Least Developed, Most Uneven:
Inequality and Sustainable Development in the LDCs

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Abstract
Inequality is often discussed in the context of developed economies, whereas poverty is seen as a greater concern in poorer countries. However, inequality has always played a critical role in the Least Developed Countries (LDCs) and will affect their future sustainable development paths. LDCs as a group lose the most development gains from inequality (as measured by the Inequality-adjusted Human Development Index - IHDI). The paper analyzes in depth the levels and trends of inequality in LDCs - not just in the distribution of income but also in health and education, using the distributions underlying each component of the IHDI. It also applies regression analysis to examine the linkages in LDCs between inequality and progress on the SDG index, both overall and for specific goals. We find that health inequalities, in particular, are ess. Finally, we utilize the findings to project the prospects of LDCs - individually and collectively - to achieve the SDGs by 2030. These projections show that LDCs can gain more progress towards the SDGs by reducing inequalities by 20% even at current economic growth rates, than they could if inequalities levels remained the same as in the past decade, but economic growth met the 7% per year target stipulated in the SDGs. The analysis in the paper thus provides policy-relevant and actionable insights for LDCs, highlighting where inequality hurts their sustainable development prospects the most and where the greatest gains can be made from enhancing equitable and inclusive development.

Keywords: least developed countries; inequality; sustainable development; human development

(2010-2019) but reduces all inequalities by 20%. Scenario 4 combines 7% growth rates and reduced inequalities.

While scenario 4 is the ideal, it is not very realistic given previous growth rates as well as the impacts of the pandemic. Scenario 3 shows dramatically how LDCs can maximize progress towards the SDGs without changing the average growth rate of the previous decade, by applying inequality-reducing policies. On average, LDCs can improve their 2020 SDG score by 24% by 2030 using the same growth rates but lower inequalities, compared to only 20% using 7% economic growth and constant inequalities. Section 4 concludes and discusses some policy implications.

2. Inequality and Sustainable Development in the Least Developed Countries

Recent increase in interest in inequality (academic and popular literature) - Piketty, SDG 10
Most studies focus on income or wealth - Sen (1980) inequality of what
UNDP focuses on multidimensional inequality - standard of living, health and education (HDR 2019)

Eight countries have graduated or are set to graduate from the LDC category. Whilst they have very different annual GDP- -period, all countries except Sao Tome and Principe say reduced inequality before graduation. Sao Tome and Principe decreased its GINI coefficient from 32.1 in 2000 to 30.8, but then saw it almost double to 56.3 in -index (IHDI) shows a decreasing trend in income inequality over the same period: the IHDI component of inequality in income actually fell from 44.2 in 2011 to 14.9 in 2018, corresponding to a 66% drop.

Country	Change in GINI coefficient	Average GDP growth rate per annum	Period	Graduation (or expected*)
Cabo Verde	-10%	7,42%	2001-2007	2007
Maldives	-7%	6.25%	2002-2009	2011
Samoa	-5%	1,86%	2002-2013	2014
Angola	-			

And whilst most economists agree that growth is key for poverty reduction, economic growth

higher and increasing at higher levels of education. The top educated quintile in low human development countries, including the LDCs, have seen approximately an 8 percent change in post-secondary education attendance over the last ten years whereas the bottom two quintiles experienced almost no change in post-secondary education during the same period (UNDP, 2019).

Gaps in education reduce social and economic mobility across generations (UNDP, 2019), and are associated with lower equality of opportunity, as well as inequality in other dimensions such as health and income. At country level, these gaps imply losing out on human capital formation, human potential for innovation and economic development. They may i

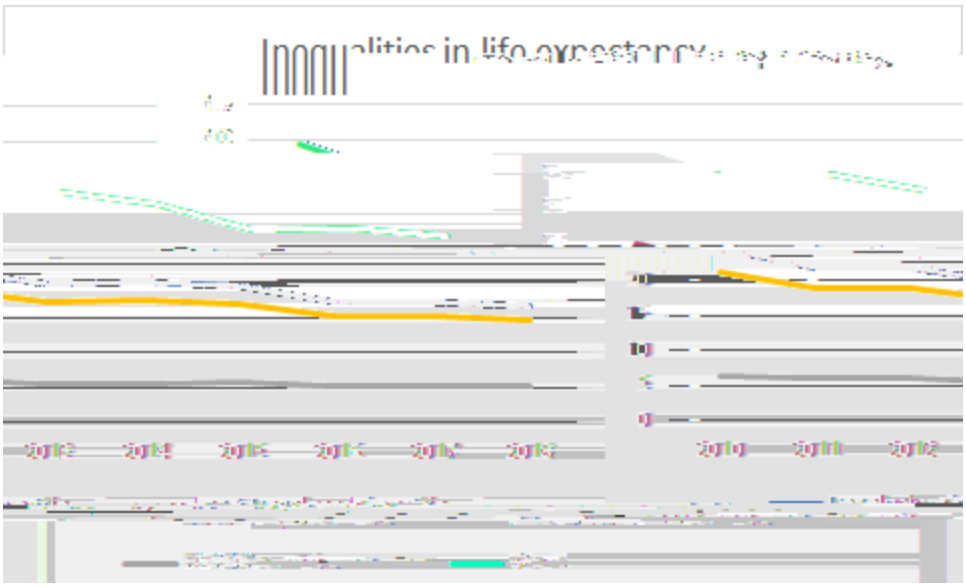

Figure 2: Inequality in Health as per the IHDI (UNDP)

Inequality and vulnerability

Sustaining long-term growth is of particular importance to the LDCs as it is key to achieve significant and sustainable poverty reduction (Berg and Ostry, 2011). The duration of growth as well as the medium-term growth rates tend to be shorter when income inequality is high (Berg and Ostry, 2011, Stiglitz, 2016). As previously discussed, income inequality affects, and is affected by, human capital development which may in turn adversely impact the possibilities for sustainable growth (ibid.), but there are other channels through which inequality affects long-term economic development trajectories worth noting. High inequality is associated with low levels of social trust and weak institutions (Wilkinson and Pickett, 2016) which may increase economic volatility and uncertainties, and decrease productive private and public investment (Stiglitz, 2016), slowing down the rate of structural transformation (Baymul and Sen, 2020). Structural transformation is needed for the LDCs to mitigate economic vulnerability, increase resilience, and spur long-term economic development.

Wilkinson and Pickett (2010) argue that high inequality erodes trust and social cohesion, which makes it harder for communities to cooperate and generates economic inefficacies through increased transaction costs (also see Putnam, 2000). The polarization of society that comes with inequality may also lead to political and social unrest as the perceptions of injustice and politicization of grievances mobilize groups to take collective, and sometimes violent, action (Schoch and Ferreira, 2020, United Nations and World Bank, 2018), increasing economic uncertainty, discouraging investments and negatively affecting growth (Stiglitz, 2016).

Social cohesion is also a key determinant for the strength and quality of formal institutions (Easterly et al, 2006), and a vast strand of literature stress the importance of institutions for

economic development outcomes (North, 1990; Rodrik, 2000; Rodrik, 2007; Acemoglu and Robinson, 2008). Whilst high levels of inequality may lead to calls for increased redistribution (Ostry et al, 2014), Stiglitz (2016) argue that highly unequal societies are less inclined to increase public spending and invest in productivity-enhancing in public goods (such as education or technology). With weak institutions and high inequality, rent-seeking becomes a prominent feature of the economy (Stiglitz, 2016) further enhancing economic instability and reducing the potential for growth-induced poverty reduction. This is mirrored empirically in the World Inequality Report (2018) which shows a global increase in wealth inequality coupled with a global decrease in public net wealth since the 1980s, further reducing public institutions capacity to provide high quality government services and public goods.

Thus, inequality, polarization, political volatility, and poor institutions are barriers to economic

paying jobs in urban industries, creating an initial increase in inequality, but as the process continues human capital becomes increasingly important for GDP growth and high levels of inequality would then slow down growth. However, research by *inter alia* Piketty (2014) has shed doubt on the relationship, showing that inequality has risen in developing countries since the 1960s, in spite of the relative importance of human capital and industrial jobs in these countries.

High initial levels of inequality may itself be a barrier to structural transformation if, as noted above, it increases economic volatility and discourages productivity-enhancing investments in infrastructure, technology and education (Stiglitz, 2016). Structural transformation is dependent on these investments, as on the institutions and human resources available (UN Habitat, 2016). And the economic development increasing inequality-relationship is not a law of nature. Baymul and Sen (2020) argues that the relationship will depend on the typology of structural

Figure 5: Overall loss in human development due to inequality (UNDP 2020)

Conversely, whilst graduated and graduating LDCs saw income inequality reduced as measured by the Gini-coefficient, they display somewhat contradictory trends when expanding the analysis beyond income. Both Bhutan and the Maldives saw stark increases in education inequality, offsetting the progress in equality in human development stemming from decreased income- and health inequality. Given the importance of education for human capital development, technological change and sustained growth in a knowledge-intensive economy (Fuente and Ciccone, 2002), reviewing inequality trends beyond income is of importance for LDCs aiming for long-term sustainable economic development.

Beyond the normative importance of capabilities for human well-being, agency, and empowerment, reduced capabilities imply that an individual is not able to fully participate in the economy and in society, hampering development outcomes at a macro level. Inequalities in human development have also been associated with low social cohesion and reduced generalized trust (UNDP, 2019) which is detrimental to economic development. Furthermore, the global progress in enhancing basic capabilities, as measured by the Human Development Index (HDI), 1990 2020 has been paralleled by global increases in income and wealth inequality (UNDP, 2019, Piketty, 2014), suggesting that expanding primary education and basic healthcare might not be enough to shift power-

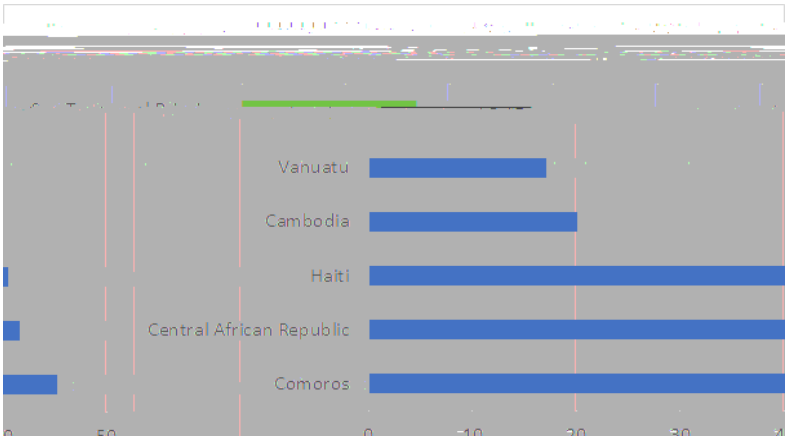

Figure 6: Top and Bottom Countries in HD Loss due to Inequality (UNDP)

Figure 7: Coefficient of human inequality, selected LDCs (UNDP)

2.2 Beyond Averages

Decomposition of loss due to inequality by three dimensions

-2018, Angola and Sao Tome saw reductions in human inequality during this period. However, CHI increased by 32% in both the Maldives and Bhutan. The IHDI allows us to decompose this change by its three dimensions:

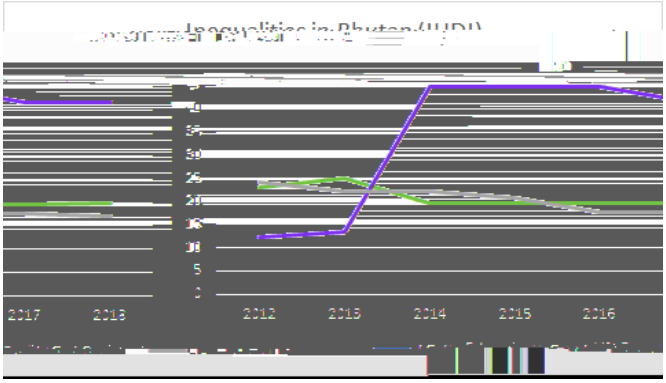

Figure 8: Inequalities in income, education and health in Bhutan (UNDP)

3. Multidimensional Inequality as an Obstacle for LDCs to Meet the SDGs

Since 2016, the Sustainable Development Solutions Network has published an annual report including a Sustainable Development Goal index (SDGi). This index averages 85 global indicators - some official and others not - for all 17 goals. Of the 166 countries for which the index has been calculated in 2020, 40 LDCs were included given available data. Of these, 33 LDCs are at the bottom 50 ranks of the index. The other seven fare only a little better:

Table 2: SDG Index 2020 scores and ranks, selected SDGs

Country	SDG Index Score	SDG Index Rank
Bhutan	69.27	80

Standard errors are shown in parentheses. Statistical significance is noted with asterisks: *** for 1%, ** for 5%, * for 10%.

When we restrict the sample to only the 40 LDCs for which there is data for all variables, the following model results:

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*** *** ***

Economic growth as well as changes in education inequality were not statistically significant for the LDC regression. Education inequality may be already captured by income inequality, as the former - coupled with poorer health and -
2014). Inequality in health and education may also create structural barriers to economic development and poverty reduction. The traditional human capital theory developed by Becker (1962) models how productivity is dependent on an individual's knowledge, skills, abilities, and competencies, with more productive individuals earning higher wages. On an aggregate level, human capital development leads to improved firm productivity as workers become better at performing their tasks, and in the endogenous growth-models increased marginal product of labour translates into increased economic growth. Large disparities in access to education would thus adversely affect the income distribution in a country, as well as overall growth rates. Likewise, Lee and Lee (2018) analyze educational expansion in more than 60 countries between 1980 and 2015, showing that a more equal distribution of education significantly reduces income inequality.

These results imply that, on average, while income does improve an LDCs progress on the SDG index, health and income inequality reduce these gains. The loss from health inequality is especially large, as each 10% increase in inequality of life-

Adjusted R2	0.838		0.923		0.847		0.835	

These models suggest several key findings:

Economic growth is only significant for SDGs 1 (poverty reduction) and 9 (innovation, industry and infrastructure). For SDG 3 (good health) and 7 (affordable and clean energy) there is no statistically significant relationship between progress on the goal and economic growth.

LDC status (as measured by the dummy variable) is a serious impediment to progress on three of these SDGs. The exception - SDG 3 - is especially interesting. The small negative coefficient is also not statistically significant, suggesting LDCs can make progress towards healthier lives as much as other countries. Given the interlinkages between health and other SDGs, this is definitely good news.

Income inequality has a negative and statistically significant coefficient for all four SDGs, but it is not large. The effect of a 10% increase in income inequality ranges between 1.1 and 3.2 points reduction in the SDG index

By contrast, inequality in health (life-expectancy) is strongly negative for SDGs 1, 3 and 7. Each 10% increase in health inequality reduc

and 13 score points.

3.3

SDG thus far, we are now in a position to project this impact forward. We do so in four different scenarios (Table X). Each scenario takes as parameters a growth rate and level of (health and income) inequalities, and projects the resulting effect on the 2030 SDG index.

Table 5: Projections with different growth and inequality scenarios

		Economic Growth Rate	
		Trend (2010-2019)	**7% per year**
Inequalities	**Same as 2010-2019**	Scenario 1	Scenario 2
	20% lower	Scenario 3	Scenario 4

The results of the projections are shown in Table Y in the annex.. Several key insights can be gleaned from these results:

Furthermore, reducing inequalities can itself help spur higher economic growth. Whilst the traditional growth economics-

So what are some policy options to decrease health inequalities? Studies suggest that addressing social determinants of health is as, or even more, important as improving health care services

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Annex I: SDG Progress under Four Scenarios

	2020 SDG Index	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Country					