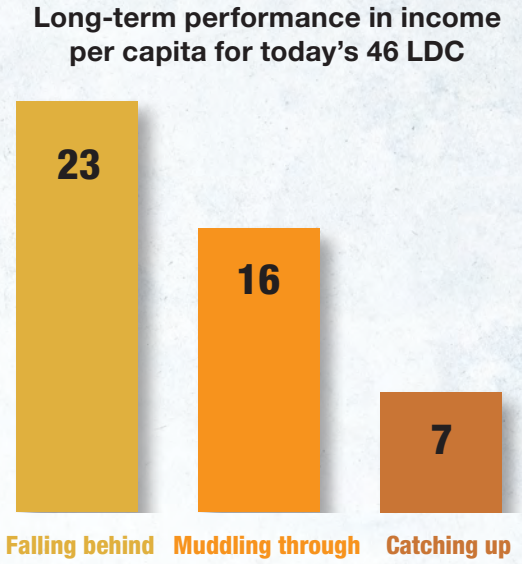
CHAPTER

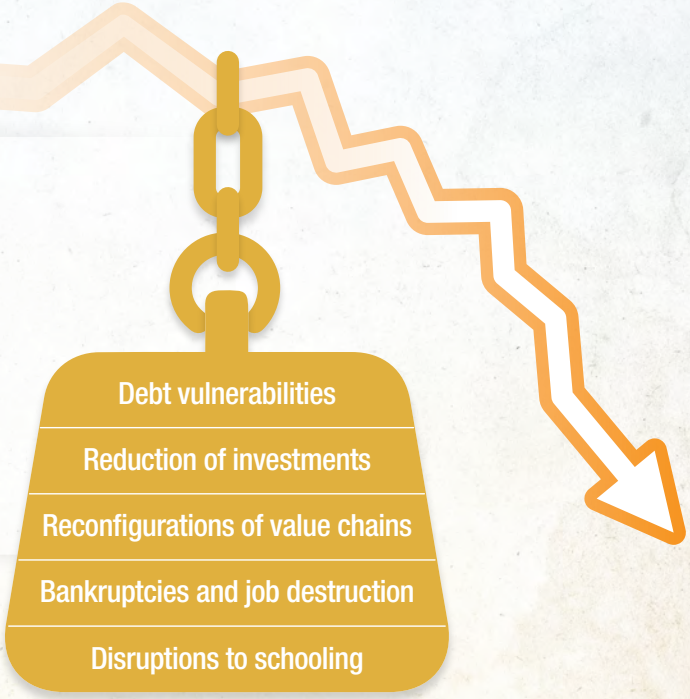
2

Achievements at 50: growth, transformation and sustainability?

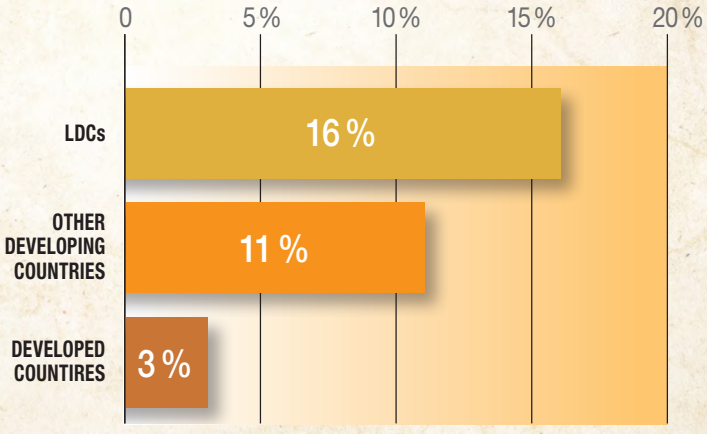
Since 1971, **23 LDCs lagged behind relative to the world's average income per capita,** 7 LDCs experienced catching up, and the rest muddled through



Beyond the health emergency, several **factors undermine LDC recovery prospects**



Though the risk has declined over the last 20 years, **LDCs remain disproportionately vulnerable to boom-and-bust cycles**



Incidence of growth collapses since the creation of LDC category

CHAPTER 2

Achievements at 50: growth, transformation and sustainability?

A. Introduction

The 50th anniversary of the establishment of the LDC category is occuring at a time when the international community is grappling with the dire consequences of the global recession triggered by COVID-19 outbreak. Productivity slowdown in developed countries, rising inequalities and environmental degradation, emerging international tensions and trade wars were already apparent, even before the onset of the deepest recession since World War II. At this juncture, however, the prospects of an uneven recovery and fears of another "lost decade" make it even more urgent to revitalize the multilateral system and bolster international cooperation. This is particularly critical for the LDCs, whose recovery and sustainable development prospects are largely contingent on maintaining long-term investment plans and access to consistent sources of sustainable development finance, so that they can benefit from a sustained global rebound in economic activity.

Against this background, this chapter addresses the following question: What can be learnt from the past growth experience of LDCs which could inform the deliberations on the next 10-year Programme of Action (PoA) for LDCs? To do so, it will reassess the growth trajectory of LDCs over the past five decades to provide key insights into how to best lay the foundations for an inclusive and sustainable recovery from the COVID-19 shock and "the great reset" it has called for. Although most of the discussion in the chapter is inevitably backward-looking, efforts are made to link the discussion to the COVID-19 shock and, data permitting, incorporate a preliminary analysis of the current juncture. The focus on economic growth is not intended to frame the discussion on the sustainable development of LDCs as a purely growth-centric debate. Rather, it is intended to affirm that a rebound of economic activity is critical at this stage, and that economic growth continues to be regarded as a key driver of the sustainable development prospects of LDCs, to the extent that explicit growth targets were enshrined in all the PoAs for LDCs, and more recently in Sustainable Development Goal 8.1.

The chapter is structured as follows. Section 2 outlines the key long-term LDC growth trends and elaborates on the implications of these trends with respect to the debate on global inequalities and income convergence. Section 3 investigates the medium-term deviation from long-term trends, highlighting the proneness of LDCs to experience boom-and-bust cycles. Section 4 examines the developments underpinning economic growth in LDCs, specifically analyzing the extent to which growth is accompanied by: (a) structural transformation; (b) inclusivity; and (c) environmental sustainability. Finally, Section 5 concludes and draws some final considerations to inform ongoing debates on the development of the next PoA for LDCs.

The long-term growth performance of LDCs has been mixed at best, and characterized by an overall sluggish and uneven record

B. A bird's eye view on the long-term performance of LDCs

This section takes a historical perspective and outlines the long-term trends in LDC growth performance since the creation of the category in 1971. The analysis that follows sets the context for the rest of the chapter, and highlights key stylized facts on the growth record of LDCs. While the bulk of the discussion focuses on the period preceding the COVID-19 pandemic, a deliberate effort is made to examine emerging preliminary data on the impact of the pandemic, and to link this to the broader ongoing quest for a more inclusive and sustainable recovery.

From a long-term perspective, the growth performance of LDCs over the past 50 years has, at best, been mixed, and characterized by an overall sluggish and uneven record. Real GDP for the LDC group increased five-fold since the category was created, climbing from roughly $200 billion in 1971 to $1,118 billion in 2019, at constant 2015 prices (Figure 2.1).[1] This is equivalent to an average growth rate of 3.7 per cent per year, only slightly higher than the corresponding world average of 3.1 per cent. Meanwhile, real GDP per capita expanded at a much slower pace (1.3 per cent per annum) due to rapid demographic growth, rising from about $600 to $1,082 over the same period.

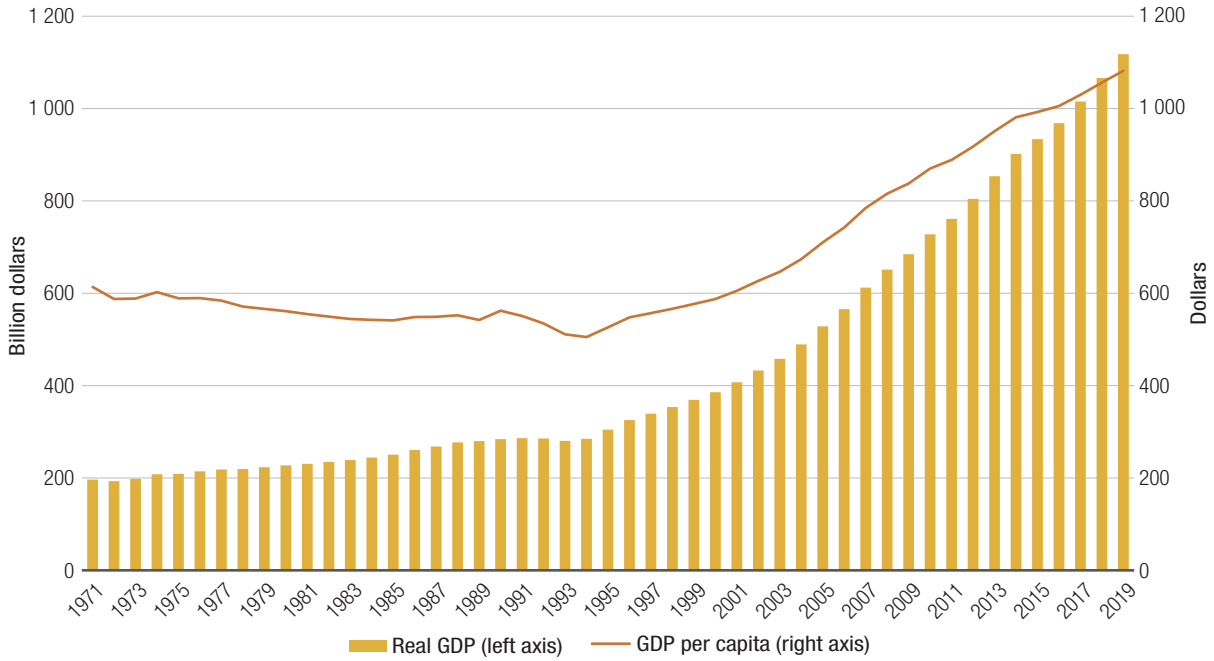
As repeatedly flagged in other issues of this report, the overall performance of LDCs has fallen short of what would have been necessary to redress their marginalization in the global economy (UNCTAD, 2010, 2016a, 2020a). Prior to the COVID-19 shock, the LDC

[1] To preserve comparability over time, the term "LDC group" refers to the current set of 46 LDCs, irrespective of when they were officially recognized by the United Nations as members of the LDC category. The same convention applies to the LDC regional group. A more detailed discussion of when individual countries officially integrated the LDC category (or graduated from it) can be found in UNCTAD (2016a) and United Nations (2018).

Figure 2.1

Real GDP and real GDP per capita in LDCs, since the creation of the category

(Constant 2015 prices)

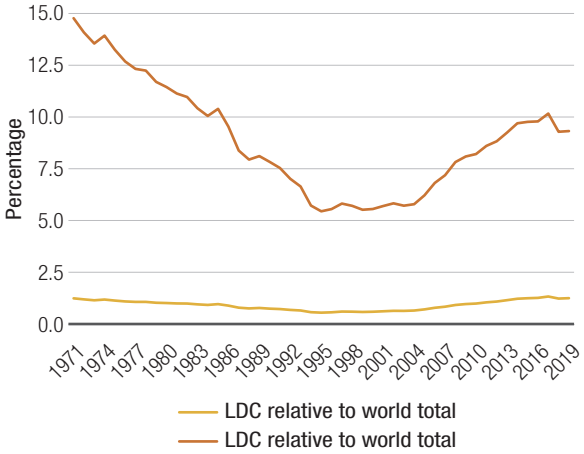


Source: UNCTAD Secretariat calculation based on data from UNCTADstat database [accessed April 2021].

group accounted for about one per cent of the world GDP, roughly the same share as in the early 1970s (Figure 2.2). Even more worrying, GDP per capita for the LDC group represented 15 per cent of the world average in 1971, but by 2019 – the year before the onset of the COVID-19 crisis – this had declined to less than 10 per cent. It is too early at this stage to account in a methodologically rigorous way for the impact of the COVID-19 crisis on this long-term picture. Nonetheless, existing forecasts and preliminary data suggest that the sharp downturn has affected LDCs and other developing countries (ODCs) disproportionately, and that the most vulnerable segments of the population have often borne the brunt of the crisis (UNCTAD, 2020a, 2020c, 2020d). LDCs are at the forefront of this global recession – one which is likely to cause lingering damage to their economies, and strain their already weak productive sectors.

Figure 2.2

LDC GDP and GDP per capita relative to the world total



Source: UNCTAD Secretariat calculation based on data from UNCTADstat database [accessed April 2021].

Note: Based on GDP and GDP per capita series in constant 2015 dollars.

Leaving aside the current conjuncture for the time being, and going back to longer-term considerations, it is interesting to note that both Figure 2.1 and Figure 2.2 reveal the existence of two distinct phases. Between 1971 and 1995, in the midst of a succession of oil shocks, debt crisis and structural adjustment programmes and relatively widespread conflicts, LDCs experienced sluggish and erratic GDP growth, when not outright recessions. This resulted in a gradual contraction of the average real GDP per capita of LDCs, both in absolute terms (Figure 2.1) and, more severely so, relative to the world average (Figure 2.2). Conversely, since the mid-1990s, LDCs witnessed a marked and generalized resumption in economic growth as macroeconomic fundamentals strengthened, the international environment improved and conflicts became less widespread.

LDCs as a group have displayed considerable heterogeneity, both in levels of income per capita and in their underlying dynamics. Throughout the period, Island LDCs have continued to record relatively higher levels of real GDP per capita than other LDC subgroups, even though they grew at a much slower pace (reaching $1,475 per person in the 2017–2019 period, at constant 2015 prices). Conversely, in the early 1970s Asian LDCs started off at a comparatively low level of income per capita, but have more than tripled it in 50 years, climbing to $1,274 in 2017–2019 (at constant 2015 prices). African LDCs and Haiti suffered an overall contraction in the first half of the period, and although the subsequent expansion outweighed the initial decline, they remain the subgroup of LDCs with the lowest average GDP per person ($947).

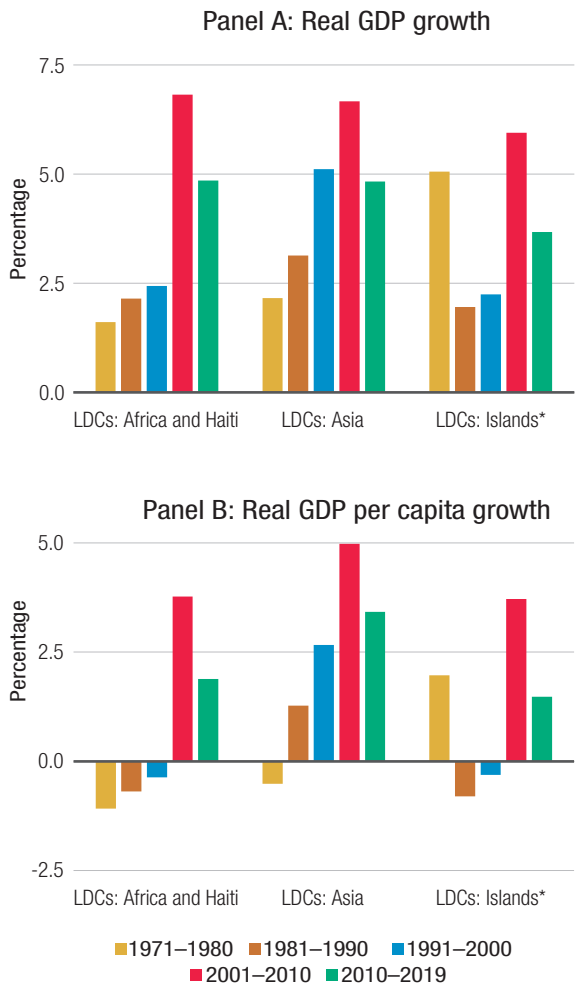
The comparison of GDP and GDP per capita growth by decade and geographical subgroups clarifies the underlying dynamics further (Figure 2.3). In the 1970s and 1980s, both African LDCs plus Haiti and Asian LDCs recorded rather sluggish expansion in real GDP; however, faster demographic growth in African LDCs plus Haiti largely explains the diverging trends in per capita income. Subsequently, in the 1990s, African LDCs and Haiti grew at roughly half the rate of their Asian counterparts, with a widening divergence in their GDP per capita. Since the new millennium, the pace of economic growth accelerated markedly in African LDCs and Haiti, with their GDP growth now matching the dynamics of Asian LDCs, but faster population growth in the former LDC subgroup still led to an about 1.3 percentage point slower expansion in per capita terms. As for Island LDCs, their growth performance has been somewhat volatile, especially when measured in per capita terms, thus reflecting a broad set of structural factors underpinning a heightened economic and environmental vulnerability.[2]

Figure 2.4 focuses closely at the individual country level, and provides a snapshot of the growth trajectory of LDCs since the creation of the category. To give an idea of how their performance compares with the rest of the world, LDCs have been grouped into the three following categories:

1. LDCs that are "falling behind". These are countries whose long-term GDP per capita growth rate is lower by more than one percentage point than the world's weighted average;

Figure 2.3

Real GDP and real GDP per capita growth, by decade and LDC geographical sub-group



Source: UNCTAD Secretariat calculation based on data from UNCTADstat database [accessed April 2021].

Note: * GDP data for Timor-Leste is only available from 2003; to avoid the undue effect of its inclusion, its GDP is imputed through linear extrapolation until the beginning of the decade.

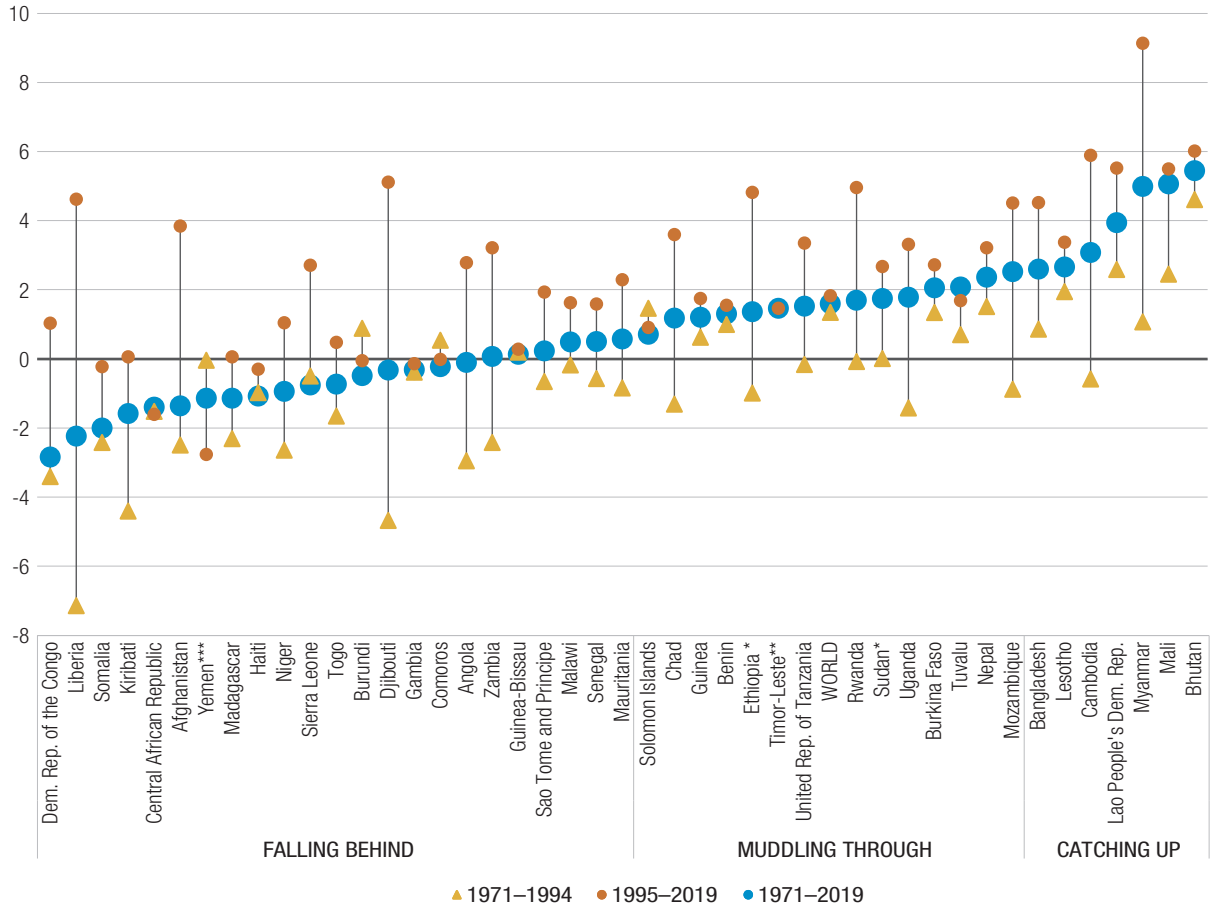
2. LDCs that are "muddling through", i.e. countries whose GDP per capita growth rate has fallen within the band defined by the world's average ± 1 per cent; and
3. LDCs that are "catching up", or whose long-term growth rate of per capita income has exceeded the world's weighted average by more than one percentage point.

Although arbitrary, this taxonomy provides a reasonable reflection of the trajectory of LDCs. It also underscores three important considerations. First, from a long-term perspective LDCs have made disappointing progress to improve per capita income levels, as reflected in the fact that as many as 23 LDCs are classified as "falling behind", and

[2] UNCTAD has repeatedly pointed out that Small Island Developing States (SIDS) tend to be characterized by comparatively high income per capita by international standards, but also heightened economic and environmental vulnerability – a situation sometimes referred to as the "Island paradox" (UNCTAD, 2016a, 2020a; MacFeely et al., 2021).

Figure 2.4

Average annual percentage growth rate of real GDP per capita (1971–2019)



Source: UNCTAD Secretariat calculation based on data from UNCTADstat database [accessed April 2021].

Notes: Average annual percentage growth rates are obtained by fitting an exponential curve as such, the growth rate for the overall 1971–2019 period may differ even substantially from the averages of the two sub-periods, when the underlying series displays marked inflection points around the cutoff date of 1995. * real GDP per capita series for Ethiopia and Sudan are adjusted to also reflect Eritrea and South Sudan respectively, so as to ensure a consistent "aggregate" throughout the period; ** data for Timor-Leste is only available from 2003 onward; *** GDP per capita series for Yemen start in 1990.

another 14 are "muddling through".[3] Moreover, as only a handful of LDCs have outperformed the world's average growth in per capita GDP, these results are broadly consistent with the findings of UNCTAD's Productive Capacity Index (PCI), which pointed to a shrinking of the high-performers' cluster (UNCTAD, 2020a). Put differently, despite some generalized improvements, particularly over the past two decades, from a long-term perspective only a small subset of LDCs have been able to sustain the type of long-term progress required to support a meaningful catching up.

Second, LDCs classified as "falling behind" include, as expected, mainly conflict-ridden countries (e.g. Afghanistan, Somalia and Yemen), as well as heavily commodity-dependent countries (e.g. Angola, Democratic Republic of Congo and Zambia). Conversely, long-term growth in relatively more diversified economies, notably various Asian LDCs, consistently exceeded the world average, giving rise to an incipient catching up process, albeit from a very low base. Similarly, most countries recommended for LDC graduation by the 2021 Triennial Review belong to the top category (or the upper part of the intermediate category), Angola being the main exception.[4]

Third, the overwhelming majority of LDCs performed much better in the second half of the

[3] To ensure a reasonable level of comparability over time, the series for Ethiopia and Sudan are adjusted to also include Eritrea and South Sudan, respectively.

[4] The specific challenges of Angola, and more broadly of the income-only graduation cases are discussed in detail in UNCTAD (2016a).

period (1995–2019) than in the first half. Indeed, if one were to apply the above taxonomy only to the 1995–2019 period, as many as 18 countries would fall within the "catching up" category, and only 11 would be in the "falling behind" group. In addition to the seven countries designated in Figure 2.4 as "catching up", other top performers would include Afghanistan, Chad, Djibouti, Ethiopia, Liberia, Mozambique, Nepal, Rwanda, United Republic of Tanzania, Uganda and Zambia. Interestingly, the difference in per capita GDP growth between the two periods is particularly visible in the case of various African LDCs. These include not only fuels and mineral exporters, which arguably benefitted more from the "commodity super-cycle" of the mid-2000s (e.g. Angola, Chad, Democratic Republic of Congo, Liberia, Mozambique or Zambia), but also some agricultural exporters and relatively more diversified economies (e.g. Djibouti, Ethiopia, Rwanda, United Republic of Tanzania and Uganda).

1. LDC growth, global inequalities and income convergence

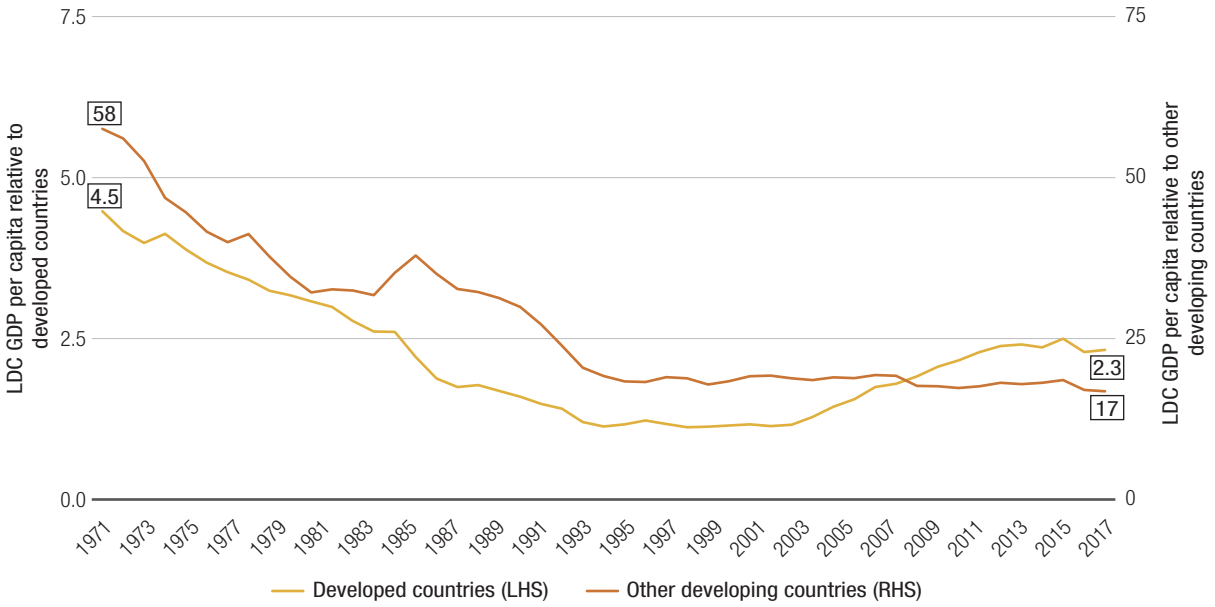
The appraisal of the growth record of LDCs needs to be contextualized in the broader debate on global inequalities and income convergence. From a long-term perspective, few signs exist of meaningful convergence in LDCs. At the time the LDC group was established, its per capita GDP was 4.5 per cent that of developed nations; however, by 2019 this share had declined to 2.3 per cent (Figure 2.5). The relative deterioration is even starker in relation to ODCs where per capita GDP of LDCs fell from 58 to 17 per cent. Focusing only on the high growth subperiod of 1995–2019 does not radically improve the picture: in that 24-year window, the GDP per capita of LDCs rose from 1.1 per cent of that of developed nations to just 2.3 per cent, and remained virtually stagnant in relation to that of ODCs.

Looking at individual country experiences, the worldwide distributional dynamics of income per capita is provided in the two panels of Figure 6. The left-hand panel depicts the kernel density of the logarithm of real GDP per capita in constant purchasing power parity (PPP) 2017 dollars at three points in time 24 years apart, namely: (i) in 1971 (when the LDC category was established); (ii) 1995 (broadly identified as the turning point in the LDCs' growth trajectory); and (iii) 2019 (the latest available year). The right-hand panel illustrates the histogram of the same real GDP per capita series in 2019, and distinguishes countries by development status.

Figure 2.5

LDC real GDP per capita as share of that of other country groups[5]

(Percentage)

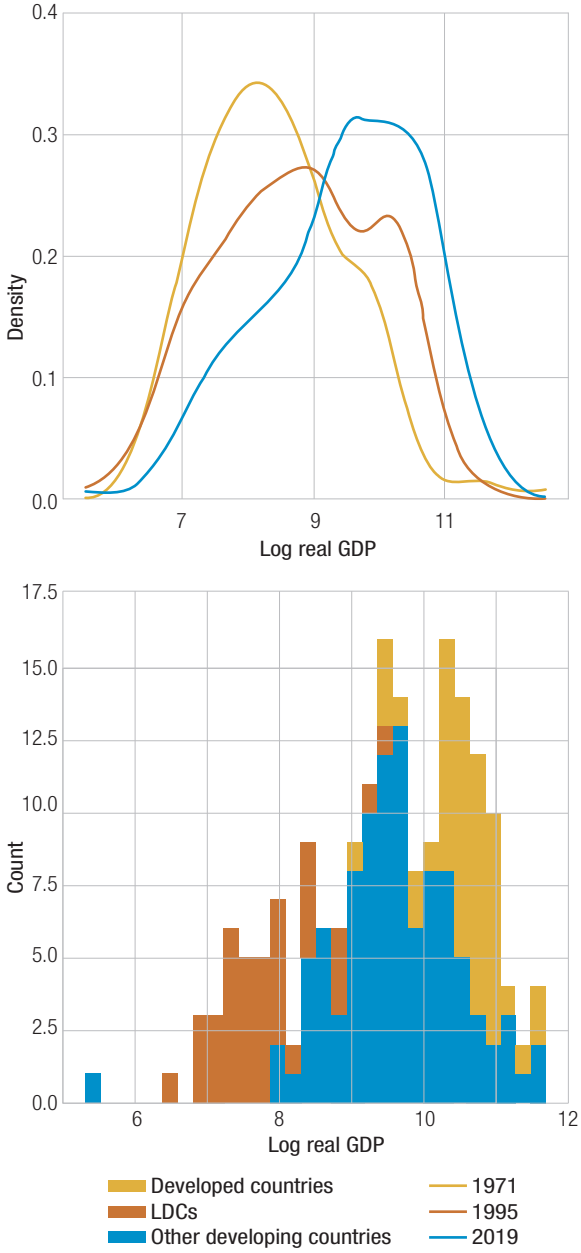


Source: UNCTAD Secretariat calculation based on data from UNCTADstat database [accessed April 2021].
Notes: Based on GDP and GDP per capita series in constant 2015 dollars.

[5] Economies formerly classified as "transition economies" have been excluded from the computation throughout the period to avoid spurious effects due to their crisis in the wake of the collapse of the former Soviet Union.

Figure 2.6

Real GDP per capita across countries – Kernel density estimation for 1971, 1995, and 2019, and histogram by development status in 2019[6]



Source: UNCTAD Secretariat calculation based on data from Penn World Table 10.0 database.

Note: For the sake of simplicity the M49 classification is adopted in the above graphs, unlike in the rest of the report.

[6] Kernel density functions provide a non-parametric way to estimate the probability density function of a given variable, in this case real GDP per capita for all world's countries for which data is available. The graph is obtained using Gaussian kernels, scaled such that the bandwidth used is equivalent to the standard deviation of the smoothing kernel. The densities are obtained from the series of real GDP per capita on the expenditure side; utilizing the real GDP per capita on the output side would give qualitatively similar results.

The right-ward shift of the density over time (especially between 1995 and 2019) in the left-hand panel is clear evidence of a generalized improvement in per capita GDP levels. Equally interesting, however, is to further explore the evolving shapes of the densities: over time, the 1971 unimodal right-skewed density (red line) turned into a more symmetric one with hints of bimodality (green line corresponding to 1995), and then morphs into a left-skewed density with a visible bulge at lower levels of income (blue line corresponding to 2019). Considering the persistence of per capita GDP ranking over time,[7] the dynamics depicted in the graph imply that a sizeable group of countries at the bottom of the income per capita ladder have tended to fall behind the rest, despite clear indications of progress in terms of rising per capita GDP. As shown in the second panel, these countries are almost invariably LDCs, with only a few countries reaching intermediate income levels in 2019.

Considering that Figure 2.6 accounts for PPP adjustments, the above distributional dynamics may be consistent with the presence of a poverty trap, as posited by classical development economists (Rosenstein-Rodan, 1943; Nurkse, 1966; UNCTAD, 2002, 2016a). It remains an open empirical question whether this reflects "conditional convergence", whereby economies with equal structural characteristics (saving propensity, institutional quality, openness and the like) converge to the same steady state, or so-called "club convergence", in which cross-country differences in per capita income are permanent, and (at least partially) determined by initial conditions.[8] Regardless of the answer, this evidence points to a key facet of rising global inequalities across countries, along with the alleged notion of a middle-income trap; it also highlights the challenges faced by developing countries in pursuing a meaningful process of convergence (UNCTAD, 2016a, 2016b).

The mechanisms that have been posited to rationalize these dynamics are unclear, but the main point here

[7] Kernel densities say little about where individual countries (or groups thereof) move over time; however, the persistence of GDP per capita ranking over time is underscored by the fact that the Spearman rank correlation between 1971 and 2019 is as high as 0.81. In light of this, it is clear that the overwhelming majority of countries at the bottom of the GDP per capita in 2019 were also there at the beginning of the period considered.

[8] The mainstream and club convergence views can be epitomized respectively by the work of Barro and Sala I Martin (2004) and Mankiw and co-authors (Mankiw et al., 1992), on the one hand, and Quah (1996, 1997) on the other.

is that the widening of between-countries inequalities has wide-ranging policy implications. Recent studies have shown that the country of residence, and in particular its average per capita GDP and level of inequality, is a key determinant of individual income, giving rise to "location premiums and penalties" (Milanovic, 2015, 2019; UNCTAD, 2017a). Hence, unless all LDCs can embark on a path of meaningful convergence, worsening levels of between-countries inequality will likely translate into inequality of opportunity.

It is also worth noting that due to lags in the production of reliable national accounting data, the preceding discussion is entirely based on series that do not cover the year 2020; hence, they cannot capture any of the effects of the sharp global recession caused by the COVID-19 pandemic. Nonetheless, a shock of similar proportions is set to significantly affect the growth performance of LDCs, as well as the outlook for global inequalities. In this context, UNCTAD has warned not only against the risks of dramatic socioeconomic impacts in the developed world, but also against the threat of "another lost decade" for many developing countries and LDCs alike (UNCTAD, 2020c, 2020d, 2020a). Early estimates for 2021 suggest that the global downturn may be less severe than previously anticipated, with global output rebounding by 4.7 per cent in 2021 following a fall of -3.9 per cent in 2020. This is explained by an early rebound in the East Asia and the Pacific region, as well as by the expansionary effects of the unprecedented stimulus packages adopted by developed countries, principally by the United States (UNCTAD, 2021a). It is also likely that the different time profiles of contamination waves and vaccine roll-outs, coupled with wide asymmetries in the capacity of countries to respond to the global recession, will trigger a k-shaped or two-speed recovery (UNCTAD, 2021a; IMF, 2021; World Bank, 2021b). For example, UNCTAD estimates that Africa's rebound in 2021 (+ 3.1 per cent) will be insufficient to fully outweigh the -3.8 per cent fall in 2020 (UNCTAD, 2021a).

In the medium term, the prospects for a majority of LDCs remain gloomy and risk factors are all on the downside (Box 2.1). Not only are the sizeable debt vulnerabilities of weighing heavily on LDCs' fundamentals, but – more generally – four factors threaten to undermine potential output on the medium term:

I. The postponement and cancellation of investment plans due to heightened uncertainty and declining demand (both of which dampen "animal spirits"), or to governments redirecting funds to urgent social expenditures, will inevitably dent medium-term growth potential (UNCTAD, 2020a, 2021a; IMF, 2020; World Bank, 2021b);

II. The widespread disruptions to schooling and learning, coupled with additional pressure on education budgets and with the likelihood that that many school drop-outs will not return to education even once the crisis has passed, might well take a toll on human capital accumulation and exacerbate existing disparities, including with respect to gender inequalities (UNESCO and World Bank, 2021);

III. Firms' bankruptcies, job destruction and related capability losses risk leaving long-term scars on an already precarious entrepreneurship landscape. Moreover, SMEs are having more difficulty gaining access to credit, and are thus being disproportionately affected by the downturn (UNCTAD, 2018a, 2020a; Djankov and Panizza, 2020); and

IV. It remains unclear whether ongoing reconfigurations of value chains and international competitiveness are a temporary phenomenon or if these changes, along with different consumers' habits, may adversely affect sectors of key importance for many LDCs –tourism and garment being a case in point (UNCTAD, 2020e; McKinsey & Company and BOF, 2021).

Box 2.1 **LDCs and the divergent recovery**

In 2020, the global recession triggered by the COVID-19 pandemic led to LDCs registering their worst socioeconomic performance since the early 1980s (UNCTAD, 2020a). Caught by a multi-layered shock to both aggregate demand and supply, and forced to impose social distancing measures in urban centres with its attendant dampening effect on activity levels, LDCs were faced by lower public revenues and a greater need for higher levels of public expenditure and social programmes. Moreover, the structural current account imbalances of LDCs were exacerbated by: (i) a decline in exports, resulting from reduced global demand and disruptions along key value chains and transport corridors; (ii) a virtual paralysis in tourism flows (which play a vital role for SIDS); and (iii) the drying up of foreign direct investment (FDI) and remittance flows (UNCTAD, 2020a, 2020f; Djankov and Panizza, 2020). Against this background, the relative resilience of ODA, which increased by 1.8 per cent compared to 2019 (OECD, 2021), has done little to address a shortage of foreign exchange among LDCs, worsened by heightened debt vulnerabilities and, in some cases, by devaluation pressures.

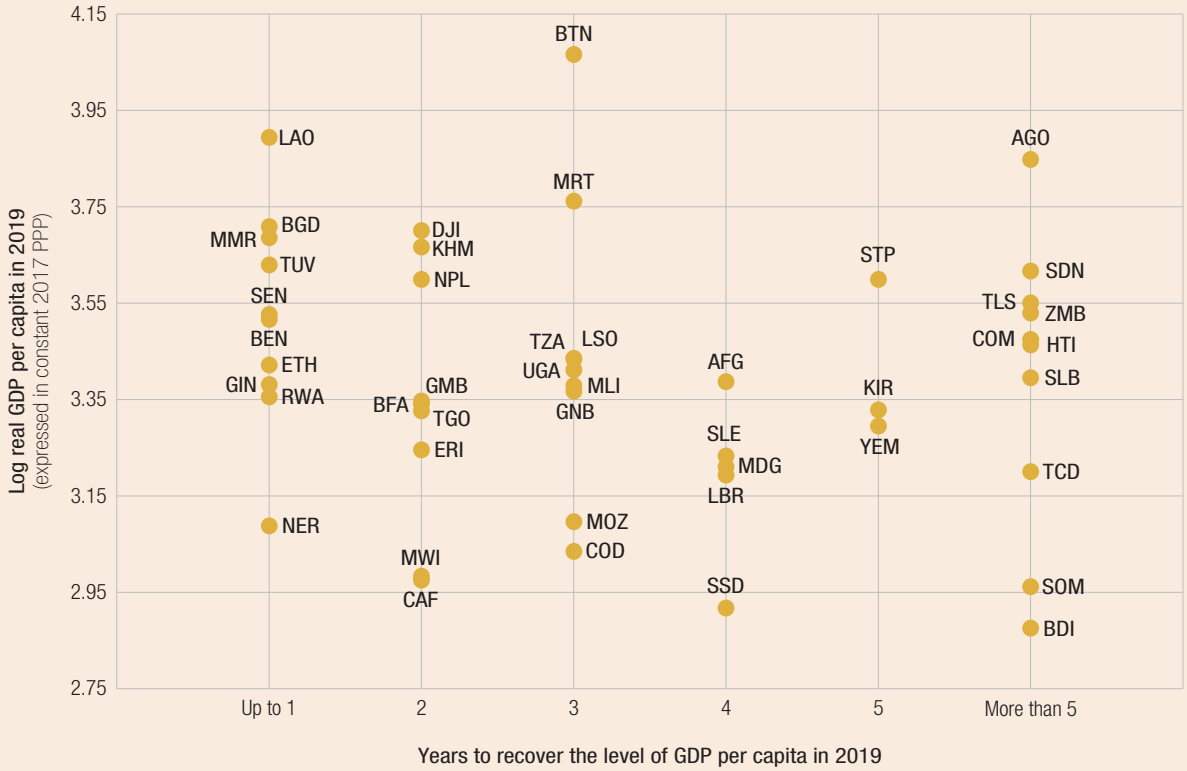
Box 2.1 (continued)

International cooperation initiatives, e.g. from the Debt Service Suspension Initiative (DSSI) to the G20 Common Framework for Debt Treatments beyond the DSSI, or even the resilience of ODA, are positive developments, but they fall short of what would be needed to ensure an inclusive broad-based recovery (UNCTAD, 2020a, 2020c, 2021a).* Meanwhile, the health situation in much of the developing world remains severe, with lingering risks of subsequent waves of COVID-19 infection, and delayed roll-outs of vaccination campaigns similar to those that have taken place in developed nations. This, in turn, weighs down on the prospects for an economic recovery.

While the most recent estimates suggest that the outlook for 2021 is better than previously forecasted, the recovery is likely to be uneven and reach developed (and some developing) countries much earlier than most LDCs. This reflects first and foremost: (i) the enormous asymmetries in the resources available to respond to the economic downturn; (ii) the technologies available to cope with social distancing and global value chain (GVC) disruptions; and (iii) broader socioeconomic resilience. As shown by Box Figure 2.1, even if IMF forecasts are taken at face value, most LDCs are likely to take several years to recover the (meagre) level of per capita GDP they recorded before the COVID-19 outbreak. The median recovery across LDCs is expected to take about three years. Equally worrying, relatively poorer countries (i.e. those with lower GDP per capita at 2017 PPP, hence closer to the bottom of the quadrant) are expected to take longer to recover their pre-crisis level, with a dozen LDCs expected to take five or more years to recover.

Box Figure 2.1

Number of years to recover the pre-crisis (2019) level of GDP per capita



Source: UNCTAD Secretariat calculation based on data from World Economic Outlook [accessed April 2021].
Notes: For the sake of readability countries are identified using standard ISO 3166-1 alpha-3 codes.

The heightened uncertainty surrounding how the world economy will evolve means that these projections need to be treated with caution, but they speak volumes to the risks of widening global inequalities in the wake of the COVID-19 pandemic. These projections also serve as a warning about the dangers of another lost decade for LDCs – one which could potentially derail the achievements of the 2030 Agenda for Sustainable Development.

* For a limited period and upon request from the beneficiary country, official bilateral creditors have granted, through the DSSI, the suspension of debt service payments to 73 eligible low- and lower middle-income countries. The G20 initiative took effect in May 2020 and has been extended through to December 2021. The Common Framework for Debt Treatments beyond the DSSI is an agreement between G20 and Paris Club countries to coordinate and cooperate on debt treatments for the countries eligible for the DSSI.

At this stage, the prospects of a two-speed recovery should be a serious source of concern with respect to global inequalities. Such a scenario could lead to LDCs suffering years of setbacks; it could also exacerbate both between-countries inequality and inequality within LDCs as a number of vulnerable categories (youth, women, informal and low-skilled workers, etc.) are being disproportionately affected by the downturn. This would jeopardize the achievement of the Sustainable Development Goals, and – more fundamentally – would likely result in heightened social and political instability, which could ultimately weaken global systemic resilience.

C. Medium-term considerations and boom-and-bust cycles

Beyond these long-term growth trends, it is instructive to assess any medium-term deviations from trends, i.e. growth accelerations and decelerations. The frequent occurrence of growth accelerations and collapses has already been documented in the literature (Hausmann et al., 2005; Arbache and Page, 2007, 2008). Several studies have associated volatile macroeconomic performance and boom-and-bust cycles to structural features common to many LDCs, e.g. a heightened dependence on primary commodity, weak institutions, and fragmented societies (Easterly and Levine, 1997; Rodrik, 1999; UNCTAD, 2010, 2013, 2016a). This line of reasoning assumes renewed relevance against the backdrop of the COVID-19 shock and the subsequent "great reset".

The present section empirically investigates the occurrence of growth acceleration and deceleration (or collapses) since 1971, extending the previous analysis in two directions: (i) it utilizes a different dataset (Penn World Table 10.0) that more appropriately accounts for changes in PPP across countries and over time (Feenstra et al., 2015); and (ii) it expands the period of analysis by a decade, thus covering also the aftermath of the global financial and economic crisis in 2008/9. In terms of methodology, growth in real per capita GDP is first computed from the expenditure-side real GDP at chained PPPs series (in 2017 dollars).[9] The section follows the definition of growth accelerations (and decelerations) proposed by Arbache and Page (2007, 2008) and outlined in Box 2.2.

Table 2.1 reports the incidence and average growth rate recorded in each type of event by country group for the whole 1971–2019 period, and for the two subperiods identified earlier in the report. To

Compared to other country groups, LDCs stand out for having experienced deeper and more frequent growth collapses

complement the statistics, the total number of growth accelerations/decelerations identified in each year is depicted in Figure 2.7, again distinguishing across country groups. Three main considerations can be drawn from this evidence.

First, worldwide growth accelerations have been three times as frequent as decelerations in the 1971–2019 period. After some fluctuations in the 1970s and 1980s, the number of accelerations increased from the mid-1990s until the eruption of the global financial and economic crisis in 2008/9 but has remained below average since then.[10] The number of growth decelerations, conversely, was relatively high during the two earlier decades; it declined thereafter in the mid-1990s (notwithstanding a spike coinciding with the East Asian crisis of 1997), but picked up again in the wake of the global financial crisis of 2008/9 to decline once more in 2015–2016.

Second, LDCs stand out for having experienced growth collapses far more frequently than other countries: collapses represent 16 per cent of the total country-year observations in the case of LDCs, compared to 10 per cent for ODCs, and as little as 2 per cent for developed countries. Moreover, although this finding was largely driven by the erratic growth record of the 1971–1994 period, even in the subsequent period growth collapses remained more prevalent in LDCs than in other country groups, particularly developed nations.

Third, compared to other country groups, on average, LDCs have tended to enjoy slower growth accelerations and suffer slightly more severe decelerations. Average growth during accelerations barely reached 4 per cent per year in the case of LDCs, compared to 6 per cent for ODCs, and 5 per cent for developed nations. Although these discrepancies tended to narrow in the 1995–2019 subperiod, they nonetheless remained significant. With respect to decelerations, the striking asymmetry appears to be between developed and developing countries (whether or not LDCs), with the former suffering less frequent and less severe growth collapses.

[9] The main results discussed here are robust with respect to the use of output-side real per capita GDP series.

[10] Note that due to the use of 4-year moving averages in the criteria for identification of growth accelerations/decelerations, the first effects of the global financial and economic crisis appear as early as 2006.

Box 2.2 How are growth accelerations and decelerations defined?

While several approaches have been proposed in the literature to identify growth accelerations and decelerations, this section relies on the methodology proposed by Arbache and Page (2007, 2008). Accordingly, four conditions define an acceleration:

1. The forward four-year moving average growth minus the backward four-year moving average growth is greater than 0 for a given year;
2. The forward four-year moving average growth exceeds the country's average growth in the long term;
3. The forward four-year moving average GDP per capita exceeds the backward four-year moving average (ensuring that a recovery from a temporary shock is not considered an acceleration); and
4. A growth acceleration episode requires at least three years in a row satisfying conditions 1-to-3.

Symmetrically, for a deceleration to be identified, the following four conditions need to be met:

1. The forward four-year moving average growth minus the backward four-year moving average growth is lower than 0 for a given year;
2. The forward four-year moving average growth is below the country's average long-term growth;
3. The forward four-year moving average GDP per capita is below the backward four-year moving average; and
4. A growth deceleration episode requires at least three years in a row satisfying conditions 1–3.

The occurrence of growth acceleration/collapse in individual LDCs in the 1971–2019 period is reported in Figure 2.8. If all individual LDCs for which data is available had at least one instance of growth acceleration (which by construction lasted at least three years), the most successful LDCs spent a considerable number of years in this condition (the maximum being 19 years in the case of Cambodia). As expected, many of these LDCs are those found to be "catching up" in Figure 2.4, namely Bhutan, Cambodia, Lesotho and Mali. It is worth noting, however, that the occurrence of accelerations explains only one facet of the catching up process: other LDCs that were deemed to be "catching up", e.g. Bangladesh or Myanmar, did not benefit from long spells of accelerated growth, but recorded an overall higher long-term growth trend.

Growth decelerations are also widespread across LDCs, with only three Asian countries (Bhutan, Lao People's Democratic Republic and Nepal) not posting any collapse in growth. At the other end of the spectrum, several LDCs among those shown in Figure 2.4 to be "falling behind" stand out for the disproportionate frequency of growth collapses, as in the case of the Central African Republic, Chad or Haiti. More generally, many (mainly commodity-dependent) LDCs have displayed both frequent accelerations and collapses, consistent with the view that their dependence on primary products has made them prone to boom-and-

Table 2.1

Incidence and speed of growth accelerations/decelerations by country groups

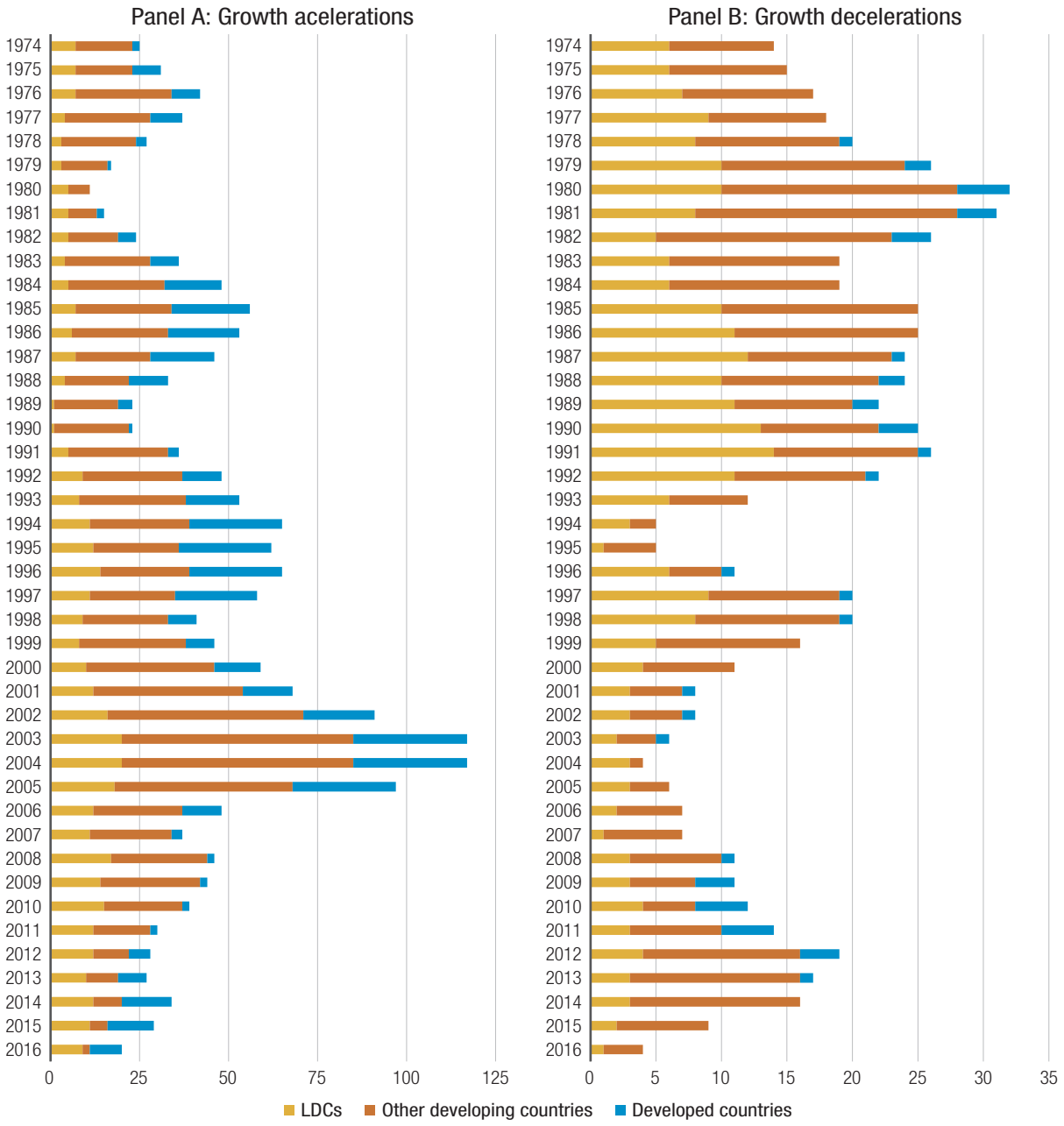
	1971–2019		1971–1994		1995–2019	
	Acceleration	**Deceleration**	**Acceleration**	**Deceleration**	**Acceleration**	**Deceleration**
	Incidence of events (number of years in acceleration/deceleration divided by total number of observations)					
World total	*27%*	*9%*	*23%*	*13%*	*30%*	*6%*
LDCs	25%	16%	15%	23%	34%	9%
Other developing countries	27%	11%	24%	13%	29%	7%
Developed countries	29%	3%	28%	3%	29%	2%
	Average growth during each event (percentages)					
World total	*5,42*	*-4,11*	*4,01*	*-4,28*	*5,66*	*-3,95*
LDCs	4,22	-4,60	1,52	-4,22	4,84	-3,79
Other developing countries	6,05	-4,19	4,90	-4,59	6,06	-4,28
Developed countries	5,10	-2,49	4,08	-2,39	5,56	-2,58

Source: UNCTAD Secretariat calculation based on data from Penn World Table 10.0 database.

Note: Since GDP series for as many as 43 countries start in 1970 (so that growth accelerations/decelerations are only identifiable after 1973), this cutoff year is applied across all countries for the sake of consistency; among LDCs, data for Yemen begin in 1989. For the sake of simplicity the M49 country classification is adopted above unlike in the rest of the report. To preserve comparability over time, the classification of country groups reflects the current composition (for instance, today's 46 LDCs) throughout the period.

Figure 2.7

Number of growth accelerations/decelerations by year and country group



Source: UNCTAD Secretariat calculation based on data from Penn World Table 10.0 database.
Note: See Table 2.1.

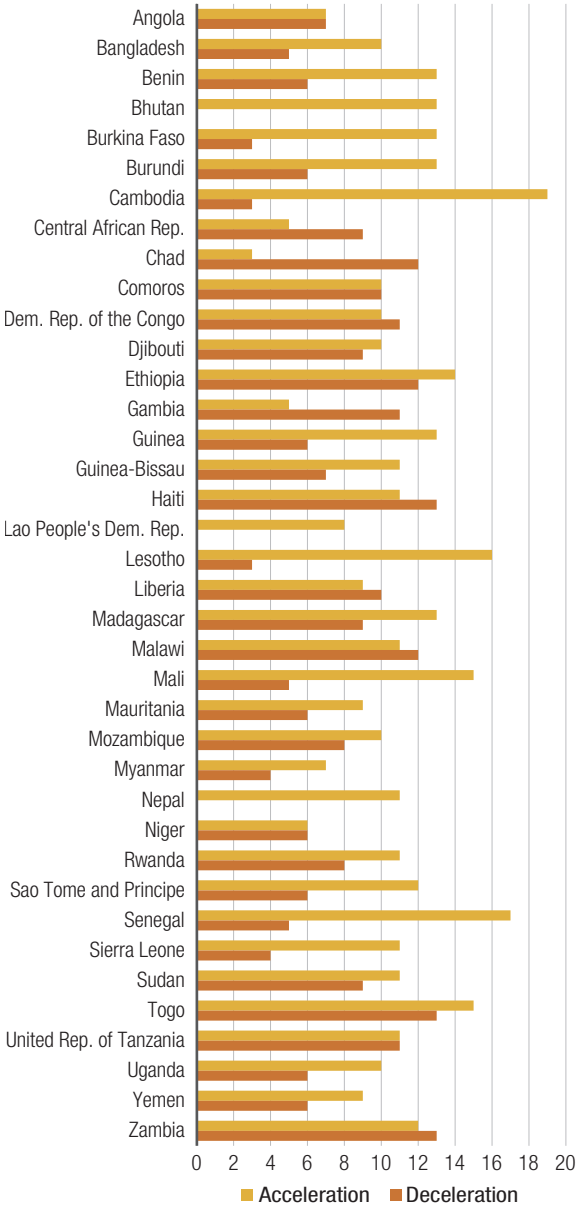
bust cycles. This erratic growth record characterizes LDCs, such as Angola, Democratic Republic of Congo, Liberia, Malawi and Zambia.

Overall, the above analysis points to specific traits of LDC vulnerabilities, and particularly to their heightened exposure to boom-and-bust cycles due to endogenous and exogenous conditions. If laying the foundations for sustainable growth and having the capacity to leverage growth accelerations is a pathway to catching up – equally important is the capacity to avoid costly growth collapses. This reading of the evidence appears to be reinforced by the experience of four LDC graduates for which data are available (Botswana, Cabo Verde, Equatorial Guinea and Maldives). Of the four, only two suffered growth decelerations over the past 50 years: Equatorial Guinea (twice, in periods 1977–1979 and 1990–1992) and Cabo Verde (in 1973–1975, at a time when the country was on the verge of gaining its independence from Portugal).

Figure 2.8

Occurrences of growth accelerations/decelerations by LDC

(Numbers of years in a given state, in the 1971–2019 period)



Source: UNCTAD Secretariat calculation based on data from Penn World Table 10.0 database.

Note: Penn World Table 10.0 data for the United Republic of Tanzania only cover its mainland.

The importance of resilience and of laying the foundations for sustainable growth is particularly apt in the current juncture as the international community scrambles to minimize the long-lasting impacts of the COVID-19 shock. If anything can be learnt from the experience of the past 50 years, it is that stronger international cooperation is needed to prevent a global recession from derailing the medium-term growth trajectory of LDCs, while renewing resilience-building efforts.

D. Patterns of growth: structural dynamics, inclusivity and sustainability

The past five decades have seen an intense debate on the role of economic growth in the development process and how it shapes related distributional, social and environmental outcomes. If achieving economic growth has always been among the top priorities for LDCs, until the late 1970s there was a broad recognition that this would hinge on addressing the structural nature of their development challenges, and the uneven terms of their integration in the global economy, as reflected in the First and Second UN Development Decades (1960–1970 and 1971–1980, respectively) and in the Substantial New Programme of Action (SNPA) for the LDCs (1981).[11] With the subsequent emergence of the Washington Consensus, the policy focus shifted towards "getting prices right" as it was assumed that growth and trickle-down would do the rest. The adoption of the Paris Programme of Action (PPoA) for the LDCs in 1990, and more explicitly the adoption of the Millennium Development Goals in 2000, gradually brought renewed attention to social aspects of development, and the gradual re-emergence of a more nuanced view that acknowledges the complex interrelations between the economic, social and environmental sphere. While this became more explicit with the adoption of the Sustainable Development Goals in 2015, the COVID-19 pandemic has added more impetus to this rethinking. The cascading of a global health emergency onto the economic, environmental and social spheres has laid bare some systemic risks and deep-seated patterns of interdependence that can no longer be overlooked. It has also put a spotlight on the fact that resilience is intimately related to the structural features of an economy, including the terms of its integration in the global economy, as well as its complex interrelationships with broader social and ecological systems. The crisis has therefore prompted a growing recognition that economic growth is not just an end in itself, but rather a means to improve well-being, lessen inequalities, build endogenous resilience, and contribute to a sustainable stewardship of the environment.

From the perspective of an LDC, growing attention needs to be paid to the importance of distinct patterns of growth in driving different socioeconomic outcomes, particularly if economic growth continues

[11] Note that the SNPA already contained quantitative growth targets for LDCs, as discussed in chapter 3.

to be regarded as key to sustainable development (Nissanke and Thorbecke, 2007; Fosu, 2009). In this context, UNCTAD has underscored how, in the long-term, growth follows from the process of the development of productive capacities, and is hence inevitably shaped by structural dynamics affecting not only capital accumulation, but also the intersectoral reallocation of production factors, and the gradual acquisition of productive capabilities and production linkages (UNCTAD, 2006, 2010, 2016b, 2020c, 2020g). UNCTAD has also highlighted how inclusivity and poverty reduction can only be achieved sustainably as part of a long-term process of structural transformation; this would entail a diversification of the economy away from primary commodity production towards one in which more productive employment is generated, domestic resource mobilization is strengthened, and where the economy improves its energy- and resource-intensity (UNCTAD, 2010, 2012a, 2016b, 2017b, 2018a). Moreover, this process typically goes hand in hand with the diversification of export markets; as such, it may be possible to establish a mutually supportive relationship between achieving LDC economic diversification and better harnessing South-South trade and regional integration.

With this premise in mind, the rest of this section analyses: (i) the different patterns of growth across LDCs; (ii) outlines the key underpinnings of the progress achieved by individual countries; and (iii) identifies commonalities that could inform on-going deliberations.

1. Productive capacity development and structural transformation

An abundant body of literature describes the sluggish development of the productive capacities of LDCs, and the limited extent to which their economic growth has been accompanied by structural transformation (UNCTAD, 2006, 2014a, 2020a). Analysis of UNCTAD's Productive Capacities Index (PCI), among others, has documented the wide gap that continue to separate LDCs from both developed countries and ODCs (UNCTAD, 2020a, 2020h). Although most LDCs recorded some progress over the past decade, only a small number of them have been able to significantly close such gaps. In addition, even amongst the best performing LDCs, many of which have been slated for graduation from the LDC category at the recent 2021 Triennial Review by the Committee for Development Policy (CDP), the process of sophistication of the economy is barely incipient, with the bulk of production and exports accounted for by relatively low-productivity activities and/or low-complexity product (UNCTAD, Forthcoming).

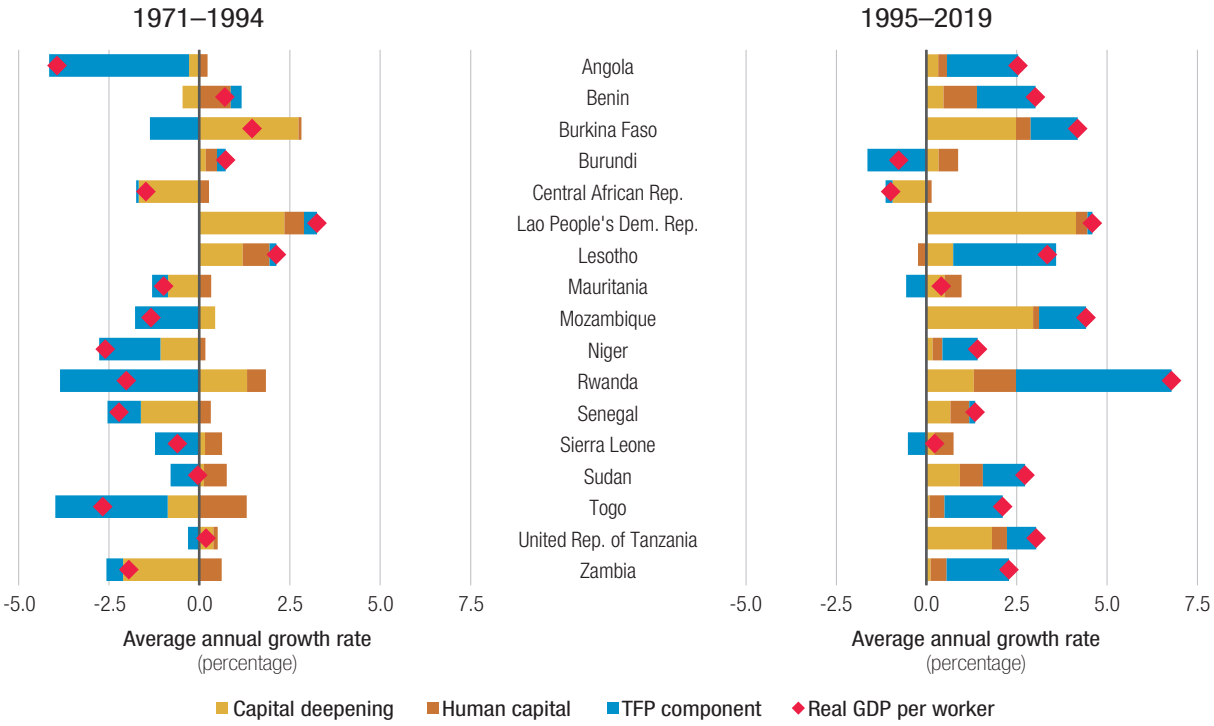
The **resilience of LDCs ultimately stems from the development of their productive capacities**, which shape their integration in the global economy, and within social and ecological systems

Moreover, if recent technological innovations can offer some scope for leapfrogging and productivity gains, e.g. decentralized electricity generation, this will still require massive investments in end-use capital, machinery and complementary skills. Similarly, the emergence of megatrends, such as servicification, digitalization and broader technological waves, may well put a premium on some immaterial elements of productive capacities; however, in the context of an LDC it remains hard to conceive how it could dispense with the need to acquire much-needed tangible capital investments. This is notably the case with respect to infrastructural provision – with access to energy being a key driver of productive upgrading (UNCTAD, 2017b) – but also of basic manufacturing capabilities, without which a meaningful engagement in advanced production technologies remains a chimera (UNCTAD, 2018b, 2020a; UNIDO, 2019).

Without repeating the analysis carried out in recent issues of this report, this section offers three complementary insights, and looks at; (i) development accounting; (ii) structural change; and (iii) the performance of LDCs in terms of the Economic Complexity Index (ECI). Development accounting essentially represents a methodology, stemming from the neoclassical growth theory, which traces changes in GDP per capita to their proximate determinants, namely the accumulation of production factors and total factor productivity (TFP) (Caselli, 2005; Feenstra et al., 2015). Although not free from criticism, development accounting can be a useful tool to shed more light on the role of capital deepening and human capital accumulation in the

Figure 2.9

Development accounting decomposition of growth in real GDP per worker for selected LDCs



Source: UNCTAD Secretariat calculation based on data from Penn World Tables 10.0 database.
Note: Penn World Table 10.0 data for the United Republic of Tanzania only cover its mainland.

context of an LDC.[12] The result of this exercise, for the 17 LDCs for which the required data are available, is presented in Figure 2.9.[13]

In relation to the first subperiod, the analysis shows that capital deepening played a critical role for the LDCs with rising real GDP per worker, and was in fact the main driver of growth in the case of the fastest economies, namely: Burkina Faso, Lao People's Democratic Republic and Lesotho. Human capital accumulation also played a positive – albeit circumscribed – role in the overwhelming majority of LDCs; while TFP residuals mirror the main episodes of contraction in GDP per worker, arguably also accounting for intra-cyclical factors. In the 1995–2019 subperiod, capital deepening remained important in fast-growing countries, such as Burkina Faso, Lao People's Democratic Republic, Mozambique and United Republic of Tanzania. This time the TFP residual also appears to have played an important role, notably in other fast-developing countries, e.g. Lesotho or Rwanda and/or natural-resource-rich one, e.g. Angola or Zambia.

Overall, capital deepening accounted for a median share of close to 40 per cent of the growth in GDP per worker, with human capital accumulation accounting for another 10 per cent. This evidence is broadly in line with the literature, and underscores the importance of capital accumulation, especially if we consider that:

1. Physical capital only covers produced capital, hence the impact of natural resources and subsoil assets is inevitably captured by the TFP component (Feenstra et al., 2015); and

[12] The three main lines of criticism on the development accounting framework focus on: (i) its saving-driven nature, whereby no role is foreseen for aggregate demand in determining investment decisions; (ii) the fact that it wipes out possible interactions between distinct sources of growth (say capital deepening and TFP); and (iii) the adequacy of the notion of aggregate production function to contexts where productivity levels differ across sectors (Taylor, 2004; Abramovitz, 1989; Banerjee and Duflo, 2005).

[13] In a nutshell, the derivation of development accounting decomposition in Figure 2.9 is obtained from an aggregate constant return to scale production function

$$Y=A_t\,(L_t\,H_t)^{\alpha}\,K_t^{1-\alpha}$$

in which Y_t, L_t, H_t and K_t represent respectively income, labour human and physical capital at time t, whereas A_t is the TFP. Through total differentiation one obtains

$$\dot{y}=\dot{A}+\alpha\,\dot{H}+(1-\alpha)\,\dot{k}$$

whereby the dot indicates the growth rate of the corresponding variable, and letters y and k indicate respectively income and capital in per-worker terms.

2. Capital accumulation is heavily affected by institutional factors, conflicts and political instability – a critical issue for a number of LDCs – often leaving long-term adverse legacies (Nkurunziza, 2019).[14]

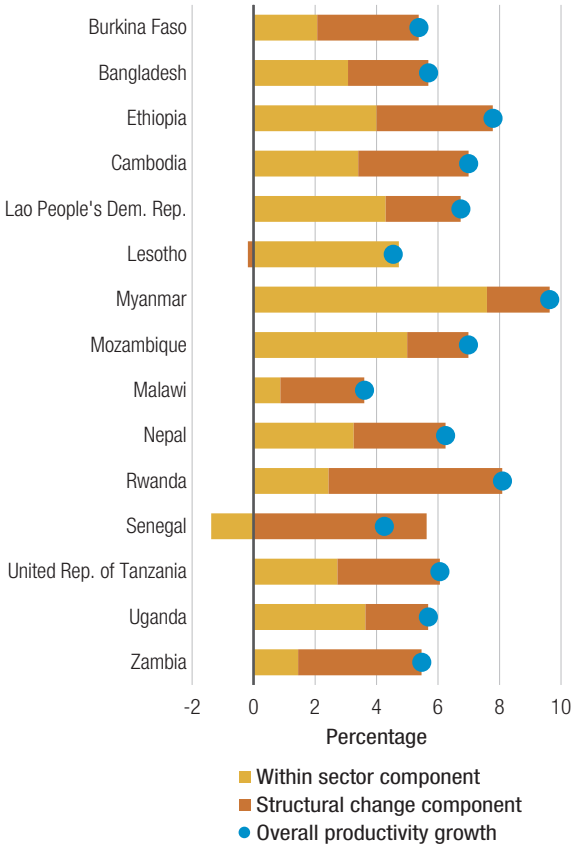
A key determinant of productivity dynamics is the pace and direction of structural change, i.e. the process of intersectoral reallocation of inputs and the corresponding changes in the composition of output, which typically accompany economic growth. Generally speaking, structural change has progressed at a sluggish pace in LDCs, mainly through the contraction of agricultural share of value added (from about 35 per cent in 1971 to 21 per cent in 2019), and a corresponding expansion of the weight of services (from 43 to 49 per cent) and industry (from 23 to 30 per cent). The increase in the weight of industry was, however, mainly accounted for by mining and constructions, while the manufacturing share grew from only 11.6 to 13.6 per cent. Simultaneously, while agriculture still employs the majority of the labour force (55 per cent in 2019), it nonetheless experienced a steady decline; the employment share of services' rose from 21 to 32 per cent in 1995–2019, and industry's share of employment rose from only from 8 to 12 per cent over the same period.

In relation to average labour productivity across the whole economy, its evolution is determined by the interplay between a within-sector component – stemming from capital deepening, technological change, or reduction of misallocation across plants – and a structural change component resulting from labour reallocation across sectors (McMillan and Rodrik, 2011; McMillan et al., 2014, 2017; UNCTAD, 2020g).[15] Typically, when labour flows to relatively higher productivity activities, such as manufacturing and advanced services, this reallocation gives rise to a so-called "growth enhancing structural change" (McMillan and Rodrik, 2011). This additional boost fails to materialize if labour leaves agriculture but is instead forced to resort to underemployment, or low-productivity small businesses (UNCTAD, 2018a).

Figure 2.10

Decomposition of annual labor productivity growth in selected LDCs

(1995–2018)



Source: UNCTAD Secretariat calculation based on data from Vries et al. (2021).

The decomposition of labour productivity growth in selected LDCs for which data are available is presented in Figure 2.10; this applies the methodology developed by McMillan and Rodrik (2011), as well as recently released data from the Economic Transformation Database (de Vries et al., 2021).[16] In the period considered (1995–2018), which overlaps with the high growth subperiod identified earlier, labour productivity growth averaged 6 per cent per year across LDCs, with the structural change component accounting for more than half of this increase. This

[14] Later analysis on structural change suggests that the TFP dynamism for Angola, Mozambique, and to some extent Zambia, is arguably linked to the boom in extractive industries (natural resources and subsoil assets being excluded from the computation of physical capital); in the case of Rwanda rapid TFP growth was largely due to sectoral labour reallocation.

[15] Analytically, the decomposition carried out can be expressed as:

$$\Delta Y_t = \sum_{i=n} \theta_{i,t-k}\, \Delta y_{i,t} + \sum_{i=n} y_{i,t}\, \Delta \theta_{i,t}$$

where Y_t and $y_{i,t}$ refer to economy-wide and sectoral labour productivity levels, respectively, and $\theta_{i,t}$ is the share of employment in sector i. The Δ operator denotes the change in productivity or employment shares between t - k and t. The first term in the expression corresponds to the within sector component, while the second one to the structural change component.

[16] The estimates use the most granular sectoral breakdown available for the following 12 sectors, namely: agriculture; mining; manufacturing; utilities; construction; trade services; transport services; business services; financial services; real estate; government services; and other services.

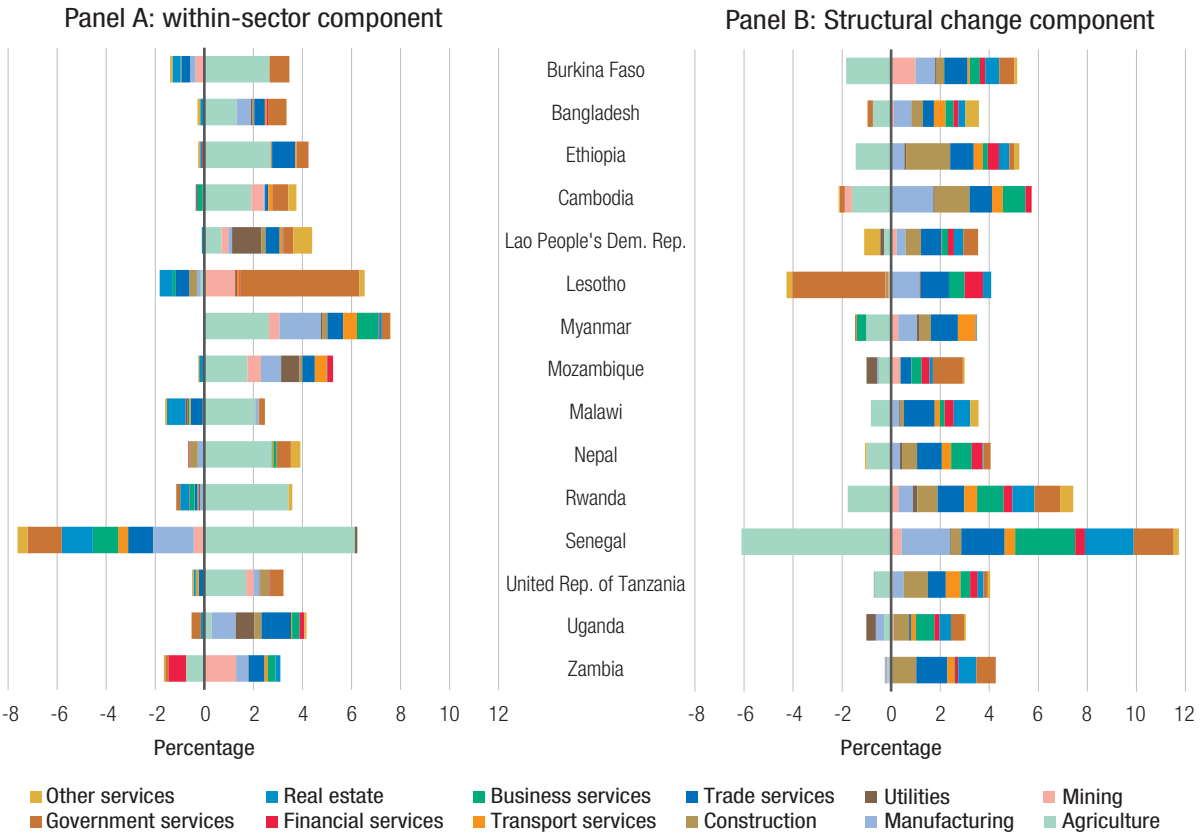
confirms the encouraging findings of related literature that document, since the 2000s, the emergence of a more growth-enhancing pattern of structural change, especially in the African region (McMillan et al., 2014; de Vries et al., 2021).

The within-sector and structural change components are further decomposed across sectors in Figure 2.11 (in Panels A and B, respectively) to give a more precise idea of the underlying pattern of structural change. Despite cross-country heterogeneity, some commonalities are visible. First, agriculture was the main driver of within-sector productivity growth in the large majority of LDCs (Panel A), reflecting its large employment share, but also that agricultural value-added expanded in the context of declining agricultural employment (which explains the negative contribution of the sector in Panel B). The rise in agricultural productivity is of fundamental importance in supporting structural change, not only because of poverty and food insecurity concerns, but also because the availability of "wage goods" reverberates on the viability of other industries (essentially through wage inflation), as well as on the balance of payment equilibrium (in the case of countries being dependent on food imports). Conversely, the contribution of the manufacturing sector to within-sector productivity growth was visible only in some LDCs (Bangladesh, Myanmar, Mozambique, Uganda and Zambia), even though the manufacturing employment share increased in all LDCs, with the exception of Uganda. Second, because of productivity differentials across sectors, labour reallocation from agriculture to other sectors is the critical driver of the structural change component (Panel B). In this respect, if manufacturing plays a positive and visible role in nearly all LDCs, the contribution of the services sectors (especially trade and business services) is larger because of their greater scope to generate employment. Third, the capital-intensive nature of the mining sector, with its circumscribed pool of highly productive workers, emerges quite starkly from the two panels, especially if considering that the period under analysis saw a rapid scale up of mining production and related exports of primary commodities. Although mining contributed visibly to within-sector productivity growth in most natural-resource rich countries, its

Figure 2.11

Sectoral decomposition of the within-sector and structural change components in selected LDCs

(1995–2018)



Source: UNCTAD Secretariat calculation based on data from Vries et al. (2021).

contribution through structural change was much smaller, as mining employment shares did not vary substantially over time.

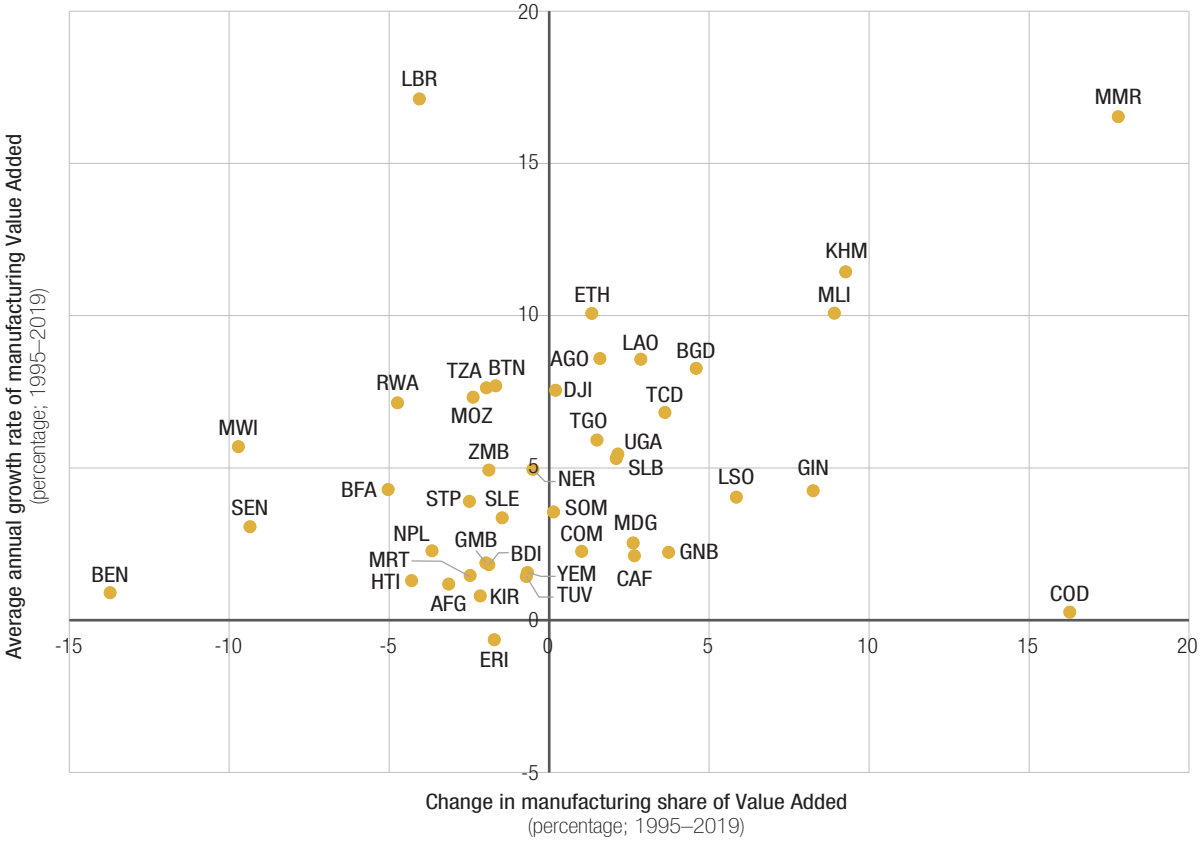
Traditionally, the special focus on manufacturing in this context is due to its scope for job creation and, above all, for productivity spillovers to the rest of the economy – spillovers which could give rise to increasing returns to scale (UNCTAD, 2016b). More recently, some doubts have arisen on the extent to which industrialization can still be a driving force behind sectoral labour reallocation in today's world; moreover, with the advent of digitalization and servicification some features traditionally ascribed to manufacturing, e.g. spillovers, scale economies and innovation, are increasingly shared by some services' segments (Rodrik, 2016; Hallward-Driemeier and Nayyar, 2017; Nayyar et al., 2018; UNCTAD, 2020a). While acknowledging these important nuances, which are in line with the analysis just presented, here it is worth focus closely on the industrialization ambitions of LDCs, particularly those explicitly enshrined in the IPoA and the 2030 Agenda for Sustainable Development, which both include related goals.

The focus on manufacturing, moreover, appears consistent with a recent study highlighting how the conditional convergence hypothesis fails to hold in the post-1989 globalization period, and contending that the most effective way to generate faster growth in per capita income is by raising the employment share of manufacturing relative to agriculture and services (Nell, 2020).

In the long-term, the industrialization performance of LDCs has been lukewarm, with a few exceptions, mainly but not exclusively in the Asian region. Between 1971 and 1995, the share of the manufacturing sector in total value added declined in 21 of the 40 LDCs for whom data are available. This might be expected given the performance of these economies over this period; however, more interesting still is to look at the evolution of the manufacturing sector during the high-growth period between 1995 and 2019. Figure 2.12 provides a snapshot of this evolution, looking on the horizontal axis at the change in manufacturing share of value added, and on the vertical axis at the average annual growth rate in real manufacturing value added. The data reveal that nearly

Figure 2.12

Evolution of the manufacturing sector in the LDCs



Source: UNCTAD Secretariat calculation based on data from UNCTADstat database [accessed April 2021].
Notes: For the sake of readability countries are identified by standard ISO 3166-1 alpha-3 codes.

LDC progress towards sustainable industrialization has been lukewarm, and the COVID-19 shock threatens to thwart even the few cases of incipient structural transformation

all LDCs recorded an expansion in manufacturing value added, but in the majority of cases (23 out of 43), this was outpaced by growth in other sectors, resulting in a decline in the overall weight of manufacturing in total value added. Among the countries that avoided such a "relative de-industrialization" are mainly rapidly growing LDCs, such as Bangladesh, Cambodia, Lao People's Democratic Republic and Myanmar, but also some African LDCs, e.g. Ethiopia, Guinea and Mali.

Recent studies have also highlighted how the trend towards premature de-industrialization began to reverse in the early 2000s, including in various African countries (McMillan et al., 2014; Kruse et al., 2021). These encouraging signs are surely important and may be overlooked from a long-term perspective. In the light of the sharp recession triggered by the COVID-19 shock, it remains to be seen if the incipient process of industrialization will continue unabated, or if the shock will thwart these efforts.

A related element of analysis corroborating the view that economic growth in LDCs in the 1995–2019 period was only weakly associated with structural transformation and economic sophistication stems from the literature on economic complexity (Hidalgo et al., 2009; Hausmann and Hidalgo, 2011). This approach uses the following four structural features to characterize the network linking countries to their exported products:

1. The negative relationship between the diversification of a country, and the average ubiquity of its exports (i.e. the number of other countries able to produce them);
2. The non-normal distributions of product ubiquity;
3. Country diversification; and
4. Product co-export (Hidalgo et al., 2009; Hausmann and Hidalgo, 2011).

The structural characteristics of the network allow inferring each country's economic complexity, based on the diversity and sophistication of the productive capabilities embedded in its exports. Countries able to sustain a diverse range of productive know-how, with sophisticated specific capabilities can produce a wide array of goods, including complex products few other countries can make. Accordingly, the complexity of an economy represents a metric of the sophistication of its capabilities, based on the diversity and complexity of its export basket (i.e. how many other countries can produce the same products, and what their respective economic complexity is). This information is summarized in the Economic Complexity Index (ECI), which in strict mathematical terms is defined through an eigenvector of the matrix connecting countries to the products they export. In turn, the ECI represents a good predictor of future growth, suggesting that it does indeed capture structural features of the underlying patterns of capabilities acquisition, despite stemming only from international trade relations. An intrinsic limitation of the ECI, however, is that it does not capture services exports, and hence overlooks an increasingly prominent part of the economy.

Looking at the ranking in terms of ECI provides a useful metric to assess how each country's capabilities compares with those of its competitors. Figure 2.13 visualizes how this ranking evolved and compares 1995 (the first available data) and 2018 (the latest). The limited degree of sophistication of LDC economy stands out clearly. In 2018, eight of the bottom-ranked 20 countries were LDCs, and the highest ranking LDCs (the United Republic of Tanzania) was only 68th out of 133 countries for which data are available. Equally important, roughly half of the LDCs (those above the 45-degree line in Figure 2.13) lost some positions over time, suggesting that their acquisition of capabilities has lagged that of their competitors. As expected, most of the best performing LDCs in terms of income per capita (Figure 2.4) also improved their ECI ranking.[17] In spite of this, rankings tend to be rather persistent over time, with a correlation of 0.84 between the ranking in 1995 and 2018, resulting in relatively small changes (with an LDC average of five positions).

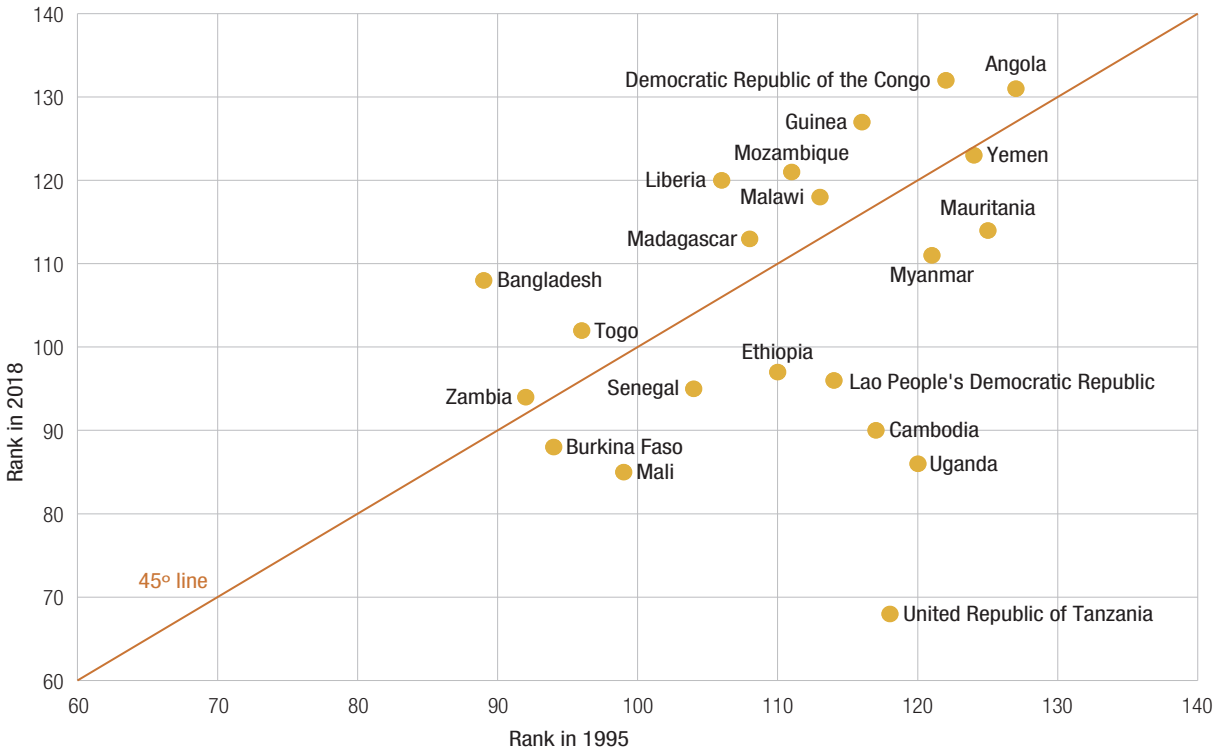
Overall, two main conclusions can be drawn to inform strategic efforts to "build back better". Structural transformation and the reallocation of factors from low productivity to higher productivity activities remain critical to TFP dynamics, and hence to sustainable growth. This is all the more valid in LDCs where sectoral productivity gaps are particularly wide, and where a substantial pool of labour toils in semi-subsistence agriculture or is "underemployed". This implies that an

[17] The main exception to this pattern is Bangladesh, which recorded steady and sustained growth over the period considered, despite a poorly diversified export structure, largely hinging on ready-made garment. Between 1995 and 2018, the country lost 19 positions under the ECI. Bangladesh's export diversification challenges are discussed in greater detail in the country's Vulnerability Profile (UNCTAD, forthcoming).

Figure 2.13

Changes in LDC ranking according to Economic Complexity Index

(1995–2018)



Source: UNCTAD Secretariat calculation based on data from Atlas of Economic Complexity database [accessed May 2021].

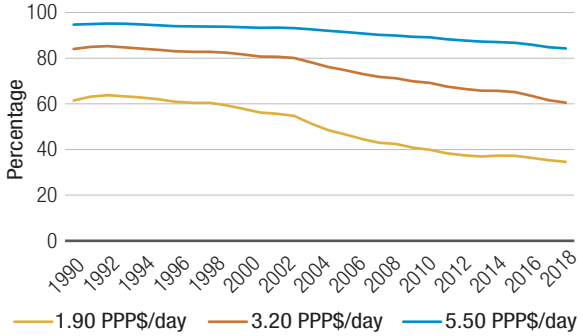
emphasis on productive capacities acquisition, through the intertwined processes of capital accumulation, structural change and productive capabilities acquisition, plays a key role in laying the ground for sustainable development. In addition, the above analysis shows that if, during the period of relatively rapid GDP growth, some LDCs managed to kick-start a long-term process of structural transformation, this is at best barely incipient. Moreover, it is unclear whether these emerging cases of nascent industrialization will continue unabated in the midst of the sharp recession triggered by the COVID-19 outbreak, or if the downturn will thwart them. Moreover, structural transformation has remained largely sluggish in about half of the LDCs. Such a mixed picture is largely linked to the challenges of nurturing the emergence of a dense network of mid- and large-sized enterprises, connected through dense input-output linkages, both domestically and in global and regional value chains (UNCTAD, 2018a; Nkurunziza, 2019).

2. Growth and inclusiveness

Notwithstanding considerable variation across countries, there is little question that economic growth has been a key driver in reducing poverty levels in the LDCs, (UNCTAD, 2020a; World Bank, 2020). Between 1990 and 2019 poverty levels in LDCs have shrunk by 27, 23 and 10 percentage points, respectively, depending on which international poverty line is utilized: the $1.90 per day; $3.20 per day; or the $5.50 per day (Figure 2.14). Even prior to the COVID-19 shock, historical trends show that the pace of poverty reduction slowed in the wake of

Figure 2.14

Historical trends in headcount ratios in LDCs, by international poverty line



Source: UNCTAD Secretariat calculation based on data from PovcalNet database [accessed April 2021].

the global financial and economic crisis of 2008/9, at least in relation to the $1.90 and $5.50 daily poverty lines. Although it is too early to rigorously assess the full impact of the COVID-19 pandemic, preliminary assessments suggest that the cost of the crisis is severe across all poverty lines (Box 2.3).

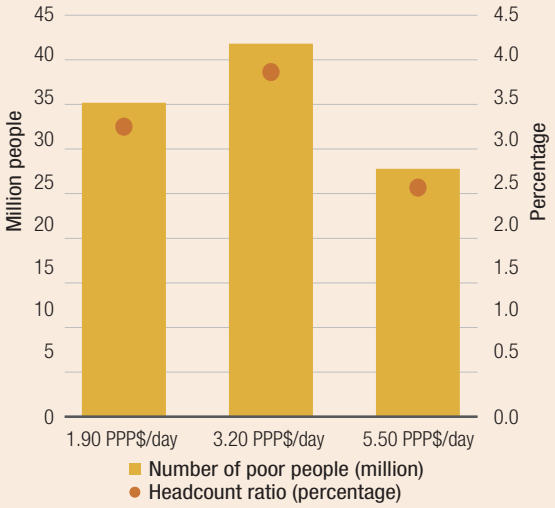
Box 2.3 The socioeconomic costs of the COVID-19 pandemic in the LDCs

Although household survey data to rigorously assess the impact of COVID-19 pandemic are not yet available, preliminary estimations and early evidence based on rapid phone interviews clearly anticipate a dramatic rise of worldwide poverty levels (Sumner et al., 2020; Valensisi, 2020; Alkire et al., 2021). As months have gone by, and the health and economic situation has continued to deteriorate, estimates of the pandemic's impact on global poverty have been revised upward, and currently stand at 119–124 million additional people living with less than $1.90 per day (Lakner et al., 2021). South Asia and Africa are found to be particularly badly hit, accounting for the bulk of the people pushed into poverty due to the fallout from the COVID-19 pandemic (Valensisi, 2020; World Bank, 2020).

This box updates previous estimates for LDCs contained in UNCTAD (2020a), applying the so-called line-up methodology to the April 2021 vintage of IMF's growth forecasts, contained in the World Economic Outlook database. This methodology – discussed in detail in Valensisi (2020) – allows for a comparison of poverty estimates consistent with IMF's downgrading of growth forecasts between October 2019 (i.e. the latest round of pre-COVID-19 forecasts used as a counterfactual) and those of April 2021. While this so-called line-up exercise is fraught with uncertainties, a number of reasons suggest that the figures obtained are – if anything – a conservative estimate. First, simulations are only run until the end of 2021, and therefore neglects any protracted effect of the crisis beyond that date (Box 2.1). Second, the methodology employed implicitly assumes that the shock does not affect the distribution of income; however, it is reasonable to believe that poorer segments of the population will be the hardest hit. For example, with 70 per cent of the LDC labour force self-employed, strict social distancing is likely to exert a disproportionate effect on informal workers and micro- small- and medium-sized enterprises (MSME), which already had meagre resources to weather confinements without disruptions (UNCTAD, 2020a; Djankov and Panizza, 2020). Third, this methodology does not account for the fact that deprivation across multiple dimensions tend to compound each other, and that adverse coping mechanisms may give rise to long-term effects on households' living standards, for instance when the school drop-out, or the sale of assets to weather a temporary crisis, end up lowering future income prospects, potentially turning a temporary shock (so-called "transient poverty") into a longer-term phenomenon ("chronic poverty").

Box Figure 2.2

Increase in poverty due to the COVID-19 pandemic in the LDCs, by international poverty line



Source: UNCTAD Secretariat calculation based on data from PovcalNet and World Economic Outlook [accessed April 2021].

With the preceding caveats, the updated estimates for LDCs confirm a further deterioration compared to 2020 results – estimates point to a rise of 35 million additional people living in extreme poverty (that is below $1.90 per day) in the LDCs as a result of the COVID-19 pandemic. This is equivalent to an increase of 3.3 percentage points in the corresponding headcount ratio, compared to the counterfactual. The increase in poverty due to the COVID-19 pandemic is even larger – 42 million people or +4 percentage point in the headcount ratio – when assessed against the $3.20 per day poverty line. When assessed against the (more reasonable) poverty line of $5.50 per day, the COVID-19 outbreak is found to increase the poverty headcount by 2.6 percentage points (28 million people), but largely because the overwhelming majority of LDC population (over 80 per cent) was already living below the poverty line prior to the pandemic.

These aggregate figures hide, admittedly, a large heterogeneity across individual LDCs, reflecting both the differential incidence of poverty prior to the COVID-19 outbreak, and the distinct patterns of crisis/recovery. In this respect, LDCs such as Afghanistan, Democratic Republic of Congo, Mozambique, Sudan and United Republic of Tanzania, account for a substantial share of the "new poor". It remains clear that the setbacks triggered by the COVID-19 pandemic will pose major challenges to the achievement of 2030 Agenda for Sustainable Development, and that sustainable poverty reduction efforts will require specific attention in the new PoA for LDCs.

Moreover, the longer the downturn engulfs LDCs, the more dramatic are the humanitarian costs likely to be; this will especially be the case if the crisis – so far largely limited to urban areas –extends to rural areas and disrupts food and agricultural value chains.[18]

These aggregate figures hide, admittedly, a large heterogeneity across individual LDCs, reflecting both the differential incidence of poverty prior to the COVID-19 outbreak, and the distinct patterns of crisis/recovery. In this respect, LDCs such as Afghanistan, Democratic Republic of Congo, Mozambique, Sudan and United Republic of Tanzania, account for a substantial share of the "new poor". It remains clear that the setbacks triggered by the COVID-19 pandemic will pose major challenges to the achievement of 2030 Agenda for Sustainable Development, and that sustainable poverty reduction efforts will require specific attention in the new PoA for LDCs.

What remains clear is that LDCs continue to be characterized by deep and widespread levels of poverty, to the point of representing the main locus of extreme poverty worldwide (UNCTAD, 2020a). In 2021, it is estimated that on average close to 35 per cent of LDC population is living below the international extreme poverty line of $1.90 per day. Similarly, the incidence of poverty using the $3.20 per day is 60 per cent, while the headcount ratio under the highest international poverty line of $5.50 per day is estimated at 84 per cent.

Against this background, it is clear that inclusive growth plays a central role from a developmental point of view. The depth and pervasiveness of poverty generates widespread and often reinforcing patterns of deprivation; this, in turn, can dampen economic dynamism by, among others: (i) undercutting human capital accumulation; (ii) lowering cognitive skills; (iii) lessening labour productivity; and (iv) potentially leading to undue pressure on natural resources (UNCTAD, 2002, 2016a; Mullainathan and Shafir, 2014; UNDP and OPHI, 2020).[19] The limited purchasing power of such a wide segment of the population constrains domestic markets, potentially giving rise to poverty traps (UNCTAD, 2002, 2016a). Moreover, widespread poverty and elevated inequality can have perverse effects on the institutional framework, fueling instability and undermining the social contract (UNCTAD, 2002, 2016a; Collier, 2008).

Economic growth is a key driver of sustainable development, but the sectoral and spatial pattern of growth, as well as related policies, have an important bearing on inclusivity and sustainability

A broad body of literature has underscored how, even if income growth is the major driving force behind changes in poverty rates, differences in the distributional, geographical and structural patterns of economic expansion play a key role in explaining the trajectory of individual countries (Nissanke and Thorbecke, 2007; Fosu, 2009). In particular, growth in the agricultural sector and employment-generating expansion in manufacturing, or in relatively more productive services, are typically found to pay the highest dividends in reducing poverty (Warr, 2002; Christiaensen et al., 2011).

Table 2.2 highlights the heterogeneity across individual LDCs and provides a summary of their record in terms of inclusive growth in the post-2000 period, following the established methodology of pro-poor growth (Ravallion and Chen, 2003).[20] To do so, the table relies on household-level data on consumption or income in two given years, and compares the average annual growth rate (AGR) for the whole population to the so-called pro-poor growth rate (PPGR), i.e. the mean yearly growth rate in consumption/income for the segment of population found to be below the poverty line.[21,22]

[18] The impact of COVID-19 pandemic is compounded by other idiosyncratic shocks such as droughts, conflicts and locust, which already triggered alarming worsening of the food security outlook in LDCs, e.g. Madagascar, Yemen, or Ethiopia.

[19] Beyond money-metric notions of poverty, the analyses based on multidimensional poverty emphasize the fact that multiple overlapping facets of deprivation tend to interlinked and reinforce each other (UNDP and OPHI, 2020).

[20] As a first approximation, pro-poor growth is here regarded as a proxy for inclusiveness, even though pro-poor growth focuses on the poorer segments of the population and not on the whole distributional spectrum. Note also that by construction the analysis cannot take within-household inequality into account as the data are collected at a household level and transformed in per capita values, with every member being assigned an equal share of household income or consumption.

[21] The analysis is carried out for the longest available time span in the post-2000 period; as household surveys are carried out sporadically and in different years, the period covered varies from one country to the other.

[22] There are typically ample discrepancies between the growth of household final consumption expenditure derived from the national accounting systems, and that of mean consumption in household surveys. These inconsistencies stem mainly from the fact that wealthier households are less likely to participate in surveys and are more prone to under-reporting (Korinek et al., 2006).

Based on a comparison between AGR and PPGR, one can the define the following cases:

- Growth is inclusive in both an absolute and relative sense if PPGR > AGR > 0;
- Growth is inclusive only in an absolute sense if AGR > PPGR > 0;
- Growth is not inclusive if AGR > 0 > PPGR; and
- Growth does not materialize at aggregate level nor for the poor, if AGR, PPGR < 0.

Table 2.2 should be interpreted in conjunction with Figure 2.15; the latter reports the growth incidence curve for selected LDCs, along with the corresponding AGR and PPGR, as well as the initial and final headcount ratios. It highlights that as many as 17 LDCs (out of 39 for which data are available) displayed a pattern of inclusive growth, in both relative and absolute terms. This is the case for most of the fastest-growing LDCs, including Lesotho and Bangladesh (whose growth incidence curves

Table 2.2

Summary table of LDC growth patterns

(Variable years depending on post-2000 data availability)

Growth pattern		Country	Initial year	Final year	Average growth rate	Pro-poor growth rate	Headcount rate (initial year)	Headcount rate (final year)
Growth in average per capita income	Inclusive in both absolute and relative sense	Lesotho	2003	2017	5,2	7,0	61,9	27,8
		Liberia	2007	2016	4,8	5,2	71,4	44,4
		Nepal	2003	2010	4,6	8,1	49,9	15,0
		Niger	2005	2014	4,5	6,8	75,3	45,4
		Bhutan	2003	2017	4,3	4,4	17,8	1,5
		Gambia	2003	2015	3,7	6,7	46,1	10,3
		Solomon	2005	2012	3,3	7,4	48,6	24,7
		Sierra Leone	2003	2018	3,1	3,8	73,0	43,0
		Guinea	2002	2012	3,0	5,1	63,0	36,1
		Uganda	2000	2017	2,7	2,7	66,8	41,5
		Rwanda	2000	2017	2,3	2,9	78,0	56,5
		Bangladesh	2000	2016	1,7	1,8	34,2	14,3
		Mauritania	2000	2014	1,7	3,1	19,6	6,0
		Burkina Faso	2003	2014	1,4	3,5	57,4	43,8
		Myanmar	2015	2017	1,3	14,3	4,8	1,4
		Mali	2001	2010	0,7	2,6	58,8	50,3
		Timor-Leste	2001	2014	0,6	2,2	38,5	22,0
	Inclusive in absolute sense only	Dem. Rep. of the Congo	2005	2012	10,6	10,6	94,3	77,2
		Chad	2003	2011	6,1	4,6	62,7	38,1
		Tanzania	2000	2018	4,8	4,5	86,2	49,4
		Mozambique	2003	2014	4,5	2,9	79,9	63,7
		Lao People's Dem. Rep.	2002	2018	3,6	2,4	32,1	10,0
		Ethiopia	2000	2016	2,8	2,1	63,4	32,6
		Haiti	2001	2012	2,5	1,6	63,2	53,6
		Burundi	2006	2014	1,6	0,4	78,6	72,8
		Senegal	2001	2011	1,3	1,0	49,1	38,5
		Malawi	2004	2016	1,1	0,4	73,9	70,8
		Djibouti	2002	2017	0,9	0,1	20,2	17,0
		Togo	2006	2015	0,8	0,1	56,6	51,1
	Non inclusive (poor worse off)	Central African Rep.	2003	2008	4,2	-2,4	64,5	65,9
		Sao Tome and Principe	2001	2017	2,4	-1,6	31,4	35,6
		Zambia	2003	2015	0,8	-3,9	52,1	58,8
		Benin	2003	2015	0,4	-2,9	49,0	49,6
		Guinea-Bissau	2002	2010	0,0	-4,6	56,6	68,4
Decline in average per capita income	But growth for the poor	Sudan	2009	2014	-0,5	2,7	15,7	12,2
	But relatively smaller decline among the poor	Angola	2000	2018	-1,9	-1,3	36,4	51,8
		Madagascar	2001	2012	-2,1	-0,9	68,4	77,4
		Comoros	2004	2014	-3,0	-2,2	15,0	19,1
	Sharper decline among the poor	Yemen	2005	2014	-1,6	-2,7	9,4	18,3

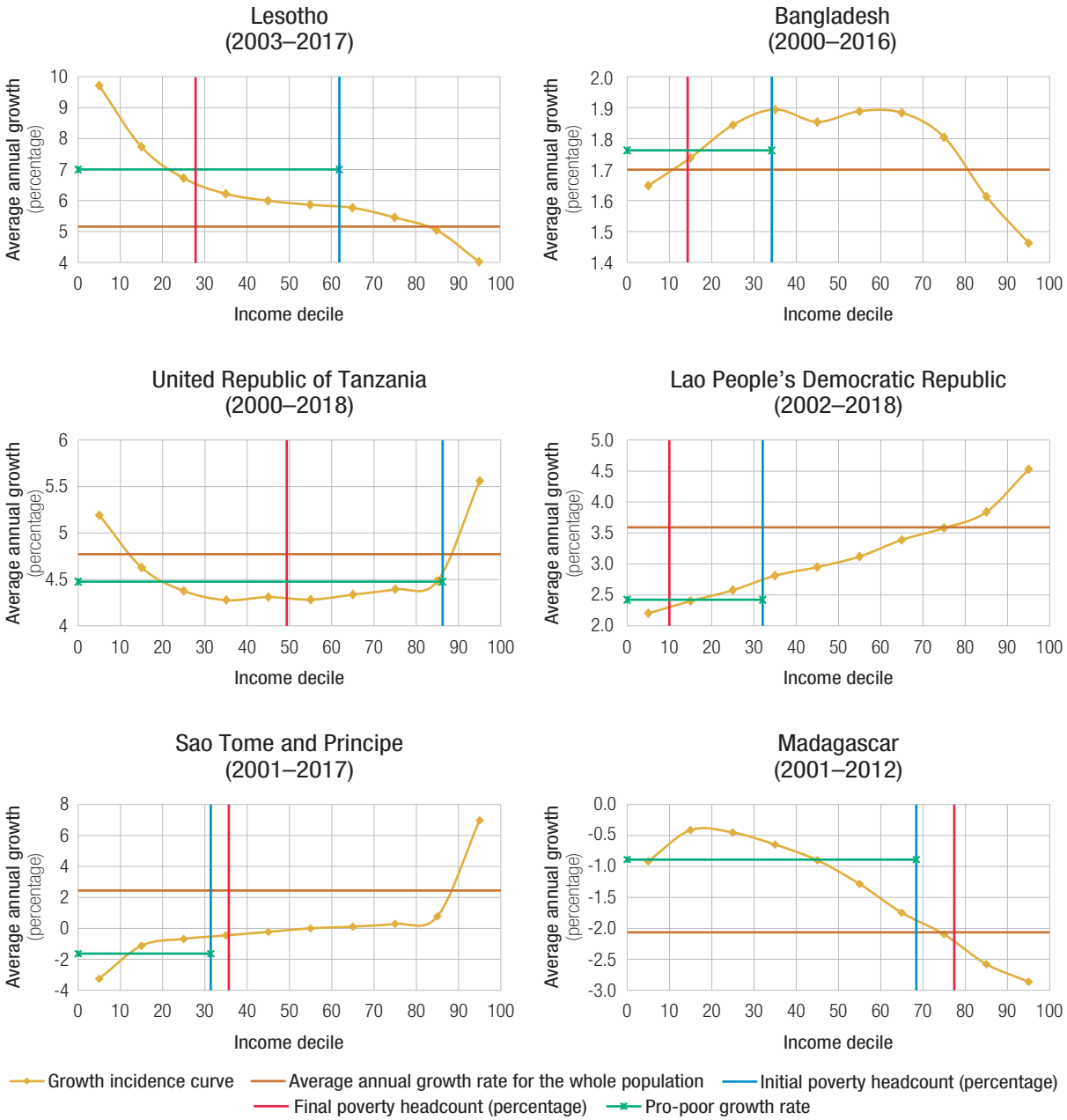
Source: UNCTAD Secretariat calculation based on data from PovcalNet database [accessed April 2021].
Note: The headcount rates are obtained adopting the extreme poverty line of $1.90 per day.

are displayed in Figure 2.15), but also for other LDCs with a less impressive growth record. Clearly, in these cases economic expansion benefitted poorer segments of the population more than the average, with the corresponding distributional changes reinforcing the pace of poverty reduction. In another 12 LDCs, growth did benefit the poor in an absolute sense (i.e. they experienced an increase in their consumption/income), but they accrued a less rapid improvement than the rest of the population. Examples of countries that exhibited this pattern of rapid growth, but somewhat skewed towards the non-poor, include the United Republic of Tanzania and Lao People's Democratic Republic.

Five LDCs displayed a non-inclusive pattern of growth in which the expansion of average consumption/income corresponded to an actual deterioration of the well-being of the poor, with a predictable increase in poverty incidence. This was the case, for instance, in Sao Tome and Principe, where – as can be seen from the corresponding growth incidence curve in Figure 2.15 – the benefits

Figure 2.15

Growth incidence curve for selected LDCs with different types of inclusive/non-inclusive growth



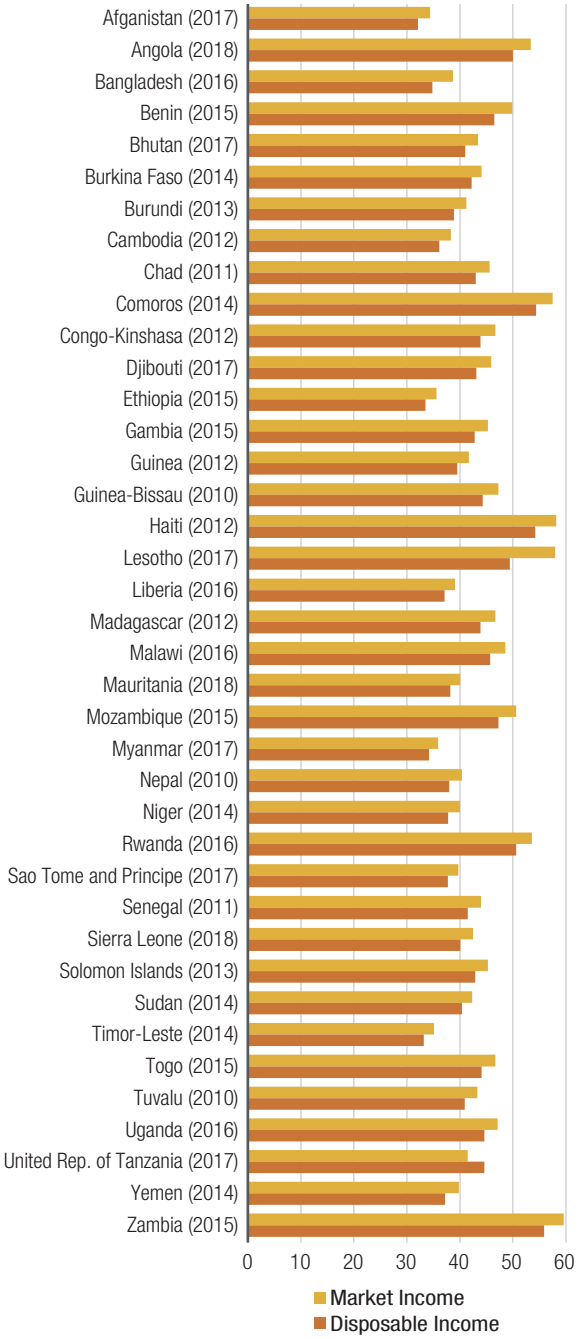
Source: UNCTAD Secretariat calculation based on data from PovcalNet database [accessed April 2021].

of growth accrued mainly to the top 40 per cent of the income distribution. Finally, five other LDCs displayed a contraction in household consumption/income over the period considered. Of these, only in the case of Sudan has the average deterioration been accompanied by an expansion of the per capita consumption/income of the poor; in all other cases, the poor are also negatively affected and predictably pushes poverty incidence trends upwards. As a paradigmatic example of this situation, Figure 2.15 reports the growth incidence curve for Madagascar, which suggests that the poor experienced on average a -1 per cent contraction in their per capita consumption/income, as compared to an overall mean deterioration of 2 per cent. At the end of the spectrum, in Yemen the poor were more adversely affected than the rest of the population, suffering a 1-percentage point deeper contraction than the average (-2.7 for PPGR compared to -1.6 AGR).

Figure 2.16

Gini index for market and disposable income in LDCs

(Latest available year)



Source: UNCTAD Secretariat calculation based on data from Solt (2020).

Overall, the evidence presented confirms that sustained growth has been a key driver of poverty reduction in the LDCs, particularly when accompanied by a degree of structural transformation and economic diversification, as occurred in the best performing LDCs. Yet, initial inequality (especially in terms of asset ownership), sectoral and geographical growth patterns, and other idiosyncratic factors appear to have a big influence on the shape of the growth incidence curve. So, for example, LDCs characterized by heightened dependence on hard commodities display inclusive growth in both a relative and absolute sense (e.g. Guinea, Liberia, or Timor Leste), but other countries have proved unable to capitalize on the commodity boom to improve the well-being of the poor (e.g. Angola and Zambia).

To complement the above analysis and address the role of inequality more explicitly, the whole distributional spectrum needs to be examined, not just the extremely poor. However, the scope for rigorous analysis is limited by patchy related data. A snapshot of inequality levels across LDCs is nonetheless insightful and provided in Figure 2.16. The latter reports the standardized Gini coefficient for market income and disposable income in the latest available year.[23] The usefulness of this picture is reinforced by the fact that inequality appears to move relatively sluggishly over time, hence initial conditions entail a strong path dependency.

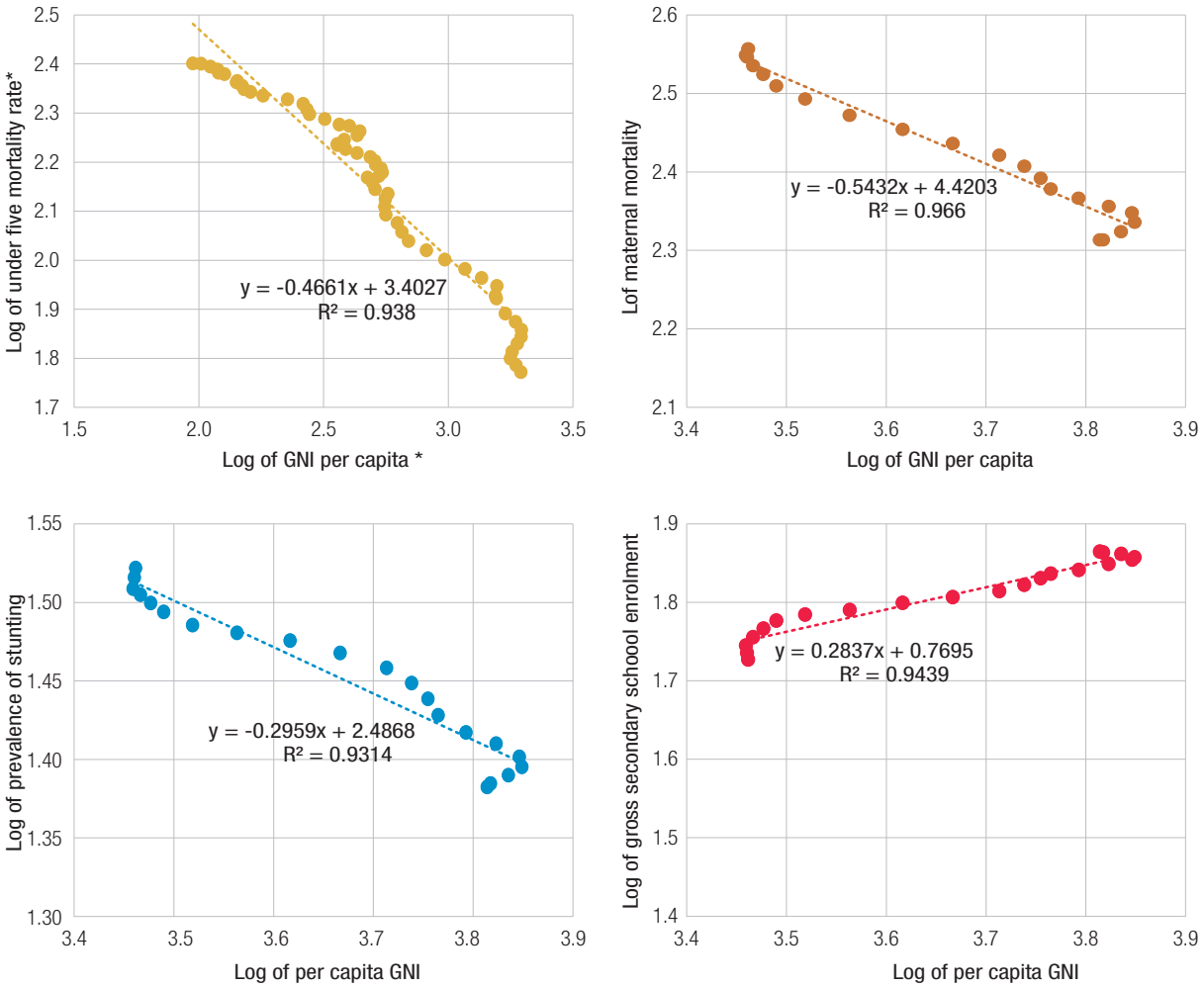
Focusing on market income inequalities, southern African LDCs appear to be among the most unequal, with Angola, Lesotho and Zambia all recording a Gini coefficient above 50, much like the Comoros and Haiti. Conversely, Asian LDCs and some Island LDCs (e.g. Kiribati or Timor-Leste) display a significantly lower Gini index of 40 or less.[24] The ranking is only slightly changed when considering disposable income inequality, suggesting that the capacity/willingness on the part of LDCs to carry out redistributive policies

[23] Unlike market income, disposable income also takes taxes and transfers into consideration.

[24] Some African LDCs, such as Ethiopia, Liberia and Niger, also have relatively low Gini indices.

Figure 2.17

Correlation between GNI per capita and selected social indicators encompassed under LDC criteria



Source: UNCTAD secretariat calculations based on data from CDP for the 2021 triennial review.

is relatively limited (Ravallion, 2009). The difference between the market income Gini coefficient, and the one referring to disposable income is about 2.5 percentage points in the median LDC; Lesotho is the only country where the Gini coefficient decreases by more than eight percentage points (compared to less than four for all other LDCs).[25]

This suggests that, lacking a stronger capacity to mobilize public revenues and a more effective system of social safety nets, the structural drivers of economic dynamism continue to be the key inclusiveness determinants in LDCs. Considering the challenges LDCs face in stepping up their domestic resource mobilization efforts, it is likely that this will remain the case for the foreseeable future (UNCTAD, 2019a; UNECA, 2019). The effect of any growth pattern is mediated by initial levels of inequality (notably asset inequality), so that predictably more unequal LDCs tend to be less likely to display inclusive growth, at least in a relative sense.

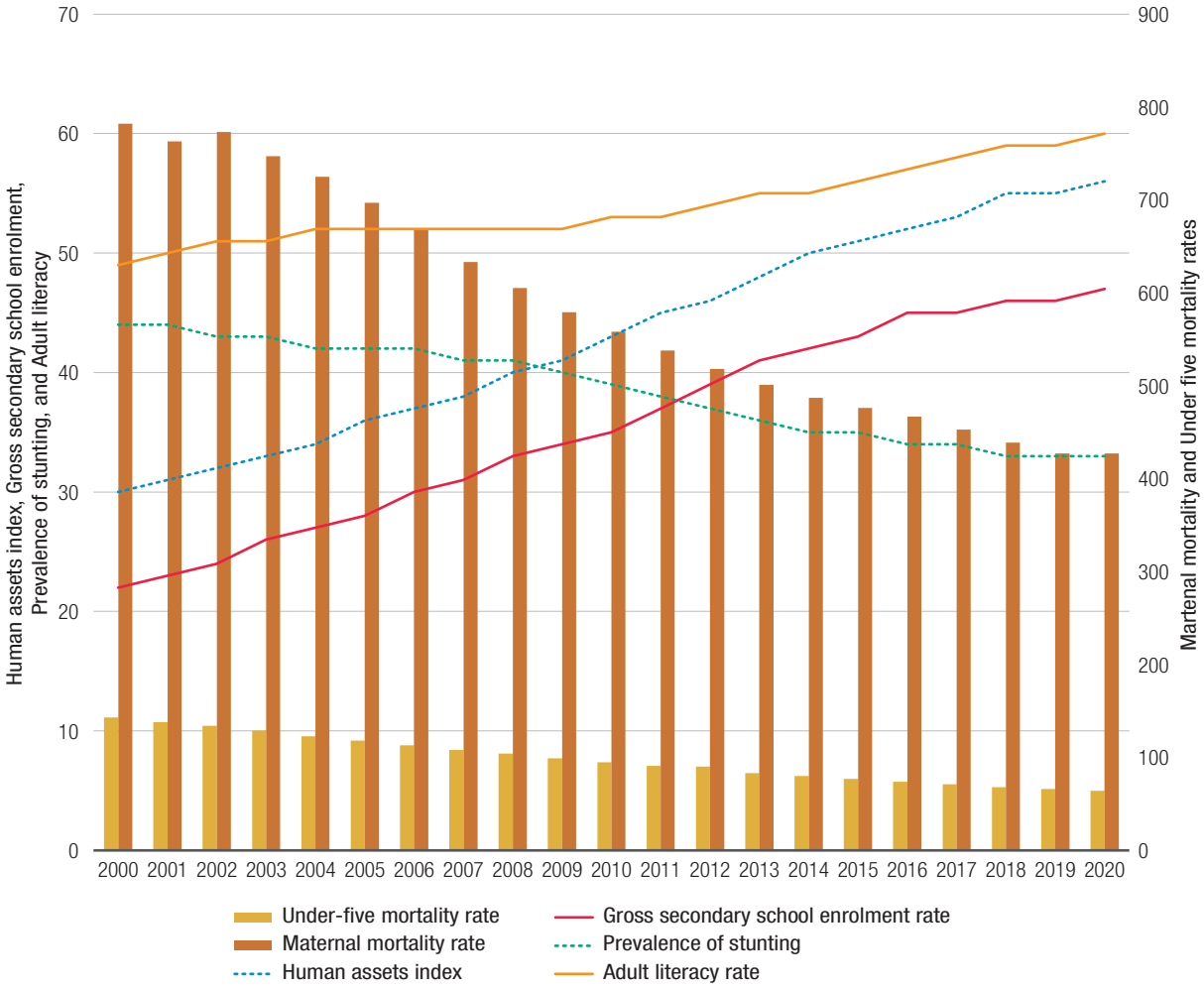
More generally, economic growth has been a key – albeit surely not the only – driver of socioeconomic progress and shared prosperity in the LDCs, as can be confirmed by assessing their performance against selected LDC criteria. This task is not straightforward given the various revisions to the latter; however, the close correlation between per capita income and positive social development outcomes is confirmed in Figure 2.17; the latter suggests that strong economic

[25] The United Republic of Tanzania represents an exception, in that in 2017 its Gini coefficient for market income was slightly lower than that of disposable income. This is broadly in line with the finding of another study referring to the 2011/12 Household Budget Survey, according to which, notwithstanding some redistributive effects of fiscal policies, the headcount ratio (vis-à-vis the national poverty line) is higher for consumable income than for market income, primarily due to the impact of high consumption taxes on basic goods (Younger et al., 2016).

Figure 2.18

Performance of LDCs against 2021 Human Asset Index criterion

(Unweighted average)



Source: UNCTAD secretariat based on data from CDP for the 2021 triennial review.

growth in the 2000s was accompanied by significant social progress, as captured by various indicators encompassed under LDC criteria.

Data reported in Figure 2.18 clearly show a significant improvement along all dimensions of the Human Assets Index (HAI). The average HAI score for the LDCs almost doubled from 31 in 2000 to 55 in 2020, pulled by a rise in gross secondary school enrolment (from 23 per cent in 2000 to 47 per cent in 2020), and significant reductions in maternal and under-five mortality rates. Despite this positive development, the average maternal mortality rate of 427 and under-five mortality rate of 64 in 2020 were among the highest in the world. Improvements to basic health systems, expanding access, infrastructure, and the provision of sexual and reproductive health services, particularly to the youth, should thus remain a priority.

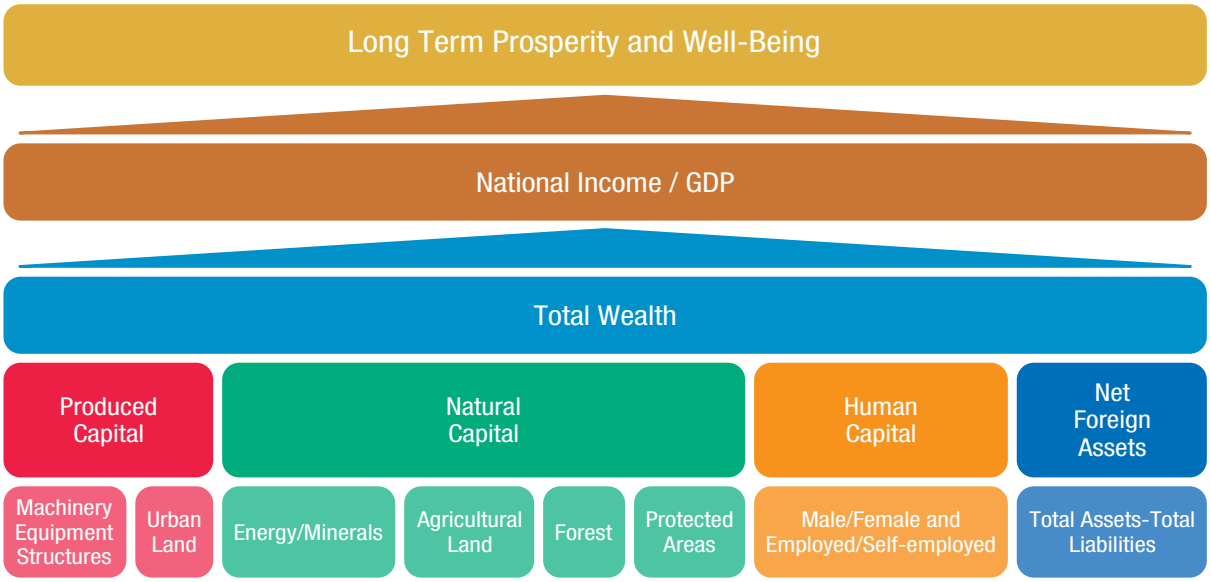
3. Environmental sustainability

The complex relationship between growth, structural transformation and environmental sustainability has been the subject of a considerable body of literature, as well as of a widening range of concrete efforts to reconcile the evaluation of wealth/income with a more rigorous assessment of ecosystem services (UNEP, 2018; Landes, 1998). The notion of sustainability has been typically linked to that of intergenerational fairness, an approach dating back to the so-called Bruntland report (World Commission on Environment and Development, 1987), and enshrined in the Rio Declaration on Environment and Development (Agenda 21) and the 2030 Agenda for Sustainable Development (United Nations, 1992, 2015).

In the presence of exhaustible but essential natural resources, the key challenge for policymakers is

Figure 2.19

Schematic representation of total wealth and its relationship to GDP and prosperity



Source: UNCTAD secretariat adapted from Wealth Accounting and the Valuation of Ecosystem Services WAVES.

not simply to achieve short-lived economic gains, but rather ensure sustainable benefits for future generations. Neoclassical growth theorists have shown that the utilization of such natural resources can achieve intergenerational fairness (i.e. generate a constant stream of consumption per capita across generations for an infinite period of time), provided that the elasticity of substitution between man-made capital and natural capital is not lower than one (Solow, 1974). If society is to achieve these outcomes, all the rents obtained from the utilization of exhaustible resources should be invested in man-made capital (Hartwick, 1977; Solow, 1974).

Broadly speaking, this reasoning lies at the core of the so-called "weak sustainability" principle, according to which sustainability is maintained when exhaustible resources are extracted and transformed into man-made capital, as long as the sum of natural and man-made capital does not shrink. This approach has been criticized because of its theoretical foundations and practical applications and measurement (Cabeza Gutés, 1996). Several ecologists have advocated instead for a "strong sustainability" principle, arguing that natural and man-made capital should be considered complements, rather than substitutes, since many of the key functions and services provided by natural capital cannot be replaced (Ayres, 2007; Cabeza Gutés, 1996; UNEP, 2018). Others have also highlighted the practical difficulty in determining natural resource rents, since commodity price volatility often overshadows market fundamentals, thereby blurring the usefulness of price signals. Ecologists have, similarly, highlighted how certain ecosystem services do not lend themselves to market evaluation.

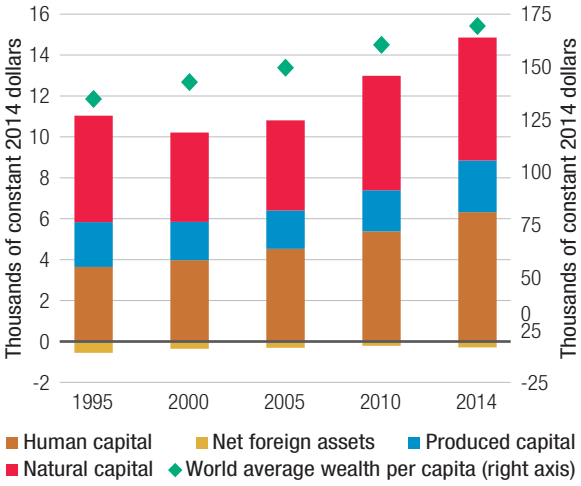
Unlike the "strong sustainability principle", which is linked to notions of carrying capacity and planetary boundaries (Ehrlich and Pringle, 2008; Rockström et al., 2009), the "weak sustainability" principle underpins the usefulness of wealth accounting. Under this approach, distinct forms of capital (man-made, human and natural, as well as net foreign assets), are jointly evaluated to characterize the evolution of total wealth.[26] A schematic representation of this approach is reproduced in Figure 2.19. Notwithstanding its limitations, this approach can be a useful step to complement earlier discussions.

[26] Total wealth components are generally evaluated on the basis of the discounted flow of income each of them can generate over its lifetime (Lange et al., 2018). Accordingly, human capital is measured as the present value of lifetime earnings of the labour force (using household surveys), while natural capital is measured as the discounted sum of the value of the rents generated over the lifetime of the asset. However, produced capital is evaluated at market price, while net foreign assets are obtained as a difference between external assets and liabilities, hence also on the basis of price signals. Admittedly, this conceptual approach to wealth accounting has its own limitations – most importantly, it is subject to measurement errors (especially where informality is prevalent), and does not incorporate uncertainty on prices (hence future rents) and on the impacts of climate change – but it has the advantage of providing a set of consistent measures for cross-country analyses.

Figure 2.20

Total wealth per capita in LDCs, by component

(1995–2014)



Source: UNCTAD Secretariat calculation based on data from Lange et al. (2018).

To shed more light on the sustainability of the development trajectory of LDCs, the remainder of this section discusses the evolution of their total wealth and adjusted net savings. Figure 2.20 illustrates the evolution and composition of total wealth per capita over the period 1995–2014 (the longest for which data is available), and averaging it across all LDCs; it also reports, for the sake of comparison, the world average wealth per capita over the same period. In the interpretation of the graph, it should be borne in mind that the various wealth components are typically computed as the discounted sum of the value of rents generated over the lifetime of the corresponding asset; whereas in the case of produced capital and net foreign assets, they are evaluated at market price. Accordingly, differences over time (or across countries) reflect the variability in the stock of capital and the differences in the "productivity" with which the various forms of capital are transformed into future income streams (Lange et al., 2018).

With this premise in mind, Figure 2.20 suggests four main considerations. First, during the 1995–2014 period – which, as seen before, spans a period of rather buoyant GDP growth – LDCs managed to increase their total wealth per capita at an annual compound rate of 1.7 per cent (from a total of $10,482 in 1995 to $14,565 in 2014). This gradual expansion is slightly higher than the world average (+ 1.4 per cent per year), and reflects an initial decline, followed by a steady expansion in the new millennium. Second, despite these improvements, the gap between total wealth per capita in LDCs and the rest of the world remained very wide: throughout the period total per capita wealth in LDCs hovered at about 8 per cent of the world average. This not only reflects huge gaps in the availability of capital, especially with respect to human and man-made capital, but also in relation to the effectiveness with which given assets are put to fruition or good use (think of the difference in discounted lifetime income for two workers with the same educational achievement but living in different countries). Third, the graph visibly underscores the importance of the human capital component, which grew at a annual compound growth rate of 3 per cent throughout the period, expanding its share of the total to over 43 per cent (up from 35 per cent at the beginning of the period). This is particularly significant since human capital is derived here as the present value of lifetime earnings of the labour force, and hence it not only reflects improvements in educational achievements or health, but also – to some extent – in their economic counterpart.[27] Fourth, the graph underscores the prominence of natural resources in the composition of the total wealth of LDCs where, in 2014, natural capital accounted for 41 per cent of the total, compared to a world average of 9 per cent.[28] For most LDCs this first and foremost reflects the contribution of agricultural land, although comparatively lower yields reduce its economic evaluation. The contribution of protected areas, which attract considerable tourism to LDCs, and subsoil assets is also noteworthy, with the latter increasing their per capita value fourfold between 1995 and 2014.

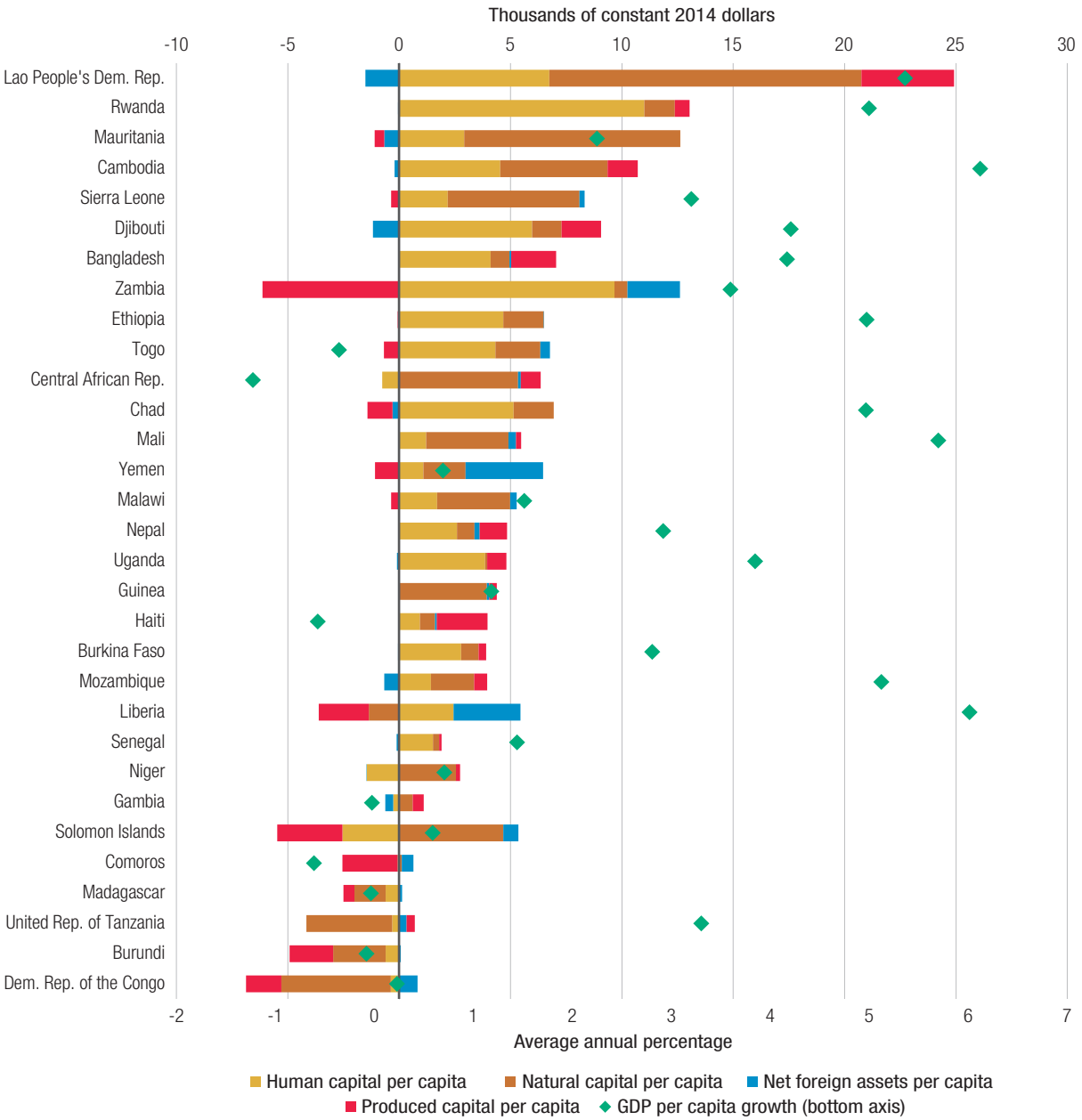
Figure 2.21 reveals considerable heterogeneity in the trajectories of individual countries (Figure 2.21). Only a handful of the 31 LDCs for which data is available achieved some improvement in the real value of total wealth per capita over the period considered. Large variations emerge, however, on the overall change and its composition. If, in general, rapidly growing LDCs did increase their total wealth more substantially than other LDCs, as occurred in Bangladesh, Cambodia, Ethiopia, Lao People's Democratic Republic, or Rwanda, the specific pattern of growth had a significant bearing on the evolution

[27] Improved social outcomes in LDCs, particularly those occurring in the past two decades, have been documented in more detail in other issues of this report (UNCTAD, 2010, 2020a).

[28] The prominence of natural resources for LDC economies corroborates similar findings obtained from the analysis of LDC productive capacities and UNCTAD's PCI (UNCTAD, 2020a, 2020h). Indeed, the only subdimension along which LDCs were outperforming ODCs was in natural resources.

Figure 2.21

Absolute change in total wealth per capita between 1995 and 2014, by LDC and main component



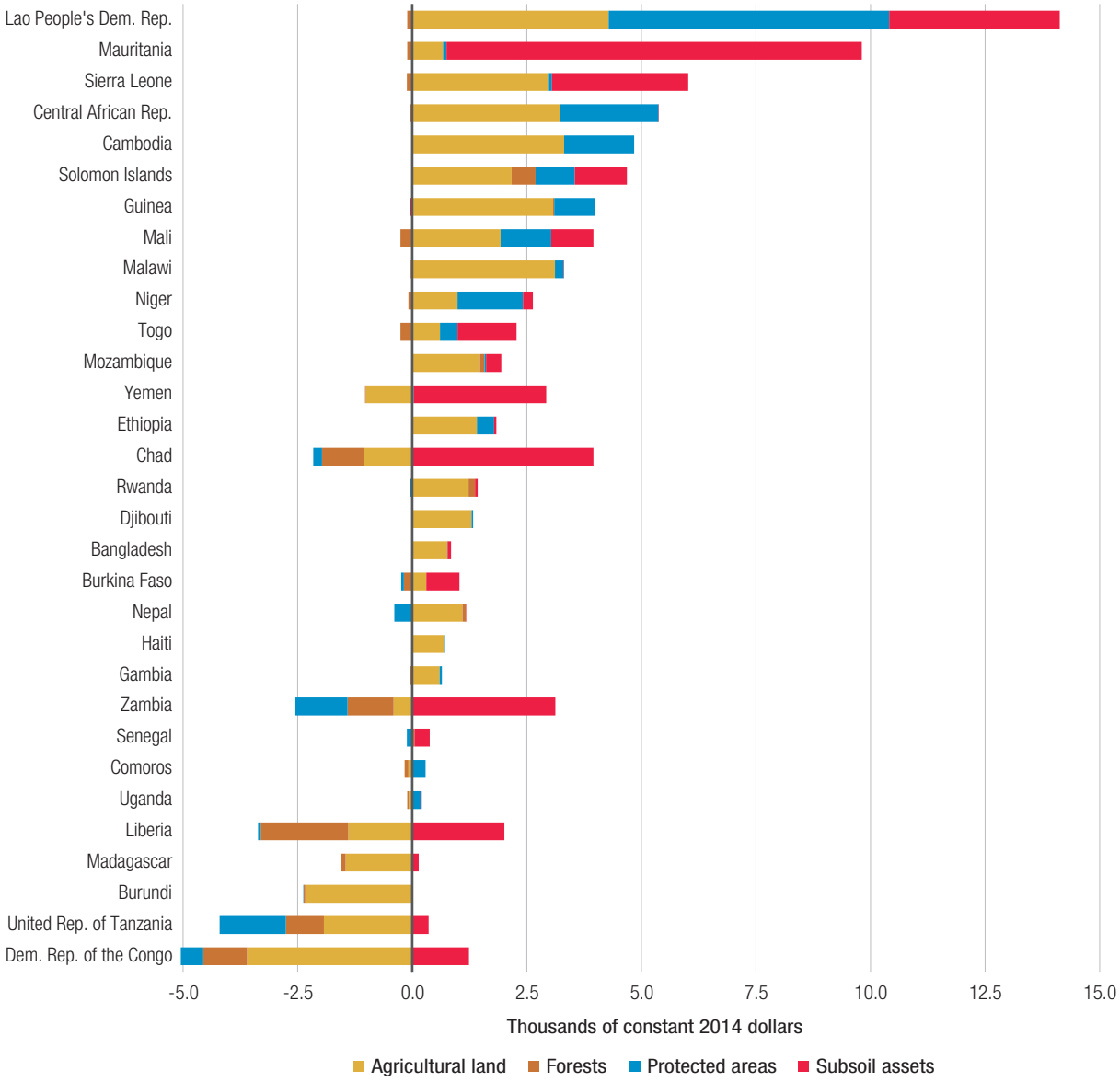
Source: UNCTAD Secretariat calculation based on data from Lange et al. (2018).

of total wealth. Countries, such as Mozambique, Liberia, or the United Republic of Tanzania, which also achieved rapid per capita GDP growth in the 1995–2014 period, recorded lukewarm results in relation to total wealth per capita. Worryingly, six LDCs (including relatively large and natural resource-rich countries, such as Madagascar, the United Republic of Tanzania, or the Democratic Republic of Congo) posted an overall decline in total wealth per capita, raising serious sustainability concerns. Beyond aggregate changes, the chart shows that human capital plays a key role in total wealth dynamics across all LDCs, but particularly so among the best performers. Conversely, the contributions of natural and man-made (physical) capital are more varied and likely driven by idiosyncratic factors.

Focusing more specifically on the dynamics of natural capital, signs of pressure on natural resources emerge in a slightly larger number of LDCs (Figure 2.22). Among the components of natural capital, the generalized importance of agricultural land stands out unambiguously: in 2014, on average, it accounted for over 60 per cent of the natural capital

Figure 2.22

Absolute change in natural capital per capita between 1995 and 2014, by LDC and main component



Source: UNCTAD Secretariat calculation based on data from Lange et al. (2018).

of the LDC group (i.e. 25 per cent of total wealth), and was typically the main driver of natural capital dynamics, being distributed more uniformly across countries than other natural resources. Besides, the rise in the value of natural capital per person in terms of agricultural land occurred at a time of increasing pressure on land resources, as demographic growth in LDCs outstripped the expansion of agricultural (or arable) land.[29] Similarly, from a wealth accounting perspective the value of forests in LDCs increased at about 1 per cent per year in per capita terms, despite forest areas having actually declined by over 60 million hectares over the same period. These apparently counterintuitive trends are essentially a reflection of the approach adopted in the wealth accounting framework, which evaluate natural assets based on the flow of income they generate. The above picture also highlights the differences between the weak and the strong sustainability approach – the latter focuses mainly on the availability of given forms of natural capital and its ecological functions, whereas the former concentrates more on the economic side of the picture.

[29] According to FAOSTAT data, agricultural land in LDCs increased at an average rate of 0.3 per cent per year over the 1995–2014 period, while arable land increased at a rate of 1.5 per cent per year; at the same time, LDC population grew at an annual rate of 2.5 on average.

Subsoil assets represented 17 per cent of LDCs' overall natural capital (i.e. 7 per cent of total wealth) in 2014, and constituted the fastest-growing component over the period considered, which encompasses the commodity boom of the mid-2000s. As expected, fuels and mineral exporters (e.g. Yemen, Chad, Mauritania, Sierra Leone or Zambia), recorded sizeable increases in the value of subsoil assets per capita, having capitalized on the "commodity super-cycle", whether in terms of higher prices and productivity increases (hence the higher value of the resources), or of additional investment and new discoveries (by increasing the overall stock of economically viable mineral reserves). Finally, if the extension of protected areas generally expanded over the period considered, their contribution to natural capital per person was highly heterogeneous across LDCs, with significant increases in Cambodia, Central African Republic, Lao People's Democratic Republic, or Niger, but shrinking values in the Democratic Republic of Congo, United Republic of Tanzania and Zambia.

More recent data are needed to update the analysis to the past few years and shed more light on the impact of the COVID-19 pandemic. Overall, however, the evidence from wealth accounting raises questions on the sustainability of the LDC trajectory. Despite the fact that data are only available for a period of relatively favourable international environment and rapid economic growth, the total wealth per capita in a number of LDCs has shrunk or increased very sluggishly. In the African region, where population growth is relatively higher, productivity levels have improved only sluggishly, and challenges remain in terms of generating sufficient employment for the cohorts of new entrants into the labour market (UNCTAD, 2014a, 2020a); in addition, pressure on natural capital has been on the rise in several countries.

This reading of the evidence is confirmed and complemented by the analysis of long-term trends in another related proxy for environmental sustainability, namely adjusted net savings. The latter magnitude is derived from the national accounting system, being defined as gross national savings minus depreciation of produced capital, depletion of subsoil assets and timber resources, the cost of air pollution damage to human health, plus a credit for education expenditures. As such, consistently negative values for adjusted net saving essentially indicate that a given country is consuming more than it is saving, thereby eroding long-term sustainability. It is worth noting that there are several methodological differences in the way in which investments in human capital and natural resource rents are measured in the computation of total wealth and adjusted net savings. For example,

Lacking domestic value addition and productivity improvements, growing LDC reliance on natural resources has often failed to translate into sustainable outcomes

in the computation of total wealth, human capital is determined as the present value of earnings for the labour force, unlike in adjusted net savings, where the corresponding provisions reflects investments through the public budget in education. Again, policy changes, for example with respect to reforms to the business environment, may affect the return and hence the value of various assets (including human capital) in the wealth accounting framework, but have no corresponding effects in the determination of adjusted net savings. Finally, several factors affecting national wealth are typically omitted from adjusted net savings, as in the case for: (i) land use changes; (ii) new discoveries of subsoil assets; (iii) technological changes affecting the productivity of an asset; or (iv) the volume of economically feasible resources to exploit (Lange et al., 2018).

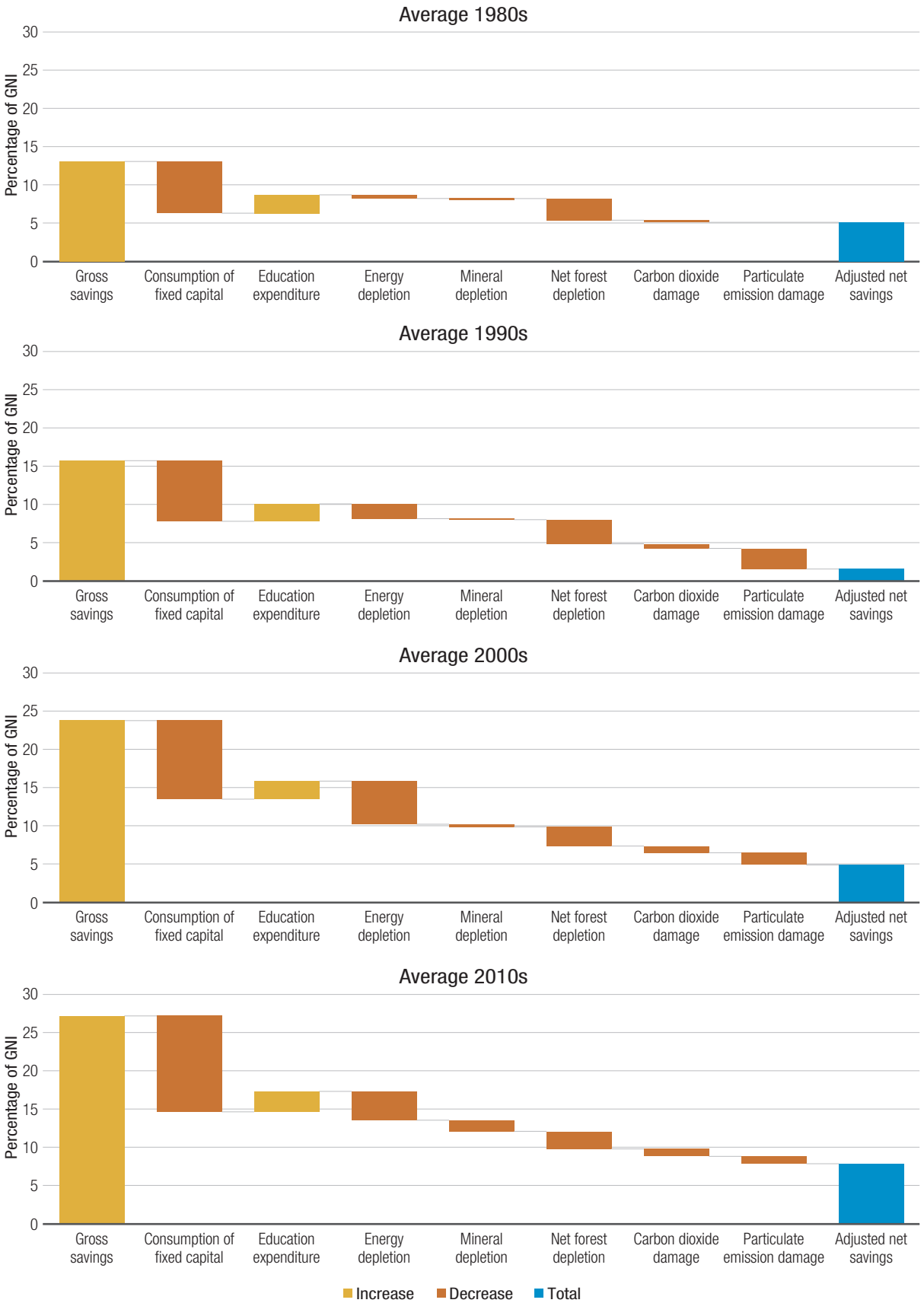
A bird's eye view of adjusted net savings for the LDC group is provided in Figure 2.23. The latter reports the different components as a share of Gross National Income (GNI), averaging across decades and up to 2019 (hence without accounting for any impacts arising from the COVID-19 shock).[30] Gradual improvements in the macroeconomic fundamentals for a number of LDCs have clearly boosted gross national savings, which doubled their weight relative to GNI. This remarkable expansion, however, has gone hand in hand with a progressive increase of natural resource depletion, notably in relation to energy and forests. Meanwhile, education expenditure has only marginally increased as a share of GNI, rising from an average of 2.4 per cent of GNI in the 1980s to 2.7 per cent in the 2010s. As a result, the improved macroeconomic outlook has only partially translated into an expansion of total adjusted net savings for the LDCs as a group.

Aggregate data conceal, however, wide heterogeneity across individual LDCs, as underscored by the boxplot of natural resource depletion relative to GNI shown

[30] Available data for adjusted net savings are rather patchy, both for the LDC group – for which aggregate estimates are consistently available only since 1980 – and, even more so, for individual countries. For this reason, the following charts present only aggregate data and are limited to periods where country coverage was at least 50 per cent.

Figure 2.23

Adjusted net savings in LDCs as a group



Source: UNCTAD Secretariat calculation based on data from World Development Indicators database [accessed February 2021].

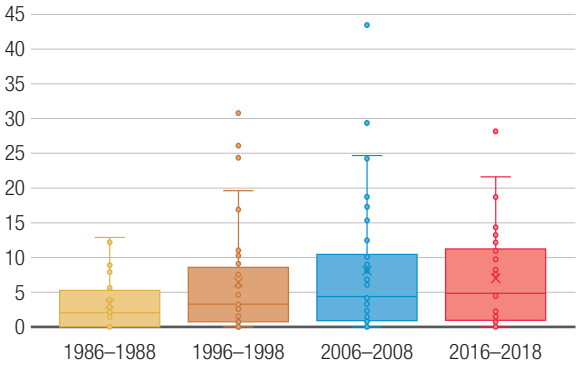
in Figure 2.24. The data reveal a generalized increase in the figurative costs for natural resource depletion relative to GNI, as well as an increasing variability across individual countries. In the 2016–2018 period, natural resource depletion exceeded 10 per cent of GNI in 13, out of the 42 LDCs for which data is available; at the other end of the spectrum, the same variable accounted for less than 1 per cent of GNI in 12 other LDCs. Interestingly, the acceleration in natural resource depletion appears to pre-date the "commodity super-cycle" of the mid-2000s, and has not subsided in the wake of the global financial and economic crisis of 2008/9. This is consistent with the idea that reliance on natural resources continues to be a structural feature of many LDCs, much like commodity-dependence (UNCTAD, 2010, 2016a, 2019d).

The evolution of adjusted net savings across individual LDCs reflects the above considerations and reinforces earlier sustainability concerns. Despite the overall improvements reported in total adjusted net savings for the LDC group (Figure 2.23), there appear to be signs of a growing heterogeneity across individual countries. This is evidenced by the widening of the interquartile range in Figure 2.25, with the median value hovering between 3 and 5 per cent of GNI for the past 30 years. Moreover, as many as 15 LDCs (out of the 37 for which data is available) posted negative adjusted net savings for the period 2016–2018, including many commodity-dependent (mainly African) LDCs. This highlights the fact that, lacking structural transformation, it remains hard to envisage LDCs' decoupling – at least in a relative sense – their

Figure 2.24

Boxplot of natural resource depletion across LDCs

(Percentage of GNI)



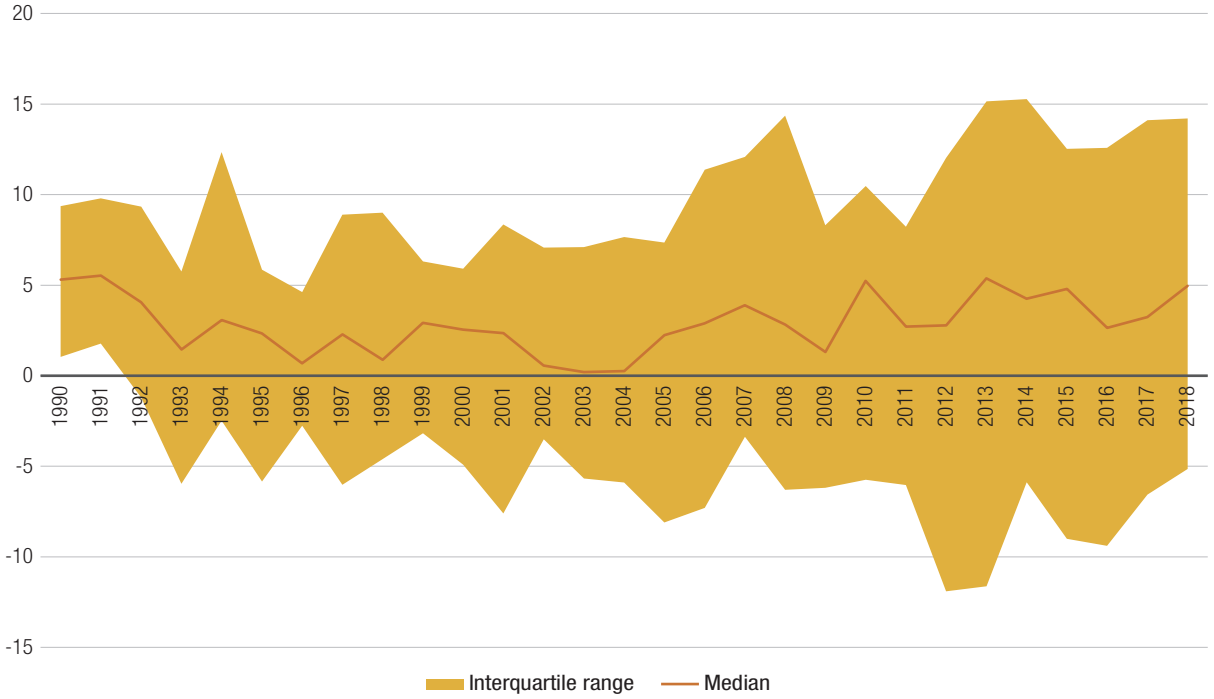
Source: UNCTAD Secretariat calculation based on data from World Development Indicators database [accessed February 2021].

Note: Boxplots visually display the distribution of LDC data over their quartiles, highlighting the mean (cross), median (horizontal line), first/third quartile (box), upper/lower extreme (whiskers), and outliers.

Figure 2.25

Adjusted net savings excluding particulate emission damage, across LDCs

(1990–2018; percentage of GNI)



Source: UNCTAD Secretariat calculation based on data from World Development Indicators database [accessed February 2021].

economic performance from natural resources, with all the attendant risks this holds for the sustainability of their future trajectory.

E. Conclusions

Overall, this analysis has documented some encouraging improvements in the performance of LDCs since the mid-1990s. Over this period, they have experienced renewed economic dynamism, less frequent growth deceleration, and, in some cases, an incipient process of structural transformation. Notwithstanding this silver lining, most LDCs continued to fall behind in terms of income per capita, with weak progress in labour productivity and remaining vulnerable to premature de-industrialization. These trends, themselves stemming from the weak development of LDC productive capacities, were also associated with limited inclusiveness and rising pressure on natural resources, all of which undermines the sustainability of their trajectory.

While it is too early to rigorously account for the impact of the COVID-19 shock, it is already clear that it could well derail the progress of even the best performing LDCs, thus exacerbating global inequalities, and potentially derailing the achievements of the 2030 Agenda for Sustainable Development. It is thus imperative for the LDCs and for the international community to renew their endeavours to avert such a dangerous outcome.

Four take-away messages from the past 50 years of LDC experience should inform on-going efforts to lay the foundations for an inclusive and sustainable recovery. First, maintaining adequate levels of investment, including public investments in infrastructure and human capital, remains as crucial as ever, not just to sustain aggregate demand but also to lay the foundations for future growth. It is therefore critical to mainstream productive capacity development into the response policies and recovery plans of LDCs. Second, productivity improvements are fundamental for long-term prosperity, not only within sectors (through capital deepening and innovation), but also – and perhaps more fundamentally – through the reallocation of inputs towards more productive and innovative activities. Third and related to this, the importance of domestic value addition as a key avenue to redress primary commodity dependence, improve natural resource efficiency and boost intersectoral linkages, cannot be overemphasized, as it could pave the way for commodity-based industrialization. This hinges on marrying a forward-looking approach to the sustainability imperative with bold industrial policies and an effective science, technology and innovation (STI) ecosystem. Fourth, although LDC proneness to boom-and-bust cycles declined in the new millennium, it remains high by international standards and the fact that LDCs entered the COVID-19-induced recession with far less means at their disposal than in 2008/9 at the height of the global financial crisis does not bode well for the recovery to come. It is therefore critical that the international community boosts the financial resources available for LDCs to respond to the downturn, at the same time as helping to strengthen their institutional capacities to ensure: (i) ownership of their respective recovery strategies; (ii) guarantee effective public spending; and (iii) enhance policy coherence.