THE LEAST DEVELOPED COUNTRIES REPORT 2018
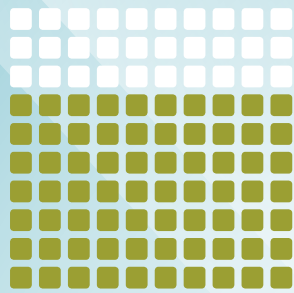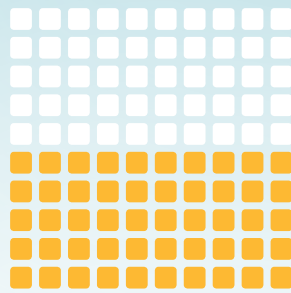
CHAPTER

2

Towards a nuanced appraisal
of the entrepreneurial landscape
in the least developed countries
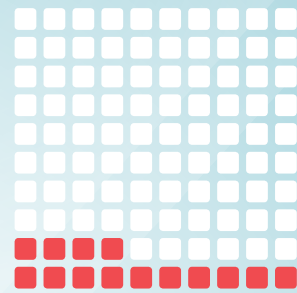
SELF-EMPLOYMENT IS
THE MAIN FORM OF "ENTREPRENEURSHIP" IN LDCs

70%*
LDCs

50%*
Other developing countries

14%*
Developed countries

*Percentage of total employment

DIFFERENT CONTRIBUTIONS
TO STRUCTURAL TRANSFORMATION

Smaller and younger firms

+ More employment growth

– Lower survival rates

Larger firms

+ Higher productivity growth
More stable and secure jobs

– Lower employment growth

DISTRIBUTION OF FORMAL FIRMS IN LDCs
REVEALS A "MISSING MIDDLE"

58% 5–20

12% 20–30

9% 30–50

8% 50–100

12% 100+

Number of employees

CHAPTER 2

Towards a nuanced appraisal of the entrepreneurial landscape in the least developed countries

A. Introduction

Entrepreneurship has increasingly become an area of focus in the development policy discourse, and is presented by various agreements, from the Istanbul Programme of Action to the Addis Ababa Action Agenda, as a key avenue to private sector development and employment generation, especially for women and youth. However, consensus has not yet been reached on the definition or the measurement of entrepreneurship and the nature of its relationship with the development process, despite the insights of theoretical contributions on the role of entrepreneurs in investment and innovation (see chapter 1).

Such general issues are arguably more problematic in LDCs, with regard to which theoretical definitions of entrepreneurship are blurred, given structural features such as predominantly agricultural labour forces; a preponderance of small-scale informal enterprises, which are more difficult to monitor; and limited economic diversification. A nuanced mapping of the multifaceted entrepreneurial landscape in LDCs is therefore critical to harnessing entrepreneurship effectively for structural transformation and aligning enterprise policies with broader development strategies.

This chapter presents some stylized facts on the state of entrepreneurship and enterprise development in LDCs, making the case for adding nuance and texture to the current understanding and noting the need for better articulation of the implications for structural transformation. To contain the problem of data limitation, two complementary steps are taken. First, occupational data, principally from labour and population surveys, is used to characterize the profiles, attributes and aspirations of individual entrepreneurs, largely based on commonly used dichotomies such as formality and informality and opportunity and necessity; and to consider the life cycle of enterprises from start-up to business discontinuation. Second, more formal evidence is presented, based on two key determinants of firm performance, mainly from World Bank Enterprise Surveys. The surveys focus on formal non-agricultural enterprises, thus excluding a major part of the economy, yet the richness of the data allows for a more rigorous assessment of the contributions of different types of firms to structural transformation.

The chapter is structured as follows. Section B outlines key challenges in the measurement of entrepreneurship and related data limitations, underscoring the extent to which they constrain the debate on the role of entrepreneurship in economic development. Section C triangulates different

The analysis of entrepreneurship is fraught with theoritical complications and measurement problems

methodological approaches and data sources to highlight the particular characteristics of LDCs in terms of the prevalence of entrepreneurial activities; the key features of entrepreneurship, that is formality versus informality and opportunity versus necessity; and the profile of entrepreneurs. Section D presents a closer look at two areas of particular importance in LDCs, namely the informal sector and rural non-farm enterprises. Section E provides a more formal analysis of the drivers of firm performance in LDCs, highlighting the need for a nuanced approach to enterprise development to harness the contribution of the private sector to structural transformation in a context of firm heterogeneity. Section F provides a summary and highlights policy considerations.

B. The measurement of entrepreneurship

The analysis of entrepreneurship is fraught with complications and measurement problems, particularly in developing countries and LDCs, impeding research on its role in economic development (Ahmad and Hoffman, 2007; Hessels and Naudé, 2017; Naudé, 2013; Ahmad and Seymour, 2008; Struthers and Nziku, 2018). The concept of entrepreneurship has been the subject of prolonged and intense theoretical debate at the intersection of economic theory and business strategy, with different strands of the literature proposing competing definitions based on occupational, institutional and functional perspectives (Klein, 2008; Naudé, 2013).

The interpretation of evidence on entrepreneurship therefore requires caution, as these approaches are different in nature. The occupational perspective focuses on the determinants of an individual entrepreneur's choice to start a business. It therefore treats the individual as the unit of analysis and sheds light on the influence of psychological, educational and socioeconomic attributes on the choice between entrepreneurship and wage employment, given the risk-adjusted expected returns to each. The institutional perspective emphasizes instead the establishment of enterprises and related dynamics, assessing variables such as start-up rates and the prevalence of high-growth firms. Finally, the functional (Schumpeterian) perspective focuses on a more elusive aspect, namely the role of entrepreneurs

Entrepreneurship manifests in the economy in different forms and with distinct economic effects. Hence a nuanced mapping is critical

in identifying potential opportunities and investing capital to reap the associated profits, thereby catalysing the process of creative destruction (Klein, 2008; Schumpeter, 1934).

These conceptual differences are mirrored in the measurement of entrepreneurship, leading to the development of competing metrics that directly or indirectly segment entrepreneurial activities in various ways, for example into formal and informal businesses and those motivated by necessity and those motivated by opportunity (Desai, 2011). Consequently, available indicators measure everything from personal attributes of entrepreneurs such as gender to outcomes of the entrepreneurial process such as start-up rates (Hoffmann et al., 2006). A careful contextualization, interpretation and comparison of the various indicators is therefore critical.

A growing strand of the literature documents how entrepreneurship manifests in the economy in different forms and with distinct economic effects (Ahmad and Hoffman, 2007; Baumol, 1990; Hessels and Naudé, 2017; Vivarelli, 2016). However, the various categories of entrepreneur delineated are not mutually exclusive, and co-exist in varying proportions in each country. Since no one measure captures all forms of entrepreneurship, the thorough mapping of the entrepreneurial landscape and the identification of policy strategies and priorities necessarily rely on an array of complementary indicators (Ahmad and Hoffman, 2007; UNCTAD, 2012a). The complementarity of the occupational and institutional perspectives, in particular, is critical to ensuring consistency and alignment between entrepreneurship strategies and broader private-sector development policies (UNCTAD, 2012a).

Indicators vary in how appropriate they are for different contexts and types of analysis, and each has its advantages and disadvantages and is subject to different caveats. In LDCs, for example, the prevalence of informal activities and self-employment may make occupational metrics focusing on the individual more pertinent than those based on formal business registration (Desai, 2011). However, many occupational indicators, notably those based on labour force surveys, do not allow for assessments

of key dimensions of entrepreneurship such as employment generation, innovation and growth potential (Margolis, 2014).[1] Different indicators are also required to analyse the determinants of enterprise formalization and to identify firms with high growth potential.[2]

Among the most widely used measures of entrepreneurship are the following (Desai, 2011; Naudé, 2013; Struthers and Nziku, 2018):

- The share of self-employment in total employment, computed by ILO.

- Total early-stage entrepreneurial activity, assessed by GEM, and defined as the share of the adult population in the process of starting a business or that owns and/or manages a new business (box 2.1).

- The density of new businesses, compiled by the World Bank on the basis of information from national business registries, and defined as new registrations of limited liability companies per 1,000 people of working age (15–64 years).[3]

An important practical problem in mapping the status of entrepreneurship in developing countries, in particular in LDCs, is the lack of reliable and internationally comparable data, in contrast with the availability of well-structured and regularly updated sets of indicators for OECD member countries (Ahmad and Hoffman, 2007). For example, total early-stage entrepreneurial activity data for 2008–2017 are available for only 11 of the 47 LDCs and, on average, there are only two yearly observations from this decade, compared with five for other developing countries and seven for developed and transition economies (figure 2.1). The World Bank Enterprise Surveys cover 41 of the 47 LDCs, and often have little or no longitudinal dimension. Each measure is also subject to various methodological caveats, including how representative the samples surveyed are and the imputation of missing data, as well as more detailed statistical qualifications (Margolis, 2014; Timm, 2018).

Interpretation of the three measures as proxies for the prevalence of entrepreneurial activity also requires caution, as they capture such activity to some extent, yet also partly reflect inter-State differences in levels of development. Self-employment and total early-stage entrepreneurial activity are likely to reflect, at least in part, the disproportionate importance in developing countries of activities that are notionally entrepreneurial but lack the critical element of creative destruction underscored by Schumpeter (1934). As with the definition of self-employment, the GEM definition of entrepreneurship is deliberately broad and therefore likely to include small-scale and informal

Box 2.1 **Global Entrepreneurship Monitor conceptual framework and key terminology**

The conceptual approach and terminology used by GEM in its data collection differ somewhat from those used in this report. The adult population surveys of GEM adopt an occupational perspective of entrepreneurship, broadly defined as "any attempt at new business or new venture creation, such as self-employment, a new business organization or the expansion of an existing business, by an individual, a team of individuals or an established business" (see https://www.gemconsortium.org/wiki/1149). This definition includes business activities of a notionally entrepreneurial character that lack the element of innovation, which is at the core of both structural transformation and the Schumpeterian view of the entrepreneur. The relationships between the entrepreneurial process and the GEM operational definitions are outlined in box figure 2.1.

Box figure 2.1

Schematic representation of the Global Entrepreneurship Monitor conceptual framework
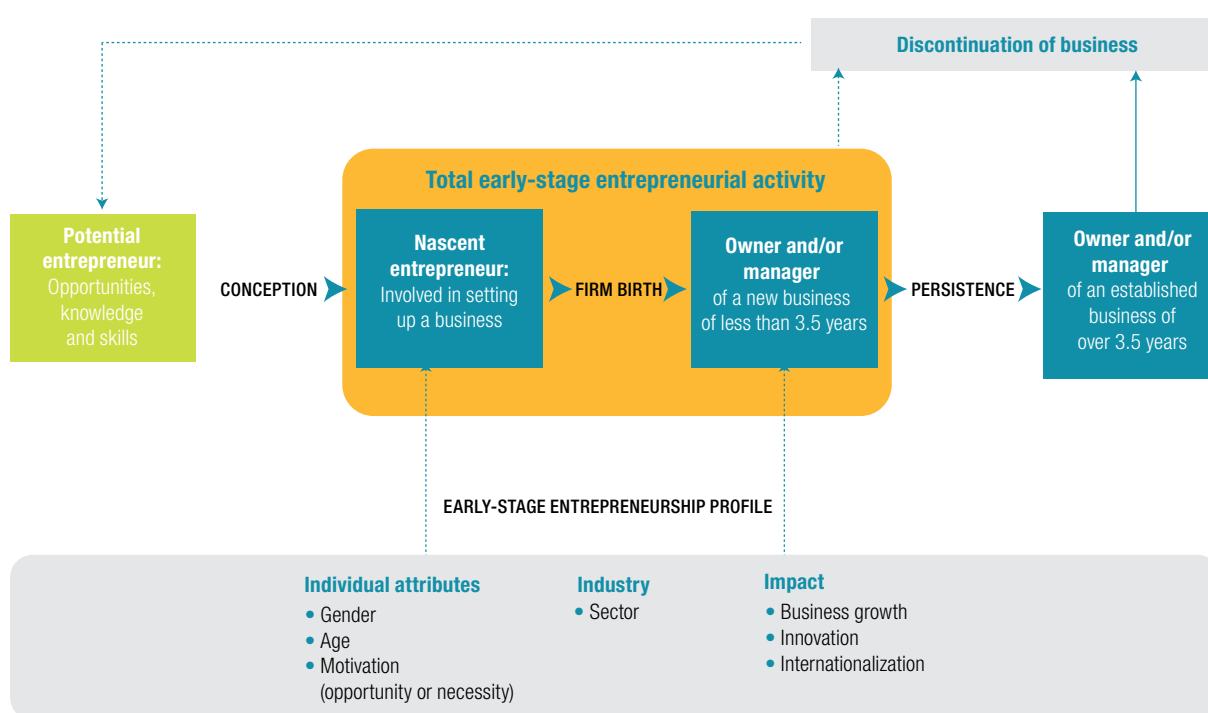
Total early-stage entrepreneurial activity, the most well-known index of GEM, measures the percentage of adults (18–64 years) that are either in the process of starting a business ("nascent entrepreneurs") or have started a business within the last 3.5 years ("baby entrepreneurs"). GEM also provides information on the ownership of established businesses, that is, those in operation for over 3.5 years; and business discontinuation. In addition, GEM collects information on entrepreneur motivation, asking the following question: "Are you involved in this start-up to take advantage of a business opportunity or because you have no better choices of work?" (see https://www.gemconsortium.org/wiki/1177). This allows entrepreneurs driven by necessity to be distinguished from those driven by opportunity.

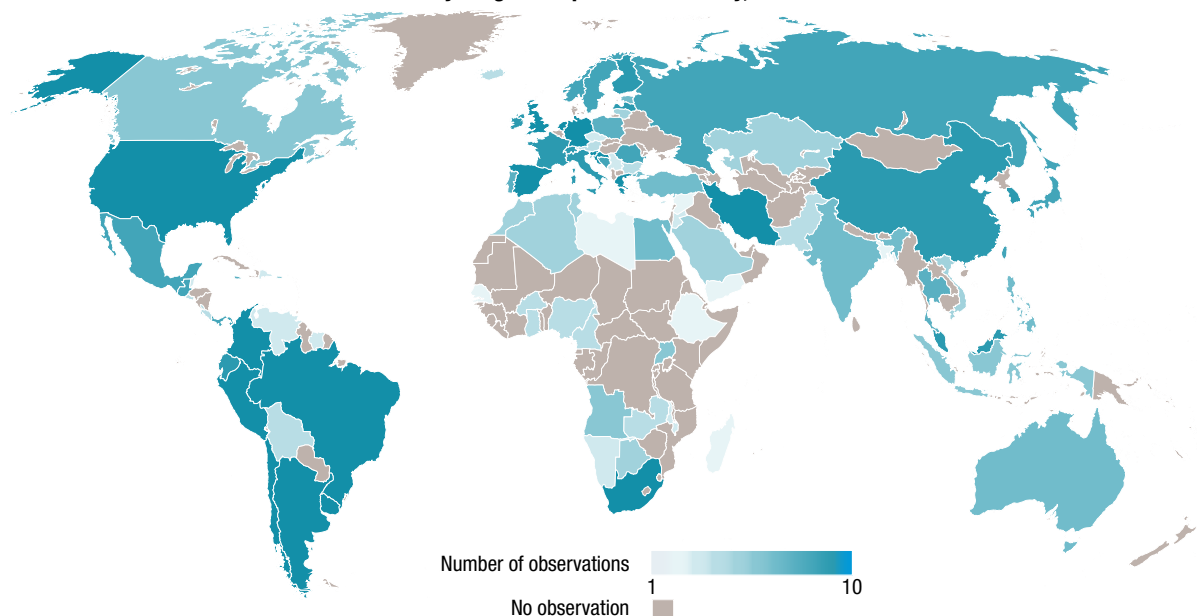*Source*: UNCTAD secretariat, based on GEM, 2018.

activities of a survivalist nature, ranging from family businesses to seasonal rural non-farming activities. Conversely, the reliance of the new business density indicator on data on the formal registration of limited liability companies makes the measurement prone to an underestimation of entrepreneurship in developing countries, in which such a legal structure is relatively uncommon.

The need for caution is demonstrated by using the pairwise Spearman's rank correlation for 108 country-level observations across the three indicators (table

2.1). There is a highly significant positive correlation between the share of those self-employed and total early-stage entrepreneurial activity, and a negative correlation between each of these and new business density, which is statistically significant with regard to total early-stage entrepreneurial activity. This reflects the distinction between new business density and total early-stage entrepreneurial activity, which provides a broader view of entrepreneurship that implies neither registration nor legal frameworks such as limited liability companies.

Figure 2.1

Number of available observations of total early-stage entrepreneurial activity, 2008–2017

Number of observations 1 — 10

No observation

Source: UNCTAD secretariat calculations, based on data from GEM database.

These findings highlight the high level of sensitivity of the analysis to the indicator used, due to the widely different facets of entrepreneurship captured by each. Moreover, the results partly reflect systematic differences in the nature of entrepreneurship at different levels of development, as demonstrated by the relationship between the three measures and GDP per person employed (figure 2.2).[4] Both self-employment (figure 2.2. (a)) and total early-stage entrepreneurial activity (figure 2.2 (b)) are negatively correlated with GDP per person employed overall, exhibiting a pattern broadly consistent with the alleged U-shaped relationship postulated in the literature (Naudé, 2013; Quatraro and Vivarelli, 2015; Wennekers and Thurik, 1999). New business density (figure 2.2 (c)), by contrast, appears to increase with GDP per person employed, at least for plausible values of the latter.[5] This suggests that the effects of entrepreneurship, broadly defined, differ between contexts, in part reflecting its particular manifestations at different levels of development. This view is reinforced by the marked clustering of

LDCs in each measure in figure 2.2, with double the self-employment and total early-stage entrepreneurial activity as in other developing countries, yet with new business density at only one quarter of the average in other developing countries.

These findings are consistent with previous empirical findings that the spread between the subcomponents of total early-stage entrepreneurial activity (nascent and baby entrepreneurs) and new business density is related to local institutional and business conditions after controlling for levels of economic development, which also play a significant role (Acs et al., 2008; Desai, 2011).

The apparently contradictory message in figure 2.2 epitomizes the "micro–macro paradox" noted by Hessels and Naudé (2017) on the role of entrepreneurship in development. Macroeconomic theories offer reasons to expect that at least some traits of entrepreneurship are conducive to economic growth, yet caution is required in identifying a microeconomically relevant measure that can provide

Table 2.1

Pairwise Spearman's rank correlation across measures of entrepreneurship for 108 countries

	Share of self-employment (percentage of total employment)	Total early-stage entrepreneurial activity	New business density
Share of self-employment (percentage of total employment)	1		
Total early-stage entrepreneurial activity	0.513**	1	
New business density	-0.529***	-0.175	1

Source: UNCTAD secretariat calculations, based on data from ILOstat; GEM and World Bank Doing Business databases.

Notes: Country-level observations refer to the latest year for which contemporaneous variables are available; *, ** and *** indicate a 10, 5 and 1 per cent significance level, respectively.

Figure 2.2

Gross domestic product per person employed and common measures of entrepreneurship
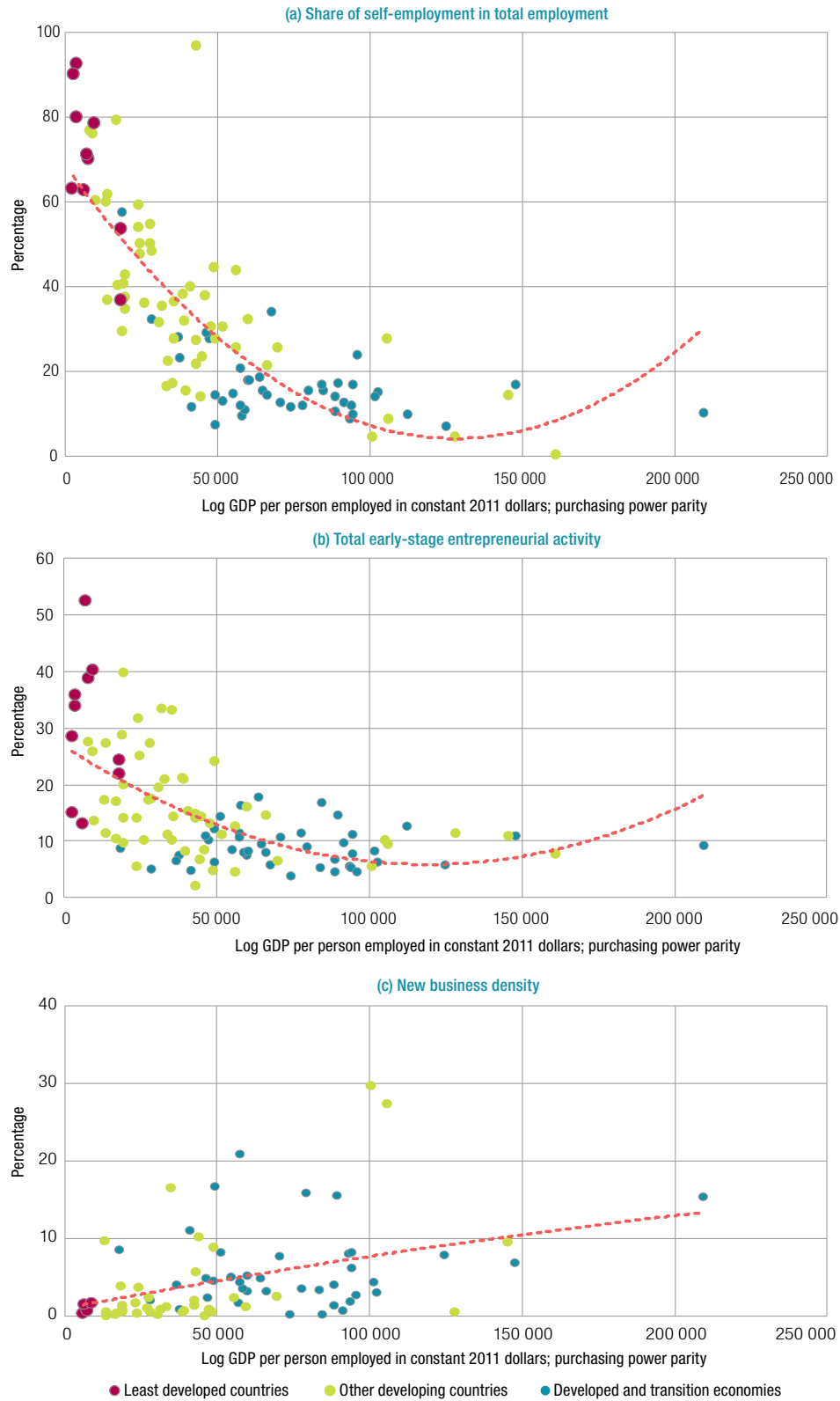
(a) Share of self-employment in total employment

(b) Total early-stage entrepreneurial activity

(c) New business density

● Least developed countries ● Other developing countries ● Developed and transition economies

Source: UNCTAD secretariat calculations, based on data from ILOstat, GEM and World Bank Doing Business databases.
Note: Country-level observations considered include the latest year for which at least two entrepreneurship measures are available; the specification of the fitted lines is assumed to be quadratic, consistent with the postulated U-shaped relationship between entrepreneurship and GDP per capita.

insights and identify some stylized facts about several dimensions of entrepreneurship that are critical to structural transformation.

Entrepreneurship mapping in LDCs requires a careful triangulation of scant sources of information, and a critical assessment of complementary indicators

information on the mechanisms postulated rather than reflecting other spurious effects. Since the level of development itself may have a strong bearing on the manifestations of entrepreneurship, different metrics, as well as different econometric specifications, may lead to different results.[6]

Mapping entrepreneurship status in LDCs is thus particularly challenging and this limits the scope for evidence-based discussion of entrepreneurship strategies and policy measures. It is further complicated by the elusive nature of many of the most common forms of entrepreneurial activities in LDCs — notably small-scale establishments, informal businesses and seasonal rural non-farming activities — from a statistical perspective (African Development Bank et al., 2017; International Monetary Fund, 2018; UNCTAD, 2014a; UNCTAD, 2015a). Mapping therefore requires a careful triangulation of scant sources of information, from the few available data sets to qualitative case studies, and a critical assessment of complementary indicators. This highlights the importance of improving statistical capacities in LDCs and enhancing the quality of local data collection systems, to enable policymakers to make better-informed decisions.

C. Entrepreneurship in the least developed countries: Stylized facts

This section attempts to characterize the entrepreneurial landscape in LDCs, taking into account the limitations identified in section B. As the data-related issues preclude a comprehensive assessment of the status of entrepreneurship in LDCs, the objective is rather to contextualize the remainder of the analysis in this report by highlighting commonalities and variations among LDCs and comparing them with other country groups. The discussion considers, in particular, the prevalence and types of entrepreneurial activity in LDCs and the characteristics of entrepreneurs. The evidence reviewed is merely suggestive, and none of the available indicators corresponds exactly to the working definition of entrepreneurship discussed in chapter 1. However, it is possible to glean some

1. The prevalence of entrepreneurial activities in the least developed countries

It is well documented that wage employment is relatively limited in LDC labour markets, while various forms of self-employment, including as employers, own-account workers and family workers, are visibly more prevalent, notably in rural areas and in the urban informal sector (Margolis, 2014; UNCTAD, 2014a; UNCTAD, 2015a; World Bank, 2012). The incidence of self-employment in LDCs is high, even by developing country standards, at 70 per cent of total employment, compared with 50 per cent in other developing countries, with an estimated 268 million self-employed workers in 2017 (figure 2.3). The prevalence of self-employment has declined somewhat over time in almost all LDCs,[7] but relatively slowly, suggesting that it will remain a critical feature of labour markets in LDCs in the long term.

The greater prevalence of self-employment is by no means an unequivocal indication of a lively entrepreneurial scene, however. The breakdown of self-employment by employment status reveals a more serious situation, in particular from the perspective of structural transformation (figure 2.4).

Figure 2.3

Self-employment as share of total employment in the least developed countries and other developing countries, period averages, 1990–2017
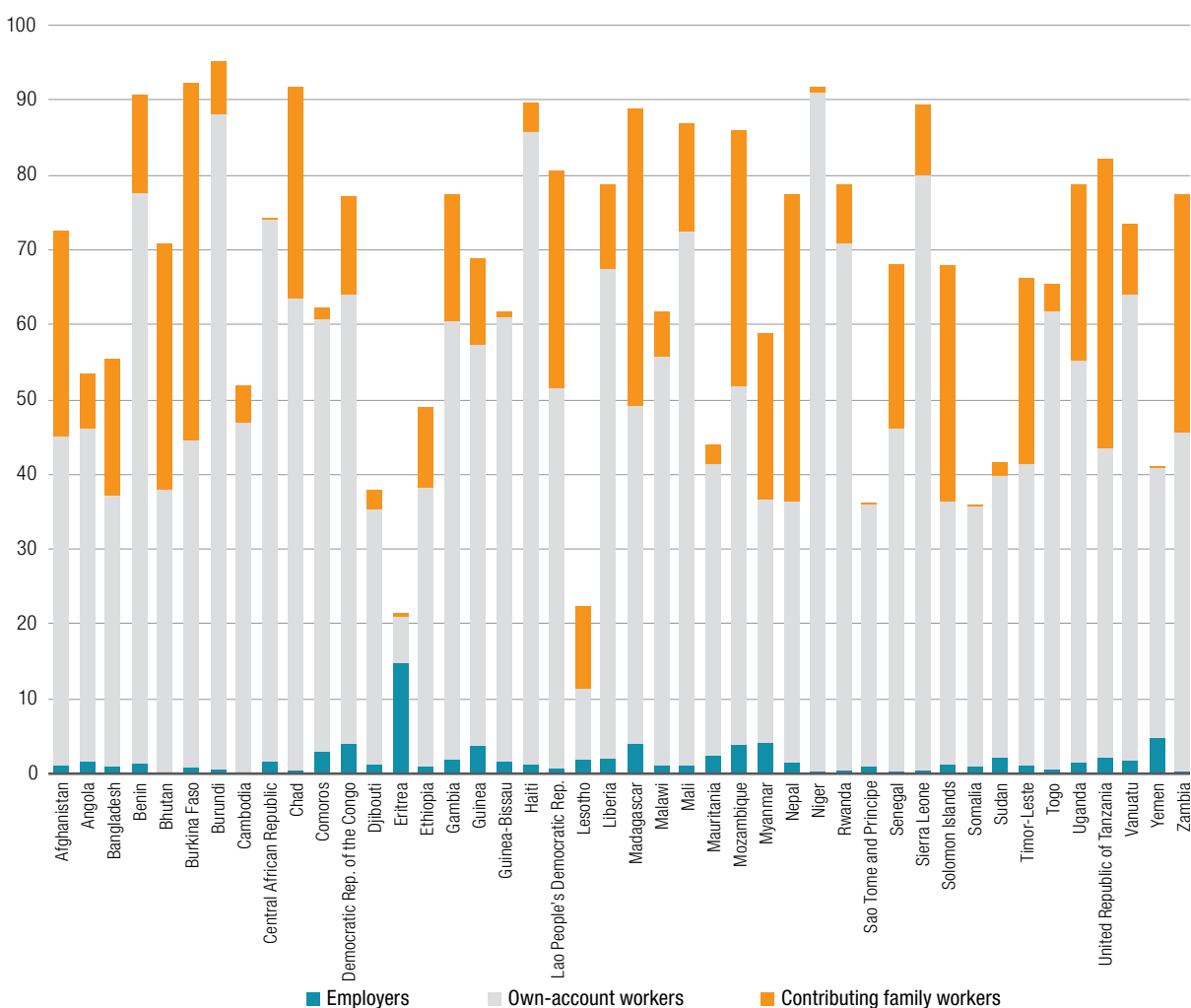
(Percentage)

■ Least developed countries
◻ Other developing countries
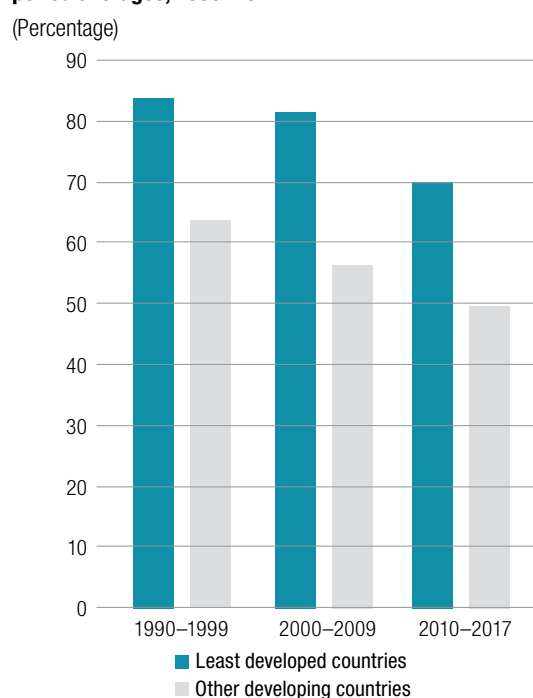
Source: UNCTAD secretariat calculations, based on data from ILOstat database.

Figure 2.4

Self-employment by employment status, as share of total employment in the least developed countries, 2017

(Percentage)

Legend: ■ Employers ■ Own-account workers ■ Contributing family workers

Source: UNCTAD secretariat calculations, based on data from ILOstat database.

There is considerable variability among individual economies, yet the overwhelming majority of self-employed workers in LDCs can more accurately be defined as own-account workers; in 2017, this category accounted for nearly 70 per cent of self-employment in LDCs (185 million people). Contributing family workers, typically predominant in agriculture, accounted for 28 per cent (76 million people) and the remaining 3 per cent (close to 8 million people) were employers.[8] Therefore, while self-employment is ubiquitous in LDCs, only a fraction of the self-employed may be considered truly entrepreneurial or engaged in progressive forms of entrepreneurship. Existing empirical studies broadly put this proportion at around one third for developing countries as a whole (Gindling and Newhouse, 2012; Grimm et al., 2012; Margolis, 2014).

The adult population surveys of GEM also indicate a significant prevalence in LDCs of both early-stage and established entrepreneurs, broadly defined (figure 2.5; see annex 1 for country and year coverage in GEM data used in figures 2.5–2.7 and 2.9–2.15).[9] The unweighted average in the 11 LDCs for which data are available suggests that close to half of the adult population is, on average, engaged in entrepreneurial activity in some form; 29 per cent are engaged in total early-stage entrepreneurial activity and 18 per cent, in established businesses, compared with 16 and 8 per cent, respectively, in other developing countries, and 9 and 7 per cent in developed and transition economies. Adults in LDCs are twice as likely as those in other developing countries to be engaged in entrepreneurial activities, broadly defined. The pervasiveness of business-related occupations

Figure 2.5

Early-stage and established entrepreneurship, latest available year

(Percentage)
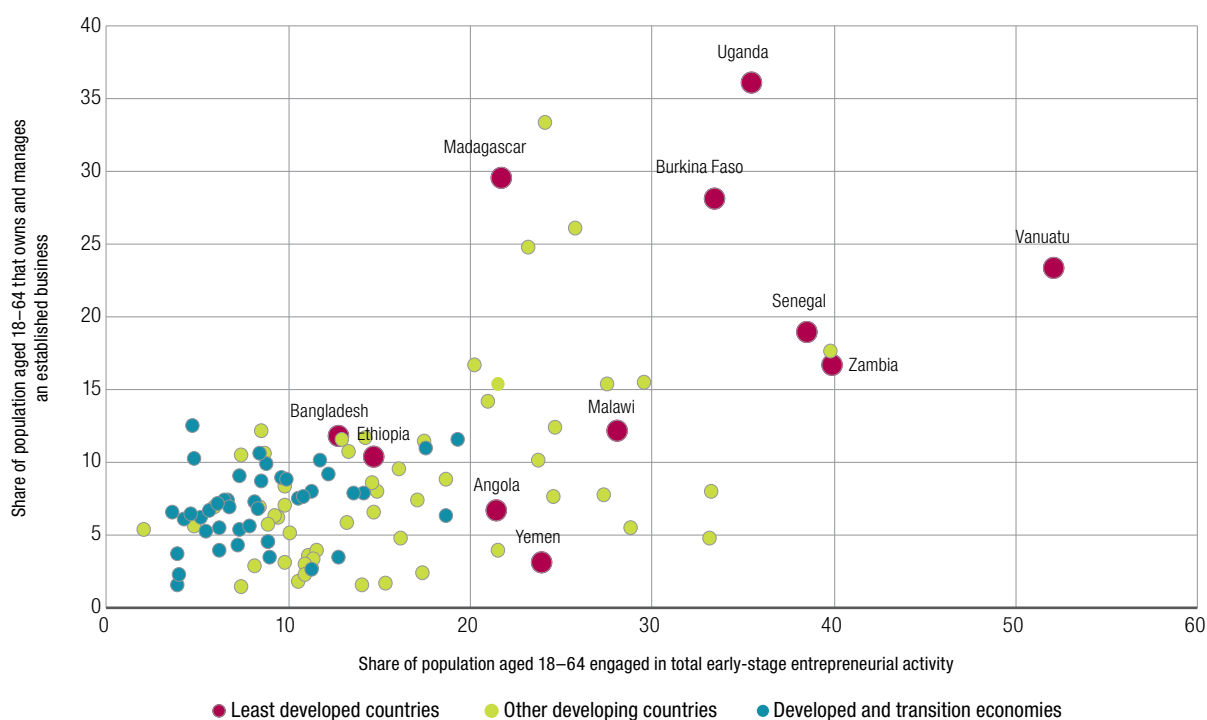
Source: UNCTAD secretariat calculations, based on data from GEM database.

in LDCs is accompanied by favourable societal values towards entrepreneurship; an unweighted average of 86 per cent of adults state that successful entrepreneurs receive high status and 76 per cent, that starting a business is a good career choice; these are more favourable views than in other developing countries and developed economies (GEM, 2017; GEM, 2018). Entrepreneurial intentions also appear more optimistic in LDCs than elsewhere; 44 per cent of adults not already involved in entrepreneurial activities report an intention to start a business within three years.

GEM data also show an apparent disconnect between generalized perceptions about the business world in LDCs and the more complex reality experienced by those who cross the "entrepreneurial Rubicon" from considering establishing a business to doing so (Delanoë-Gueguen and Fayolle, 2018). In eight of the 11 LDCs for which data are available, a substantial majority of adults consider that there are good opportunities to start a business, and in 10 of the 11 LDCs, that they possess the necessary skills to do so (figure 2.6). These views appear optimistic, both in absolute terms and by international standards.[10] Risk aversion in LDCs, as proxied by the GEM "fear of failure" variable, is not significantly different than in other country groups.[11]

Based on their motivational index and growth expectations, early entrepreneurs in LDCs appear less optimistic (figure 2.7). Aside from the greater prevalence of necessity-driven rather than opportunity-driven motivations, as discussed in section C.2, the proportion of early entrepreneurs with high job-growth expectations is particularly low in LDCs: on average, 9 per cent expect to create six or more jobs within five years, compared with 21 per cent in both other developing countries and developed and transition economies.

Data from perception-based surveys should be treated with caution and GEM recognizes issues with regard to its reliability, especially in cross-country comparisons at different points in time (Timm, 2018). There is also the issue of reference dependence, to the extent that the level and nature of economic activity itself influences perceptions; it is plausible that the ubiquity of small-scale businesses with low margins and low barriers to entry give rise to exaggerated perceptions of the extent and accessibility of business opportunities.

Overall, therefore, the entrepreneurship landscape in LDCs is mixed, as presented in this section. Between half and two thirds of the labour force in LDCs is typically engaged in notionally

Figure 2.6

Perceptions of the adult population on entrepreneurship, latest available year

(Percentage)
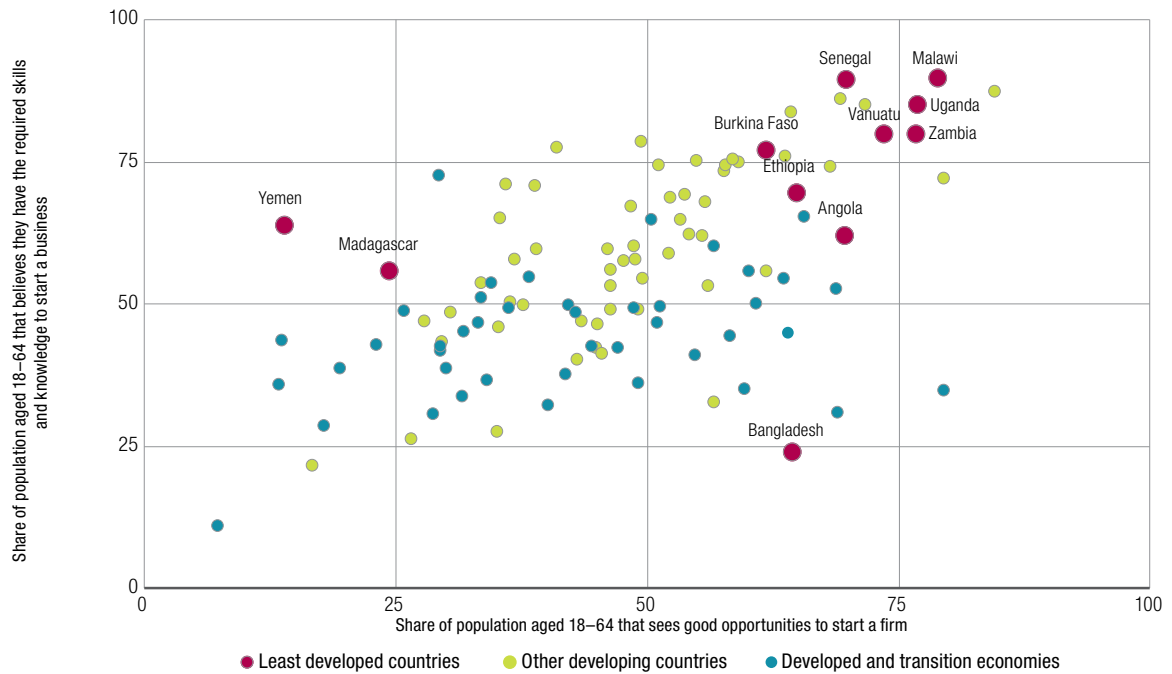
Source: UNCTAD secretariat calculations, based on data from GEM database.

Figure 2.7

Motivational index and growth expectations of early entrepreneurs, latest available year
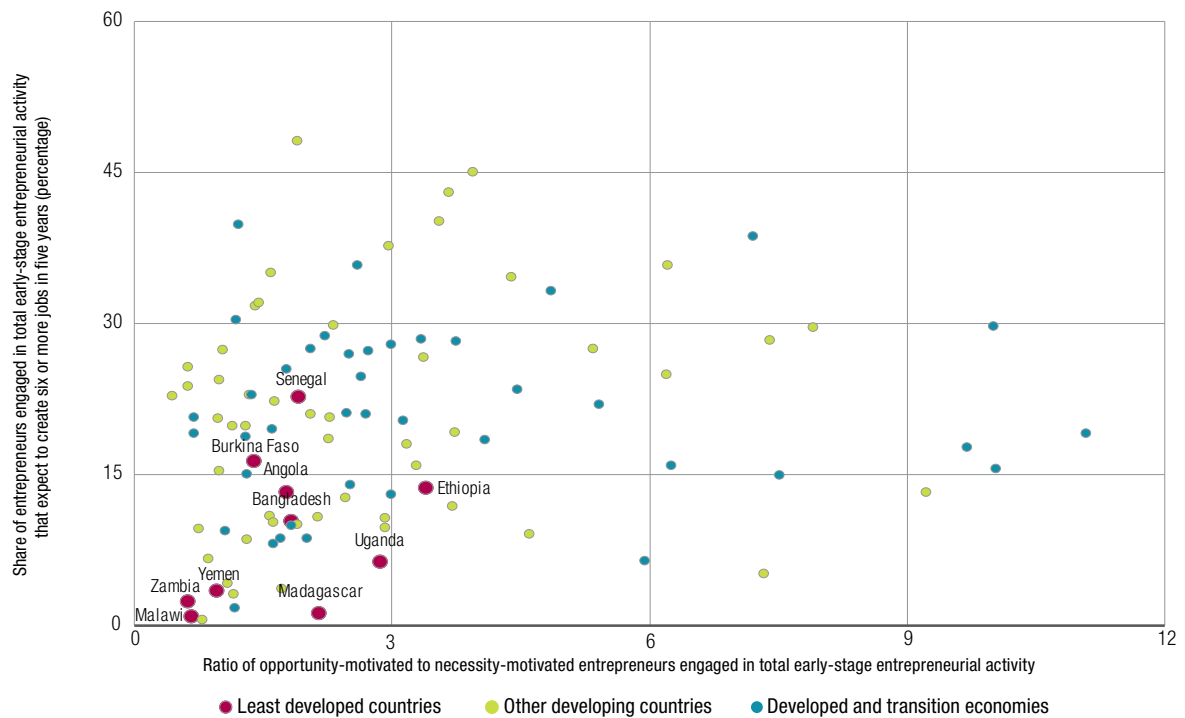
Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: The motivational index, as defined by GEM, represents the ratio of opportunity-motivated to necessity-motivated entrepreneurs engaged in total early-stage entrepreneurial activity.

Between half and two thirds of the labour force in LDCs is engaged in notionally entrepreneurial activities, but their contribution to structural transformation is limited

entrepreneurial activities, depending on the indicator used, suggesting considerable entrepreneurial potential. However, the contribution to structural transformation is more limited, as a disproportionate share of such activities is confined to small-scale and often informal survivalist businesses. This shortcoming is further underlined by the low level of job creation anticipated by entrepreneurs themselves. Redressing this situation requires disentangling the various types of entrepreneurial activities and leveraging those that present the greatest innovative potential. This is particularly important because structural transformation in LDCs is likely to require a consolidation of the entrepreneurial landscape through job creation by more productive and innovative enterprises, to absorb the survivalist self-employed into wage employment.

2. Traits of entrepreneurship in the least developed countries

There is growing consensus that the role of entrepreneurship in development cannot be fully understood without unravelling the varied contributions of different types of entrepreneurs (Hessels and Naudé, 2017; Margolis, 2014; Quatraro and Vivarelli, 2015). In this context, entrepreneurship is typically characterized according to dichotomies such as formal and informal enterprises and opportunity-driven and necessity-driven entrepreneurs. Such conceptual distinctions are highly pertinent in LDCs, in which such divides are particularly marked. In practice, however, distinguishing between enterprises for analytical purposes according to administrative or essentially subjective criteria, such as those based on motivation, is problematic and transitions between categories are by no means uncommon. Informal enterprises may become formalized, while entrepreneurs by necessity may, over time, develop opportunity-driven enterprises. In addition, although closely related, the distinctions between formal and informal and opportunity-driven and necessity-driven are by no means coextensive (Amin and Islam, 2015; Desai, 2011). However, a comparison of different entrepreneurship metrics, if appropriately contextualized and interpreted, can provide important insights into the nature of entrepreneurship in LDCs.

a. Formality and informality

The most obvious distinction is that between formal and informal enterprises. The lack of systematic and comprehensive data hinders a formal assessment, yet the pervasiveness of informal entrepreneurship can be indirectly gauged from the size of the informal economy in LDCs. A recent study of 158 countries suggests that the shadow economy (defined as all economic activities hidden from official authorities for monetary, regulatory or institutional reasons) accounts for, on average, approximately 35 per cent of GDP in LDCs, compared with 27.7 per cent worldwide (figure 2.8). However, the typically smaller size of informal enterprises compared with their formal counterparts suggests that they represent a considerably larger proportion of businesses.

The prevalence of informal and small-scale firms in LDCs is further demonstrated by the deviation between metrics of entrepreneurship derived from an occupational approach and new business density as measured by new registrations of limited liability companies. In contrast with the diffusion of business-related occupations, new business density in LDCs remains significantly low by international standards, notwithstanding some signs of dynamism.[12] Measures of entrepreneurship based on nascent and baby entrepreneurs are typically nearly 10 times as great as measures based on new business density, implying that the overwhelming majority of new businesses do not fall into the latter category (Acs et al., 2008; Desai, 2011).

b. Opportunity and necessity

The distinction between opportunity-driven and necessity-driven entrepreneurs is of particular importance in LDCs, given the key role of the former in structural transformation (African Development Bank et al., 2017; Brixiova, 2010; Struthers and Nziku, 2018). Although strongly connected, the dichotomies between formal and informal and opportunity-driven and necessity-driven are by no means equivalent, in that many opportunity-driven enterprises may choose to remain below the radar in the informal sector (Amin and Islam, 2015; see section D).

There is some variation between LDCs, yet overall they appear to have a particularly low motivational index, reflecting a relatively high proportion of necessity-driven entrepreneurs. On average, there are 1.7 times as many early entrepreneurs in LDCs that describe themselves as opportunity-driven rather than necessity-driven, compared with 2.8 times as many in other developing countries and 3.6 times as many in developed and transition economies (figure 2.9). At the national level, the proportion of necessity-driven early entrepreneurs in LDCs ranges from 22

Figure 2.8

Size of shadow economy as share of gross domestic product, 2013–2015

(Percentage)
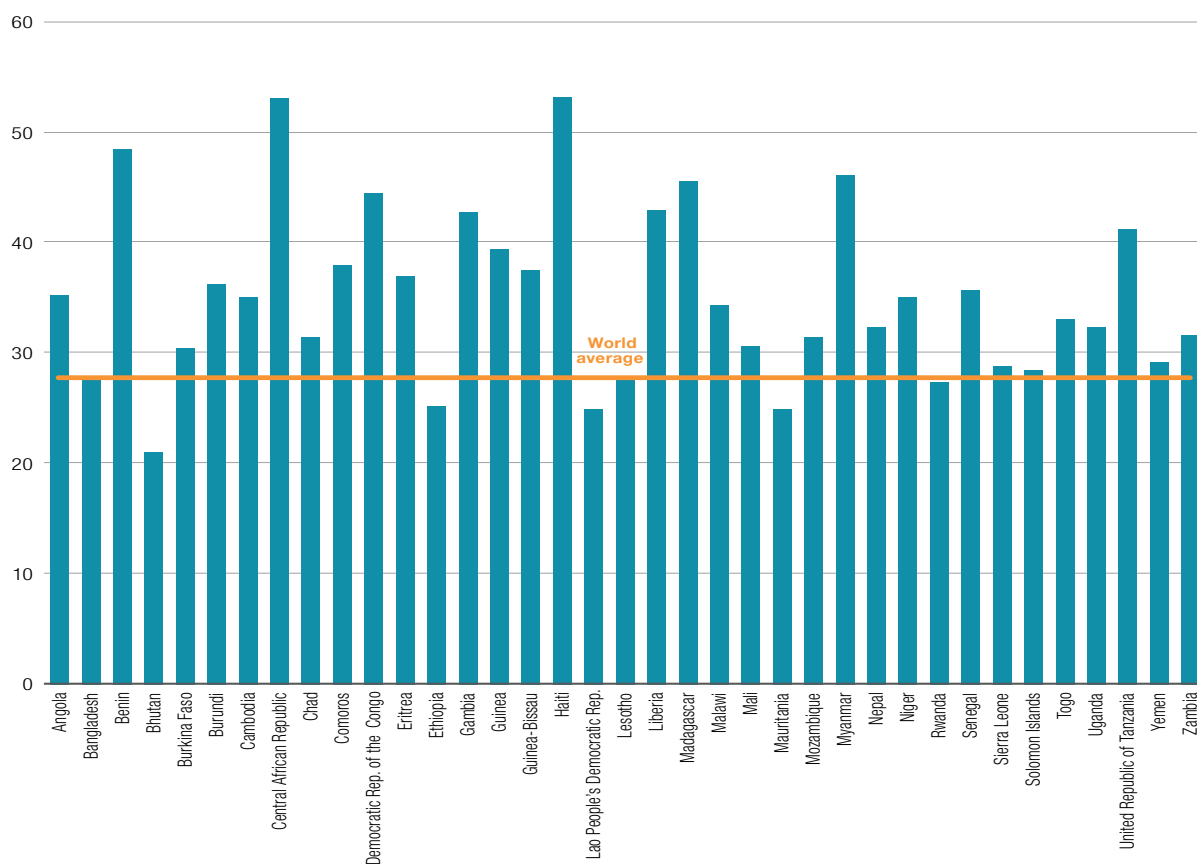
Source: UNCTAD secretariat calculations, based on data from International Monetary Fund, 2018.

Figure 2.9

Motivational index in selected least developed countries and by country group, latest available year
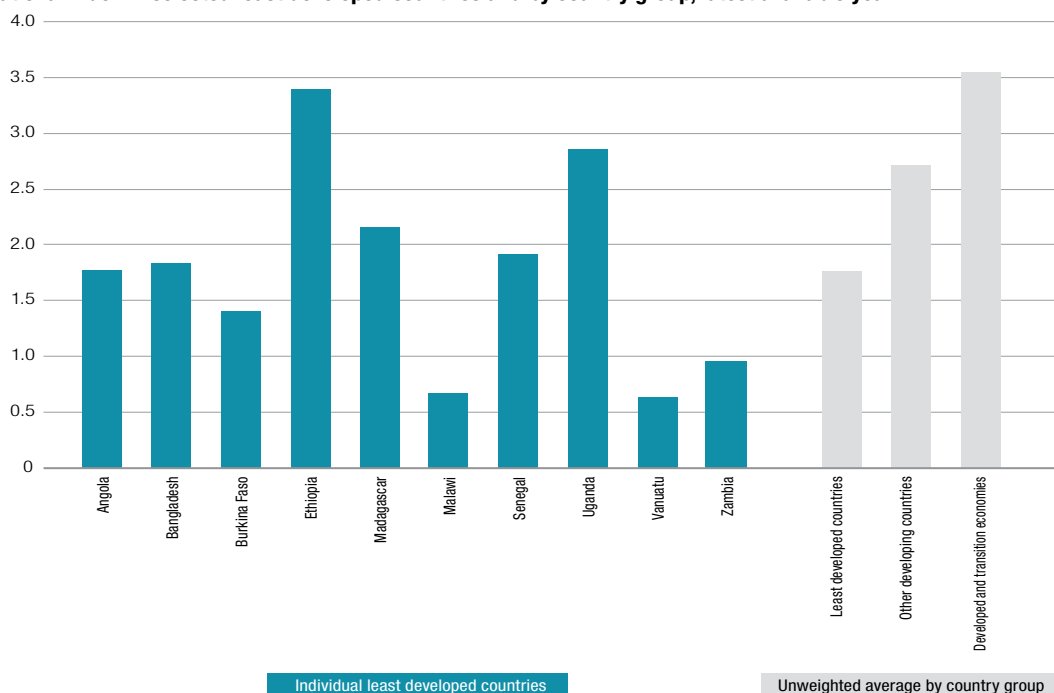
| Individual least developed countries | Unweighted average by country group |

Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: The motivational index, as defined by GEM, represents the ratio of opportunity-motivated to necessity-motivated entrepreneurs engaged in total early-stage entrepreneurial activity.

per cent in Ethiopia to 47 per cent in Malawi and Vanuatu.

Some caution is required in interpreting these figures due to the limited size of the sample and, more significantly, the subjective nature of the distinction between opportunity-driven and necessity-driven, based on respondent perceptions (box 2.1). For example, a woman selling corn or coffee on the street or a man waiting for a motorbike passenger at a market may be taking advantage of market opportunities, yet their businesses are not innovative and are unlikely to entail significant productivity increases. Such enterprises are more akin to underemployment as characterized by Lewis (1954) than to transformational businesses.

c. Innovation

The incidence of innovation among early entrepreneurs presents a broadly similar picture to that of motivation, regardless of reference dependence and possibly biased perceptions about how innovative products might be. Case studies in African LDCs show, for example, that "me-too businesses", based on imitations of existing activities, are predominant at lower levels of development and typically constitute the most common route for survivalist entrepreneurs (GEM, 2015; Herrington and Kelley, 2013; Wyngaard,

2015). On average, only 15 per cent of early entrepreneurs in LDCs report the introduction of a new product or service that few other businesses offer, substantially less than the 24 per cent in other developing countries and the 28 per cent in developed and transition economies.[13] Entrepreneurial employee activities, such as, among others, developing or launching new goods or services and setting up a new business unit, also tend to be less frequent in LDCs than in other country groups.

d. Sectoral composition

Limited innovation is reflected in the sectoral composition of activities in LDCs, which is dominated by those with low entry barriers and limited skill requirements.[14] In the nine LDCs for which data are available, the majority of activities are consumer-oriented services (such as personal services, social and recreational services and services in retail, motor vehicles, lodging, restaurants, health and education), which, on average, account for 63 per cent of early entrepreneurs and 57 per cent of established businesses (figure 2.10). Conversely, the backbone of structural transformation, that is, activities that GEM categorizes as falling under the transformative sector (namely construction, manufacturing, transportation, communications, utilities and wholesale) and business-oriented services (namely finance, insurance, real

Figure 2.10

Sectoral composition of early-stage entrepreneurship and established businesses, selected least developed countries, latest available year

(Percentage)
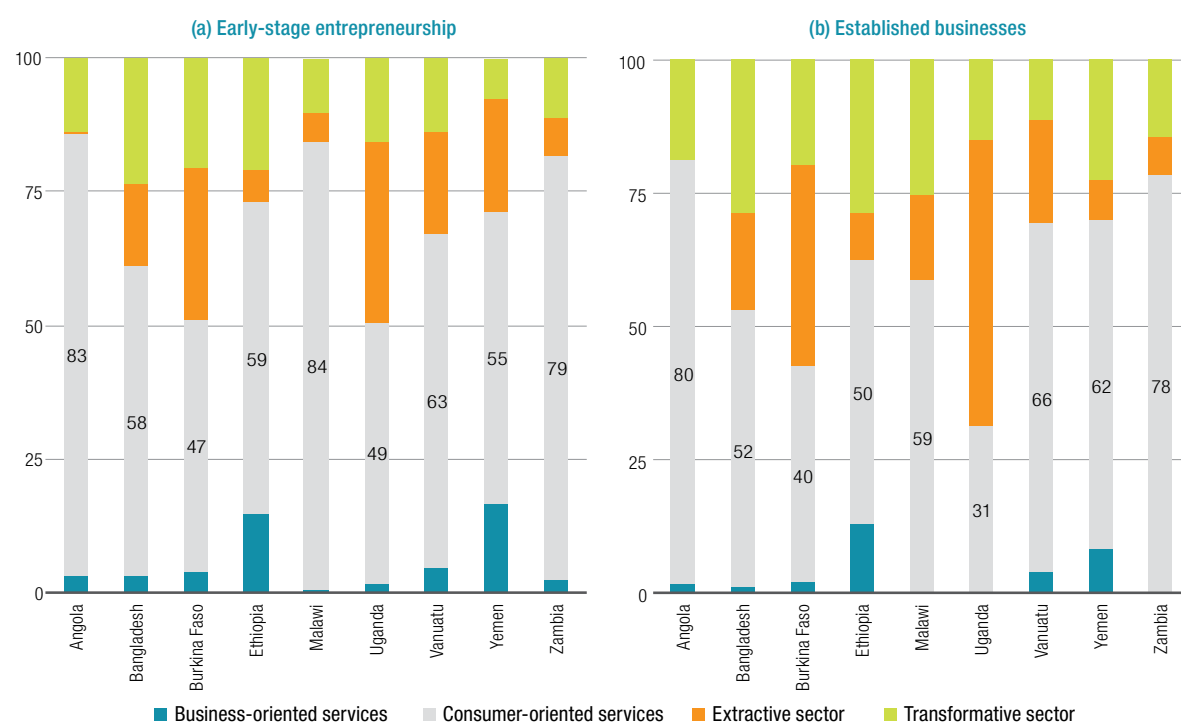
Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: Figures refer to GEM database full national data sets.

estate and all business services) play a much more subdued role. Only 15 per cent of early entrepreneurs and 20 per cent of established businesses operate in the transformative sector and only 6 and 3 per cent, respectively, in business-oriented services. The extractive sector (namely agriculture, forestry, fishing and all mining activities) appears to be significant only in Burkina Faso, Uganda and Yemen and, to a lesser extent, in Bangladesh and Vanuatu.

This contrasts sharply with the situation in other developing countries and developed economies, in which the transformative sector and business-oriented services play a much more prominent role. In other developing countries, the transformative sector accounts for, on average, 23 per cent of early entrepreneurs (a level achieved solely by Bangladesh among LDCs) and business-oriented services account for 10 per cent. The contrast with developed and transition economies is even more sharp; on average, 25 per cent of early entrepreneurs in these economies operate in the transformative sector and 27 per cent, in business-oriented services.

Me-too-businesses constitute the most common route for survivalist entrepreneurs in sectors with low entry barriers and low margins

These findings largely reflect the modest progress towards economic diversification made to date in LDCs and the concentration of non-agricultural employment creation in low-productivity services, which lead to little or no increase in labour productivity (UNCTAD, 2015a; UNCTAD, 2016a). There have been some signs of productivity-enhancing structural transformation since the mid-2000s (McMillan et al., 2014; McMillan et al., 2017). However, the evidence presented here suggests that entrepreneurship potential translates to a limited extent into innovative businesses capable of playing a catalytic role in structural transformation, catch-up growth and economic diversification in LDCs. This raises

Figure 2.11

Importance of early-stage entrepreneurship relative to established businesses, selected least developed countries, latest available year
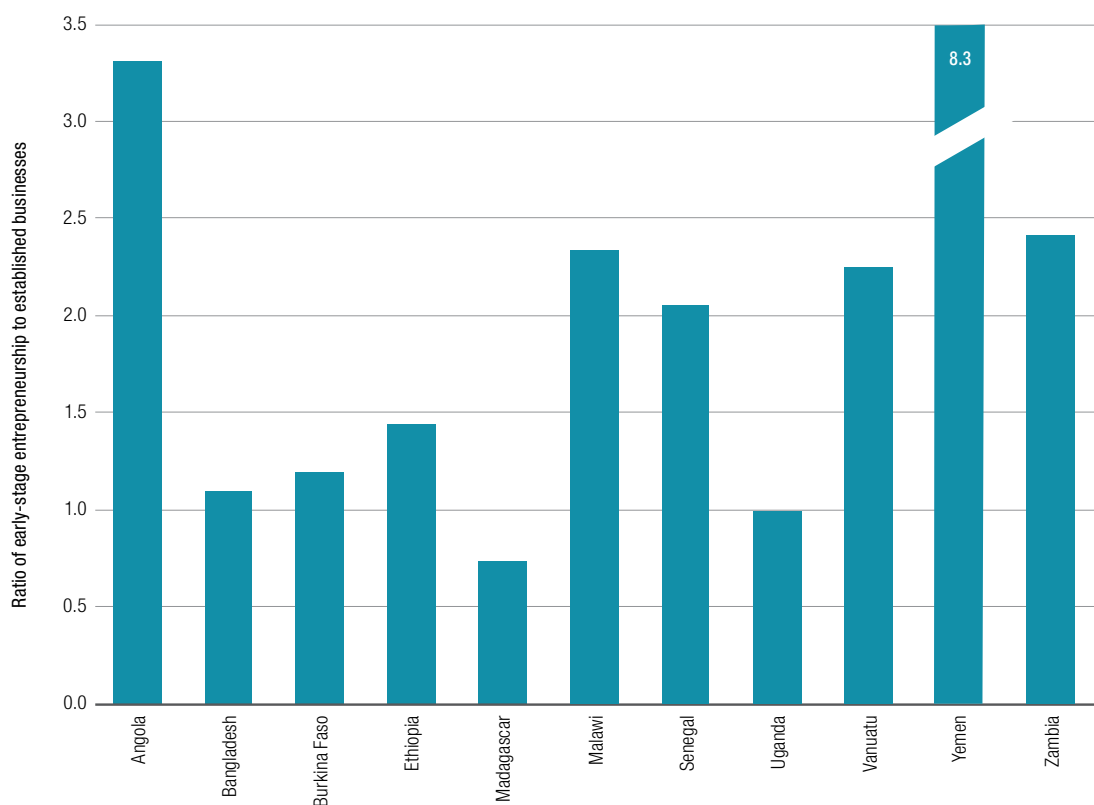
Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: Figures refer to GEM database full national data sets.

Notwithstanding high entrepreneurship potential, LDCs are characterized by low survival rates and less transformative firms

questions regarding the definition and measurement of entrepreneurship and the contribution of current patterns of entrepreneurship in LDCs to structural transformation.

e. Life cycle

The entrepreneurial landscape in many LDCs tends to be skewed towards early stages of entrepreneurship, although with considerable variation between countries (figure 2.11). In six of the 11 LDCs for which data are available (namely Angola, Malawi, Senegal, Vanuatu, Yemen and Zambia), there are more than twice as many early entrepreneurs as established entrepreneurs. Large numbers of start-ups and young businesses may in principle signify a vibrant and competitive environment, yet coupled with relatively limited numbers of established businesses, they may also indicate poor firm survival and high levels of discontinuation. Available econometric evidence suggests that survival rates are quite low; more than 50 per cent of new firms exit the market within the

first five years (Johnson, 2005; Quatraro and Vivarelli, 2015). Moreover, survival rates are ceteris paribus lower among firms with smaller start-up sizes and, in particular, low-margin businesses, whose success largely depends on their ability to fill a strategic niche or acquire the capability to engage in international trade (Agarwal and Audretsch, 2001; Page and Söderbom, 2015; Wagner, 2013).

Data on firm discontinuation appear to reinforce such concerns, particularly in countries in Africa (Herrington and Kelley, 2013). In most LDCs for which data are available, with some variation, there are high discontinuation rates (figure 2.12).[15] On average, 14 per cent of the adult population in LDCs report having exited a business in the past year, compared with 6 per cent in other developing countries and 3 per cent in developed and transition economies. In most cases of exit, the business itself was discontinued (figure 2.12 vertical axis), suggesting that limited sustainability is a major driver.

This is further underlined by the main reasons for exit. Personal reasons and incidents play an important role, yet the most important economic driver of exit by far is low profitability. On average among LDCs, 29 per cent of those who discontinued a business did so because it was unprofitable, and this is the most important factor in five of the nine LDCs for which data are available (namely Bangladesh, Burkina Faso, Malawi,

Figure 2.12

Business discontinuation rates, latest available year
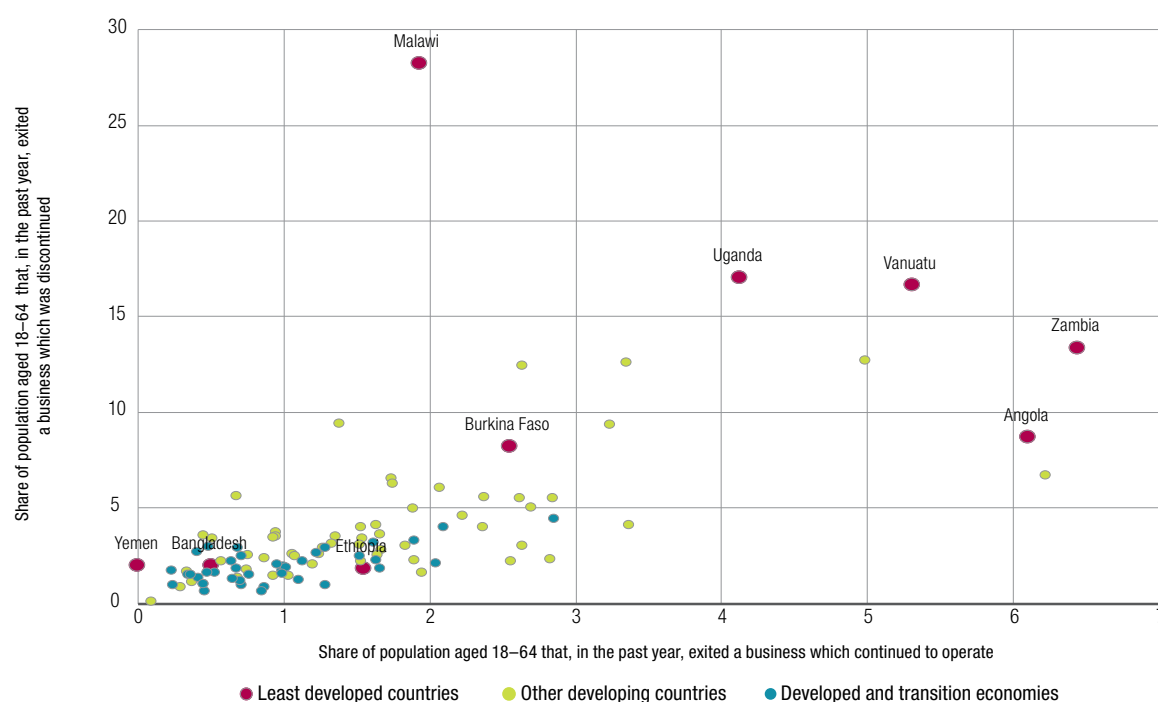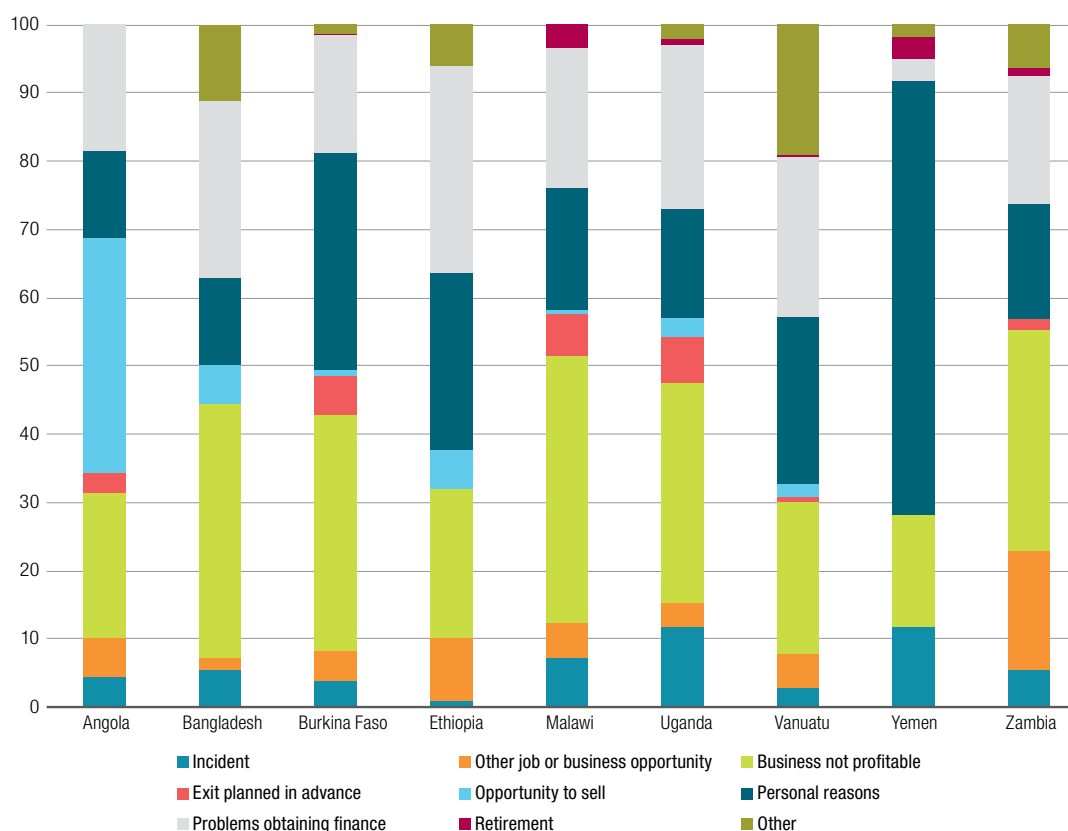
(Percentage)

Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: Figures refer to GEM database full national data sets.

Figure 2.13

Reasons for business exit, selected least developed countries, latest available year

(Percentage)

Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: Figures refer to GEM database full national data sets.

Uganda and Zambia), including some that may be assumed to be the most entrepreneurial (figure 2.13). In some countries, notably Ethiopia and Zambia, a significant number of people also discontinued their businesses because of better opportunities, highlighting the limited appeal of many businesses as an occupation. Business discontinuation in LDCs is rarely planned in advance or motivated by retirement, and positive reasons to exit, such as an opportunity to sell the business, appear to be significant only in Angola. Financial constraints are a significant challenge in entrepreneurship in most LDCs, yet they are less relevant in explaining business exit than low profitability.

3. Who are entrepreneurs in the least developed countries?

As well as shedding light on patterns of entrepreneurship and the related challenges, the demographic profile of entrepreneurs, for example in terms of age, educational attainment and gender, can help inform policymaking, in particular with regard to goals such as poverty reduction, employment creation and women's empowerment.

a. Age

Population dynamics and labour market trends make employment generation critical in LDCs, especially for the 11 million youth entering the labour market each year (UNCTAD, 2013a). This youth bulge is also conspicuous in the demographic characteristics of entrepreneurs. In the nine LDCs for which data are available, young adults (18–24 years) account for an unweighted average of 28 per cent of early entrepreneurs, around double the shares in other developing countries and developed and transition economies, at 17 and 13 per cent, respectively (figure 2.14). This share is greatest in LDCs characterized by faster demographic growth and young population structures, such as Yemen (40 per cent), Uganda (38 per cent) and Zambia (29 per cent). The difference

Figure 2.14

Early and established entrepreneurs by country group and age, latest available year

(Percentage)
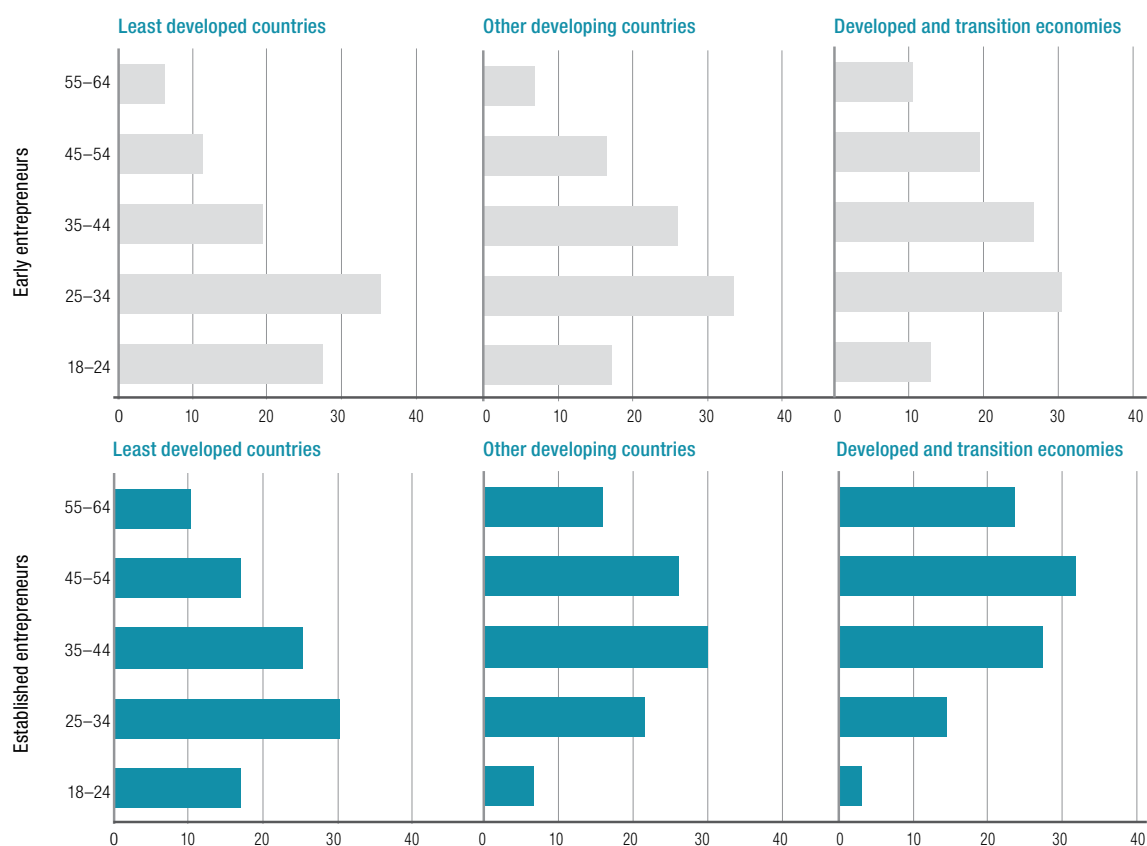
Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: Figures are unweighted averages.

compared with other country groups is greater with regard to established entrepreneurs; on average, young adults account for 17 per cent of the total in LDCs (and more than 30 per cent in Yemen and Zambia), compared with 7 per cent in other developing countries and 3 per cent in developed and transition economies. This may not be surprising given the high levels of youth unemployment prevalent in many LDCs, yet the poorer economic outcomes and odds of survival of businesses established to escape unemployment (Quatraro and Vivarelli, 2015) make this pattern a matter of concern from the perspective of structural transformation.

In terms of overall age distribution, those of 25–34 years of age predominate among early entrepreneurs in all country groups. However, LDCs are distinguished by a more rapid decline in the weight of older cohorts (35–44, 45–54 and 55–64 years) among both early entrepreneurs and, to a lesser extent, established entrepreneurs. Those of 18–34 years of age constitute the majority of early entrepreneurs in LDCs and more than two thirds of early entrepreneurs

in some countries, such as Ethiopia, Malawi and Uganda. By contrast, the weight of older cohorts in the distribution of early entrepreneurs declines more gradually in other developing countries and a fortiori in developed and transition economies, in which those of 35–44 years of age are the second largest group. The distinctive age profile in LDCs implies a substantially lower median age of entrepreneurs, in particular established entrepreneurs, than elsewhere.

b. Education

Entrepreneurship in LDCs is also characterized by a low level of educational attainment among entrepreneurs by international standards, consistent with patterns in the population as a whole. On average, only 12 per cent of early entrepreneurs have a post-secondary education in LDCs, compared with 36 per cent in other developing countries and 50 per cent in developed and transition economies. However, these averages hide considerable inter-State variations, with proportions above 20 per cent in Angola and Ethiopia and below 5 per cent in Burkina Faso, Malawi and Yemen.

Educational attainment is often considered a proxy for human capital, yet it does not necessarily reflect either the quality of education or business-related skills, which rarely feature in curricula in LDCs. Studies have often found that technical and managerial skills are one of the main constraints to entrepreneurship in LDCs (African Development Bank et al., 2017; Herrington and Kelley, 2013; UNCTAD, 2012a).

These distinctive features of the entrepreneurial landscape in LDCs have an important bearing on the scope for different and possibly more transformational forms of entrepreneurship, including through technological upgrading and the uptake of ICT. The young age structure of entrepreneurs, coupled with increasing enrolment ratios in LDCs, suggests that the average educational attainment of entrepreneurs in LDCs could increase relatively rapidly over time. However, as well as increasing managerial capacities, and thereby the appeal of a business career, higher levels of education can be expected to increase options for wage employment. In the majority of developing countries, the latter effect outweighs the former, so that educational attainment appears to reduce the probability of self-employment (Van der Sluis et al., 2005). This might strengthen the consolidation of the entrepreneurial landscape, especially if the level

While **women participate** nearly **as much as men** in early-stage entrepreneurship,

they are **5 times less likely to own** a company
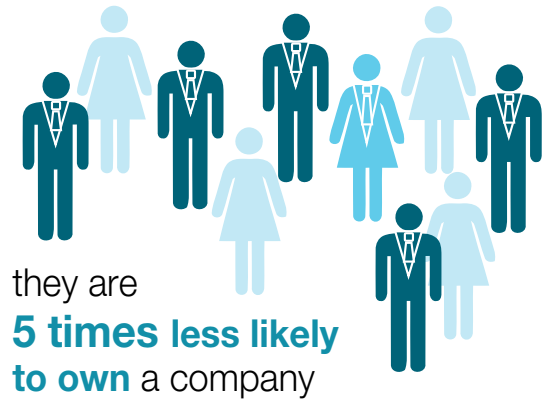
of education is positively correlated with opportunity-driven entrepreneurship, as for example in South Africa (Herrington and Kelley, 2013).

c. Gender

Early-stage entrepreneurial activity appears to be relatively more balanced between women and men in LDCs than in other countries, including a number of developed countries, signified by their greater

Figure 2.15

Gender-related gaps in total early-stage entrepreneurial activity, latest available year
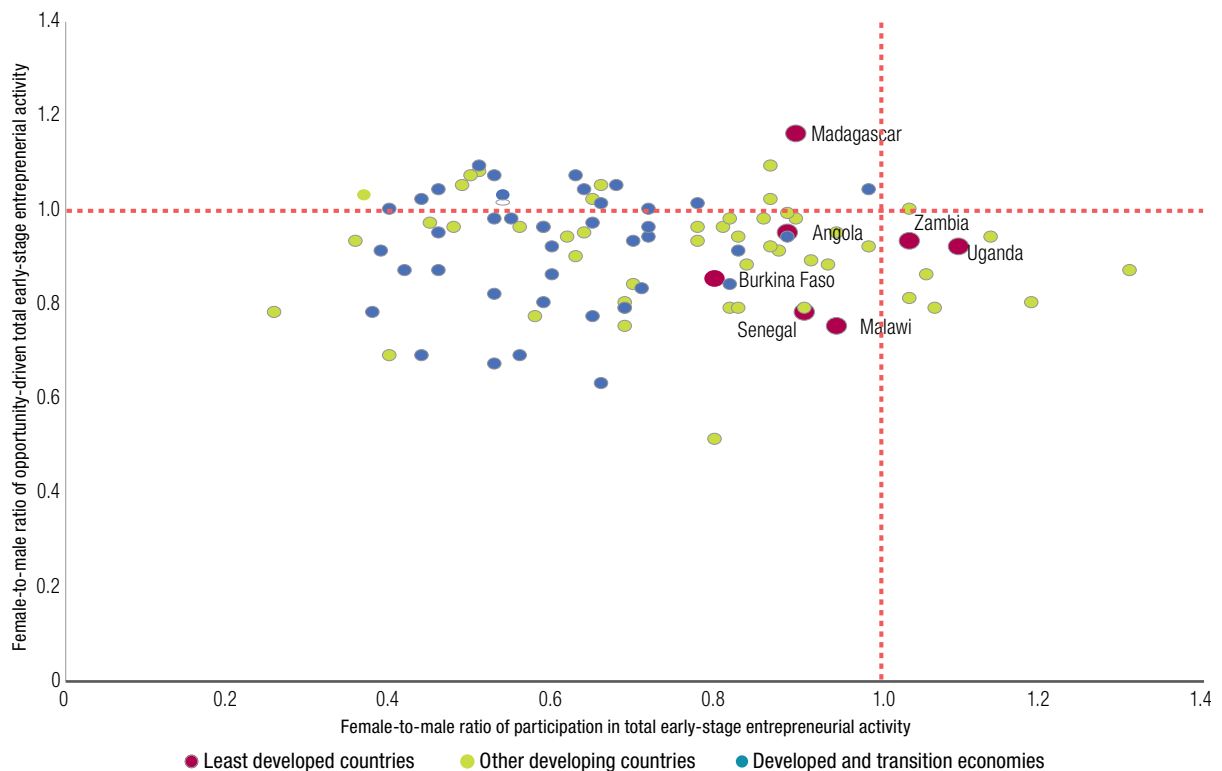
Source: UNCTAD secretariat calculations, based on data from GEM database.
Note: Vertical dashed line represents gender equality in participation in total early-stage entrepreneurial activity and horizontal dashed line represents gender equality in the weight of opportunity-driven early entrepreneurs.

Figure 2.16

Gender-related gaps in newly registered limited liability companies, selected least developed countries, 2016
(Percentage)
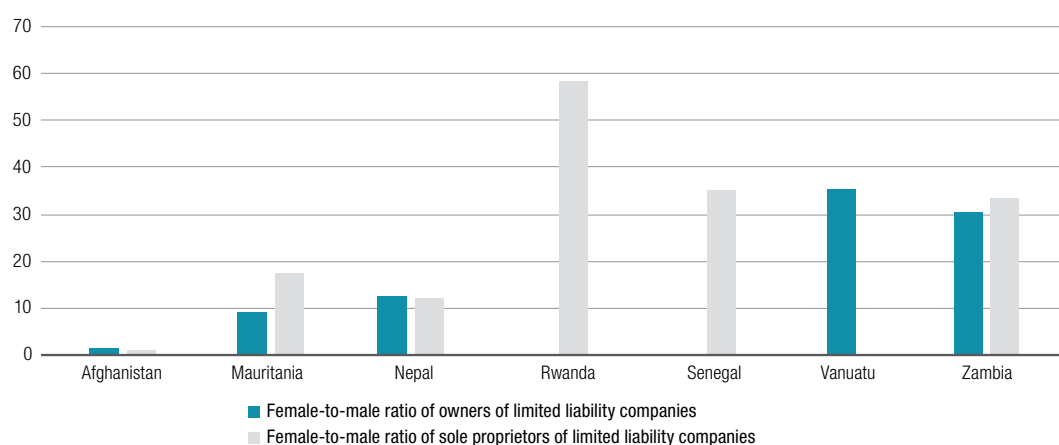
Source: UNCTAD secretariat calculations, based on data from World Bank Doing Business database.
Note: Data are unavailable with regard to owners of limited liability companies in Rwanda and Senegal and sole proprietors of limited liability companies in Vanuatu.

proximity to the vertical dashed line in figure 2.15. The average female-to-male ratio of participation in total early-stage entrepreneurial activity is 0.94 for LDCs, compared with 0.77 for other developing countries and 0.61 for developed and transition economies.

This apparently positive picture, however, largely reflects the disproportionate prevalence of survivalist forms of entrepreneurship among women in LDCs, whereas a lack of gender equality is more pronounced in more transformational forms of entrepreneurship.[16] The fact that most LDCs are below the horizontal line in figure 2.15 shows that women are relatively underrepresented among opportunity-driven early entrepreneurs, although not substantially more so than in other developing countries or in developed and transition economies; the female-to-male ratio averages 0.9 in all three country groups.

Gender-disaggregated data on registrations of newly registered limited liability companies, although not complete, indicate still wider gender-related gaps with regard to the participation of women in such companies (figure 2.16). Socioeconomic and idiosyncratic cultural factors play an important role, yet there is a considerable level of gender inequality in LDCs in this regard, even by already high international standards. In the seven LDCs for which data are available, women are five times less likely than men to be owners of newly registered limited liability companies and four times less likely to be sole proprietors. This reflects the extent to which factors such as unequal access to wealth, inheritance and finance constrain women's opportunities for more sophisticated forms of entrepreneurship.

D. Key sectors in the least developed countries: The informal sector and rural enterprise

1. The informal sector

The informal sector in LDCs is dominated by microenterprises and, to a lesser extent, small enterprises. The World Bank Enterprise Surveys of the informal sector find that, in the eight LDCs for which underlying questionnaires are directly comparable,[17] 74 per cent of informal enterprises are microenterprises with fewer than five employees; 20 per cent are small firms with five to nine employees; 6 per cent are small–medium, medium-sized and medium–large firms together; and there are no large firms. With regard to the weight of microenterprises in the total, Angola has the most diverse balance (30 per cent) and Madagascar has the least (97 per cent) (figure 2.17).

Informal enterprises make heavy use of unpaid workers, frequently including family members, who account for an overall average of 38 per cent of the employees; the proportion ranges from 11 per cent in Angola to 75 per cent in Madagascar. Within the pooled sample of informal enterprises from the Enterprise Surveys, there is a statistically significant negative correlation (-0.21) between the share of unpaid workers and the size of informal enterprises; the share declines steadily, from 43 per cent in microenterprises to 1 per cent in medium–large enterprises (figure 2.18). However, the incidence

Figure 2.17

Composition of the informal sector by size of enterprise based on number of employees, selected least developed countries
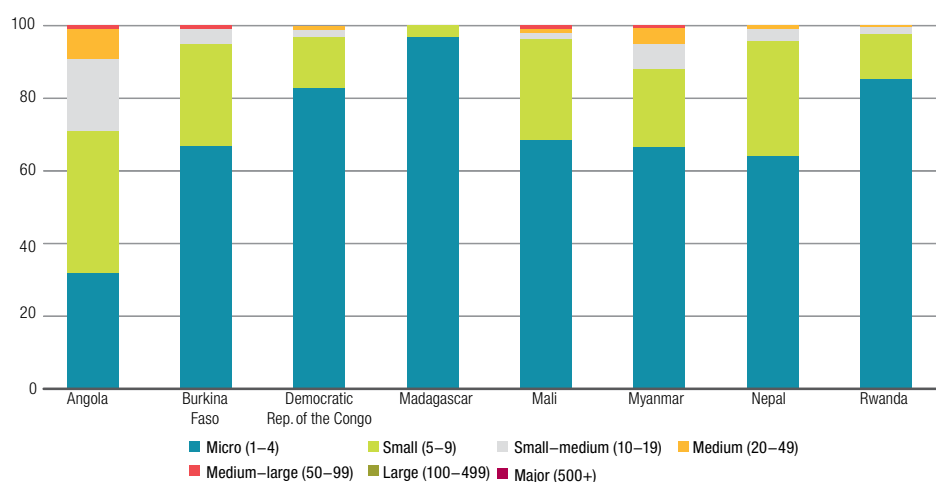
(Percentage)

Source: UNCTAD secretariat calculations, based on data from World Bank Enterprise Surveys.

of unpaid labour among distinct size categories is relatively similar in some LDCs, such as in Burkina Faso and Mali, and erratic in others, such as in Rwanda.

Figure 2.18

Informal labour force composition by size of enterprise, selected least developed countries

(Percentage)

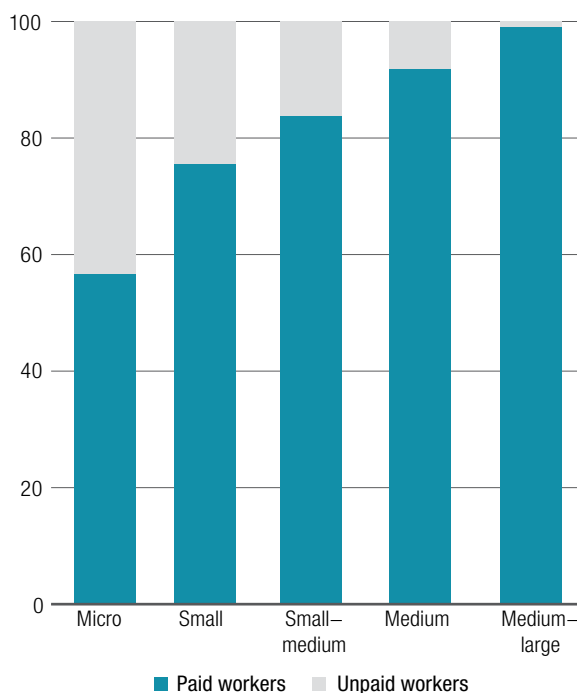*Source:* UNCTAD secretariat calculations, based on data from World Bank Enterprise Surveys.

The data from the World Bank Enterprise Surveys of the informal sector also highlight a significant lack of gender equality in unpaid labour and ownership within the sector. In the pooled sample for eight LDCs, 50 per cent of women employed in informal enterprises are unpaid, compared with 33 per cent of men, and only 30 per cent of firms feature a woman as their main owner.

Most necessity-driven entrepreneurs are likely to be in the informal sector, as noted in section C.2, yet so are some opportunity-driven entrepreneurs. Whether an enterprise is in the formal or informal sector is essentially the result of a decision, or at least a tacit decision, on the part of the entrepreneur, based on the costs and benefits of formalization. This is related, in part, to the time and financial costs of the formalization process, as well as to the financial and non-financial costs and benefits of a formal rather than an informal enterprise, for example in terms of taxation, regulation and access to finance. Understanding the nature of this process is important, to both disentangle the potential contribution of the enterprise sector to structural transformation and enhance the formulation of enterprise policies.

Data from the World Bank Enterprise Surveys suggest that 50–90 per cent of informal entrepreneurs in LDCs would like to register their businesses, with some variation between countries and sectors.[18] The conventional wisdom is that business registration is discouraged by administrative costs, higher tax rates,

corruption and fear of inspections (Djankov et al., 2002; International Monetary Fund, 2018; UNCTAD, 2012a) and this is broadly confirmed by the reasons given for non-registration in LDCs (figure 2.19). The greater unwillingness to register in contexts in which unpaid labour is more prevalent suggests that the burden of social security contributions is also a significant factor. However, decision-making on formalization is by no means straightforward. Accessibility of information about registration is also an important and unnecessary obstacle in some cases, notably in Angola, Mali and Nepal. Moreover, while costs may be certain and readily quantifiable, benefits are more elusive and are contingent on firm performance following registration, especially when enterprises rely on unpaid labour or have little expectation of legal protection or access to credit. In Afghanistan, Burkina Faso and Nepal and to a lesser extent in Mali, a substantial proportion of informal entrepreneurs see no potential benefits to registering their businesses.

Unpaid work in the **informal sector –** is more common **among women** than among men

50% of women

33% of men
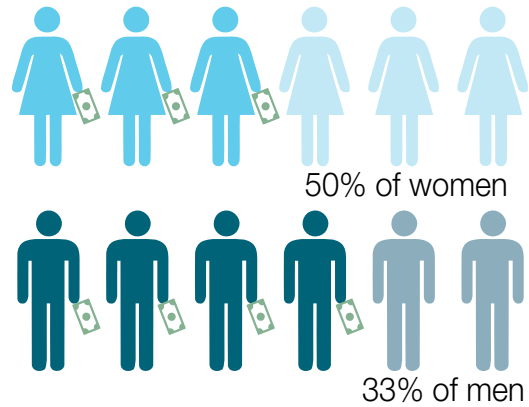
Figure 2.19

Main reasons for not registering an informal business, selected least developed countries
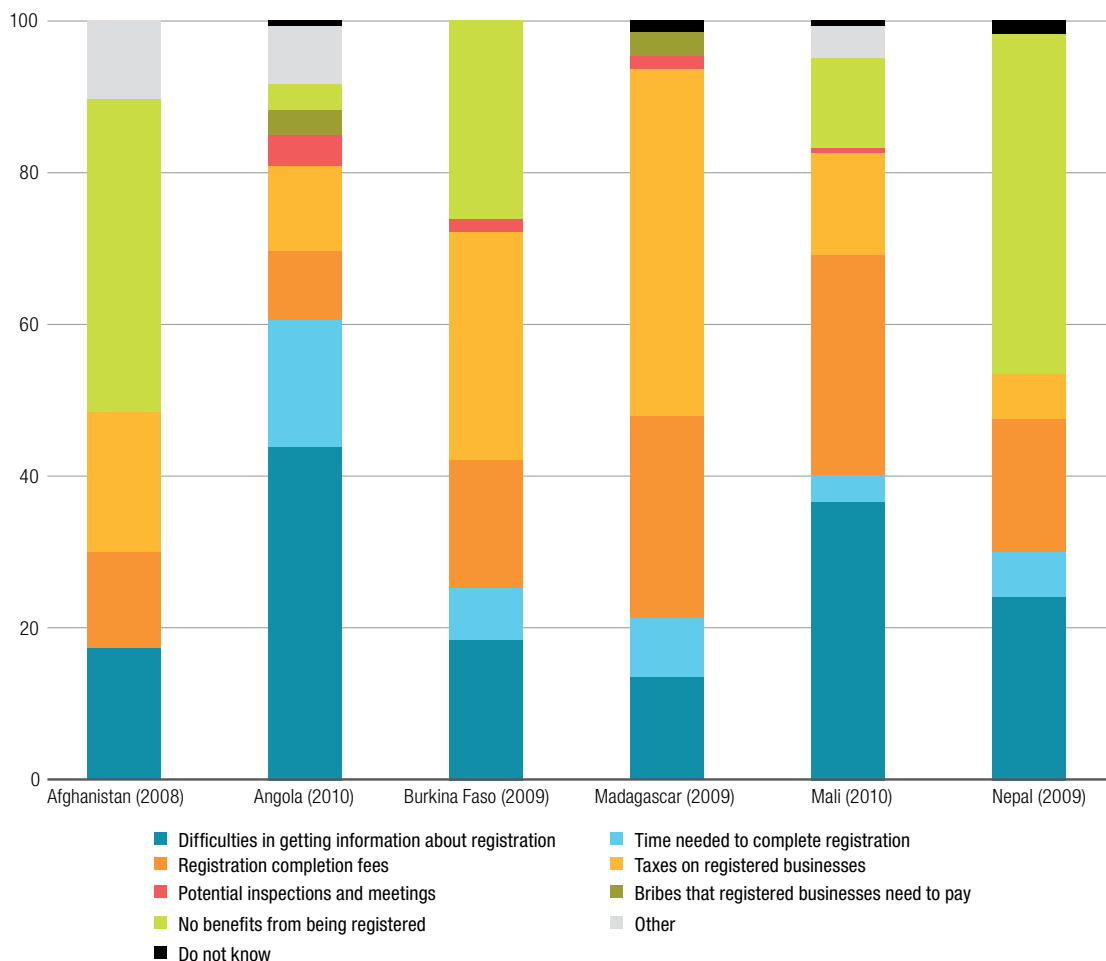
(Percentage)

Legend:
- Difficulties in getting information about registration
- Time needed to complete registration
- Registration completion fees
- Taxes on registered businesses
- Potential inspections and meetings
- Bribes that registered businesses need to pay
- No benefits from being registered
- Other
- Do not know

Source: UNCTAD secretariat calculations, based on data from World Bank Enterprise Surveys.
Note: Evidence is only presented for those LDCs for which the format of the relevant questions is directly comparable and not those for which the corresponding question has a wholly different wording or a different range of response options.

There is also some evidence that the incentive structures created by entry regulations may affect the size of informal establishments and post-registration firm performance (Amin and Islam, 2015; Williams et al., 2017). For some enterprises, at least, informality may be the result of a deliberate strategic decision on the "optimal degree of participation in formal institutions" (Maloney, 2004). The predominance of microenterprises and small enterprises within the informal sector may therefore stem partly from deliberate decisions by relatively productive firms to remain small as a means of limiting evasion costs, that is, the costs of remaining unregistered and not being detected by authorities.

For young firms, informality may represent a deliberate, and possibly transitory, choice to engage in cost discovery without incurring the fixed costs associated with registration, as a means of reducing the costs associated with the liabilities of newness and ensuring the viability of their business models before registration. This could help explain why formal enterprises that delayed registration subsequently outperform those that registered in the start-up phase (Williams et al., 2017).

2. Rural non-farm enterprises

Transformation of the rural economy plays a central role in structural transformation in LDCs and, as in the broader economy, enterprise is central to this process (see chapter 1). The nature of enterprise in rural areas differs significantly, however, from enterprise in urban areas. Empirical studies show that in rural areas, household decisions to engage in non-farming activities and diversify income sources are multidimensional, reflecting a combination of risk mitigation, seasonality of agricultural labour demand and potential areas of specialization within households, that is, they stem from the interplay of push and pull factors (Davis et al., 2017; Nagler and Naudé, 2017).

A distinctive feature of rural entrepreneurship is the possibility, for most entrepreneurs, of alternating between agricultural production and non-farm entrepreneurship. The seasonality and uncertainty of agricultural income is an important driver, as such entrepreneurship is motivated partly by the need to smooth income over time and reduce risk and uncertainty in the absence of adequate insurance and credit markets, along with limited opportunities for wage employment (Tamvada, 2010). Some studies indicate that high levels of risk in agriculture in Africa are a strong push factor in encouraging entrepreneurship. Food shortages in the preceding 12 months have been found to be a driver of rural

> **A distinctive feature of rural entrepreneurship is the possibility of alternating between agricultural production and non-farm entrepreneurship**

entrepreneurship (Nagler and Naudé, 2017) and there is evidence of income diversification by farming households in response to the risk of harvest failure or unanticipated shocks. The family firm that emerges from non-farm entrepreneurship can effectively provide informal insurance (Dercon, 2009; Liedholm and Kilby, 1989).

Linkages between agriculture and non-farm entrepreneurial activities are an important pull factor, giving rise to a potential virtuous circle of agricultural non-farm entrepreneurship development, driven by rising demand for agricultural inputs, agroprocessing and consumer goods (Mellor and Lele, 1973) and providing resources and incentives for increased investment in both sectors. Equally, the insurance provided by non-farm entrepreneurship allows farmers to undertake riskier and more profitable activities.

The interconnection of non-farm entrepreneurship activities and the complex pattern of income diversification at the individual and household levels, together with the lack of data and wide variations between countries in the definitions of rural and urban areas, make systematic analysis of rural entrepreneurship problematic (UNCTAD, 2015a). However, some general observations are possible on the basis of local and national studies, as noted in this subsection.

a. Prevalence

Rural entrepreneurship and engagement in non-farm entrepreneurship appear widespread in LDCs. Non-farm rural income, however, tends to be concentrated in richer rural households, who also have greater shares in non-agricultural wage employment, whereas less well-off households derive income mainly from crops, livestock and agricultural wage labour (Davis et al., 2017).

Considering the level of development of domestic economies, rural households in Africa are no less engaged in non-farm entrepreneurship than in other regions, with a greater focus on non-farm household enterprises than non-agricultural wage employment. In six LDCs in Africa, namely Ethiopia, Malawi, the

Rural households closer to towns are more likely to be engaged in non-farm entrepreneurship

Niger, Nigeria, Uganda and the United Republic of Tanzania, no less than 42 per cent of rural households have enterprises in the non-farm sector (Davis et al., 2017). There is, however, a high turnover and exit rate among rural enterprises, with many firms operating for only part of the year, and non-farm entrepreneurship survival is strongly affected by seasonality (Nagler and Naudé, 2017).

Despite the high prevalence of non-farm activities, non-farm entrepreneurship generally remains less important than agriculture as an income source. Overall, 92 per cent of rural households in Africa are involved in agriculture, which represents 69 per cent of total income for the average rural household in the region (Davis et al., 2017). Non-farm entrepreneurship, conversely, generates barely 15 per cent of overall rural household income in Africa, compared with, for example, 39 per cent in Brazil, 50 per cent in Chile and Colombia, 46 per cent in China, 59 per cent in Costa Rica, 55 per cent in Mexico and 51 per cent in Peru (Escobal, 2001; De Janvry and Sadoulet, 2001; Lanjouw and Lanjouw, 2001; Shi et al., 2007). In Ethiopia, 27 per cent of all households obtain half or more of their total income from non-farm entrepreneurship and 5 per cent of these receive all their income from that source (Nagler and Naudé, 2017). In urban areas, the share of income derived from self-employment is typically higher, for example, 22 per cent in Malawi, 48 per cent in the Niger, 33 per cent in Uganda and 43 per cent in the United Republic of Tanzania (Nagler and Naudé, 2017).

b. Size and sector

The majority of rural non-farm entrepreneurship is composed of microenterprises and small enterprises, and 95 per cent employ fewer than five workers in some African LDCs (Nagler and Naudé, 2017). A study of four districts in Ethiopia found that farm experience had a positive impact on non-farm entrepreneurship and that households with larger landholdings were less likely to engage in such entrepreneurship, while those with less than 1.43 hectares tended to rely more on non-farm income (Alemu and Adesina, 2017). In larger families, to the extent that labour exceeds the needs for a fixed supply of farmland, some family members may be pushed into entrepreneurship. Equally, however, the availability of labour and capital might be a pull factor stimulating entrepreneurship

(Reardon, 1997; Reardon et al., 2007; Reardon et al., 2009).

New enterprises in rural areas in African LDCs tend to be established in sectors with low entry barriers, such as sales and trading activities, and there is a lack of investment in higher value added activities such as transport, education and other professional services (Nagler and Naudé, 2017). In the early stages of rural transformation, consumption linkages with the farm sector tend to predominate, leading to an initial concentration of non-farm entrepreneurship in services and cottage industries. However, as transformation progresses and incomes rise, other types of linkages become more important, namely backward production linkages from agricultural inputs and forward linkages to agroprocessing activities.

c. Location

Geography and location are important determinants of the agglomeration effects of farm and non-farm enterprises, even where soil conditions and climate are identical (Davis et al. 2017). In LDCs in Africa, distances to large population centres play a major role in determining the success of rural enterprises (Nagler and Naudé, 2017). For example, in the Amhara region of Ethiopia, households located in rural towns are 21–24 per cent more likely than others to participate in non-farm entrepreneurship, and the figures are similar for households located closer to food markets (Rijkers et al., 2010). In addition, rural households closer to towns are more likely to be engaged in non-farm entrepreneurship, as their location allows for easier access to credit and telecommunications facilities (Alemu and Adesina, 2017).

In African and Asian LDCs, the proportion of non-farm wage employment is typically inversely related to household distance from urban areas (Fafchamps and Shilpi, 2003; Owoo and Naudé, 2017). In Nepal, however, there is a non-linear pattern in the location of rural enterprises; for example, in the high-value horticultural sector, wage employment tends to be clustered in rural areas that are close to cities but not close enough to be dominated by unskilled urban wage labour (Fafchamps and Shilpi, 2003).

d. Productivity and profitability

Labour productivity is also influenced by location, and is generally lower in rural rather than urban enterprises and in those further from large, usually urban, populations (Nagler and Naudé, 2017). In manufacturing enterprises in Ethiopia, for example, the output-to-labour ratio is 0.43 in remote rural areas, compared with 0.95 in rural towns and 2.30 in urban areas (Rijkers et al., 2010). Labour productivity is also

lower in enterprises that operate only during certain times of the year, a pattern common in rural areas (Nagler and Naudé, 2017). Notably, the development of non-farm entrepreneurship tends to have a positive effect on agricultural productivity. The opportunity for non-farm entrepreneurship income also enhances average agricultural proceeds by providing resources for input purchases and increasing financial security, which allows farmers to adopt activities with higher risks but higher returns (Liedholm and Kilby, 1989).

The success of rural non-farm entrepreneurship varies between sectors and is strongly associated with proximity to markets, in particular urban markets; enterprise size; land tenure; and, to a lesser extent, with the gender and education levels of entrepreneurs. Many studies have shown that the availability of credit and access to finance are major determinants of the success of rural enterprises in LDCs (Baye, 2013; Singh and Belwal, 2008; Gajigo, 2014; Osondu, 2014). Similarly, literacy has been found to have a significant positive effect on the success of rural enterprises in African LDCs (Nagler and Naudé, 2017). For example, in the Amhara region of Ethiopia, those with greater access to electricity, the ability to use land as collateral and divorcées are more likely to run a non-farm entrepreneurship, and an inverse U-shaped relationship has been found between the likelihood of engaging in non-farming activities and the age and educational attainment of the household head (Rijkers and Söderbom, 2013). Prior income and wealth indicators, such as the number of rooms in a residence, have a positive impact on the success rate of rural enterprises in African LDCs (Nagler and Naudé, 2017).

Response to excessive risk may lead entrepreneurs to take on activities with potentially lower returns but lower volatility. A choice often made is to reduce investment in fixed capital such as equipment in favour of holding more liquid assets, including cash (Rijkers et al., 2010). In addition, short-term responses to shocks can have long-term negative effects on the livelihoods of individuals and households in rural communities (Dercon and Krishnan, 2000).

e. Gender

In African LDCs, labour productivity tends to be lower in rural non-farm enterprises headed by women rather than men, yet the entrepreneur's gender does not have an impact on the success rate of the rural enterprise (Nagler and Naudé, 2017). For example, in Ethiopia, men's participation is greater than women's in both farm and non-farm activities, but a significant role for women has a positive impact on non-farm entrepreneurship and, in the Amhara region,

women are more likely than men to run a non-farm entrepreneurship (Alemu and Adesina, 2017; Rijkers et al., 2010). Effective institutions, good governance and the availability of appropriate networks are particularly important for success among women entrepreneurs.

f. Social capital

Social capital, networking and trust play crucial roles in rural entrepreneurship, as either barriers or enablers. Networks such as farmers' associations, cooperatives and marketing bodies are often at the forefront of promoting rural development policies such as access to rural credit and extension services, for example in agrobusiness (Struthers and Nziku, 2018; Witt, 2004). For example, in four districts in Ethiopia, rural households that are active members of various farmers' networks and cooperatives participate more in non-farm entrepreneurship, as do rural households located nearer farmer's training centres (Alemu and Adesina, 2017).

E. Firm heterogeneity and structural transformation

There is a well-established literature assessing, through various approaches, the effects of the microeconomic characteristics of firms and of broader institutional and macroeconomic variables on firm performance (African Development Bank et al., 2017; Andreoni and Chang, 2016; Audretsch, 1995; Baumol, 1990; Djankov et al., 2002; Harrison et al., 2014; Naudé, 2013; Nkurunziza, 2010; Quatraro and Vivarelli, 2015). The latter include, inter alia, the wider business climate with regard to infrastructure provision, access to credit, protection of property rights, level of corruption, administrative conditions, trade facilitation provisions and other regulatory issues. For example, controlling for key differences in geography, infrastructure, access to finance and political and institutional factors, firms in Africa perform better than those in other regions at similar income levels (Harrison et al., 2014). Such factors are important determinants of the post-entry performance of new firms, yet are fraught with market failures, from information asymmetries to externalities. The poor quality of hard and soft infrastructure, as well as limited access to credit, can be binding constraints to enterprise performance.

Assessing the role of firm characteristics as determinants of firm performance is important with a view to informing enterprise policy. This section analyses formal non-agricultural enterprises in LDCs using firm-level data from the World Bank Enterprise

Firm heterogeneity and structural transformation: Analytical methodology

The analysis considers the effects of firm characteristics on labour productivity growth and employment growth. Following the World Bank methodology, labour productivity growth is measured as the annual percentage change in labour productivity between the last fiscal year and two years previously, whereby labour productivity is measured as the value of sales, adjusted for inflation, divided by the number of permanent full-time employees, consistent with the relevant literature (see Amin and Islam, 2015; Ayyagari et al., 2011; Harrison et al., 2014). Employment growth is the annual percentage change in full-time permanent employees over the same period. A log transformation of the labour productivity growth and employment growth variables is used to stabilize variance. To resolve negative values, a constant (α) is added to the data prior to log transformation, such that $\min(Y + \alpha) = 1$. Two variants of the following specification are tested:

$$Y_{i,k,j,z,(t-1,t-3)} = \beta 0 + \beta 1 \, \text{Size} + \beta 2 \, \text{Age} + \delta_{i,k,j,z} + \beta 3 \, \text{Region FE} + \beta 4 \, \text{Country FE} + \varepsilon_{i,k,j,z}$$

where

$Y_{i,k,j,z,(t-1,t-3)}$ represents the performance indicator (the log transformation of labour productivity growth or employment growth) of firm i in country k, region j and industry z. t-3 is the beginning of the period for which growth rates are computed and firm size and age are measured. Firm size is measured in two complementary ways. In the first set of regressions it is measured as a continuous variable (the log of the number of permanent full-time employees); in the second set of regressions it is captured by dummy variables representing small, medium-sized and large firms, with 5–19, 20–99 and 100 or more permanent full-time employees, respectively. Firm age is consistently measured as a continuous variable expressing the number of years since the firm began operations, irrespective of registration status. Robustness checks, in which firm age is instead captured by a dummy variable for start-ups, are reported separately in Valensisi et al. (2018).

$\delta_{i,k,j,z}$ represents a set of additional control variables introduced in the second set of regressions, which include additional firm characteristics such as self-declared innovative behaviour, ownership structure, access to finance, gender and years of experience of the top manager, export status and whether or not the firm registered at start-up.

Region fixed effects and country fixed effects are included in all regressions to control for location-specific factors, such as differences in hard and soft infrastructure, consistent with the relevant literature.

$\beta 0$, the constant term, and $\varepsilon_{i,k,j,z}$, the error term, are included in all regressions.

In order to address potential endogeneity concerns, an instrumental variable approach (two-stage least squares) is adopted in the first set of regressions, whereby the number of employees at start-up is used as an instrument for firm size at t-3.

Source: UNCTAD secretariat.

Surveys for 39 LDCs. The data are described in section E.1, the methodology is set out in box 2.2 and the results are presented in section E.2. The following two key determinants of firm performance are assessed in order to shed light on how firm characteristics shape performance and, accordingly, their role in structural transformation:

- Labour productivity growth, which broadly encompasses the combined effect of capital deepening and increasing total factor productivity within each firm, as an indicator of the importance of high-growth firms in technological upgrading.

- Employment growth, as an indicator of the role of labour reallocation from low-productivity activities such as smallholding farming and petty trade to higher productivity businesses in the manufacturing and high-value services sectors.

1. Data

The analysis in this section uses pooled firm-level data from the World Bank Enterprise Surveys database

for 39 LDCs, covering the non-agricultural private economy, and thereby excluding fully government-owned firms. To ensure cross-country comparability, only surveys conducted according to the standard global methodology of the World Bank are included,[19] and only the most recent survey is used for countries surveyed more than once (see annex 2 for country and year coverage in World Bank Enterprise Survey data).[20] The surveys use a stratified random sampling approach, with three criteria of stratification, namely sector of activity, geographical location and firm size, whereby small firms have 5–19 employees, medium-sized firms have 20–99 employees and large firms have 100 or more employees. This provides an overall sample of 15,298 establishments prior to data cleaning, of which 44 per cent are in the manufacturing sector and 56 per cent are in services.

There are three caveats with regard to use of this data set. First, since only formal establishments with five or more employees are targeted by the surveys, the results presented in this section do not take into

account the roles of microenterprises and informal enterprises.[21] Second, since the data relate only to surviving firms, the analysis cannot capture the effects of firm liquidation or the associated employment reduction. Third, the unit of analysis of the surveys is the establishment and not the firm, and this makes the measurement of the size of multi-establishment firms problematic, although it also allows for changes in the actual number of jobs to be captured more accurately by excluding apparent changes arising from mergers and acquisitions. However, 78 per cent of the establishments in the pooled sample are stand-alone establishments and the main results in this analysis are robust only with regard to this subsample of firms. Notwithstanding these limitations, the data set provides a representative picture of non-agricultural private firms in LDCs.

The data set shows that the balance of firms in LDCs, even among formal enterprises with at least five employees, is heavily skewed towards smaller establishments (figure 2.20). Firms with 5–10 employees account for some 35 per cent of the total, but the weight declines steeply as the number of employees increases. Large firms, with 100 or more employees, account for some 10 per cent, and the proportion of medium-sized firms,

The balance of firms in LDCs is heavily skewed towards smaller establishments and displays a "missing middle"

with 20–99 employees, is low, showing the validity of long-standing concerns over a "missing middle" and highlighting the dualistic structure of the enterprise landscape in LDCs, whereby a few large players coexist with a plethora of small competitors and suppliers. This corroborates detailed censuses of manufacturing firms in LDCs, such as Myanmar and the United Republic of Tanzania, which show a polarization between a multitude of small enterprises and a few large enterprises, whereby the latter often have a disproportionate level of market power (Andreoni, 2017; United Nations University-World Institute for Development Economics Research (UNU-WIDER) et al., 2018). This uneven structure indicates the weakness of the private sector in LDCs and poses significant challenges to the emergence of a dense network of production linkages, as discussed in previous editions of this report. In addition, it hampers domestic value addition, as domestic small and medium-sized enterprises (SMEs) are often unable to

Figure 2.20

Share of firms in sample by number of permanent full-time employees

(Percentage)
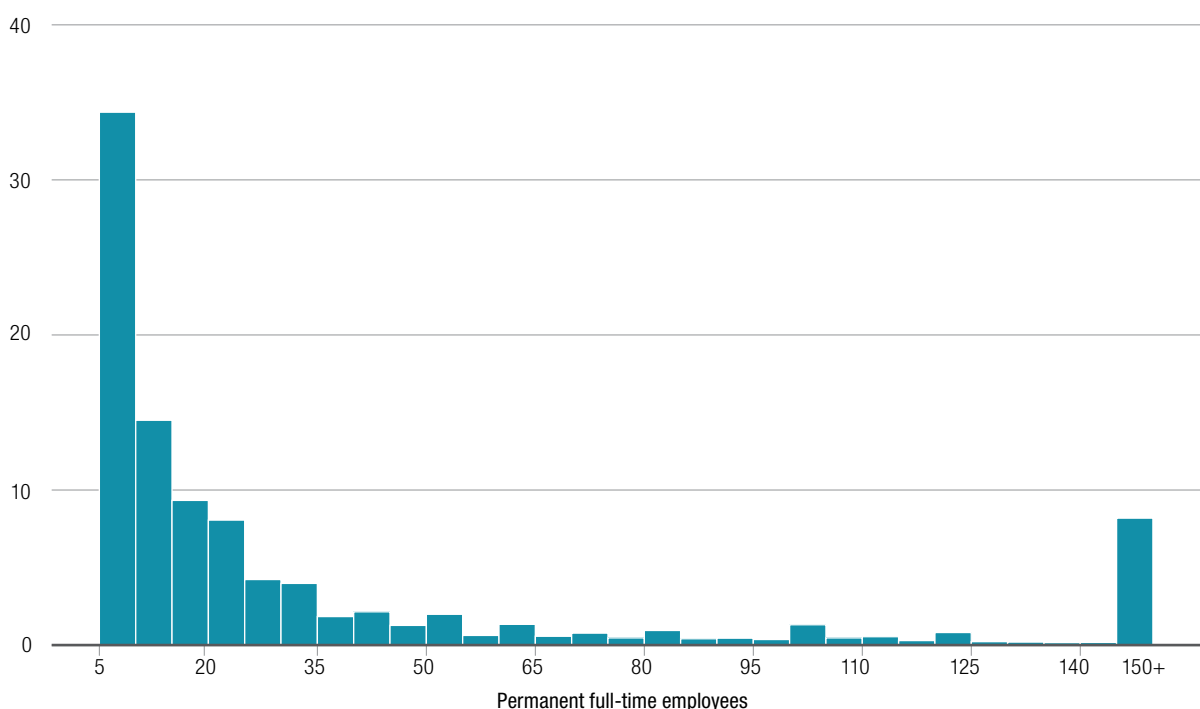
Source: UNCTAD secretariat calculations, based on data from World Bank Enterprise Surveys.

Notes: Data set comprises pooled firm-level data from World Bank Enterprise Surveys for 39 LDCs, covering the non-agricultural private economy, with only surveys conducted according to the standard global methodology of the World Bank included and only the most recent survey used for countries surveyed more than once; bin width is set at five permanent full-time employees.

Figure 2.21

Employment share by type of establishment

(Percentage)
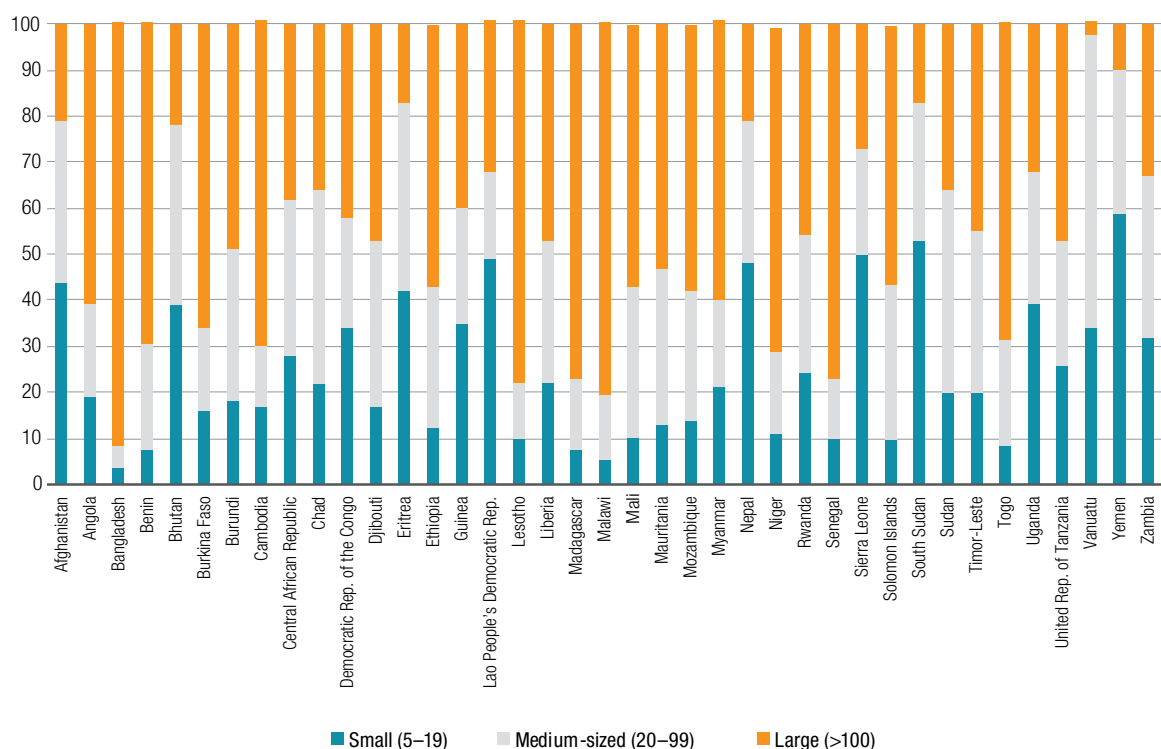
Source: UNCTAD secretariat calculations, based on data from World Bank Enterprise Surveys.

Notes: The employment share takes into account both permanent full-time employees and seasonal employees; the latter are considered pro rata, depending on the average duration of seasonal employment; sampling weights are considered in the estimation.

integrate into global value chains, either directly or as suppliers to larger exporters (see chapter 3).

SMEs provide a significant share of total employment in formal firms, although with wide variation between countries (figure 2.21). The median value of the employment share in all LDCs is 20 per cent for small enterprises, 30 per cent for medium-sized enterprises and 47 per cent for large enterprises. However, the net contribution of smaller firms to employment creation is likely to be more limited than their employment share, since the cross-sectional nature of the data implies that the net effects of firm exit are overlooked, and smaller firms tend to have lower survival rates (Page and Söderbom, 2015; Quatraro and Vivarelli, 2015). On average in all firm-level observations, women account for 27 per cent of full-time workers, with a higher incidence in SMEs (29 per cent of all full-time workers in small enterprises and 26 per cent in medium-sized enterprises) than in large enterprises (19 per cent). Temporary or seasonal workers represent some 6 per cent of total full-time equivalent employees, although again with wide variation between countries.

2. Empirical results

The effects of LDC firm characteristics on labour productivity growth and employment growth are discussed here, on the basis of the analytical methodology (box 2.2). Regression results are first reported for the full sample, then separately for subsamples of firms operating in the manufacturing and services sectors.

Table 2.2 presents the estimation results, focused exclusively on firm size and age, for the log of labour productivity growth and the log of employment growth as the dependent variable, specifying both firm size and age as continuous variables. The results suggest that the effects of firm size on labour productivity growth differ between sectors; they are positive and significant in the services sector, but negative, though non-significant, in the manufacturing sector. Older firms are found to experience significantly faster productivity growth, in both the full sample and the subsample of firms in the manufacturing sector.

The results indicate a significant positive relationship between firm size and labour productivity growth,

Table 2.2

Instrumental variable (two-stage least squares) regression results: Firm size and performance in the least developed countries

Dependent variable	Labour productivity growth			Employment growth		
	Full	Manufacturing	Services	Full	Manufacturing	Services
Models	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Firm size (log of full-time employees)	0.0098*	-0.0032	0.0269***	-0.0140***	-0.00725**	-0.0296***
	(0.00516)	(0.0063)	(0.0101)	(0.00216)	(0.00289)	(0.00384)
Firm age	0.000811*	0.00143***	0.000123	-0.00108***	-0.00118***	-0.000876***
	(0.000435)	(0.000551)	(0.000695)	(0.000182)	(0.000253)	(0.000263)
Constant	3.771***	4.050***	3.697***	4.640***	4.629***	4.662***
	(0.0575)	(0.108)	(0.0743)	(0.024)	(0.0496)	(0.0282)
Observations	9070	4334	4736	9083	4345	4738
R-squared	0.193	0.17	0.214	0.081	0.069	0.119

Source: UNCTAD secretariat calculations, based on data from World Bank Enterprise Surveys.

Notes: The dependent variable is either the log of labour productivity growth (columns 1–3) or the log of employment growth (columns 4–6); columns 1 and 4 report results for the full sample; columns 2 and 5 for the subsample of firms in the manufacturing sector and columns 3 and 6 for the subsample of firms in the services sector; firm size and age are measured at t-3; values in parentheses represent the standard errors; *, ** and *** indicate a 10, 5 and 1 per cent significance level, respectively.

in both the full sample and the subsample of firms in the services sector. In the full sample, a 10 per cent increase in the number of full-time permanent employees is associated with a 0.1 per cent increase in labour productivity growth.

Conversely, both firm size and age have a significant depressive effect on employment growth, in both the full sample and the sectoral subsamples, indicating that smaller and younger firms tend to play a significantly stronger role in terms of employment creation. This finding may reflect a tendency towards greater labour intensity among small firms and/or the fact that younger firms may not yet have attained a minimum efficient scale and therefore remain in a process of expansion. The effect of firm age on employment growth is robust to an alternative definition of the former, namely a dummy variable that takes the value of 1 for firms in the first three years of activity (Valensisi et al., 2018).

Table 2.3 presents the result for a specification modified in three ways. First, the continuous measure of firm size is replaced with dummy variables for small, medium-sized and large firms based on employment in the year t-3. Second, additional control variables are introduced to account for firm characteristics; these are self-reported product and process innovations in the previous three years[22] and capital structure, with separate dummies for at least partial State ownership and foreign ownership. Finally, the analysis controls for access to finance, proxied by the availability of an overdraft facility; gender and years of experience of the top manager; export status; and whether or not the firm registered at start-up.

Even with these specifications, the significant and positive relationship between firm size and labour productivity growth is strongly confirmed. Firm age appears to have a positive yet weakly significant effect on productivity growth in the full sample, but not in the sectoral subsamples. Small firms have a significantly higher rate of employment growth than medium-sized and large firms, again in both the full sample and the sectoral subsamples. Firm age also appears to dampen employment growth significantly, as in the results shown in table 2.2. Overall, these findings are in line with those of Ayyagari et al. (2011), which show that in developing economies, controlling for firm age, small firms have significantly lower productivity growth than large firms.

The results reported in table 2.3 also suggest that innovation is positively and significantly associated with productivity growth in the subsample of firms in the manufacturing sector, and with employment growth in both the full sample and the sectoral subsamples. The involvement of government actors in ownership appears to have a significantly negative effect on productivity growth in the full sample, but not in the sectoral subsamples, and the involvement of foreign actors appears to have a positive effect on employment growth in the full sample and in the subsample of firms in the manufacturing sector, but not the subsample of firms in the services sector.

Access to finance consistently represents a significant boost to employment creation, while manager experience has — perhaps surprisingly — the opposite effect, although with a lower degree of significance and not for firms in the services sector.

Table 2.3

Regression results: Firm characteristics and performance in the least developed countries

Dependent variable	Labour productivity growth			Employment growth		
	Full	**Manu-facturing**	**Services**	**Full**	**Manu-facturing**	**Services**
Models	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Medium-sized firm dummy	0.0367***	0.0340**	0.0396**	-0.0581***	-0.0696***	-0.0485***
	(0.0120)	(0.0166)	(0.0180)	(0.00517)	(0.00793)	(0.00721)
Large firm dummy	0.0563***	0.0577***	0.042	-0.0706***	-0.0742***	-0.105***
	(0.0164)	(0.0208)	(0.0347)	(0.00893)	(0.0116)	(0.0193)
Firm age	0.000734*	0.000838	0.000787	-0.000938***	-0.000746***	-0.00121***
	(0.000442)	(0.000549)	(0.000755)	(0.000203)	(0.000262)	(0.000318)
Innovation dummy	0.0173	0.0376**	-0.00633	0.0197***	0.0267***	0.0145*
	(0.0131)	(0.0170)	(0.0201)	(0.00533)	(0.00742)	(0.00755)
State owned dummy	-0.133**	-0.158	-0.103	-0.00599	-0.0153	0.0133
	(0.0662)	(0.100)	(0.0781)	(0.0214)	(0.0291)	(0.0309)
Foreign owned dummy	0.0191	0.0244	0.0095	0.0189***	0.0305***	0.00815
	(0.0166)	(0.0261)	(0.0216)	(0.00653)	(0.00966)	(0.00862)
Access to finance dummy	-0.0104	-0.00741	-0.00708	0.0190***	0.0237***	0.0121*
	(0.0122)	(0.0166)	(0.0180)	(0.00498)	(0.00737)	(0.00664)
Experience of top manager (years)	0.0000424	0.000589	-0.000726	-0.000418*	-0.000737**	0.0000703
	(0.000551)	(0.000686)	(0.000906)	(0.000247)	(0.000341)	(0.000366)
Female manager	0.0259**	0.0132	0.0360**	-0.0086	-0.00656	-0.0120*
	(0.0127)	(0.0182)	(0.0172)	(0.00561)	(0.00933)	(0.00699)
Exporter dummy	-0.0192	-0.0318	0.0102	0.0213***	0.0408***	-0.0295*
	(0.0174)	(0.0218)	(0.0314)	(0.00763)	(0.00875)	(0.0162)
Firm registered at start-up	-0.0288**	-0.0226	-0.0356*	-0.00419	-0.00121	-0.00692
	(0.0141)	(0.0197)	(0.0202)	(0.00557)	(0.00786)	(0.00782)
Constant	3.763***	3.953***	3.761***	4.601***	4.583***	4.599***
	(0.0473)	(0.113)	(0.0571)	(0.0174)	(0.0339)	(0.0224)
Observations	8676	4197	4479	8686	4207	4479
R-squared	0.197	0.174	0.219	0.084	0.09	0.102

Source: UNCTAD secretariat calculations, based on data from World Bank Enterprise Surveys.

Notes: The dependent variable is either the log of labour productivity growth (columns 1–3) or the log of employment growth (columns 4–6); columns 1 and 4 report results for the full sample; columns 2 and 5 for the subsample of firms in the manufacturing sector and columns 3 and 6 for the subsample of firms in the services sector; firm size and age are measured at t-3 and access to finance is proxied by the availability of an overdraft facility in the last three years; all regressions adopt an ordinary least squares approach, including regional and sectoral fixed effects; values in parentheses represent robust standard errors clustered at the country level; *, ** and *** indicate a 10, 5 and 1 per cent significance level, respectively.

Women are underrepresented in top management, as only 15 per cent of firms have a woman as the top manager. However, their presence is significantly associated with faster productivity growth, both in the full sample and in the subsample of firms in the services sector.[23] Exporter status appears to be significantly associated with higher rates of employment growth, in both the full sample and the subsample of firms in the manufacturing sector.[24] Finally, in line with Williams et al. (2017), the results reported in table 2.3 suggest that productivity growth is significantly faster in firms in LDCs that started as unregistered, compared with those that registered in the start-up phase.

The results highlight the different roles played by firms with different characteristics in structural transformation and thus the importance of taking full account of the heterogeneity of firms in policymaking, to best harness entrepreneurship for development. Smaller and younger firms are critical from the point of view of employment creation, yet the sustainability of their contribution is contingent on their surviving and thriving and this often requires greater skills and possibly different management structures (African Development Bank et al., 2017; Greiner, 1972). Conversely, larger firms appear to play a key role in capital deepening and productivity upgrading. Accordingly, while horizontal policies such as improving the business environment and widening access to finance undoubtedly have a role, structural transformation necessarily hinges on a well-balanced ecosystem that encompasses multiple types of firms, interrelated in a dense network of production linkages.

F. Concluding remarks

This chapter has outlined some stylized facts about enterprises in LDCs, which underline the importance of a nuanced understanding of entrepreneurship to policymaking in this area. Entrepreneurial activities, broadly defined, undoubtedly represent a major source of employment in LDCs, at nearly 70 per cent of the total, with self-employment as a proxy. This may signify substantial entrepreneurial potential, and helps to explain the prominence accorded to entrepreneurship in poverty reduction, notably for vulnerable populations such as women and youth.

A careful reading of the available evidence points to a more sobering reality, however, in particular from the perspective of structural transformation. The greater prevalence of necessity-driven entrepreneurs and low-productivity me-too businesses in LDCs suggests that much of the apparent entrepreneurial potential is likely to make at most a limited contribution to sustainable development. Instead, as high-productivity firms emerge and consolidate their positions, fuelling economic growth, the least productive entrepreneurs are more likely to discontinue their businesses in favour of better paid wage employment. The U-shaped relationship often posited between entrepreneurship and economic development suggests that, even in a successful country in this regard, a certain degree of upward consolidation in the entrepreneurial landscape is to be expected during the development process and is an important channel for labour reallocation towards higher productivity activities.

Similarly, while informality is associated with small-scale and necessity-driven entrepreneurial activities, informality and necessity-driven entrepreneurship can by no means be equated. Besides the cost and time burden of registration, a significant number of informal entrepreneurs see no potential benefits from formalization and there is growing evidence that some remain unregistered until they are confident that their business models will succeed after formalization. Therefore, while reducing registration costs and improving administrative efficiency may be beneficial, it is equally important to enhance the benefits of registration, by fostering a virtuous circle of growth and increasing productivity among formal firms, and to support young firms in cost discovery.

A more nuanced approach is also needed from an enterprise development perspective. Enthusiasm about start-ups and microenterprises and SMEs is understandable in terms of gross employment creation, but is often overstated. Microenterprises

Smaller and younger firms are critical for employment creation, yet larger firms appear to play a key role in capital deepening and productivity upgrading

and SMEs dominate the entrepreneurial scene in LDCs and undoubtedly play a key role in employment generation, not least because entrants with a suboptimal size need to expand to achieve economies of scale for survival. However, a large body of literature highlights remarkably low survival rates among start-ups, in particular smaller ones, implying substantial employment losses that are rarely accounted for due to the lack of longitudinal data. Larger firms also appear to perform better than smaller firms in terms of productivity growth, likely reflecting distinct economies of scale in different sectors, highlighting the importance of addressing the missing middle and promoting denser production linkages among a more balanced array of firms.

Start-ups can play a key role in structural transformation, notably by fostering competition, challenging incumbents and introducing innovations. However, in practice, only a limited proportion of start-ups can do so in a sustained way. Therefore, although universal policy measures, such as improving the business environment or enhancing entrepreneurship education, undoubtedly have some usefulness, effectively targeted support to enterprises with higher growth potential is equally critical in terms of sustainability. This point is further reinforced in LDCs given the serious resource constraints and the large number of potential beneficiaries of any implicit or explicit subsidization in the absence of adequate eligibility criteria.

Boosting the contribution of entrepreneurship to structural transformation thus requires – along with a careful and regular mapping of the entrepreneurship landscape across several complementary dimensions (for example along the lines of the OECD and Eurostat measurement framework), adapted to specificities in LDCs – a proactive industrial policy framework, including an incentive structure that nudges enterprises to improve performance, harnessing market discipline to foster innovation while limiting rent-seeking behaviour. It also requires bold approaches to harnessing international trade and investment to promote structural transformation.

Notes

1   This is not necessarily true for specialized surveys that focus on entrepreneurship, such as the adult population surveys carried out by the Global Entrepreneurship Monitor (GEM).

2   For these reasons, for example, the Organization for Economic Cooperation and Development (OECD) and Eurostat measurement framework avoids the use of a single synthetic indicator, and relies instead on an articulated set of measures to map entrepreneurship determinants, entrepreneurial performance and related impacts (Ahmad and Hoffman, 2007; Ahmad and Seymour, 2008).

3   See www.doingbusiness.org/data/exploretopics/ entrepreneurship.

4   GDP per person employed is used in preference to GDP per capita to exclude the effect of cross-country differences in labour participation rates.

5   The postulated U-shaped relationship between the rate of entrepreneurship and GDP per capita (figure 2.2 (a) and (b)) may be at least partly explained by the parametric nature of the estimation. The specification of the fitted line in figure 2.2 (c) is also quadratic, as in (a) and (b), yet the coefficient of the quadratic term is close to zero and far smaller than the coefficient of the linear term.

6   The unweighted average values of the share of self-employment, total early-stage entrepreneurial activity and new business density in LDCs are 70, 30 and 0.78 per cent, respectively, compared with 37, 16 and 4.14 per cent, respectively, in other developing countries.

7   The main exceptions to this trend are conflict-affected countries such as Afghanistan and the Democratic Republic of Congo.

8   Eritrea represents a significant outlier, as the majority of self-employment is accounted for by employers, yet this is likely related to policies such as that on national service and their effects on the labour market (Kibreab, 2009; Human Rights Watch, 2017; Valensisi and Gauci, 2013).

9   The adult population surveys are administered by GEM national teams to representative national samples of at least 2,000 respondents in different countries, following a standard methodology, to measure the level and nature of entrepreneurial activity worldwide. The data collection process varies slightly between countries, but predominantly relies on landline telephone-based surveys, with some face-to-face and/or mobile telephone interviews in areas where landline telephone coverage is limited.

10   An unweighted average of 61 per cent of adults in LDCs perceive good opportunities to start a business, compared with 49 per cent in other developing countries and 42 per cent in developed and transition economies; and 70 per cent of adults in LDCs believe that they possess the required skills, compared with 59 per cent in other developing countries and 44 per cent in developed and transition economies.

11   An unweighted average of 35 per cent of adults in LDCs indicate that fear of failure would prevent them from setting up a business, compared with 33 per cent in other developing countries and 37 per cent in developed and transition economies.

12   The number of newly registered limited liability companies in LDCs has nearly doubled, from 31,896 in 2006 to 61,257 in 2016. The latter figure is comparable with the figures in Indonesia and the Netherlands.

13   Unweighted averages across country groups; findings do not change if median values are considered.

14   The sectoral classifications in this paragraph refer to those of GEM and differ from the standard categories of UNCTAD. The adult population surveys of GEM may underestimate rural entrepreneurship due to their reliance mainly on telephone interviews.

15   Business discontinuation is assessed by GEM through the following question: "Have you, in the past 12 months, sold, shut down, discontinued or quit a business you owned and managed, any form of self-employment or selling goods or services to anyone?" (see www.gemconsortium.org/wiki/1184).

16   The lack of gender equality patterns addressed here are consistent with those documented by GEM (2017) and GEM (2018), taking into account the differing country classification.

17   Angola (2010), Burkina Faso (2009), Democratic Republic of the Congo (2013), Madagascar (2009), Mali (2010), Myanmar (2014), Nepal (2009), Rwanda (2011).

18   The figures are Angola, 89 per cent; Burkina Faso, 60 per cent; the Democratic Republic of the Congo, 51 per cent; Mali, 79 per cent; Nepal, 50 per cent; and Rwanda, 56 per cent.

19   See www.enterprisesurveys.org/methodology.

20   The surveys for the Gambia (2006) and Guinea-Bissau (2006) were not used due to comparability concerns.

21   There have been separate surveys of microenterprises and informal enterprises in some countries, such as those referred to in section D, yet they are not comparable to the standard surveys as they follow different methodologies and often include country-specific features.

22 The corresponding dummy takes the value of 1 if the firm reported both a product and process innovation, in order to take a conservative approach.

23 One plausible explanation for this finding is related to the educational attainment of managers and the interplay with the pattern of women's participation in enterprise ownership and/or management. However, the lack of data impedes a formal test of this hypothesis. The presence of women owners and/or managers in the sample appears to be concentrated in a few countries (namely Bangladesh, Cambodia, the Lao People's Democratic Republic, Myanmar, Madagascar, and Zambia), with relatively higher and less gender-unequal levels of educational attainment than in other LDCs. Moreover, there is evidence suggesting that the impact of education on firm performance tends to be more pronounced in businesses owned by women than in those owned by men (De Vita et al., 2014).

24 The opposite is true with regard to enterprises in the services sector, but the associated coefficient hardly passes the 10 per cent-significance threshold.