

What drives quality-adjusted human development achievements?



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Economic and Social Commission for Western Asia

What drives quality-adjusted human development achievements?



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Introduction

Health, education and income are key dimensions of human development. Progress with regard to those dimensions is captured in the human development index (HDI), which was first presented in the inaugural publication of the United Nations Development Programme Human Development Report in 1990. The index was designed to capture “the three essential components of human life – longevity, knowledge and basic income for a decent living standard”.¹ The initial indicators corresponding to those components were life expectancy at birth, the adult literacy rate and the logarithm of real gross domestic product (GDP) per capita.

The HDI indicators have been adjusted several times since the launch of the index. Thus, by the time the 1991 Human Development Report had been published, the indicator of mean years of schooling had been added to complement the adult literacy rate and provide a broader measure of the attainment of “knowledge”.² In Human Development Reports starting in 1995, the indicator for mean years of schooling was replaced by the combined primary, secondary and tertiary enrolment ratio. In the 2010 Human Development Report, the combined enrolment ratio was replaced by two education indicators: *attained* mean years of schooling and *expected*

mean years of schooling.³ Additionally, Gross National Income (GNI) per capita replaced GDP per capita because there could be large discrepancies between the income of a country’s inhabitants and that country’s domestic production, particularly given accelerating globalization, which entails the transfer and exchange of incomes, remittances and aid flows.

The various changes to the educational indicators were made to ensure the comprehensiveness of the human development index, namely, its ability to capture human development across a broad spectrum of achievement. However, by not accounting for the *quality* of human development, the (quantitative) HDI indicators do not tell the whole story. This is one of the main weaknesses of the index and hence an important point to highlight. By not accounting for quality, HDI results may have limited policy relevance since they may be based on human development gaps that are not particularly relevant for most developing regions today, particularly given challenges such as the ongoing coronavirus (COVID-19) pandemic and the so-called “fourth industrial revolution”. In other words, the HDI has, to date, been too focused on *basic* human capabilities and achievements, and may thus be a more

¹ UNDP, Human Development Report 1990: Concepts and Measurement of Human Development (1990). Available at: hdr.undp.org/en/reports/global/hdr1990.

² UNDP, Human Development Report 1991: Financing Human Development (1991). Available at: www.hdr.undp.org/en/reports/global/hdr1991.

³ Jeni Klugman, Francisco Rodríguez and Hyung-Jin Choi, “The HDI 2010: new controversies, old critiques”, *The Journal of Economic Inequality*, vol. 9, issue 2, (June 2011) pp. 249-288.

appropriate measure of severe human development deprivation.⁴

The indicators informing the HDI should thus be amended so that they more accurately reflect the quality of human development achievements. Building on analyses and proposals in two recent papers prepared for the Economic and Social Commission for Western Asia (ESCWA),⁵ this paper therefore introduces a quality-adjusted human development index (Q-HDI) that discounts the health, education and income indicators informing the HDI by three appropriate measures of quality, namely healthy life years (which discounts the HDI life expectancy indicator by a measure of illness from chronic disease and/or injury), quality-discounted educational achievement (which adjusts the mean and expected years of schooling indicators on the basis of the World Bank Human Capital Project harmonized test scores) and inequality-adjusted income (which discounts the HDI gross national income per capita indicator). Although the proposed indicators may more accurately capture the qualitative aspects of human development, they may still have certain limitations. Educational disparities, for example, may be overstated if assessments do not take into account the situation and educational needs of particular

groups. Additionally, it could be argued that factors affecting the quality of education beyond learning outcomes should also be considered.⁶

To date, the discussion on human development has focused, primarily, on outcomes, which is understandable given the conceptual framework of the capability approach. Not enough consideration has been given, however, to a key question posed by policymakers, namely what are the main instruments under our direct and indirect control that can be deployed to enhance quality-adjusted human development achievements? This is the second major issue addressed in this paper.

In line with those objectives, Section 2 of the present paper discusses the reasons why the Q-HDI is needed and examines the measurement methodology of two proposed indices, namely the quality-adjusted human development index (Q-HDI) proposed by the author and the human development drivers index (HDDI). Section 3 of the paper provides an overview of the main results of the author's analysis and draws a number of conclusions regarding the application of the HDDI and Q-HDI at the country-level. The paper closes with a number of policy recommendations.

⁴ McKinley, Terry, "The need for a new framework for defining a development measure for the Arab countries". Economic Development and Integration Division Working Paper, No. 1. Beirut: ESCWA (2016). E/ESCWA/EDID/2016/WP.1.

⁵ Khalid Abu-Ismaïl and others, "A Quality-Discounted Education Achievement Index", paper prepared for ESCWA (forthcoming); Khalid Abu-Ismaïl, Phoebe Ishak and Oussama Safa, "Healthy Life Expectancy Index Reveals a regional paradox", paper prepared for ESCWA (forthcoming).

⁶ Right to Education Project, Learning Outcomes Assessments: A Human Rights Perspective (2013). Available at: www.right-to-education.org/sites/right-to-education.org/files/resource-attachments/RTE_Learning_Outcomes_Assessments_HR_perspective_2013.pdf.

1. Conceptual and measurement issues

A. Quality of human development

As stated above, although the HDI was formulated with a view to quantifying key human development gains, it does not measure their quality. For example, although population ageing is considered a developmental gain, it should not necessarily be viewed as a success unless older persons are also able to enjoy an acceptable quality of life (it is important, for example, to consider the capacity of older persons to enjoy active, healthy and dignified lives). The quality of health care should also be considered, particularly at the present time, not only because of the challenges posed by the COVID-19 pandemic, but also because many developing countries are undergoing rapid demographic transition and expect to witness a huge increase in the number of older persons in their populations. In the Arab region, for example, the number of older persons is expected to exceed 100 million by 2050, up from only 29 million in 2017.⁷ Most developing countries have achieved significant progress on key health and development indicators, including a rapid decrease in infant, child and maternal deaths and improved access to safe drinking water and sanitation, and those improvements will positively affect the capabilities of their populations. In many

countries, however, significant gaps remain in terms of equitable access to high quality health-care services. Furthermore, in tandem with the improvements in life expectancy that have occurred since the 1990s, the burden of non-communicable diseases and injuries has increased.⁸ In some global regions this is likely to place a double burden on health systems, as changes in the burden of disease further challenge already stretched human and financial resources.⁹

Likewise, additional years of schooling are of no tangible benefit if they do not translate into skills and capabilities that are relevant to current and emerging labour market needs. However, in many countries, labour market needs are determined, primarily, by macroeconomic strategies that are biased towards low-value added sectors that depend on limited knowledge content. Nonetheless, as countries progress in terms of quantitative achievements in primary education, and as their economies become more diversified, there will be a pressing need to raise the bar. Compulsory education has had a marked impact on several generations of children in many developing countries in the last few decades and basic education has substantially advanced in all developing regions.¹⁰ Indeed, indicators on

⁷ ESCWA, Arab Regional Review: Five Years After the 2013 Cairo Declaration (2018). Available at: archive.unescwa.org/sites/www.unescwa.org/files/publications/files/arab-regional-review-cairo-declaration-english.pdf

⁸ Abu-Ismaïl, Ishak and Safa, "Healthy Life Expectancy Index Reveals a regional paradox".

⁹ Ali Mokdad and others, "The state of health in the Arab world, 1990-2010: an analysis of the burden of diseases, injuries, and risk factors", *The Lancet*, vol. 383, issue 9914 (25 January 2014), pp 309-320. Available at: [www.thelancet.com/journals/lancet/issue/vol383no9914/PIIS0140-6736\(14\)X6067-8](http://www.thelancet.com/journals/lancet/issue/vol383no9914/PIIS0140-6736(14)X6067-8).

¹⁰ ESCWA and Economic Research Forum, *Rethinking Inequality in Arab Countries* (2019). E/ESCWA/EDID/2019/2.

literacy have improved remarkably in recent decades. When scratching below the surface, however, it is apparent that there are significant discrepancies between school attainment levels and quality of education outcomes (as represented by the results of international test scores and other knowledge indicators).¹¹ This is an important factor affecting the attainment of highly-valued functional capabilities by the populations of those countries.

Education quality also plays a decisive role in many other developmental areas and should thus be accorded primary focus. Reflecting enhanced capabilities, education, and particularly high-quality education, is associated with better social and health outcomes. In particular, communities with higher average years of schooling and who receive high-quality education tend to have lower mortality rates, a lower share of pupils with below baseline proficiency in school, lower intergenerational inequality in education¹² and stronger macroeconomic growth.¹³ High-quality education can also play the role of equalizer in terms of intergenerational mobility as the socioeconomic status of children from families of low socioeconomic status can be improved if those children have access to and perform well in school.¹⁴ There can also be no doubt that improving quality in education has positive spillover effects on income and health. Adjusting the years of education attained with a

measure of quality is therefore a necessary part of any revised quality-adjusted human development measurement framework.

As for income, the question that poses itself is: how is the quality of income defined? While methods for making quality adjustments to health and knowledge indicators are well known to researchers, the same is not true for indicators on income. In fact, various legitimate questions can be raised regarding the quality of income. For example, should quality adjustments be made to take into account how income is generated, how it is used, or both? Should income earned through decent work be viewed as “quality” income, irrespective of how it is used? And should income used to advance human priorities, including health and education, be regarded as “quality” income irrespective of how it is generated?

The simplest and most defensible approach for addressing this conundrum is to emphasize the individual and societal-level qualitative aspects of income distribution and to underscore that more equitably distributed income yields both better quantitative and qualitative human development outcomes than less equitably distributed income. Indeed, numerous studies have shown that societies characterized by inequitable income and wealth distribution have less equitable social outcomes and are more prone to social polarization and domestic conflict.

¹¹ Nathan Grawe, “Primary and Secondary School Quality and Intergenerational Earnings Mobility”, *Journal of Human Capital*, vol. 4, No. 4 (2010), pp. 331–364. Available at: www.jstor.org/stable/10.1086/658855.

¹² Fabrizio Bernardi and Ilze Plavgo, “Education as an equalizer for human development?”, *Human development report background paper*, No. 4-2019 (UNDP, 2019). Available at hdr.undp.org/en/paper-categories/background-papers.

¹³ Alan Krueger and Mikael Lindahl, “Education for Growth: Why and for Whom?”, *Journal of Economic Literature*, vol. 39(4), pp. 1101-1136 (2001). Available at www.aeaweb.org/articles?id=10.1257/jel.39.4.1101.

¹⁴ Grawe, “Primary and Secondary School Quality and Intergenerational Earnings Mobility”.

Increasing income inequality is also a global challenge. Since the 1990s, income inequality has been rising both in developed and middle-income countries. Those countries are home to more than two thirds (71 per cent) of the world's population.¹⁵ In fact, despite progress in some countries, income is increasingly concentrated among an elite population.¹⁶ The rich are becoming more affluent while increasing numbers of poor people are being reduced to extreme poverty. For example, ESCWA estimates that the real wealth of the 37 most affluent individuals in the Arab region is equivalent to the real wealth of the region's poorest 110 million adults, or some 46 per cent of the region's total adult population.¹⁷ Rising inequality has created discontent, exacerbated political divisions, and is a catalyst for violent conflict.¹⁸ Furthermore, untargeted pro-growth policies have often failed to decrease poverty since most of the benefits stemming from economic growth flow to those who are already relatively well off. Social mobility is also reduced as privileged groups are able to monopolize opportunities and adopt common positions against the poor.¹⁹ The income dimension of the new index hence serves as a proxy for material well-being that encapsulates people's capacity to meet their basic needs, achieve a decent standard of living and take advantage of expanding opportunities.

To sum up, the HDI fails to measure quality in a meaningful way, even though quality is a pivotal factor with a significant impact on the capacity of developing countries to address current and emerging challenges. A logical starting point would thus be to adjust the HDI indicators on health, education and income by incorporating appropriate measures of quality. Further details on the steps undertaken to that end in the formulation of the Q-HDI are described in the following section.²⁰

Quality-adjusted human development index (Q-HDI)

As described above, the Q-HDI is formulated simply by discounting the HDI by an appropriate quality measure. For the health dimension, the new indicator is healthy life expectancy at birth, which is defined as the average number of years an individual is expected to live in full health after discounting the number of years lived in less than full health due to disease and/or injury. The new indicator is thus the life expectancy at birth indicator used in the HDI adjusted for non-healthy years. The healthy life expectancy at birth indicator will thus always be lower than the conventional life expectancy indicator.²¹ As described below, the same methodology is applied to the education dimension of the HDI by incorporating the World Bank Human Capital

¹⁵ United Nations Department of Economic and Social Affairs (DESA), *World Social Report 2020: Inequality in a Rapidly Changing World (2020)*. Available at www.un.org/en/desa/world-social-report-2020.

¹⁶ Ibid.

¹⁷ Khalid Abu-Ismaïl and Vladimir Hlasny, *Wealth Inequality and Closing the Poverty Gap in Arab Countries*. (ESCWA, 2020). Available at: www.unescwa.org/sites/www.unescwa.org/files/publications/files/wealth-inequality-closing-poverty-gap-arab-countries-english.pdf.

¹⁸ UNDP, *Human Development Report 2019: Beyond income, beyond averages, beyond today – Inequalities in human development in the 21st century (2019)*. Available at: <http://hdr.undp.org/sites/default/files/hdr2019.pdf>.

¹⁹ Ibid.

²⁰ Abu-Ismaïl and others, "A Quality-Discounted Education Achievement Index"; Abu-Ismaïl, Ishak and Safa, "Healthy Life Expectancy Index Reveals a regional paradox".

²¹ Abu-Ismaïl, Ishak and Safa, "Healthy Life Expectancy Index Reveals a regional paradox".

Project harmonized test scores as a quality-discounting factor. Similarly, for the income dimension, the HDI gross national income per capita indicator is discounted by the HDI inequality in income coefficient. The Q-HDI is thus computed as the geometric mean of three subindices: the healthy life expectancy index (HLEI), the quality-adjusted education index (QEI) and the quality-adjusted income index (QII). The computation method for the three subindices is described below.

(a) Healthy life expectancy index

The healthy life expectancy index is constructed by standardizing the healthy life expectancy at birth (HLE) indicator as calculated by the World Health Organization (WHO) using the following min-max formula:

$$\frac{HLE \text{ in years}_i - \text{Minimum}}{\text{Maximum} - \text{Minimum}}$$

The minimum (maximum) values are set on the basis of the minimum (maximum) observed values in raw data for healthy life expectancy at birth. Although the data used in this paper show that the lowest (highest) value scored by a country is 28 (74.1), the minimum (maximum) values are set at 20 (75) following the same approach as the HDI, so as not to cluster index values close to zero, and in order to ensure that minimum healthy life expectancy is lower than minimum life expectancy.

(b) Quality-adjusted education index²²

To calculate the quality-adjusted education index, the education indicator informing the HDI, computed as the simple average of the mean and expected years of schooling, is discounted using the harmonized test scores indicator, which are taken as a proxy for the quality of education.

The methodology for arriving at harmonized test scores is based on a paper by Patrinos and Angrist (2018), in which the authors looked at learning outcomes from major international student achievement tests in a comparable way across both countries and time using a ratio linking methodology.²³ As noted in that paper, the linking scores approach does not mean that scores across various assessments are equivalent, but rather captures the differences between tests to generate scores for countries that only participate in regional assessments and place those scores on an international scale, hence allowing cross-country comparison.²⁴ To calculate the quality of education adjustment factor, we divide each country's score on the harmonized international test scores by a maximum score. The maximum is set on the basis of the maximum observed value in raw data for test scores. In our analysis, the highest value scored by a country was 581, so the maximum value was set at 581.

²² Abu-Ismaïl and others, "A Quality-Discounted Education Achievement Index".

²³ The tests included are the following: Trends in International Maths and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS), Programme for International Student Assessment (PISA), Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ), Program of Analysis of Education Systems (PASEC), Latin American Laboratory for Assessment of the Quality of Education (LLECE), Pacific Islands Literacy and Numeracy Assessment (PILNA), nationally-representative Early Grade Reading Assessments (EGRA), and non-nationally-representative Early Grade Reading Assessments (EGRANR).

²⁴ Harry Patrinos and Noam Angrist, "Global Dataset on Education Quality: A Review and Update (2000-2017)", Policy Research Working Paper, No. 8592 (Washington, D.C., World Bank, 2018). Available at documents1.worldbank.org/curated/en/390321538076747773/pdf/WPS8592.pdf.

(c) Quality-adjusted income index

To calculate the quality-adjusted income index, the HDI gross national income per capita indicator is discounted by the HDI inequality in income coefficient using the following formula:

$$\text{Quality-adjusted income index} = (\text{HDI income indicator}) * \left(1 - \frac{\text{inequality in income}}{100}\right).$$

As these output indicators are mutually reinforcing (or are independent of one another) the choice of geometric mean as an aggregation technique is justifiable. A good explanation is offered by UNDP: *“in 2010, the geometric mean was introduced to compute the HDI. Poor performance in any dimension is directly reflected in the geometric mean. In other words, a low achievement in one dimension is not linearly compensated for by a higher achievement in another dimension. The geometric mean reduces the level of substitutability between dimensions and at the same time ensures that a 1 per cent decline in the index of, say, life expectancy has the same impact on the HDI as a 1 per cent decline in the education or income index. Thus, as a basis for comparisons of achievements, this method is also more respectful of the intrinsic differences across the dimensions than a simple average.”*²⁵

B. Human development drivers

What then are the policy-related factors influencing the Q-HDI? This is a difficult question to address, but one that is particularly important from a decision maker’s standpoint. The simplest answer offered in this paper is that Q-HDI scores

depend, primarily, on initial conditions, institutional capacities and good public policies. Stakeholders attempting to assess Q-HDI quality must, however, deal with a number of intellectual and methodological challenges.

For example, one problem in understanding the relationship between policymaking and human development outcomes is that any purported policy drivers are themselves likely to be endogenous to the influence of other factors, such as the effectiveness of government policies and the strength of governance frameworks (including sound accountability, the rule of law and participation), which are simultaneously affected by the country’s initial level of human development. From a statistical point of view, these circular causal relationships are quite problematic to assess.

To sort out such intricate correlation versus causality conundrums, there is no escape from deploying one’s pre-analytical vision. Following Helibroner and Milberg,²⁶ these are the preconceived notions derived from historical observations and previous empirical analyses that form our theoretical assumptions. In some cases, these notions can also be supplemented (but rarely verified) by statistical analysis. For example, it can be statistically shown that good governance and institutional effectiveness have a positive impact on human development and that this causal link is most significant in upper and middle-income countries.²⁷ But the results of a Granger causality test are unlikely to shift the perspective of an academic who believes the causal direction runs in the opposite direction.

The purpose here, however, is not to engage in these academic debates, but rather to contend

²⁵ For further information about the Human Development Index, see: hdr.undp.org/en/faq-category/human-development-index-hdi.

²⁶ Robert Heilbroner and William Milberg, *The crisis of vision in modern economic thought* (Cambridge University Press, 1995).

²⁷ Khalid Abu-Ismael and Phoebe Ishak, *Institutions and Human Development: A Panel Granger Causality Analysis* (2021).

with the conclusion that it is more important to focus on what we know than on what we don't know. For example, it is well known that the level of economic diversification and knowledge content of the production process is a good predictor of current and future income levels (and arguably income distribution).²⁸ But as to what drives that process, this is a sticking point that is of little relevance to our present exercise. To further elaborate using this example, some growth theories contend that the past accumulated stock of knowledge that generates innovative ideas embodied in human capital is the key deterministic factor.²⁹ Structuralist growth theories, on the other hand, argue that income distribution patterns play the most important role.

These interesting debates are not a concern in this paper. The concern here is a practical one. To influence inequality-adjusted income achievements, there can be no doubt that policymakers need to generate broad-based employment in knowledge-intensive high-value-added sectors, which in turn is determined by the level of investment in those sectors. Eventually, those policies (given an appropriate institutional context and a sufficient level of initial human development) should induce an advancement in economic complexity and, through that channel, in income per capita. Policies that promote knowledge generation (such as investment in research and development and in education sector capacities) and distributional policies (redistributive fiscal policies) can be deployed to influence and steer this process. For the purposes of this paper it is therefore irrelevant which of the factors are more important to the generation of economic

diversification and complexity (a debate which can only be resolved by taking into consideration country-specific contexts). What matters is that, conceptually, the existing level of, and changes in, economic complexity are expected to exert the strongest influence on present and future levels of economic growth.

Turning to health and education, it is easy to contend that, in many poor countries, poor health and education outcomes result from limited quantitative institutional capacities, such as a lack of nearby hospitals, doctors, teachers, or limited training and skills. Hence, public investment in these capacities is expected to result in the achievement of higher-quality health and education goals. This process will take place over extended periods and improved health and education services are likely to remain inaccessible to the majority of the population at early stages of transformation, especially in the poorest countries. As countries develop, however, access to quality health and education is expected to become more affordable, particularly as countries start to reap the rewards of initial investments. Country evidence suggests this transformation process is non-linear and that the rewards will be significantly higher at earlier stages of development than at more advanced stages, when countries approach qualitative and quantitative target limits.

We are not concerned here that decision makers are only weakly incentivized to take action if the expected benefits from such investments are very slow to appear and are unlikely to yield short-term political rewards. Nor are the expected strong feedbacks between drivers of

²⁸ Growth Lab at Harvard University, Atlas of Economic Complexity (2019) Available at: atlas.cid.harvard.edu/.

²⁹ See for example, Gregory Mankiw, David Romer and David Weil, "A Contribution to the Empirics of Economic Growth", *Quarterly Journal of Economics*, vol. 107(2) (May 1992), pp. 407–437. Available at: scholar.harvard.edu/mankiw/publications/contribution-empirics-economic-growth.

quality-adjusted education, health and income achievements of importance to the purpose of this exercise. For example, public investments in health and education drivers are expected to yield multiple overlapping positive externalities that directly affect education and income dimensions. In the light of extremely high out of pocket expenditures on health and education in many countries, improvements in those indicators are expected to correlate with improvements in education enrolment and health insurance coverage, thereby relieving some of the financial pressure on households. As in the case of the human development index (HDI), these endogeneities are irrelevant to the purpose of determining how their combined impact can lead to developmental change. This is the central argument.

Building on the above, the author of this paper suggests that the proposed human development drivers index (HDDI) should incorporate three key input indicators corresponding, respectively, to each of the three dimensions of the Q-HDI. These are: an indicator of the simple average of the doctors per 1000 individuals and hospital beds per capita (corresponding to the health dimension); the pupil to teacher ratio (corresponding to the education dimension); and the economic complexity index (corresponding to the income dimension).

As in the case of the Q-HDI, the computation of the HDDI is based on the geometric mean of the three health, education and income subindices (which may also exhibit correlation). For the health dimension of the HDDI, the indicator adopted is the simple average of the per capita number of hospital beds and the per capita number of doctors per 1000 people. Arguably,

these two factors play a crucial role in determining both the quantitative and qualitative outcomes of the health system as whole. For education sector capacity, the paper uses the teacher to pupil ratio. Lastly, the economic complexity index is used to assess the income dimension. This index ranks countries based on how diversified and complex their export basket is, which is found to be closely correlated with income levels.

To construct the HDDI, the below steps are followed:³⁰

1. For health and education indicators, missing values are replaced by the average values for the most recent three to five years for which data is available. In some cases, the only available data points in periods 2000-2009 and 2011-2015 were simply substituted in years 2010 and 2016.
2. For health and education indicators, a smoother distribution is obtained using a log transformation, also in order to avoid outliers.
3. Countries scores are standardized using the following min-max formula:

$$\frac{Score_i - Minimum}{Maximum - Minimum}$$

4. The minimum and maximum values are chosen on the basis of the HDI methodology. The minimum (maximum) is set on the basis of the minimum (maximum) observed value in raw data for the indices. The lowest (highest) value scored by a country in terms of the pupil-teacher ratio between 1990 and 2016 was 5.2 (100.2). Thus, the minimum (maximum) values were set at 5 (104). For the number of physicians, the lowest (highest) values scored were 0.008 (7.9). Therefore, the

³⁰ For further information about the education and health indicators, see Abu-Ismaïl and others, "A Quality-Discounted Education Achievement Index" and Abu-Ismaïl, Ishak and Safa, "Healthy Life Expectancy Index Reveals a regional paradox".

minimum value was set at 0, while the maximum value was set at 8.1. Lastly, the lowest (highest) observed values for the number of hospital beds were 0.1 (15.1), and the minimum and maximum values were hence set at 0.07 and 18, respectively.

5. Data on economic complexity were taken from the Atlas of Economic Complexity, compiled by the Growth Lab at Harvard University with a view to measuring the diversity, technological sophistication and volume of exports.

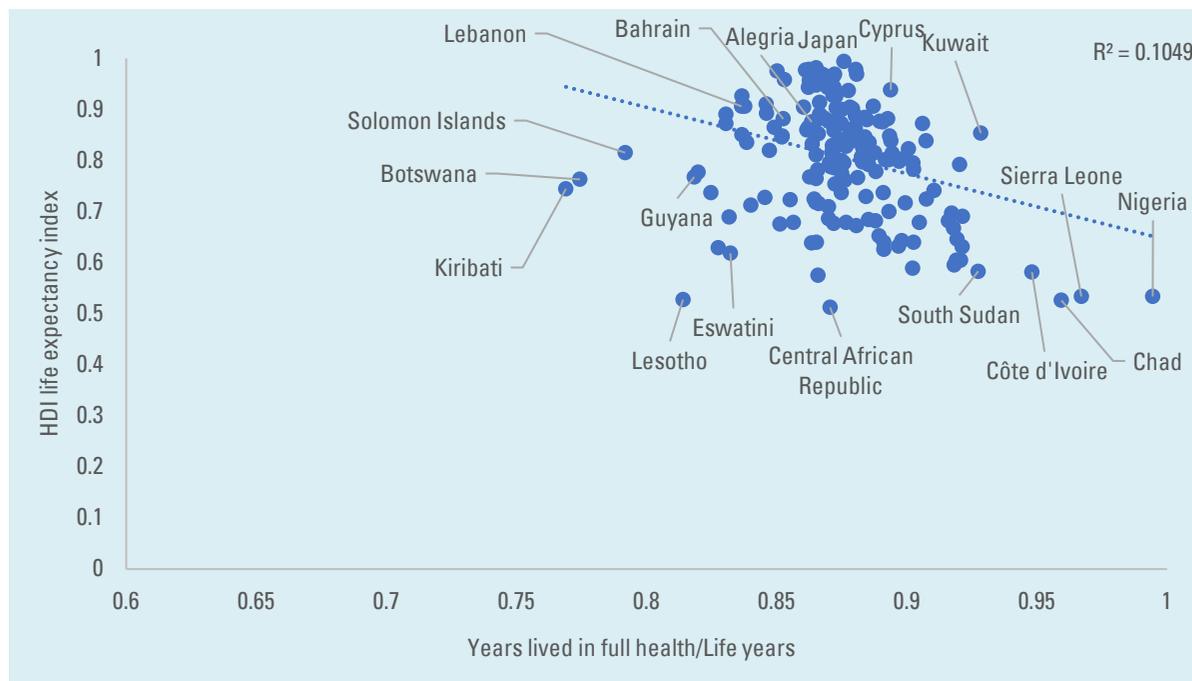
2. Key findings and stylized facts

A. Quantitative and qualitative aspects of human development outcomes do not always correspond

Figures 1 to 3 plot the components of the human development index (HDI) against their respective quality adjustment indices. The main conclusion to draw is that the relation is not always straightforward. The clearest example of a congruent relationship is offered in the education dimension (figure 2), which is plausible as, to progress in education, one assumes a minimum level of qualitative progress is attained. However, this is not a prerequisite in the case of income or health. For example, the debate on the

relationship between income per capita and inequality of income distribution dates back at least to the 1950s and the development of the Kuznets curve by economist Simon Kuznets. Accordingly, as an economy develops, income inequality is assumed to first increase then decrease. The Kuznets curve appeared to be consistent with experience at the time it was proposed. However, as shown in figure 3, the cross-country relationship is not always clear. Neither is it always evident using time-series country-specific data. In many developed economies, for example, inequality has risen systematically since the 1960s, in tandem with rising income per capita.

Figure 1. Life expectancy and quality of health

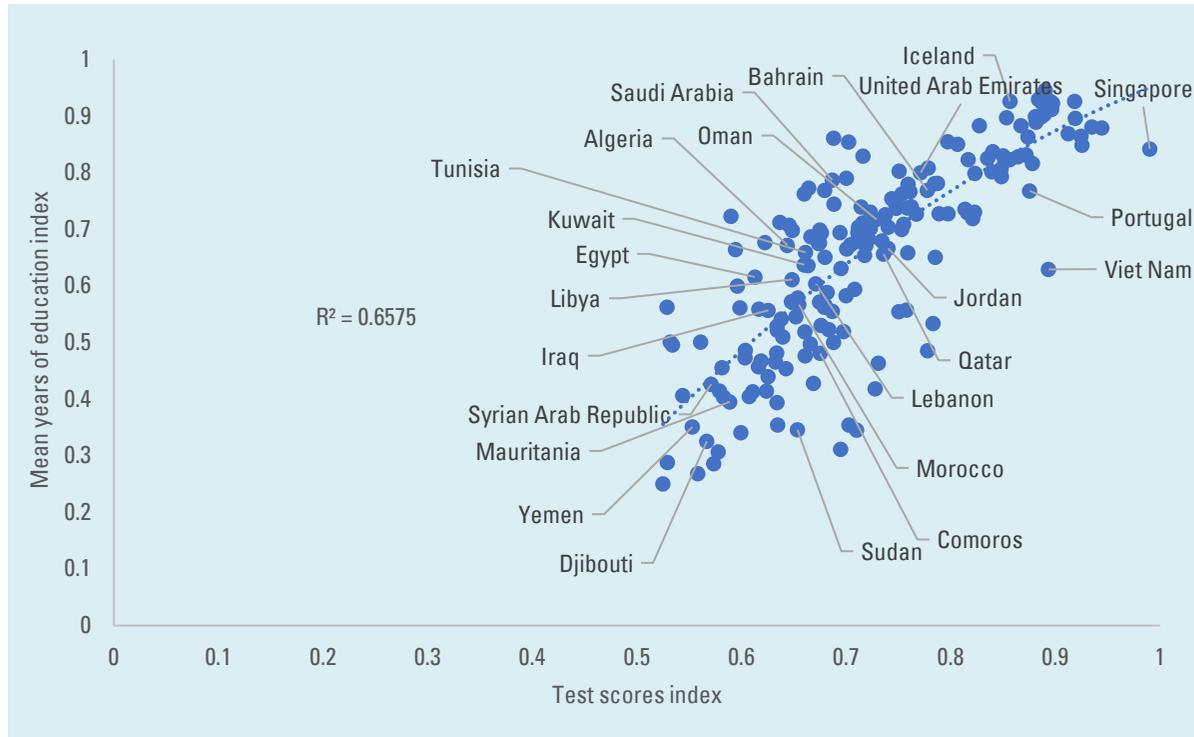


Source: Author's calculations.

Likewise, the relationship between the ratio of years lived in full health to total life years on the one hand and total life years on the other is inherently problematic since there is an assumption that, as countries increase their life expectancy, this is reflected in more healthy life experiences. It is indeed possible that the opposite is true, as indicated by the slightly declining slope of the linear trend line in figure 1. Countries with poor healthcare systems show high years life in full health to life years

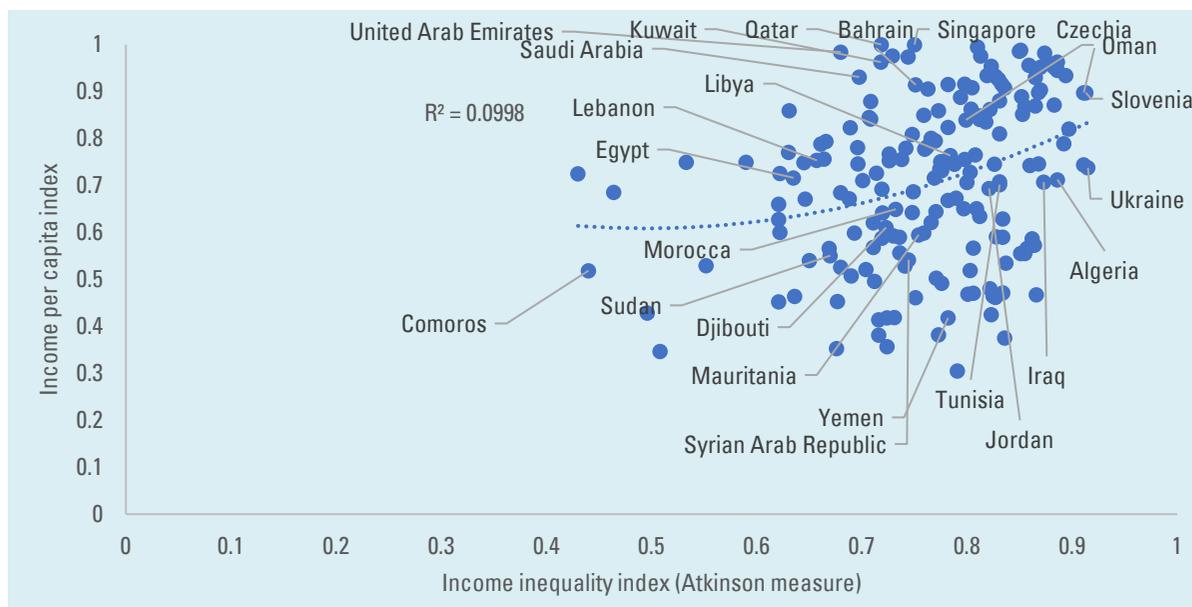
ratios. This is because low-capacity healthcare systems lack the ability to respond to communicable and non-communicable diseases, which results in high morbidity rates. Thus, these countries' years lived in full health and life years are almost equal. To conclude, the first stylized fact highlighted in the study is that there is no evidence that quality and quantity are mutually reinforcing in all aspects of human development. This makes the case for the adoption of a quality-discounted HDI approach all the stronger.

Figure 2. Mean years of education and international test scores



Source: Author's calculations.

Figure 3. Income level and income distribution



Source: Author's calculations.

B. Some country scores are heavily impacted by the quality adjustment but there are no distinct patterns

The scores of the ten highest and lowest performing countries on the quality-adjusted human development index (Q-HDI) are presented in figure 4 below, along with their rank gains or losses with respect to the human development index (HDI). The ten highest rank gains and losses are shown in figure 5. The results show that Norway has the highest Q-HDI score, followed by Finland, Denmark, Ireland and the Netherlands. The top performing countries in terms of the Q-HDI are also the top performing countries on the HDI, with most countries in that group showing less than five rank changes under the proposed new index. On the other hand, countries that score relatively poorly on the Q-HDI compared to their performance on the HDI have significant scope to improve the qualitative aspects of development. These

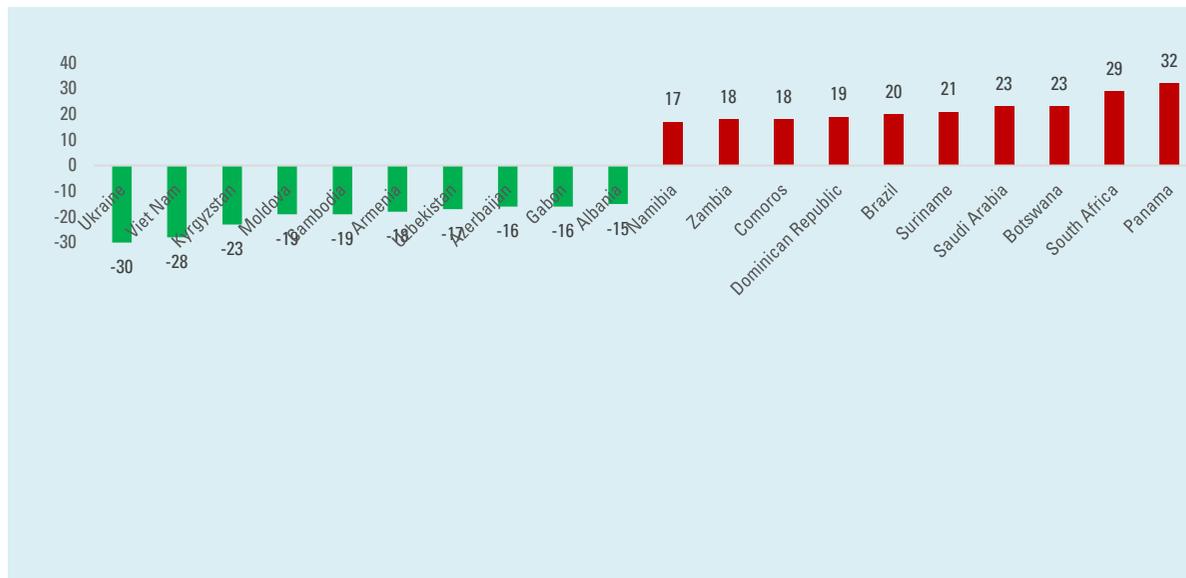
figures help to highlight the fact that, for countries at the very top of the human development ladder, taking the quality of human development into consideration has only a limited impact on their human development scores. At the same time, however, taking quality into consideration has a significant impact on the rankings of certain countries: Finland and Slovenia, for example, see rank gains of eight and ten places, respectively, on the Q-HDI relative to the HDI. The same is also true for the ten countries with the lowest Q-HDI scores (with the exception of Haiti). It is also notable that, as indicated in figure 5 and figure 6, there are no distinct regional patterns in these results, and countries in several different regions with differing population sizes and other socioeconomic characteristics are found in both the group of countries with the greatest rank gains (Gabon, Ukraine, Viet Nam) and the group with the greatest rank losses (Brazil, Saudi Arabia and South Africa).

Figure 4. The ten highest- and lowest- scoring countries on the Q-HDI and their rank gains and losses with respect to the HDI



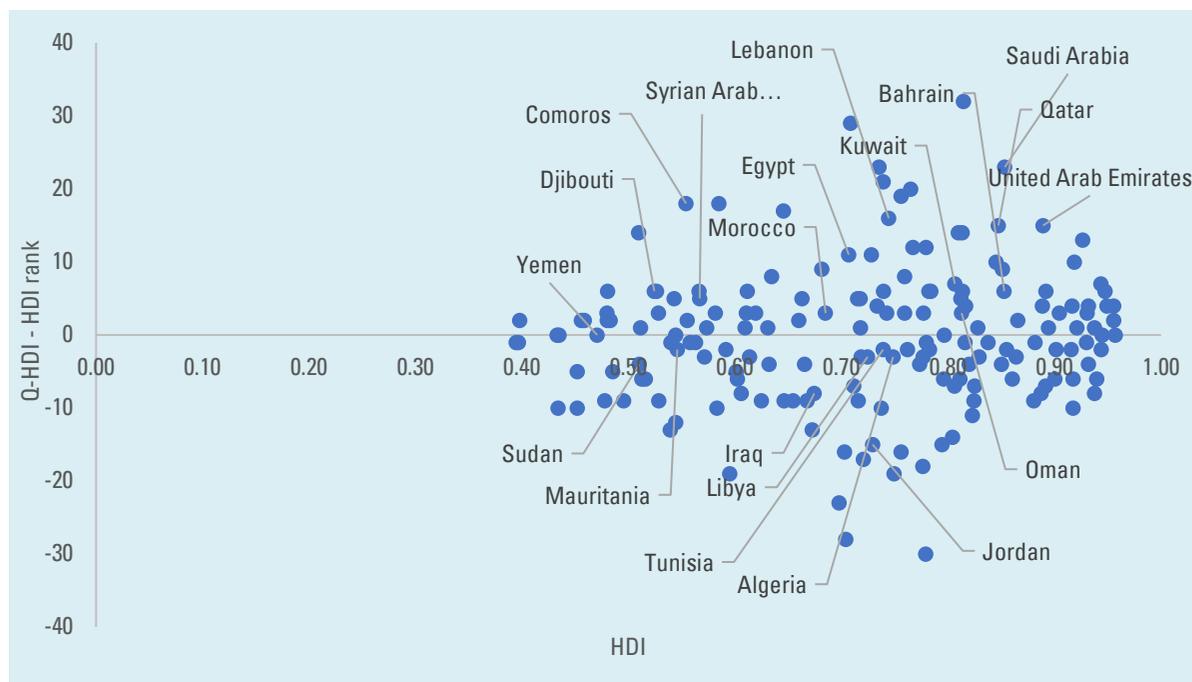
Source: Author's calculations.

Figure 5. The ten countries with the greatest rank gains and losses on the Q-HDI with respect to the HDI



Source: Author's calculations.

Figure 6. Rank change (Q-HDI relative to HDI) and HDI level



Source: Author's calculations.

C. Human development drivers strongly impact human development achievements and are positively correlated with good governance

Countries with better initial conditions and policy drivers tend to achieve higher levels of human development. This is shown in figure 7, which plots the Q-HDI against the human development drivers index (HDDI), revealing that there is very strong positive correlation between the two indices. Despite that surprisingly strong correlation, one can still easily identify countries with a higher HDDI relative to their Q-HDI (namely those countries below the regression line, such as Lebanon and Yemen). There are also distinct outliers above the regression line. For example, more

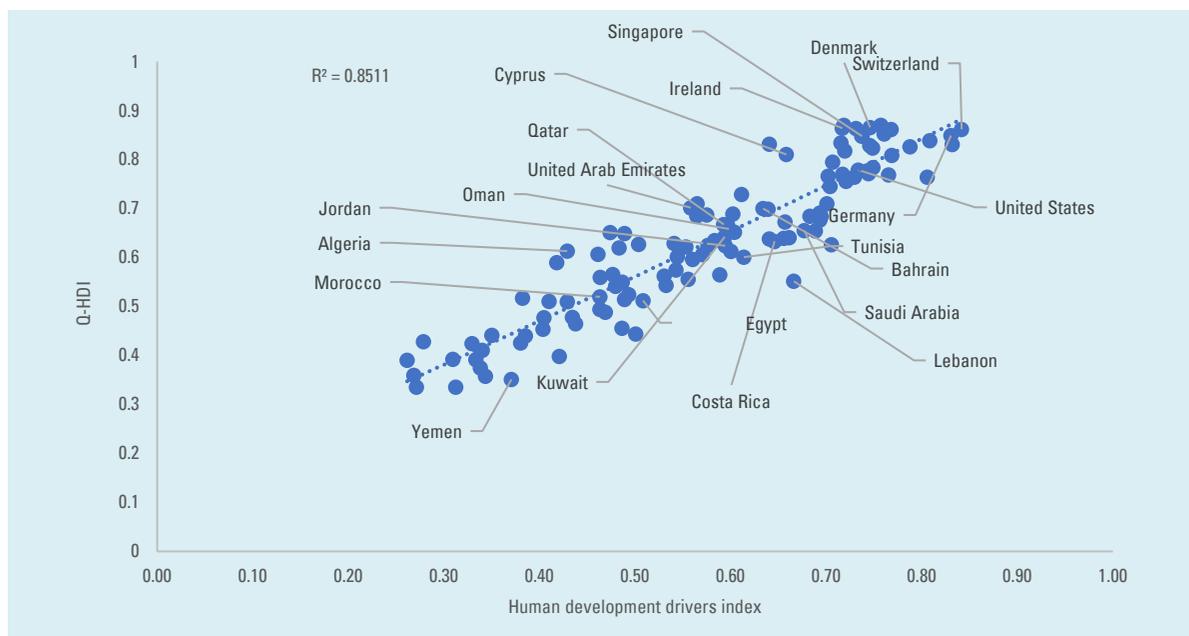
developed countries such as Singapore and the Nordic countries lie well above the regression line, revealing the high quality of their human development outcomes relative to their HDDI scores. This suggests that they are making particularly good use of their economic resources and health and education sector capacities. On the other hand, a high HDDI score relative to the Q-HDI score suggests that a country is making relatively inefficient use of their health and education sector capacities and production systems.

The more interesting question is what causes those stark differences in health and education sector capacities, and how can they be improved to yield better human development quality outcomes? This is a complex question which requires deeper analysis. Previous

studies have revealed, however, that initial conditions and good governance, including strong institutional effectiveness, play an important role in driving human development. Indeed, as illustrated in figure 8, there is strong correlation between the ESCWA governance index³¹ (which is based on indicators related to the rule of law, institutional accountability, effective participation and government effectiveness) and the HDDI, making clear that enhanced governance leads to higher human development achievements. Fortunately, the rule of law, institutional accountability, effective

participation and government effectiveness are all under the direct influence of policymakers. It is notable, moreover, that the correlation between the Q-HDI and the ESCWA governance index becomes stronger as governance improves. In other words, improving governance in countries where governance is still relatively weak is likely to have only a limited impact on the pace of human development. This is in line with findings that have revealed that the relationship between governance and human development is heavily dependent on countries' initial circumstances.³²

Figure 7. Relationship between the Q-HDI and the HDDI

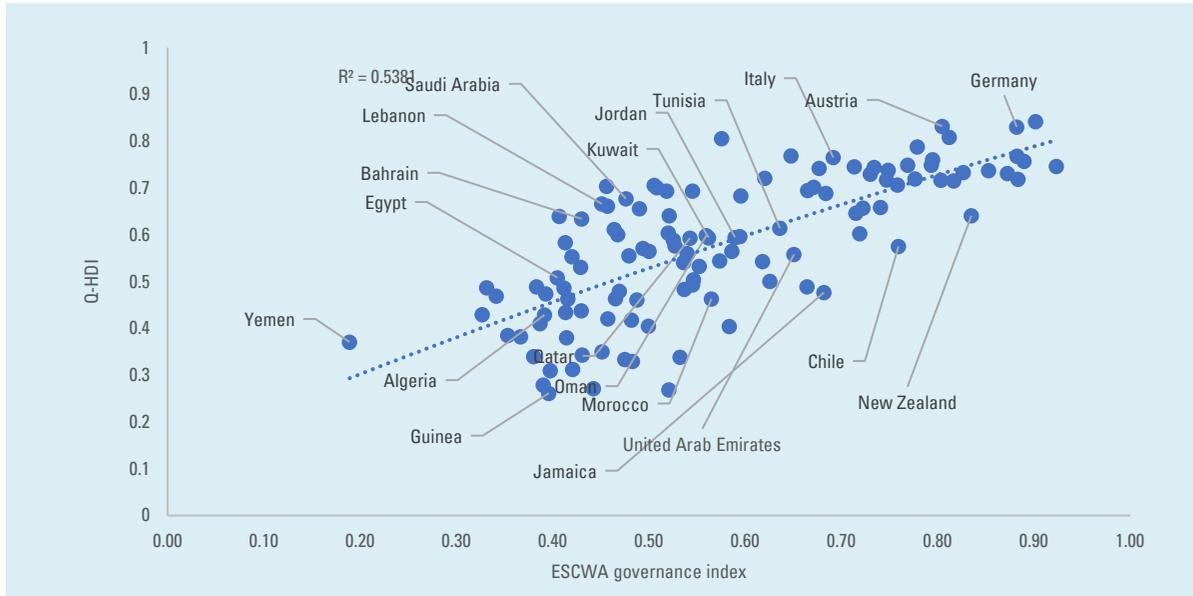


Source: Author's calculations.

³¹ ESCWA, *Global Development Challenges: A Regional Perspective* (forthcoming).

³² Khalid Abu-Ismaïl, Aljaz Kuncic and Niranjan Sarangi, *Governance-adjusted Human Development Index: The case for a broader index and its implications for Arab States*. (2016). E/ESCWA/EDID/2016/WP.3.

Figure 8. Relationship between the Q-HDI and the ESCWA governance index



Source: Author's calculations.

3. Conclusion

Since its inception, the main analytical contribution of the HDI has been its emphasis on enhancing the quantity of its components. In this paper, a set of qualitative indicators are introduced in order to formulate a quality-adjusted human development index (Q-HDI) which discounts HDI scores by taking into account three dimension-specific quality indicators, namely income distribution, quality of education and healthy life expectancy.

This paper also introduces a second index, namely the human development drivers index (HDDI), which has been formulated to capture the strength of three interrelated policy input variables affecting the Q-HDI, and which also reflect the initial conditions in the country being evaluated. Those variables are knowledge content of the production process, and the human and physical capacities of the health and education sectors. The intellectual justifications for this new index are conceptually similar to the premises underlying the HDI, except that, in this case, we are interested in monitoring intermediate inputs which are more directly under the control of policymakers. There is also a practical motivation: policymakers are interested in their countries' performance on the HDDI, not only because it pertains to factors over which they often have signification control, but also because a comparison of a country's score on the HDDI and its score on the Q-HDI can provide useful input. For example, policymakers in countries that have made significant investments in health and education (but whose Q-HDI scores remain similar to those of countries with similar or lower income

per capita levels that have not made significant investments in those areas) should examine why this is the case, and whether there are significant governance bottlenecks that they have so far failed to address.

Three main conclusions may be drawn from this paper:

Firstly, no distinct regional or human development patterns are apparent, possibly because of the relatively complex relationship among quantitative aspects of health, education and income and their respective quality-adjustment variables. This also implies that, when adjusting for quality, it is difficult to predict rank winners or losers. Consistent with this, results also show that, with few exceptions, such as Haiti and Slovenia, countries at the extreme ends of the HDI rankings show no notable change in their rankings under the Q-HDI. However, other countries such as the Brazil, Saudi Arabia, South Africa and the United States of America, are notably penalized due to a combination of extreme income inequality and/or poor health and education quality outcomes. Given its focus on conceptual and measurement aspects, this paper has not considered the national-level factors underlying those outcomes. To understand the impact of those factors, a follow-up study will be necessary. The main conclusion is that the Q-HDI brings about a new development narrative, especially for countries with large rank adjustments under the Q-HDI compared with their ranks under the HDI.

Secondly, although the vast majority of countries achieve proportional HDDI and Q-HDI scores, there are a number of clear outliers. Indeed, some countries achieve much higher scores under the HDDI than their scores on the Q-HDI would suggest, potentially indicating relatively weak economic diversification and/or relatively low efficiency within their health and education sectors. On the other hand, Singapore and some Nordic countries lie distinctly above the regression line, revealing the high quality of their human development achievements relative to the strength of their development drivers.

Thirdly, governance factors may explain those deviations from the trend line. Those factors appear to correlate positively with human development drivers, particularly among countries who are ranked highly on the HDI. This means that, in order to improve the health, education and economic capacities that drive quality human development outcomes, it is important to establish good systems of governance, including high levels of institutional effectiveness.

To conclude, an unanswered question is whether this is truly an example of causality or whether this is merely correlation. In this paper, it is assumed that quality-adjusted human development achievements are essentially driven by macroeconomic and social policies that generate broad-based knowledge-intensive economic activities and spur the development of effective health and education sector capacities. It is also assumed that those drivers

are influenced by institutional arrangements and the strength of governance mechanisms. There is also a case to be made for bidirectional causality, however, as good governance and the design and implementation of effective policies also require at least a minimum level of human development to take effect. This is not the time to dwell on what are, essentially, academic issues that have been extensively discussed elsewhere in socioeconomic literature. The key message is that these factors tend to move together and that it is inconceivable that sustained achievements in human development will be observed while significant gaps remain in terms of policy drivers and governance-related factors. Accordingly, countries should invest in health and education sector capacities, promote economic diversity and adopt macroeconomic policies that leverage improvements in health and education quality, including, in particular, policies that generate inclusive broad-based economic growth by supporting the transition to a knowledge-based economy. In tandem with efforts to improve governance systems and enhance participation, accountability and the rule of law, this appears the most appropriate approach for advancing quality-adjusted human development. In fact, if they fail to take those actions, countries may inadvertently promote unbalanced human development outcomes whereby advancements in health and education quality are not accompanied by increasing numbers of decent work opportunities or much needed institutional and governance reforms, and may give rise to social and political instability or even violence.

Country quality-adjusted human development index scores, other development index scores,* and ranks under the human development and quality-human development indices

Country	HDI LEI	HDI EI	HDI Income Index	HDI	HLEI	QEI	QII	Q-HDI	HDDI	HDI rank	Q-HDI rank
Norway	0.96	0.93	0.98	0.96	0.93	0.82	0.86	0.87	0.72	1	1
Finland	0.95	0.93	0.93	0.94	0.93	0.85	0.84	0.87	0.76	10	2
Denmark	0.94	0.92	0.96	0.94	0.93	0.82	0.85	0.87	0.75	9	3
Ireland	0.96	0.92	0.99	0.96	0.93	0.83	0.84	0.86	0.72	2	4
Netherlands	0.96	0.91	0.96	0.94	0.93	0.82	0.84	0.86	0.73	7	5
Sweden	0.97	0.92	0.95	0.94	0.94	0.82	0.83	0.86	0.77	6	6
Switzerland	0.98	0.90	0.99	0.96	0.95	0.80	0.84	0.86	0.84	3	7
Iceland	0.97	0.93	0.95	0.95	0.95	0.79	0.84	0.86	..	4	8
Belgium	0.95	0.90	0.94	0.93	0.92	0.80	0.84	0.85	0.76	13	9
Slovenia	0.94	0.91	0.90	0.92	0.92	0.82	0.82	0.85	0.74	20	10
Germany	0.94	0.95	0.95	0.95	0.93	0.84	0.79	0.85	0.83	5	11
Singapore	0.98	0.84	1.00	0.94	0.97	0.83	0.75	0.85	0.74	11	12
Japan	0.99	0.85	0.92	0.92	0.98	0.79	0.76	0.84	0.81	19	13
Canada	0.96	0.90	0.93	0.93	0.93	0.82	0.77	0.84	..	15	14
Australia	0.98	0.92	0.93	0.94	0.93	0.82	0.77	0.84	..	8	15
United Kingdom	0.94	0.93	0.93	0.93	0.91	0.83	0.77	0.83	0.72	12	16
New Zealand	0.96	0.93	0.91	0.93	0.91	0.83	0.76	0.83	0.64	14	17
Austria	0.95	0.86	0.96	0.92	0.93	0.75	0.82	0.83	0.83	17	18
Czechia	0.91	0.89	0.90	0.90	0.89	0.78	0.82	0.83	0.75	25	19
Korea (Republic of)	0.97	0.87	0.92	0.92	0.97	0.80	0.73	0.83	0.79	22	20
Estonia	0.90	0.88	0.89	0.89	0.89	0.82	0.76	0.82	0.75	28	21
France	0.96	0.82	0.93	0.90	0.95	0.72	0.80	0.82	0.72	24	22
Cyprus	0.94	0.83	0.90	0.89	0.95	0.72	0.78	0.81	0.66	31	23
Poland	0.90	0.87	0.87	0.88	0.89	0.79	0.75	0.81	0.77	33	24
Luxembourg	0.96	0.81	1.00	0.92	0.94	0.68	0.81	0.80	..	21	25
Spain	0.98	0.83	0.91	0.90	0.95	0.73	0.73	0.80	0.71	23	26
Malta	0.96	0.82	0.90	0.89	0.94	0.67	0.79	0.79	..	26	27
Israel	0.97	0.88	0.91	0.92	0.95	0.73	0.69	0.78	0.75	18	28

Country	HDI LEI	HDI EI	HDI Income Index	HDI	HLEI	QEI	QII	Q-HDI	HDDI	HDI rank	Q-HDI rank
United States	0.91	0.90	0.98	0.93	0.84	0.79	0.71	0.78	0.73	16	29
Slovakia	0.88	0.83	0.87	0.86	0.88	0.69	0.77	0.78	0.74	36	30
Lithuania	0.86	0.90	0.89	0.88	0.85	0.77	0.71	0.77	0.74	32	31
Portugal	0.95	0.77	0.88	0.86	0.93	0.67	0.73	0.77	0.72	35	32
Italy	0.98	0.79	0.92	0.89	0.94	0.67	0.72	0.77	0.77	27	33
Greece	0.96	0.85	0.86	0.89	0.93	0.69	0.71	0.77	0.70	30	34
Hungary	0.88	0.82	0.87	0.85	0.86	0.70	0.74	0.76	0.81	37	35
Latvia	0.85	0.88	0.86	0.87	0.84	0.77	0.69	0.76	0.73	34	36
Croatia	0.90	0.80	0.85	0.85	0.88	0.67	0.73	0.76	0.72	41	37
Belarus	0.84	0.84	0.79	0.82	0.84	0.70	0.70	0.75	0.70	49	38
Russian Federation	0.81	0.82	0.84	0.82	0.80	0.71	0.68	0.73	0.61	48	39
Kazakhstan	0.82	0.83	0.82	0.83	0.82	0.59	0.74	0.71	0.57	47	40
Ukraine	0.80	0.80	0.74	0.78	0.81	0.66	0.68	0.71	0.70	71	41
Montenegro	0.88	0.80	0.81	0.83	0.85	0.60	0.67	0.70	..	45	42
Brunei Darussalam	0.86	0.70	0.98	0.84	0.83	0.53	0.79	0.70	..	44	43
United Arab Emirates	0.89	0.80	0.98	0.89	0.84	0.62	0.67	0.70	0.56	29	44
Bahrain	0.88	0.77	0.91	0.85	0.83	0.60	0.69	0.70	0.63	39	45
Turkey	0.89	0.73	0.85	0.82	0.88	0.60	0.64	0.70	0.64	50	46
Romania	0.86	0.77	0.86	0.83	0.85	0.58	0.66	0.69	0.69	46	47
Mauritius	0.85	0.74	0.84	0.80	0.80	0.60	0.68	0.69	0.60	62	48
Chile	0.93	0.81	0.82	0.85	0.91	0.63	0.57	0.69	0.58	40	49
Albania	0.90	0.75	0.75	0.79	0.89	0.56	0.65	0.69	0.56	65	50
Bulgaria	0.85	0.78	0.82	0.82	0.84	0.59	0.64	0.68	0.68	52	51
Malaysia	0.86	0.73	0.85	0.81	0.83	0.56	0.69	0.68	0.69	58	52
Argentina	0.87	0.86	0.81	0.85	0.86	0.60	0.61	0.68	..	43	53
Serbia	0.86	0.78	0.78	0.81	0.85	0.62	0.59	0.68	0.69	61	54
Uruguay	0.89	0.76	0.80	0.82	0.86	0.58	0.61	0.67	0.66	51	55
Armenia	0.85	0.74	0.75	0.78	0.86	0.56	0.62	0.67	0.60	74	56
Qatar	0.93	0.66	1.00	0.85	0.86	0.48	0.72	0.67	0.59	42	57

Country	HDI LEI	HDI EI	HDI Income Index	HDI	HLEI	QEI	QII	Q-HDI	HDDI	HDI rank	Q-HDI rank
Trinidad and Tobago	0.82	0.73	0.84	0.80	0.84	0.57	0.60	0.66	..	64	58
Oman	0.89	0.72	0.84	0.81	0.81	0.52	0.67	0.66	0.60	56	59
Bahamas	0.83	0.74	0.88	0.81	0.81	0.56	0.62	0.66	..	54	60
Saudi Arabia	0.85	0.79	0.93	0.85	0.80	0.54	0.65	0.65	0.68	38	61
Georgia	0.83	0.86	0.75	0.81	0.81	0.59	0.58	0.65	0.69	57	62
Seychelles	0.82	0.73	0.85	0.80	0.80	0.58	0.60	0.65	..	63	63
Moldova (Republic of)	0.80	0.71	0.74	0.75	0.81	0.54	0.64	0.65	0.60	83	64
Iran (Islamic Republic of)	0.87	0.75	0.73	0.78	0.84	0.56	0.59	0.65	0.47	67	65
Azerbaijan	0.82	0.71	0.74	0.76	0.79	0.51	0.68	0.65	0.49	82	66
Kuwait	0.85	0.64	0.96	0.81	0.91	0.42	0.69	0.64	0.59	60	67
Bosnia and Herzegovina	0.88	0.71	0.76	0.78	0.86	0.51	0.60	0.64	0.66	69	68
Barbados	0.91	0.78	0.76	0.81	0.85	0.61	0.50	0.64	..	55	69
Thailand	0.88	0.68	0.78	0.78	0.88	0.50	0.60	0.64	0.66	73	70
North Macedonia	0.86	0.70	0.77	0.77	0.84	0.50	0.62	0.64	0.64	75	71
Cuba	0.90	0.79	0.67	0.78	0.87	0.55	0.53	0.63	0.58	66	72
Costa Rica	0.93	0.73	0.79	0.81	0.91	0.54	0.52	0.63	0.65	59	73
Sri Lanka	0.88	0.75	0.73	0.78	0.85	0.51	0.57	0.63	0.54	68	74
Peru	0.87	0.74	0.73	0.78	0.90	0.53	0.52	0.63	0.50	72	75
China	0.88	0.66	0.77	0.76	0.88	0.50	0.56	0.63	0.71	78	76
Viet Nam	0.85	0.63	0.65	0.70	0.82	0.56	0.53	0.62	0.58	105	77
Jordan	0.84	0.67	0.69	0.73	0.87	0.49	0.57	0.62	0.59	93	78
Uzbekistan	0.80	0.73	0.64	0.72	0.81	0.60	0.50	0.62	0.55	96	79
Mongolia	0.77	0.74	0.71	0.74	0.73	0.55	0.59	0.62	0.48	90	80
Algeria	0.88	0.67	0.71	0.75	0.84	0.43	0.63	0.61	0.43	84	81
Mexico	0.85	0.70	0.79	0.78	0.83	0.52	0.53	0.61	0.60	70	82
Ecuador	0.88	0.70	0.71	0.76	0.88	0.51	0.50	0.61	0.46	80	83
Kyrgyzstan	0.79	0.73	0.59	0.70	0.83	0.53	0.51	0.61	0.57	107	84
Panama	0.90	0.70	0.86	0.81	0.89	0.45	0.54	0.60	0.54	53	85

Country	HDI LEI	HDI EI	HDI Income Index	HDI	HLEI	QEI	QII	Q-HDI	HDDI	HDI rank	Q-HDI rank
Tunisia	0.87	0.66	0.70	0.74	0.85	0.44	0.58	0.60	0.61	88	86
Saint Lucia	0.86	0.67	0.75	0.76	0.81	0.48	0.55	0.60	..	79	87
Colombia	0.88	0.68	0.75	0.77	0.89	0.49	0.48	0.60	0.56	76	88
Fiji	0.73	0.76	0.74	0.74	0.72	0.50	0.57	0.59	..	86	89
Gabon	0.72	0.65	0.75	0.70	0.68	0.51	0.59	0.59	0.42	106	90
Turkmenistan	0.74	0.65	0.76	0.72	0.77	0.47	0.56	0.59	..	100	91
Libya	0.81	0.61	0.76	0.72	0.82	0.40	0.60	0.58	..	95	92
Maldives	0.91	0.57	0.78	0.74	0.91	0.37	0.58	0.58	..	87	93
Indonesia	0.80	0.65	0.72	0.72	0.78	0.44	0.55	0.57	0.54	97	94
Venezuela (Bolivarian Republic of)	0.80	0.70	0.64	0.71	0.81	0.47	0.48	0.57	..	102	95
Jamaica	0.84	0.69	0.68	0.73	0.85	0.46	0.47	0.57	0.48	92	96
Brazil	0.86	0.69	0.75	0.76	0.83	0.49	0.44	0.56	0.59	77	97
El Salvador	0.82	0.56	0.67	0.67	0.82	0.42	0.52	0.56	0.53	111	98
Bolivia (Plurinational State of)	0.79	0.69	0.67	0.72	0.79	0.48	0.46	0.56	0.46	98	99
Dominican Republic	0.83	0.66	0.78	0.76	0.80	0.39	0.54	0.56	0.56	81	100
Lebanon	0.91	0.60	0.75	0.74	0.84	0.41	0.50	0.55	0.67	85	101
Iraq	0.78	0.56	0.71	0.67	0.78	0.35	0.62	0.55	..	110	102
Tajikistan	0.79	0.68	0.56	0.67	0.76	0.46	0.47	0.55	0.49	112	103
Philippines	0.79	0.68	0.69	0.72	0.76	0.42	0.50	0.54	0.53	99	104
Paraguay	0.84	0.64	0.73	0.73	0.83	0.42	0.45	0.54	0.48	94	105
Belize	0.84	0.69	0.63	0.72	0.82	0.47	0.39	0.53	..	101	106
Bhutan	0.80	0.50	0.71	0.65	0.79	0.33	0.57	0.53	..	116	107
India	0.76	0.56	0.63	0.65	0.73	0.38	0.52	0.52	0.49	117	108
Cabo Verde	0.82	0.56	0.64	0.67	0.81	0.38	0.46	0.52	..	113	109
Suriname	0.80	0.68	0.75	0.74	0.77	0.46	0.40	0.52	..	89	110
Morocco	0.87	0.57	0.65	0.68	0.79	0.37	0.48	0.52	0.46	108	111
Cambodia	0.77	0.49	0.57	0.60	0.75	0.38	0.49	0.52	0.38	131	112

Country	HDI LEI	HDI EI	HDI Income Index	HDI	HLEI	QEI	QII	Q-HDI	HDDI	HDI rank	Q-HDI rank
Sao Tome and Principe	0.78	0.57	0.56	0.62	0.76	0.38	0.47	0.52	..	122	113
Botswana	0.76	0.68	0.77	0.74	0.62	0.46	0.49	0.51	0.49	91	114
Egypt	0.80	0.62	0.72	0.71	0.78	0.38	0.45	0.51	0.51	104	115
Bangladesh	0.81	0.53	0.59	0.63	0.81	0.34	0.49	0.51	0.41	120	116
Nicaragua	0.84	0.57	0.60	0.66	0.83	0.39	0.42	0.51	0.43	115	117
Guyana	0.77	0.60	0.69	0.68	0.68	0.36	0.51	0.50	..	109	118
Guatemala	0.84	0.52	0.67	0.66	0.77	0.36	0.43	0.49	0.46	114	119
Timor-Leste	0.76	0.51	0.57	0.61	0.74	0.33	0.50	0.49	..	128	120
Lao People's Democratic Republic	0.74	0.48	0.65	0.61	0.74	0.31	0.52	0.49	0.47	124	121
Kiribati	0.74	0.59	0.57	0.63	0.59	0.42	0.46	0.48	..	121	122
Nepal	0.78	0.52	0.54	0.60	0.75	0.33	0.45	0.48	..	129	123
Myanmar	0.72	0.46	0.59	0.58	0.74	0.34	0.43	0.48	0.43	134	124
Kenya	0.72	0.53	0.57	0.60	0.69	0.42	0.38	0.48	0.40	130	125
Micronesia (Federated States of)	0.74	0.58	0.56	0.62	0.65	0.38	0.41	0.47	..	123	126
Honduras	0.85	0.50	0.60	0.63	0.78	0.34	0.37	0.46	0.44	119	127
Vanuatu	0.78	0.56	0.52	0.61	0.69	0.34	0.42	0.46	..	127	128
Eswatini	0.62	0.56	0.66	0.61	0.55	0.42	0.41	0.46	0.49	126	129
Equatorial Guinea	0.60	0.47	0.75	0.59	0.62	0.29	0.52	0.46	..	132	130
Ghana	0.68	0.56	0.60	0.61	0.69	0.30	0.45	0.45	0.40	125	131
South Africa	0.68	0.72	0.72	0.71	0.66	0.43	0.31	0.44	0.50	103	132
Uganda	0.67	0.52	0.46	0.54	0.69	0.36	0.35	0.44	0.35	145	133
Zimbabwe	0.64	0.59	0.50	0.57	0.60	0.40	0.35	0.44	0.39	137	134
Namibia	0.67	0.58	0.69	0.65	0.66	0.41	0.32	0.44	..	118	135
Côte d'Ivoire	0.58	0.45	0.59	0.54	0.63	0.29	0.43	0.43	..	149	136
Congo	0.69	0.54	0.51	0.57	0.66	0.35	0.35	0.43	..	136	137
Angola	0.63	0.50	0.62	0.58	0.63	0.28	0.44	0.43	..	135	138
Cameroon	0.60	0.55	0.54	0.56	0.63	0.36	0.35	0.43	0.28	140	139

Country	HDI LEI	HDI EI	HDI Income Index	HDI	HLEI	QEI	QII	Q-HDI	HDDI	HDI rank	Q-HDI rank
Pakistan	0.73	0.40	0.59	0.56	0.67	0.24	0.49	0.43	0.38	141	140
United Republic of Tanzania	0.70	0.43	0.49	0.53	0.70	0.29	0.38	0.42	0.33	150	141
Mauritania	0.69	0.40	0.59	0.55	0.72	0.23	0.45	0.42	..	144	142
Syrian Arab Republic	0.81	0.41	0.54	0.57	0.78	0.24	0.40	0.42	..	138	143
Papua New Guinea	0.68	0.44	0.57	0.56	0.67	0.28	0.40	0.42	..	142	144
Solomon Islands	0.82	0.47	0.47	0.57	0.69	0.29	0.38	0.42	..	139	145
Benin	0.64	0.48	0.53	0.54	0.65	0.31	0.36	0.42	..	146	146
Nigeria	0.53	0.50	0.59	0.54	0.63	0.27	0.42	0.41	..	148	147
Togo	0.63	0.52	0.42	0.52	0.66	0.34	0.31	0.41	0.34	154	148
Senegal	0.74	0.35	0.53	0.51	0.72	0.25	0.39	0.41	..	155	149
Gambia	0.65	0.41	0.46	0.50	0.67	0.25	0.38	0.40	..	159	150
Zambia	0.68	0.56	0.53	0.58	0.63	0.34	0.29	0.40	0.42	133	151
Rwanda	0.75	0.46	0.46	0.54	0.73	0.28	0.29	0.39	..	147	152
Sudan	0.70	0.35	0.55	0.51	0.73	0.23	0.37	0.39	..	157	153
Madagascar	0.72	0.49	0.42	0.53	0.68	0.29	0.30	0.39	0.31	151	154
Ethiopia	0.72	0.34	0.47	0.49	0.73	0.20	0.40	0.39	0.33	160	155
Guinea	0.64	0.35	0.48	0.48	0.61	0.25	0.39	0.39	0.26	165	156
Afghanistan	0.69	0.41	0.47	0.51	0.62	0.25	0.38	0.39	..	156	157
Lesotho	0.53	0.53	0.52	0.53	0.44	0.36	0.37	0.39	..	152	158
Djibouti	0.72	0.33	0.61	0.52	0.69	0.18	0.44	0.38	..	153	159
Burkina Faso	0.64	0.31	0.46	0.45	0.63	0.22	0.38	0.37	0.34	170	160
Comoros	0.68	0.48	0.52	0.55	0.71	0.32	0.23	0.37	..	143	161
Burundi	0.64	0.42	0.31	0.43	0.65	0.30	0.24	0.36	..	172	162
Malawi	0.68	0.47	0.35	0.48	0.67	0.29	0.24	0.36	0.27	161	163
Sierra Leone	0.53	0.41	0.43	0.45	0.60	0.22	0.35	0.36	..	169	164
Liberia	0.68	0.43	0.38	0.48	0.63	0.24	0.30	0.36	0.34	163	165
Yemen	0.71	0.35	0.42	0.47	0.68	0.19	0.33	0.35	0.37	166	166
Guinea-Bissau	0.59	0.41	0.45	0.48	0.59	0.26	0.28	0.35	..	164	167

Country	HDI LEI	HDI EI	HDI Income Index	HDI	HLEI	QEI	QII	Q-HDI	HDDI	HDI rank	Q-HDI rank
Democratic Republic of the Congo	0.63	0.50	0.36	0.48	0.62	0.26	0.26	0.35	..	162	168
Eritrea	0.71	0.27	0.50	0.46	0.65	0.15	0.39	0.34	..	167	169
Mozambique	0.63	0.39	0.38	0.46	0.55	0.25	0.27	0.34	0.27	168	170
Mali	0.60	0.29	0.47	0.43	0.63	0.15	0.39	0.34	0.31	171	171
Haiti	0.68	0.46	0.43	0.51	0.65	0.27	0.21	0.33	..	158	172
South Sudan	0.58	0.31	0.45	0.43	0.61	0.18	0.31	0.32	..	173	173
Chad	0.53	0.29	0.41	0.40	0.58	0.16	0.30	0.30	..	175	174
Niger	0.65	0.25	0.38	0.39	0.65	0.13	0.31	0.30	..	176	175
Central African Republic	0.51	0.35	0.35	0.40	0.48	0.22	0.18	0.27	..	174	176

* HDI LEI: HDI life expectancy index.
HDI EI: HDI education index.
HLEI: Healthy life expectancy index.
QEI: Quality-adjusted education index.
QII: Quality-adjusted income index.
Q-HDI: Quality-adjusted human development index.
HDDI: Human development drivers index.



