborn firms.

Entrepreneurial Learning

From a theoretical point of view, Lucas (1978) was the first to propose a theory of the size distribution of firms based on the relative endowment of entrepreneurial talents. However, the first author to represent the post-entry evolution of newborn firms formally was Jovanovic (1982), who proposed a Bayesian model of noisy selection in which efficient firms grow and survive, whereas inefficient ones decline and fail. Jovanovic's model of entrepreneurial learning is perfectly consistent with a world in which founders are quite heterogeneous in terms of both general and specific characteristics, entry mistakes can easily occur, entry can be originated by a "try and see" bet and early failures are rather common (see previous sections; Hopenhayn 1992; Ericson and Pakes 1995).

If entrepreneurial learning is crucial and entry is often tentative, both spinoffs (entrepreneurs leaving a mother firm to found a new business) and "serial entrepreneurs" (founders who have previously run other businesses) may have an advantage compared with "de novo" entrepreneurs.[11] For example, Hirakawa, Muendler, and Rauch (2010),

using microdata from Brazil over the 1995–2001 period, found that spinoffs are characterized by larger entry sizes and lower exit rates than are new firms that are not generated by a parent company. Similarly, the role of past experience and path-dependence is confirmed by the fact that serial entrepreneurs are more likely to replicate the success of their past companies than single venture entrepreneurs or serial entrepreneurs who failed in their prior business (Gompers et al. 2006).

Empirical studies on DCs provide support for the importance of entrepreneurial learning for the post-entry performances of newborn firms either by observing the direct effect between experience and survival (Parker 1997) or by showing that in contexts characterized by a substantial absence of learning opportunities, the average survival is quite short (Barr 1998). McPherson (1996) found a positive relationship between annual employment growth and the previous experience of the founder in similar economic activities for entrepreneurial firms in Swaziland and Botswana, whereas Vijverberg (1991) and Goedhuys and Sleuwaegen (2000), in studies of Côte d'Ivoire, found that job experience previously acquired in the same industry both increases the likelihood of founding a new business and contributes to a firm's better performance.

Nichter and Goldmark (2009) noted an additional channel by which learning on the job may positively affect the survival rate of newborn firms: previous work experience may expand entrepreneurs' social network, which, in turn, can positively affect post-entry performance (see also Barr 1998; Kantis, Angelli, and Koenig 2004). However, the authors stress the differences between DCs and advanced countries with regard to this link, and the evidence about DCs is quite controversial.[12]

Finally, turning our attention to a managerial and organizational perspective, new founders who had previously been employed as top managers in the same sector and who

have better access to relevant information are expected to exhibit better post-entry business performance due to their better ability to run and organize complex activities (for an empirical validation of these relationships, see Cooper, Gimeno-Gascon, and Woo 1994; Cressy 1996; Arrighetti and Vivarelli 1999; Shane 2001; Vivarelli 2004).

Financial Constraints

Credit constraints and a lack of financial capital in general should limit the rate of entry of new businesses as well as their likelihood of survival and rate of growth (Becchetti and Trovato 2002; Carpenter and Petersen 2002; Aghion, Fally, and Scarpetta 2007). However, some recent microeconometric studies have shown that the role of credit rationing has been somewhat over-emphasized and that entrepreneurial saving plans may be able to overcome borrowing constraints (Cressy 1996, 2000; Parker 2000; Hurst and Lusardi 2004).[13]

At any rate, new entrepreneurial initiatives in DCs are credit-rationed in the vast majority of cases due to a lack of collateral, informational asymmetries, and largely imperfect local capital markets. For this reason, micro and small firms in DCs rarely apply for and receive formal bank loans. Instead, they rely on other sources of credit, such as trade credit, overdrafts, and informal loans (Bigsten et al. 2003). Indeed, the lack of credit represents a severe impediment to the growth of small firms in the early years of activity. For instance, Goedhuys and Sleuwaegen (2010), in a study investigating 947 small and medium entrepreneurial firms in several manufacturing industries in 11 Sub-Saharan African countries,[14] report that financial constraints are singled out as the major obstacle (from 11 alternatives) to a firm's growth in five of 11 countries. In the previously cited paper on Côte d'Ivoire, the authors consistently find that a lack of collateral significantly

hampers firms' growth (Goedhuys and Sleuwaegen 2000, 139). In this framework, the successful diffusion of microfinance in DCs can be seen as a way of reducing information and transaction costs in screening and financing small and new businesses (Yunus 1999; Fogel, Lee, and McCumber 2011).

A somewhat more skeptical position is proposed by Akoten, Sawada, and Otsuka (2006), who conducted an econometric test of the effects of credit rationing on the growth of 225 micro and small garment firms in Nairobi. Their results show that credit access does not affect significantly firms' growth and that the factors that affect credit access are clearly different from those that affect firms' growth.

Education

Not surprisingly, it has been demonstrated that education and human capital have an important role in increasing the likelihood of survival of new firms and in improving their post-entry economic performance (Bates 1990; Gimeno et al. 1997; Acs, Armington, and Zhang 2007). In particular, human capital aspects are particularly important in fostering entrepreneurship in the high-tech sectors. For instance, Baptista and Mendonça (2010) show that local access to knowledge and human capital significantly affect entry by knowledge-based firms, whereas Colombo and Grilli (2010) note that the founder's human capital is a key driver of post-entry growth of high-tech start-ups.

Turning our attention to DCs and taking into account that entrepreneurship and self-employment are often carried out within the informal sector of the economy in this context, the impact of education is controversial. In fact, higher education augments the managerial capabilities necessary to run a business enterprise, but it also increases the outside option for salaried employment in the formal sector of the economy. This is most likely the reason

why van der Sluis, van Praag, and Vijverberg (2005), in their comprehensive survey, found that in the majority of DCs, education reduces the likelihood of entering self-employment as contrasted with wage-earning employment.

In contrast, Goedhuys and Sleuwaegen (2000) ran logit estimations on data concerning the owners of 141 manufacturing firms in Côte d'Ivoire and found that the probability of being an entrepreneur is strongly stimulated by both apprenticeship and formal education, with the positive effect of education steadily increasing from lower to higher levels of education. Similarly, Ghani, Kerr, and O'Connell (2011), using cross-sectional establishment-level surveys of manufacturing and services companies in Indian districts, conclude that higher education in a local area significantly increases the supply of entrepreneurs. However, this relationship becomes non-significant when the informal manufacturing sector is taken into account. This is an interesting outcome that confirms that education may render the choice of being a wage earner preferable to entering self-employment in the informal sector (often characterized by "defensive entrepreneurship").[15]

The evidence concerning the relationship between education and the post-entry performance of new businesses in DCs may also appear controversial on the surface. For example, Kantis, Angelli, and Koenig (2004) show that secondary school attainment yields no discernible impact on firm growth in Latin America. On the contrary, other studies, such as van der Sluis, van Praag, and Vijverberg (2005), conclude that an additional year of schooling raises entrepreneurial income by an average of 5.5 percent. Similarly, McPherson (1996) found that in Botswana and Zimbabwe, business owners who have completed secondary school run faster-growing firms than do those proprietors with no schooling. Finally, Goedhuys and Sleuwaegen (2000, 2010), using data from Côte d'Ivoire and from 11 Sub-Saharan African countries, respectively, found unequivocal evidence that

formal education of an entrepreneur positively affects a firm's growth performance, measured in terms of the growth rates of sales and employment, respectively (in both studies, the greatest effect on growth is found for entrepreneurs who hold a university degree).[16]

Nichter and Goldmark (2009) maintain that such apparent contradictions disappear if one takes into account a sort of "threshold effect" of education. Small firms with more educated owners are more likely to experience faster growth rates, but a country-specific threshold should be reached for this effect to take place. For example, whereas the threshold enabling faster growth appears to be secondary school in African countries, in Latin America, one can observe a higher threshold at the university level. Finally, it is worth noting the potential harmful effects of higher education, which may divert the attention of firms' owners to other business opportunities, leading these owners to pay little attention to the workings of their actual business (Alvarez and Crespi 2003).

Technological Change

If the underlying motivation to start a new firm is linked to innovative projects, then better post-entry performance should be expected.[17] Empirically, this seems to be the case. In fact, a propensity for innovation emerges generally as a firm's growth driver (see, for instance, Coad and Rao 2008; Altindag, Zehir, and Acar 2011; Colombelli, Krafft, and Quatraro 2014) and specifically as a positive predictor of survival and an above-average post-entry performance of newborn firms (Esteve-Pèrez, Sanchis, and Sanchis 2004; Raspe and Van Oort 2008; Colombelli, Krafft, and Quatraro 2013).[18]

Consistent with the discussion above, Cefis and Marsili (2006) found convincing evidence of an "innovation premium" in survival time. Using Pavitt's (1984) taxonomy,

they showed that young firms (less than four years old) in the "science-based" and "specialized supplier" sectors were characterized by significantly higher chances of survival than firms in other sectors. More specifically, Cefis and Marsili (2005) showed that being an innovator enhanced the expected time of survival by 11 percent compared with non-innovator counterparts.

However, the impact of innovation on the post-entry performance of newborn firms is strictly related to sectoral differences and ultimately to the differential patterns of specialization of countries discussed above. In fact, entrepreneurial dynamics in DCs are more likely to occur in sectors that are far from the technological frontier. Therefore, the prevalence of traditional and mature sectors makes these contexts less fertile for innovation-driven entrepreneurship. According to Siqueira and Bruton (2010), high-technology entrepreneurship in emerging economies is subject to greater resource constraints and higher levels of informality than in advanced countries. These two factors are likely to mitigate any possible positive effect of technology investments on firm performance.

Moreover, as far as technological change is concerned, a distinction must be made between low-income and middle-income DCs. Middle-income DCs primarily import innovation produced elsewhere in the global economy, whereas low-income DCs are often completely excluded from any innovative process (see Robbins and Gindling 1999; Robbins 2003; Lall 2004; Lee and Vivarelli 2006; Srholec 2011).

Finally, the international diffusion of technologies is likely to be grounded in creative rather than passive adoption (Antonelli 2006). Technological congruence, institutional setting and governmental arrangements shape a country's capacity to absorb knowledge and technologies produced elsewhere (Dosi and Nelson 2013). Social

capabilities represent the set of cultural, political, commercial, industrial and financial institutions that create the conditions for catching-up countries to absorb and exploit the technologies developed elsewhere (Abramovitz 1986). For example, a study conducted on Brazil, Russia, India, and China (the so-called BRIC) confirmed that their institutional specificities play a major role in shaping their rapidly growing economies (da Rocha, Ferreira da Silva, and Carneiro 2012; Kim, Park, and Lee 2013; Gupta et al. 2014). Nevertheless, in most DCs and even in BRIC, the role of R&D-driven new firms and domestic NTBFs[19] is extremely limited. Therefore, it is not surprising that very few studies attempt to link innovation with entrepreneurship within a DC context.

Santarelli and Tran (2011) studied entrepreneurship in Vietnam using a panel of regional-level data for 61 provinces over the 2000–8 period. Among other outcomes, the authors found that an innovative climate (proxied by the share of technical/R&D personnel in the province) significantly and positively affects the regional net entry rate. As for post-entry performance, in the previously cited study by Goedhuys and Sleuwaegen (2010) on Africa, the innovative capability (proxied by a dummy for the introduction of new products) was found to increase a firm's annual employment growth by 2 percent on average.

Unemployment

Regarding unemployment (or the fear of becoming unemployed), the literature notes two stylized facts: 1) those who start a new business as an escape from unemployment exit to a higher extent than those who enter from paid employment (see Carrasco 1999; Pfeiffer and Reize 2000; for slightly more optimistic evidence, Caliendo

and Kritikos 2010); 2) new founders who were formerly unemployed have, on average, lower economic outcomes and a lower propensity to contribute positively to job creation.

For instance, Arrighetti and Vivarelli (1999, 936) found that defensive motivations, such as concern about future career developments and the fear of becoming unemployed, were predictors of below-average post-entry evolution. Similarly, Andersson and Wadensjö (2007), using a large sample of Swedish-born men who were self-employed in the 1999–2002 period and who were wage-earners, unemployed or inactive in 1998, showed that those who were previously unemployed had systematically lower incomes compared to those who were previously wage earners. Moreover, they found that income from self-employment declined with the number of days spent in unemployment and that previously unemployed entrepreneurs were significantly more likely to be "solo" entrepreneurs (i.e., to have no employees).

With regard to DCs, the literature is extremely scarce.[20] However, Wang (2006) found convincing evidence that unemployment fostered start-ups in Taiwan (China) over the 1986–2001 period. In contrast, in the previously cited work by Santarelli and Tran (2011), no significant impact of the unemployment rate on new firm formation in Vietnam was found.

Alien Minorities

A particular driver of new firm formation in DCs is the role played by ethnic minorities in generating above-average rates of entry and better post-entry performance among newborn firms. The basic hypothesis is that alien minorities may have an entrepreneurial advantage based on their opportunity to exploit their minority community networks to overcome important hindrances to entrepreneurship, such as regulatory

drawbacks, credit constraints, and difficulties accessing available inputs and technologies (Kilby 1983; Biggs and Shah 2006). In addition, from a sociological point of view, an ethnic minority, which is characterized by common traits such as language, culture, and religion, generates trust, social cohesion, and emulation, which are all factors that favor entrepreneurial behavior (Greif 1993; Hobday 1995; Iyer and Schoar 2010). Finally, a minority group may be affected by a feeling of insecurity and frustration (in comparison with a dominant group), which encourages members to seek economic success and better social status (Elkan 1988).[21]

Empirical evidence is generally consistent with the hypotheses just discussed. For instance, Ramachandran and Shah (1999), using firm-level data from Kenya, Tanzania, Zambia, and Zimbabwe and after controlling for firm size and age, various personal characteristics of the entrepreneurs, and sector and country differences, found that Asian and European firms start larger and grow faster than do indigenously owned African firms. Similarly, Hewitt and Wield (1997) show that Asian businesses in the Tanzanian manufacturing sector have better access to sources of technology than do indigenous companies. In the previously cited study by Goedhuys and Sleuwaegen (2000), the consistent finding is that the dummy variable "non-African" significantly and positively affects the likelihood of becoming an entrepreneur in Côte d'Ivoire. When analyzing a randomly selected sample of 296 Ethiopian SMEs, Mengistae (2001) finds that companies owned by the indigenous minority group of the Gurage perform better than average in the country; in particular, new businesses start larger and then grow faster. More recently, Goedhuys and Sleuwaegen (2010) show that the Asian dummy (equal to 1 for entrepreneurs of Lebanese, Indian, Middle Eastern, or other Asian origin) turns out to be positive and significant in affecting firms' growth in Sub-Saharan Africa.

Main Findings and Some Policy Suggestions

If one conclusion can be drawn from this study, it is that "entrepreneurship" is performed by very different "animals". From a macroeconomic point of view, progressive new firm formation can generate permanent economic growth, whereas defensive and regressive start-ups generate only temporary positive effects and, ultimately, market turbulence. From a microeconomic point of view, far from solely being the result of the entrepreneurial "creative destruction" process proposed by Schumpeterian advocates (Schumpeter 1943), any set of entrepreneurial ventures can be seen as a rather heterogeneous aggregate where real and innovative entrepreneurs are found together with passive followers, over-optimistic gamblers and even escapees from unemployment. Therefore, both scholars and policy makers should bear some important caveats in mind.

First, because founders are heterogeneous and may make entry mistakes, most new firms are doomed to early failure. This type of entry is not conducive to technological renewal and economic growth but simply to an excess of entries, market churning and turbulence. In both developed and developing countries, policy makers should discourage this type of venture.

Second, ex ante features may be predictors of survival chances and post-entry business performance. For instance, larger size, previous experience, the absence of credit constraints, higher education, and innovation can be considered positive predictors of a higher likelihood of survival, whereas infrastructural and institutional drawbacks, the

absence of an adequate incubator background and a previous state of unemployment can be seen as predictors of early failure.

The implementation of policy measures supporting the creation of new firms should take into account these factors. Policy makers could for example target potentially successful entrepreneurs by shaping eligibility criteria to gain access to specific funds or tax credits. Although this cannot ensure the success of new ventures, this would allow to minimizing the risk to waste public resources by supporting entrepreneurs having low ex-ante probabilities to survive (see Santarelli and Vivarelli 2002, 2007; Mason and Brown 2013). In the specific case of DCs, in addition to having a larger start-up size, higher education, longer previous job experience, and innovative capabilities, belonging to an entrepreneurial ethnic minority can be seen as a preferential trait when deciding how to target a policy addressed at sustaining progressive new firm formation.

However, on average, DCs appear to be strongly affected by regressive factors that induce "defensive" and "necessity" start-ups, which are often concentrated in the informal sectors and doomed to early failure. In this context, the widespread diffusion of general, "erga-omnes" entry subsidies as policy instruments in developing countries is unfortunate[22] because they are very likely affected by standard policy failures, such as deadweight and substitution effects (Vivarelli 2012, 2013). Indeed, umbrella subsidies should be discarded in favor of selective and targeted measures addressed at more promising potential entrepreneurs, such as those characterized by superior human capital or by interesting and feasible innovative ideas.

Examples of targeted policy measures may include 1) public financial aid to innovative projects that are otherwise neglected by a conservative and short-run-oriented capital market (for instance, the Korean government credit guarantee offered to

technology-based SMEs suffering from funding problems; see Sohn and Kim 2013); 2) the already mentioned microcredit support, which is intended to be a way of reducing the information and transaction costs that are so common in DCs and that affect both the screening and the financing of new promising businesses (Yunus 1999); and 3) public support for innovative start-ups generated by university spin-offs (for recent analyses of this perspective, see Bonaccorsi et al. 2013).

In DCs, more general market failures and regulatory constraints are obvious and severe, ranging from extreme financial rationing to a lack of property rights and bribing. In this context, any entrepreneurial policy should consider it a priority to remove the market, institutional and informational constraints that prevent potential entrepreneurs from starting a new business (Acs and Virgill 2009). In this respect, tailored subsidies and supports, such as those briefly discussed above, should be coupled with framework and infrastructural policies that are able to improve the business climate where new ventures can find a proper environment to start and grow.

In summary, a proper entrepreneurial policy in the DCs should be able to combine a comprehensive macroeconomic approach to release the major institutional constraints to entrepreneurship with selective microeconomic support for the most promising potential entrepreneurs.

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Notes

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[1] The identification of necessity entrepreneurs is a non-trivial task. In the recent literature, the distinction between necessity- and opportunity-driven entrepreneurs is established by using the Global Entrepreneurship Monitor (GEM) data. The GEM measures 'necessity-driven' entrepreneurship by including the question 'Are you involved in this start-up [this firm] to take advantage of a business opportunity or because you have no better choices of work?' (Naudé, Amoros, and Cristi 2011). In more general terms, empirical studies single out 'necessity entrepreneurs' either as those who come from unemployment status or as those who answer ad-hoc questionnaires revealing that they are pushed into 'entrepreneurship' by a concern about future career developments or by the fear of becoming unemployed (see also Section 4.6).

[2]The authors used a sample of 22 countries (14 European, six Latin American, the US and Canada) and found that the correlation between entry and exit rates across industries in 1990 was positive and significant in the vast majority of cases (Bartelsman, Haltinwanger, and Scarpetta 2004, 21, Table 6).

[3] Aterido, Hallward-Driemeier, and Pagés (2009, 10), using evidence from the World Bank Enterprise Surveys, show that 42 percent of firms declare that they have paid bribes, with an average amount paid of 1.5 percent of sales.

[4]Aterido, Hallward-Driemeier, and Pagés (2009) provide a slightly different picture, showing that the effect of corruption on growth is different across different size classes. In particular, corruption seems to have no effect on medium-sized firms and some negative effects on small firms, whereas it may help micro firms grow. This phenomenon can be explained by the fact that often, very small firms in DCs do not comply with all prescriptions of business regulation, and they stay persistently in the informal sector. Paying bribes may therefore be less costly than compliance (see also Vial and Hanoteau 2010).

[5]The authors, using data from the World Bank Investment Climate Survey covering 947 manufacturing SMEs in 11 Sub-Saharan countries, show that firms with their own transport facilities and their own websites exhibit higher growth rates, measured in terms of employment creation.

[6] In the conventional approach, entrepreneurship is generally measured as the number of new firms relative to the size of the existing population of businesses in a given industry. In contrast, if the individual 'push factors' are fully considered, new firms must be related to the labor force (for further discussion, see Santarelli, Carree, and Verheul 2009; Vivarelli 2007).

[7] However, as clarified by the authors, these results, in contrast to previous studies, may be due to the peculiarities of the Italian manufacturing sample used, which is dominated by micro-firms well below the minimum efficient scale. In this context, which is characterized by a limited size variability, the positive impact of a larger scale might have been underestimated.

[8] Gibrat (1931), proposed that firm growth is predominantly a random process. This amounts to say that firm growth is independent of firm size.

[9] Moreover, recent literature has shown that firms' age may play a crucial role in shaping the relationship between size and firms' growth. In particular, Haltiwanger, Jarmin, and Miranda (2013), using data from the Census Bureau's Business Dynamics Statistics and Longitudinal Business Database, show that once one controls for firm age, the negative relationship between size and growth either disappears or reverses the sign due to the large share of exit among the smallest firms. As far as age is concerned, young firms are found to grow more rapidly than mature ones. From this perspective, start-ups are likely to play a key role in the job creation process. However, Haltiwanger, Jarmin, and Miranda (2013) do not focus on start-ups; most of their firms are established incumbents (for an analysis of the link between age and firm's performance, see Coad, Segarra, and Teruel 2013).

[10] Consistent econometric outcomes in studies devoted to DCs can also be found in the studies by Mead and Liedholm (1998), Gunning and Mengistae (2001), Bigsten and Söderbom (2006), and Coad and Tamvada (2012).

[11] For instance, Sørensen and Phillips (2011) argue that work experience in the prior firm shapes both the entrepreneur's competence and his/her commitment to the entrepreneurial role. However, although the

competence and information inherited from the mother firm provide an initial advantage, parental influence may generate inertia and resistance to change unless the new company is able to create a unique competitive identity (see Ferriani, Garnsey, and Lorenzoni 2012).

[12]A recent article by Frankish et al. (2013) questions the idea that previous work experience affects firms' performances. They propose that there are good reasons to expect no significant effects of work experience, such as the importance of chance, entrepreneurs' propensity toward optimism, and the unlikely event that two business situations are identical. They use UK data to show that there is no significant evidence about entrepreneurial learning. It must be noted, however, that such results could, to some extent, be due to the peculiarity of the sample they use due to institutional specificities of the UK business environment.

[13]The risk of overstating the hindering role of credit constraints is particularly high in questionnaire analyses where nascent or newborn entrepreneurs are asked to list their main difficulties in starting and/or running a new firm. In fact, they have the self-indulgent tendency to indicate a lack of external financial support as the main cause of their problems, whereas in most cases, this is only a symptom of more fundamental deficiencies that are internal to the firm.

[14]The authors extracted their firm-level data from the World Bank Investment Climate Survey.

[15]Nafziger and Terrell (1996), using evidence from India, found that higher education of the founding entrepreneur reduces firm survival, indicating the importance of outside opportunities in paid wage employment within the formal sector.

[16]Ligthelm (2011) found that business management skills are one of the strongest predictors of survival among small informal firms in South Africa.

[17]For an updated survey on the vast available micro-evidence on the link between innovation and productivity, see Mohnen and Hall (2013). For a discussion of the key role of innovation and R&D in young firms and SMEs in general, see Ortega-Argilés, Vivarelli, and Voigt (2009) and Voigt and Moncada-Paternò-Castello (2012).

[18] For instance, Arrighetti and Vivarelli (1999), after applying a factor analysis to a sample of 147 Italian spinoffs, found that innovative factors (related both to the innovative motivations of the founder and to his/her previous innovative experience in the mother firm) were significantly correlated with post-entry performance. Their subsequent cluster analysis also revealed that the innovative group was more likely to have better post-entry performance (see also Vivarelli and Audretsch 1998).

[19]Rather, R&D-based initiatives in DCs are often the outcome of the outsourcing by US, European, and Japanese multinationals; see Moncada-Paternò-Castello, Vivarelli, and Voigt 2011.

[20]This is unfortunate because, as discussed above, "defensive and necessity entrepreneurs" appear to make up the bulk of self-employment in DCs, with activities ranging from street vending and small retailing to traditional personal services.

[21] This mechanism can work up to a given threshold. Belonging to a socioeconomically excluded group may decrease the likelihood of successfully founding a new firm (this is the case, for instance, for the caste system in India; see Monsen, Mahagaonkar, and Dienes 2012).

[22]As correctly pointed out by Shane (2009, 41), "Policy makers believe a dangerous myth. They think that start-up companies are a magic bullet that will transform depressed economic regions, generate innovation, create jobs. This belief is flawed because the typical start-up is not innovative, creates few jobs, and generates little wealth".