UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

HOW INDUSTRIAL DEVELOPMENT MATTERS TO THE WELL-BEING OF THE POPULATION

Some Statistical Evidence

Vienna, 2020

Acknowledgement

This publication was prepared by Kamila Facevicova and Petra Kynclova under the general supervision of Shyam Upadhyaya, Chief Statistician of UNIDO. The final editing of the report was done by Niki Rodousakis.

For reference and citation, please use: United Nations Industrial Development Organization, 2020. How industrial development matters to the well-being of the population: Some statistical evidence. Vienna.

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INTRODUCTION

Introduction

The 2030 Agenda for Sustainable Development, agreed by all UN Member States in 2015, is a global action plan for people, planet and prosperity, which is relevant now and in the future. Building on the Millennium Development Goals (MDGs), the 17 Sustainable Development Goals (SDGs) and 169 targets have been established to drive economic prosperity and social well-being while protecting the environment. The 2030 Agenda aims to leave no one behind and thus represents a shared blueprint for both developed and developing countries (UN, 2017).

The United Nations Industrial Development Organization (UNIDO) is fully committed to contributing to the achievement of the SDGs, while delivering on its mandate to support Member States in achieving inclusive and sustainable industrial development (ISID). SDG 9 calls for building resilient infrastructure, promoting sustainable industrialization and fostering innovation. Due to the SDG's interlinked nature, many of UNIDO's activities contribute to more than just SDG 9.

The main objective of this report is to provide statistical evidence on how closely industrial development is linked to people's living conditions and the quality of their lives. Countries' development is measured by their economic growth, defined in terms of rising levels of gross domestic product (GDP). The main disadvantage of using GDP as the main measure of development is that it does not capture important quality of life elements as well as inequalities, which are essential for the assessment of any community's well-being. It also disregards the effects that economic production and the associated increased demand for energy, food, services and consumer goods have on the environment (Stiglitz et al., 2018).

Although 'well-being' has become a widely used term, promoted by both researchers and policymakers, there is no established definition. Well-being is a very broad concept that can be described by many dimensions and defining it has been the focus of many research papers (Dodge et al., 2012). Considering the significance of well-being for sustainable development, establishing well-designed measurement frameworks is crucial for policy-making (Llena-Nozal et al., 2019).

The OECD Framework for Measuring Well-Being and Progress was introduced to monitor not only the economic performance of countries, but people's living conditions as well. It builds around three distinct components: 1) material conditions, 2) quality of life, and 3) sustainability, each with their relevant dimensions. Based on this framework, the biennial OECD report "How's Life?" (OECD, 2017) presents a comprehensive set of internationally comparable well-being indicators for OECD and partner countries. At the same time, the OECD created the "Better Life Index" as a communication tool to engage directly with data users. The set of indicators is, however, dominated by subjective perspectives of the surveyed population (OECD, 2013).

The development of this framework to measure the level of well-being and its progress is a step towards making such information publicly available and to highlight priority areas for action followed by a reshaping of national policies. The available information allows researchers to extend the analysis by further indicators and to investigate potential linkages.

It is indisputable that the achievement of SDG 9 is linked to meeting the other Goals and targets of the 2030 Agenda. Inclusive and

sustainable industrialization drives sustained economic growth, the creation of decent jobs and income (SDG 8); it helps reduce poverty (SDG 1), hunger (SDG 2) and inequalities (SDG 5 and 10), while improving health and well-being (SDG 3), increasing resource and energy efficiency (SDG 6, 7, 11, 12) and reducing greenhouse gas and other polluting emissions, including from chemicals (SDG 13, 14, 15).

There is strong evidence that citizens living in developed industrialized countries enjoy far more prosperous and healthy lives than those who reside in least developed countries (LDCs) (Upadhyaya and Kepplinger, 2014). The former benefit from high levels of education, better social security and health services, sophisticated transport and communication networks, and access to information, knowledge, technology and financial facilities required by businesses. This report presents empirical evidence on the correlation between industrial development and other dimensions of sustainable development, with a view to improving the understanding of these correlations among policymakers at both national and international level. The report does not draw, however, draw on the causal analysis of the variables under study.

II INDUSTRIAL DEVELOPMENT

Industrial Development

Industrial development unleashes dynamic and competitive economic performance which generates income and employment, facilitates international trade and increases resource efficiency, and is thus a major driver of poverty alleviation and shared prosperity.

Although industrialization contributes to the universal objective of economic growth, its impact differs depending on the country's stage of development. In developed economies, industrial growth is reflected in achieving higher productivity, embracing new technologies, intelligent production processes and reducing the effects of industrial production on the environment and climate. For developing economies, industrialization implies structural transformation of the economy from traditional sectors such as agriculture and fishery to modern manufacturing industries fuelled by innovation and technology. Such an expansion of the manufacturing sector creates jobs, helps improve incomes and thus reduces poverty, introduces and promotes new technologies and produces essential goods and services for the market.

World manufacturing production reached USD 13,543 billion (at constant 2010 prices) in 2018, reducing the global MVA growth rate from 3.8 per cent in 2017 to 3.5 per cent in 2018. This slowdown has primarily been attributed to the increase in trade and tariff barriers between the United States, China and the European Union, exposing the markets to a high level of uncertainty, limiting investments and future growth. The deceleration in production was observed in all major country groups.

Industrialized economies continued to dominate global manufacturing production, however, their share dropped from 67.7 per cent in 2007 to 55.7 per cent in 2017 (Figure 1). This long-term trend illustrates the relocation of manufacturing production from industrialized economies to the developing world. Developing and emerging industrial economies have maintained a strong pace of manufacturing growth, much higher than that of the world and of industrialized economies.

MVA in developing and emerging industrial economies is dominated by China which increased its MVA share from 13.5 per cent in 2007 to 24.3 per cent in 2017. Emerging industrial economies excluding China accounted for 16.4 per cent of global manufacturing production in 2017, while the share of other developing economies and LDCs was negligible at 2.8 per cent and 0.8 per cent, respectively.

China has been heading the list of the ten largest manufacturers worldwide since 2010, with a share of 24.3 per cent in world MVA in 2017, followed by the United States with a share of 15.0 per cent (Figure 1). China's manufacturing production is inching closer to Europe's, which accounted for 25.5 per cent in 2017. The remaining countries in the list of top ten manufacturers are Japan, Germany, India, the Republic of Korea, Italy, France, Brazil and Indonesia. Together, these countries accounted for over 70 per cent of global MVA in 2017.

Despite being home to over 12 per cent of world population, LDCs only accounted for 0.8 per cent of total worldwide manufacturing production in 2017. By comparison, industrialized economies with a share of around 17 per cent of global population, accounted for over 55 per cent of global manufacturing output. It is thus crucial for LDCs to expand their capacities to reach an overall higher growth trajectory (UNIDO, 2019e).

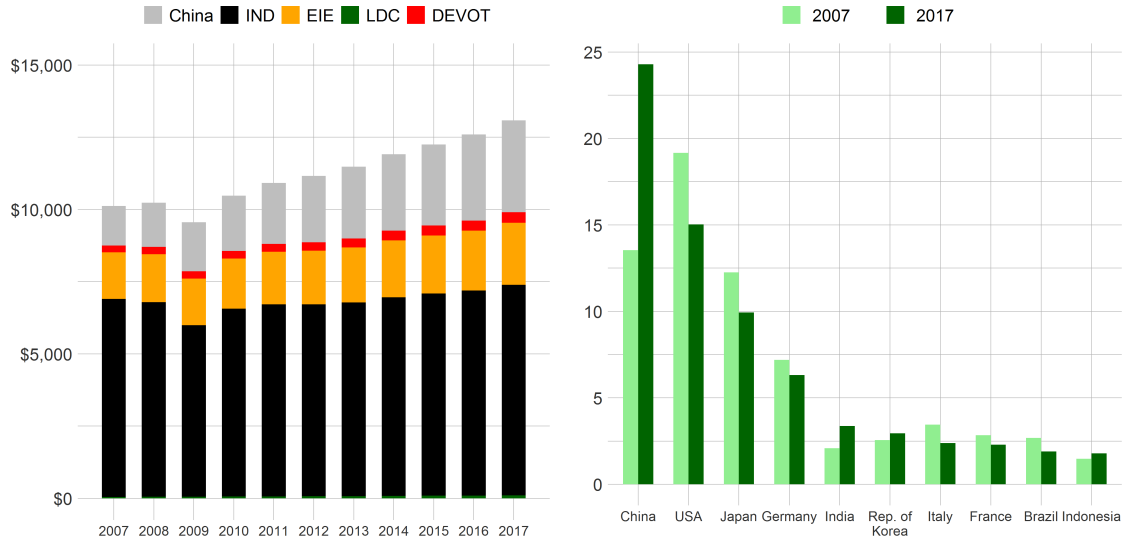

Figure 1: MVA and its distribution by country groups, billions of constant 2010 US dollars (left). Top 10 largest manufacturing producers in the world in 2017, share of countries' MVA in global MVA (right).

Source: UNIDO MVA 2019 Database (UNIDO, 2019d)

Manufacturing value added per capita

A country's level of industrial development is often reflected by its MVA per capita which measures a countries' level of manufacturing production relative to their population size. Value added is a sector's net output after adding up all outputs and subtracting all intermediate inputs. It is calculated without deducting the depreciation of fabricated assets or the depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are expressed in constant 2010 US dollars and sourced from the UNIDO MVA Database (UNIDO, 2019d). Manufacturing refers to industries that belong to ISIC divisions 15-37.

The process of industrialization is facing a number of fundamental challenges, particularly because industrial production capacity has been concentrated in a few countries, including China, the United States, Japan and Germany. The regional patterns are depicted in Figure 2 indicating that the highest levels of MVA per capita are attained in North America and Europe. Despite the rapid growth of MVA per capita in developing and emerging industrial economies, they still lag significantly behind industrialized countries.

Global MVA per capita has continued to grow, accounting for USD 1,736 in 2017 compared to USD 1,251 in 2000. The median value of MVA per capita in 2017 was around USD 500, i.e. the majority of countries in the world achieve only USD 500 compared with USD 5,770 for industrialized economies.

Figure 2 shows that the lowest levels of MVA per capita are mostly located in LDCs in Africa and Asia. Somalia (USD 2), Timor-Leste (USD 7) and Sierra Leone (USD 9) registered the lowest MVA per capita in 2017, while Liechtenstein (USD 44,349), Ireland (USD 24,077) and San Marino (USD 15,462) had the highest MVA per capita in 2017.

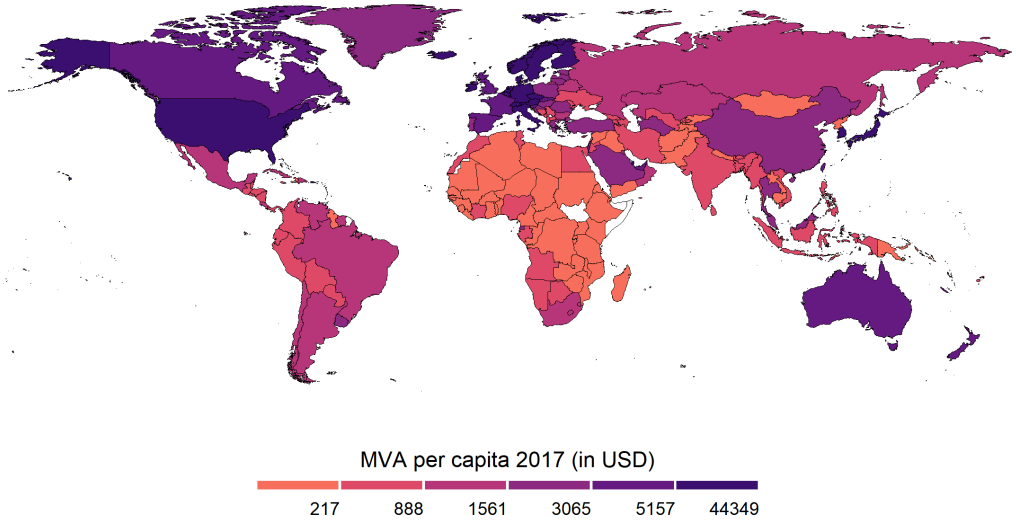

Figure 2: World map of MVA per capita in 2010 constant US dollars, all measured in 2017.
Source: UNIDO MVA 2019 Database (UNIDO, 2019d)

Competitive Industrial Performance index

The Competitive Industrial Performance (CIP) index represents a composite measure to benchmark industrial competitiveness across economies, providing valuable information on countries' strengths and weaknesses in national manufacturing industries. By promoting competitiveness, economic efficiency in the allocation of scarce resources can be maximized while greater prosperity for the population is generated.

An increase in industrial competitiveness can contribute to a country's overall prosperity in many different ways. For example, it can encourage more investment from national and international firms, increase industries' resilience to external shocks, including surges in commodity prices or economy-wide recessions. Competitiveness is decisive if a country's industrial sector is to flourish, it determines the pace and quality of the country's structural change as its economy develops, as well as the extent to which these changes will contribute to society's well-being. The industrial sector's contribution to prosperity depends on its capacity to produce manufactured goods, to exchange those goods in global markets and to specialize in complex production processes (UNIDO, 2019b).

The CIP Index is widely used by international development agencies to rank countries within the context of their development priorities. The global manufacturing ranking is based on the analysis of eight indicators reflecting three dimensions: 1) the capacity to produce and export manufactured goods, 2) the extent of technological deepening and upgrading, and 3) the impact on the world market.

The 2019 edition of the CIP Index assesses 150 economies covering around 99 per cent of

global manufactured exports and MVA in 2017. Figure 3 presents the distribution of CIP scores in the world. The countries at the top of the 2017 CIP ranking are Germany (0.515), Japan (0.404), China (0.369), the Republic of Korea (0.365) and the United States (0.355). By contrast, the economies with the lowest levels of manufacturing capacity include Burundi, Eritrea and Tonga.

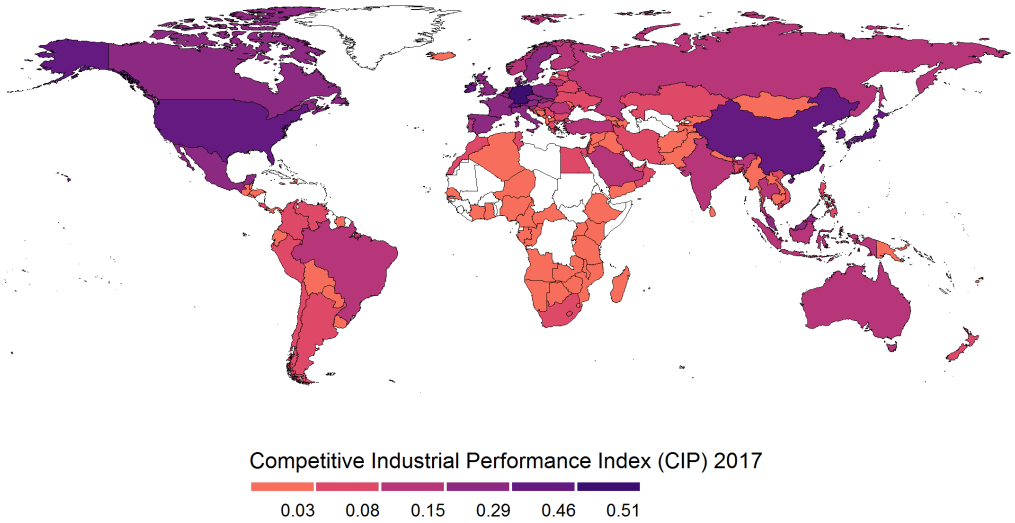

Figure 3: World map of CIP index scores, all measured in 2017.

Source: UNIDO CIP 2019 Database (UNIDO, 2019a)

III HUMAN DEVELOPMENT

Human Development

Human development is a concept that goes beyond economic growth and is defined as the process of expanding people's freedoms and opportunities and improving their well-being. The human development approach aims to increase the richness of human life rather than the richness of the economy human beings live in. People and their opportunities and choices are the main focus of human development.

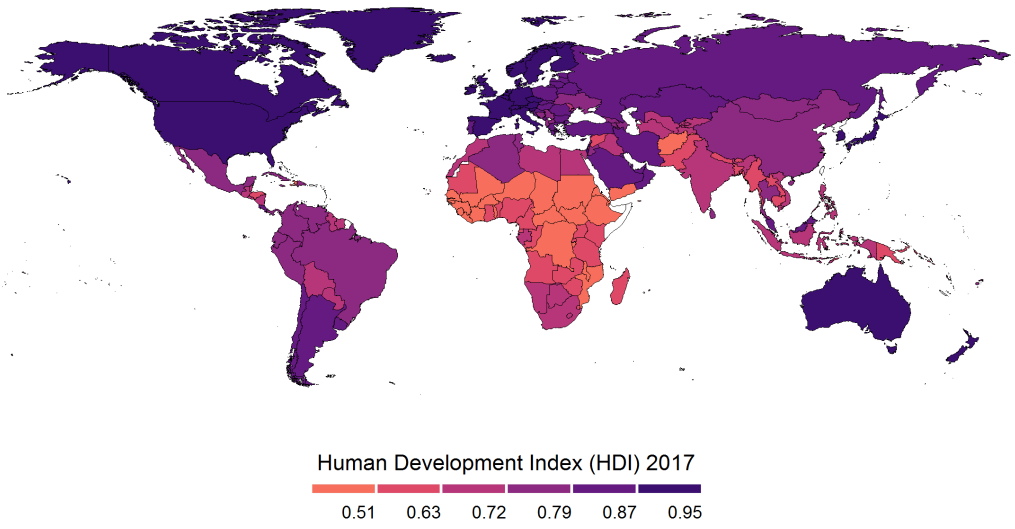

Figure 4: World map of HDI scores, all measured in 2017.

Source: UNDP HDI 2018 (UNDP, 2018)

Improving people's lives by expanding their freedoms and opportunities is a principle that is applicable to everyone in the world. The human development approach thus reinforces the pledge to leave no one behind as promoted by the 2030 Agenda for Sustainable Development, which incorporates human development in a number of dimensions.

Significant progress has been made over the past 25 years on many fronts of human development, with people living longer, more people rising out of extreme poverty and fewer

people suffering from malnutrition. Human development has enriched human lives —- unfortunately, however, not all have benefited equally, and even worse, not everyone has been included (UNDP, 2016).

There are many reasons why industrialization is fundamental for human development. First, its is an essential means for incorporating technological progress and innovation and promoting its use. That is, it offers a unique opportunity for learning, improvement and transformation. Moreover, industrialization empowers people to access productive resources by expanding human capabilities through education, skills development, and sociocultural changes as well as to produce goods that are essential for nutrition, health care, and other human needs to improve the quality of life.

The Human Development Index (HDI) developed by UNDP, together with its adjusted version that takes inequality factors into account, belong to the important measure of human development.

Human Development Index

The Human Development Index (HDI) is a composite index that focuses on three basic dimensions of human development: (i) the ability to lead a long and healthy life, measured by life expectancy at birth; (ii) the ability to acquire knowledge, measured by mean years of schooling and expected years of schooling; and (iii) and the ability to achieve a decent standard of living, measured by gross national income per capita.

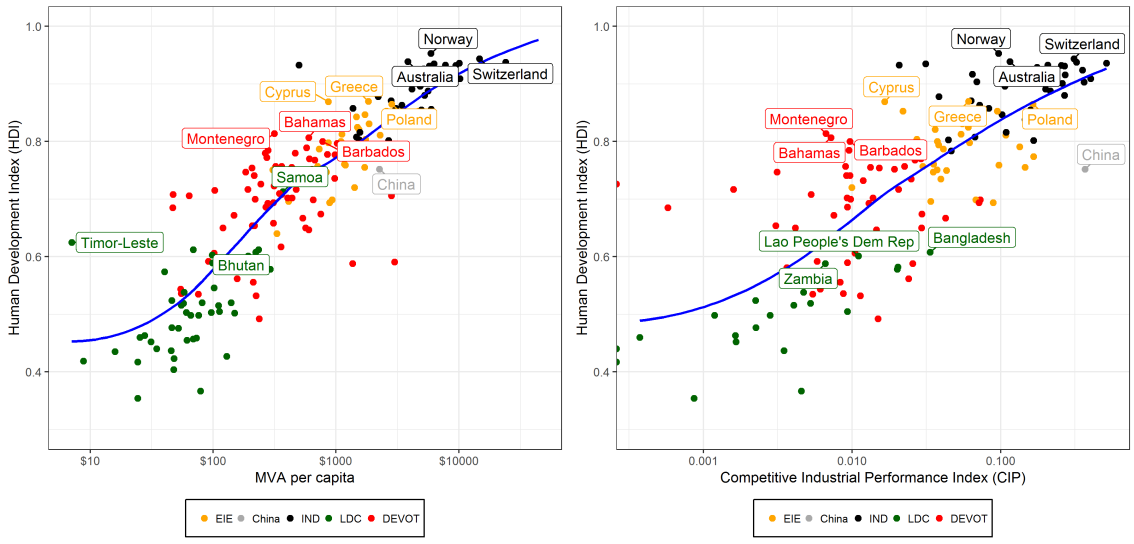

Figure 5: Comparison of the HDI with MVA per capita and the CIP index, all measured in 2017.

Source: UNDP HDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

The HDI's 2018 Update presents values for 189 economies around the world from 1990 up to the most recent data available for 2017. The HDI's regional patterns are illustrated on the world map in Figure 4. We find clear similarities with the global distribution of MVA per capita (Figure 2). Countries with the highest HDI scores are located in Europe and North America, i.e. industrialized economies. By contrast, LDCs in Africa and Asia are clustered at the bottom of the HDI ranking. The top five countries in the global HDI ranking are Norway (0.953), Switzer-

land (0.944), Australia (0.939), Ireland (0.938) and Germany (0.936). The bottom five are all located in Africa, namely – Burundi (0.417), Chad (0.404), South Sudan (0.388), the Central African Republic (0.367) and Niger (0.354).

A comparison of HDI scores with MVA per capita in 2017 (Figure 5) reveals a positive association between both indicators. High HDI scores are observed in industrialized countries with a high MVA per capita. The distribution of HDI values creates clusters of countries corresponding to country groupings by stage of industrial development.

The countries with the highest HDI values belong to the group of industrialized economies, while low HDI values are typically found in LDCs. Samoa is an interesting example, which reported a very high HDI value (0.71) in 2017, normally achieved by the group of other developing economies, and Samoa thus seems to have untapped industrial potential.

Similar patterns are also evident when we compare the HDI with the CIP index (Figure 5). HDI scores are positively correlated with the industrial competitiveness of nations.

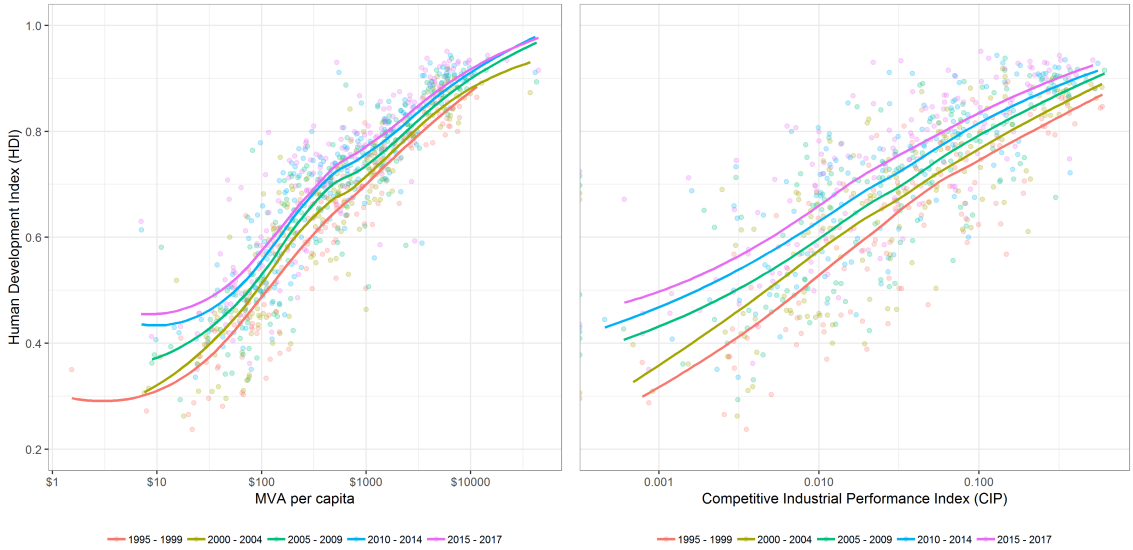

Figure 6: Progression of the relationship between the HDI and MVA per capita and the CIP index since 1995.

Source: UNDP HDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Figure 6 depicts the relationship between HDI scores and MVA per capita (left) and CIP scores (right) in five subsequent time periods since 1995. Both indicators reflect countries' industrial performance and show improving trends over time. An overall growth in HDI scores is clearly linked to increases in MVA per capita and CIP scores. A change in the distribution of HDI scores over the last 20 years is visible. The median values are slowly rising and the values of countries with low HDI scores are increasing more rapidly than those of economies at the top of the HDI ranking.

A slowdown in the growth of HDI scores can be observed in recent years. This overall trend can be explained not only by the global financial crisis of 2008-2009, but also by the natural limit of various HDI components, i.e. life expectancy, years of schooling and rates of enrolment cannot grow indefinitely.

Inequality-adjusted Human Development Index

The Inequality-adjusted Human Development Index (IHDI) adjusts the HDI for inequality in the distribution of each dimension across the population. The IHDI combines a country's average achievements in health, education and income with how those achievements are distributed among the country's population by "discounting" each dimension's average value according to its level of inequality. The IHDI equals the HDI when there is no inequality across a population but falls below the HDI scores as inequality rises. In this sense, the IHDI measures the level of human development when inequality is accounted for.

The difference between the IHDI and HDI is the human development cost of inequality, also termed loss to human development due to inequality. The IHDI identifies inequalities in the different dimensions, and can inform policies to reduce inequality, and leads to a better understanding of inequalities across populations and their contribution to the overall human development cost. A recent measure of inequality in the HDI, the coefficient of human inequality, is calculated as an average inequality across all three dimensions of the HDI, namely – the ability to lead a long and healthy life, the ability to acquire knowledge and the ability to achieve a decent standard of living (UNDP, 2018).

The IHDI measure corresponds to the reference year 2017. It uses the HDI indicators for 2017, measures of inequality that are based on the most recent household surveys available from 2006 to 2017 and life tables that refer to the period 2015-2020. The development of the IHDI over time is only available from 2010 to 2017.

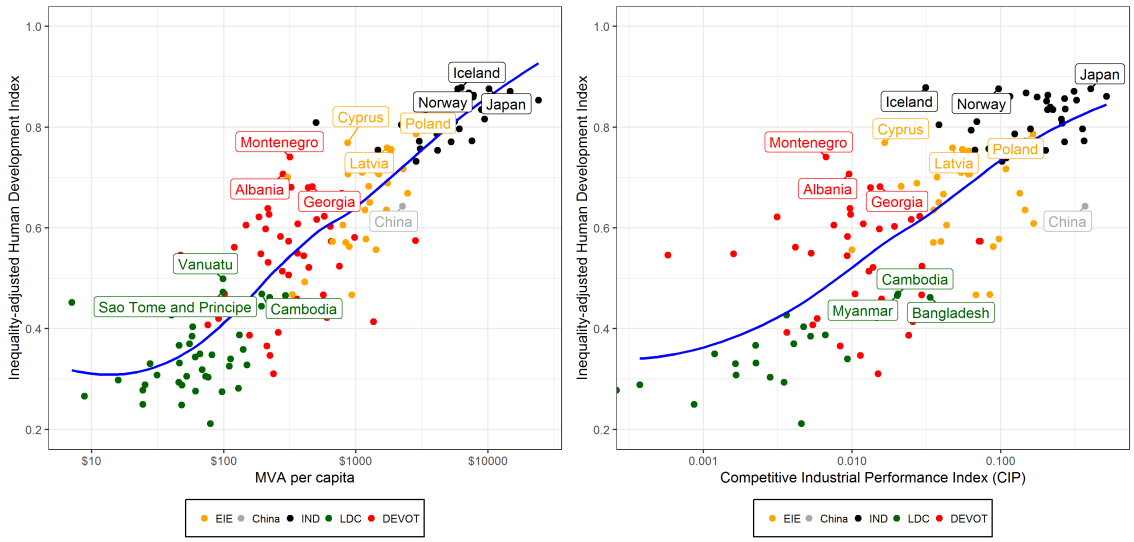

Figure 7: Comparison of the IHDI with MVA per capita and the CIP index, all measured in 2017.

Source: UNDP IHDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

The adjustment for inequality seems to reduce the HDI scores, regardless of the stage of industrial development in accordance with country groups (Figure 7). As is the case for the HDI, the IHDI scores are also closely related to the values of both MVA per capita and CIP, with high values typical for industrialized economies.

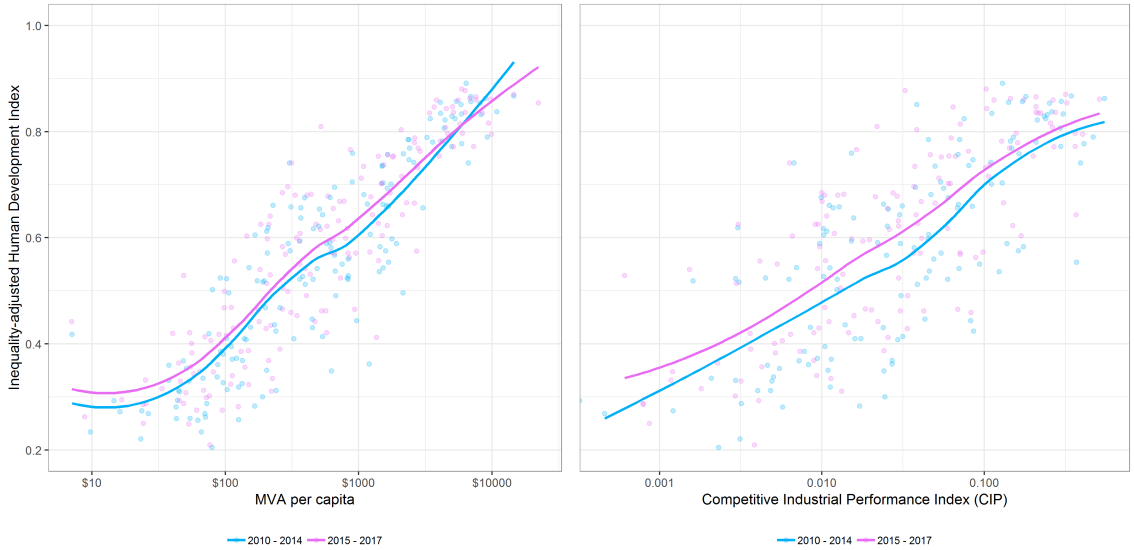

Figure 8: Progression of the relationship between the IHDI and MVA per capita and the CIP index since 2010.

Source: UNDP IHDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Despite data sparsity for the calculation of IHDI scores and thus limited availability, Figure 8 suggests an overall upward trend over the period 2010-2017. Although the HDI scores are adjusted to corresponding levels of inequality, the link with industrial development indicators remains very strong suggesting positive correlation patterns and overall improvement over time.

The HDI and IHDI as composite measures of human development are crucial indicators used by policymakers and researchers alike. However, new challenges to human development, particularly inequality and environmental sustainability, require concerted measurement and more-in-depth analysis. Data availability is expanding with new opportunities to measure innovation and disaggregation, and possibilities to establish new partnerships to track the progress towards achieving the 2030 Agenda for Sustainable Development. For this reason, other indicators should be considered as supplementary to human development measures to track countries' achievement of sustainable development.

IV POVERTY AND INEQUALITY

Poverty and Inequality

Economic growth driven by industrial development is often essential for reducing absolute poverty. Nevertheless, economic growth may also be associated with increased income inequality, which does not automatically address the entire poverty problem.

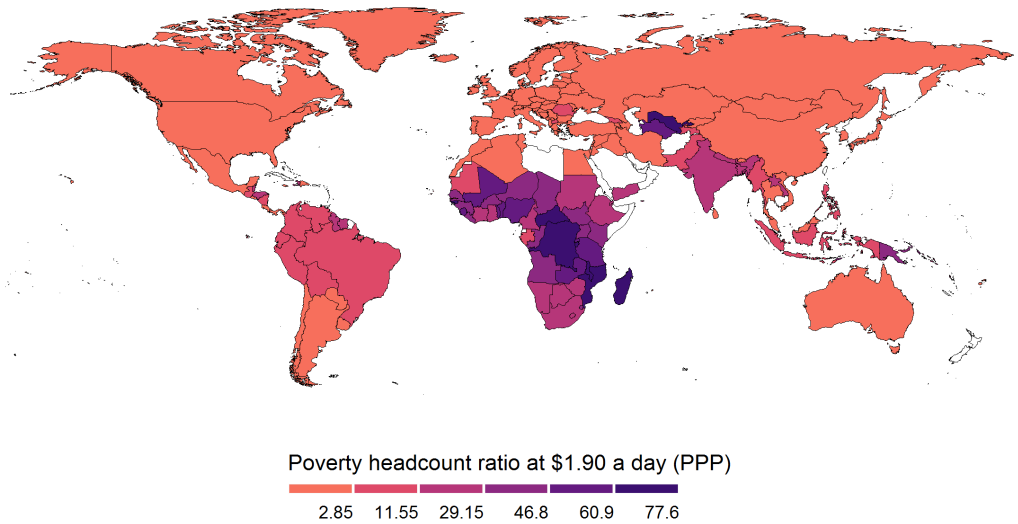

Figure 9: World map of the poverty headcount ratio at USD 1.90 per day, most recent available values

Source: The World Bank's Poverty and Equity Database (World Bank, 2019a)

Inclusive and sustainable industrial development, when adequately linked to formal job markets and health, safety and environmental standards, is widely recognized as having a crucial impact on job creation, sustainable livelihoods, technology and skills development, food security and equitable growth – some of the key requirements for eradicating poverty by 2030.

There is evidence that rapid industrialization has lifted several millions of people out of poverty by providing them with jobs and an income. Yet progress has been uneven and many remain stuck in a poverty trap, particularly in

areas where industrialization levels remain low or have stagnated. Countries, especially in sub-Saharan Africa, are lagging far behind and the share of poor people has actually even increased in some countries. Inclusive and sustainable industrial development can contribute to poverty reduction efforts and ensures that "no one is left behind" by 2030.

Poverty headcount ratio at USD 1.90 per day (2011 PPP)

When assessing poverty in a given country, and trying to define how best to reduce it, one naturally chooses a poverty line considered appropriate for that country. Poverty lines across countries vary in terms of their purchasing power, and have a strong economic gradient, implying that richer countries tend to adopt higher standards of living in their definition of poverty. But to consistently measure global absolute poverty in terms of consumption we need to treat two people with the same purchasing power over commodities the same way—both are either poor or not poor —- even if they live in different countries.

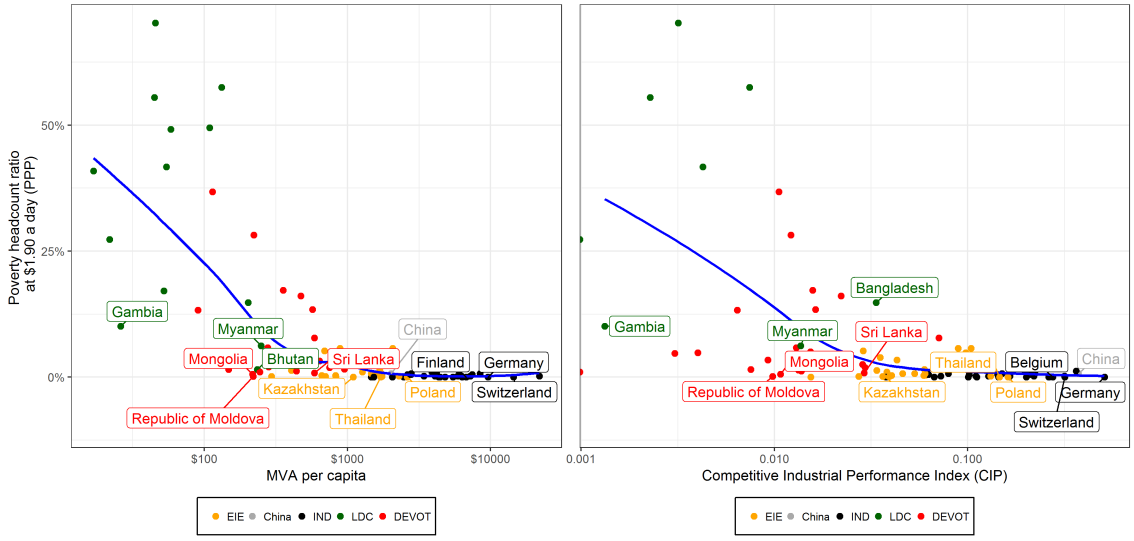

Figure 10: Comparison of the poverty headcount ratio at USD 1.90 a day with MVA per capita and the CIP index, all measured in the period 2015-2017

Source: The World Bank's Poverty and Equity Database (World Bank, 2019a), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Poverty measures based on international poverty lines attempt to hold the poverty line's real value constant across countries, as is the case when making comparisons over time. The poverty headcount ratio at USD 1.90 a day is an indicator that expresses the percentage of the population living on less than USD 1.90 a day at 2011 international prices. As a result of revisions in PPP exchange rates, poverty rates for individual countries cannot be compared with poverty rates reported in earlier editions (World Bank, 2019a).

The distribution of the poverty headcount ratio at USD 1.90 a day (2011 PPP) is shown in Figure 9. Since this indicator was only reported for a fraction of countries in 2017, the world map combines the most recent values available for each country. The majority of figures were reported for the period of 2013-2017, however, for some of the African countries, only data from before 2010 were available. The map shows clear differences between African and South Amer-

ican countries, where the ratio of the population below the international poverty line is much higher than in the rest of the world. The highest values were reported for Madagascar with 77.6 per cent in 2012, the Democratic Republic of the Congo with 76.6 per cent in 2012 and Burundi with 71.8 per cent in 2013.

A comparison of the poverty headcount ratio at USD 1.90 a day (2011 PPP) with the value of MVA per capita and the CIP index is depicted in Figure 10. It reveals substantially different patterns for various levels of industrial development. Industrialized economies and emerging industrial economies have very low poverty headcount ratio values concentrated around a value of zero. Other developing economies and least developed countries, on the other hand, report values of 10 per cent and higher. For instance, in Zambia, 57.5 per cent of the population lived below the international poverty line, and in Malawi, 70.3 per cent did. Figure 10 indicates that as countries industrialize the percentage of people living in poverty is decreasing significantly.

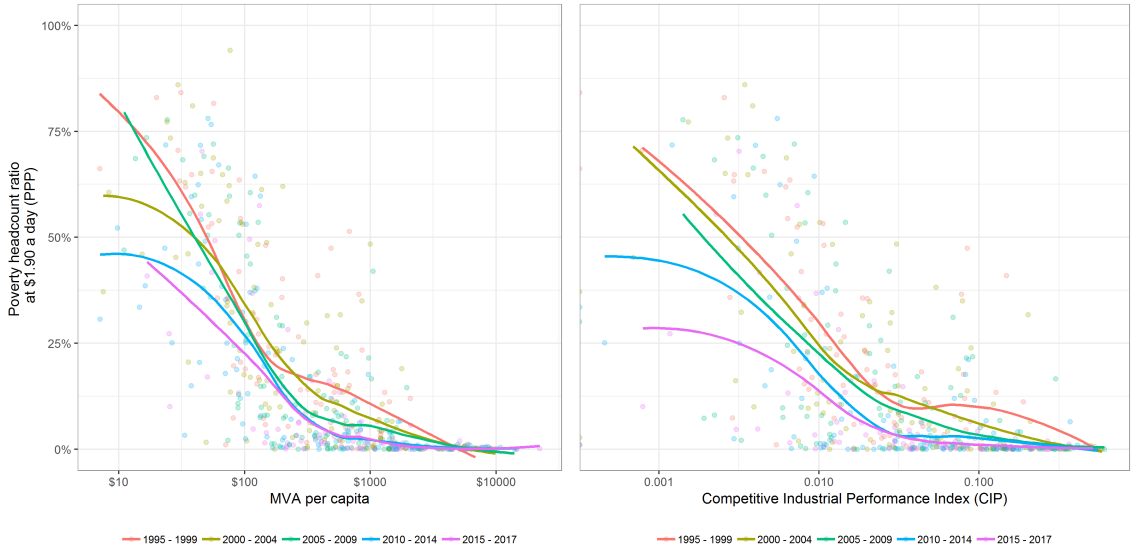

Figure 11: Progression of the relationship between the poverty headcount ratio at USD 1.90 per day and MVA per capita and the CIP index since 1995.

Source: The World Bank's Poverty and Equity Database (World Bank, 2019a), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

The systematic decline of the overall value of the poverty headcount ratio over the last 20 years is depicted in Figure 11. Major differences are visible over the different time periods, particularly as regards lower MVA per capita values and CIP scores in least developed countries. The percentage of the population living on less than USD 1.90 per day has decreased by half since 1995–1999. In the case of developed countries with an MVA per capita that is higher than USD 1,000 or with a CIP score of more than 0.5, the decline has not been as dramatic. Figure 11 demonstrates that the poverty headcount ratio at USD 1.90 per day decreased over the last 20 years from around 10 per cent to almost zero in countries that have successfully industrialized.

Inequality-adjusted Income Index

The inequality-adjusted income index is part of the calculation process of the HDI index and represents the HDI income index adjusted for inequality in income distribution based on data from household surveys (UNDP, 2018).

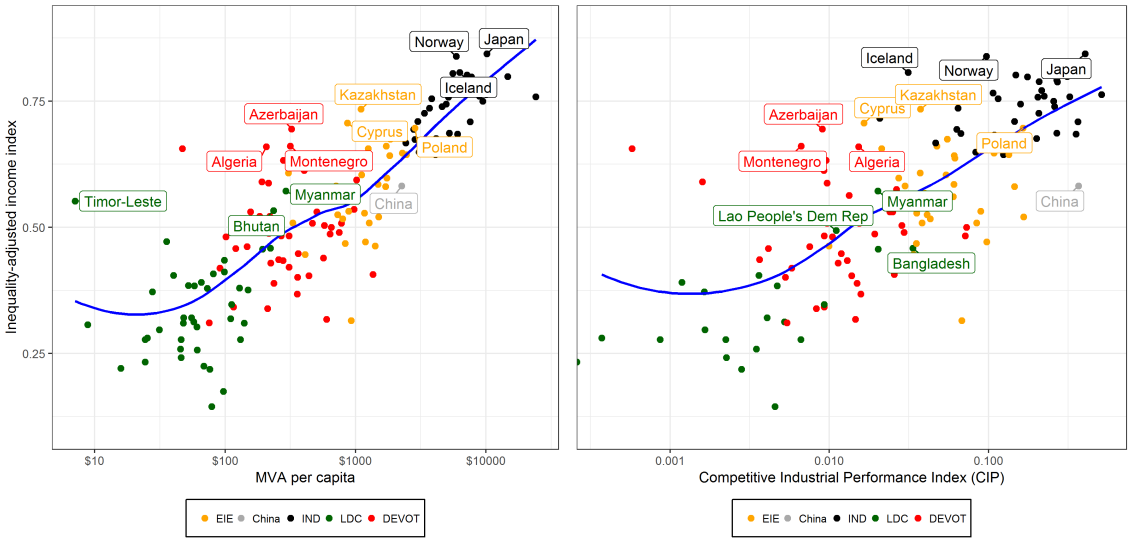

Figure 12: Comparison of the inequality-adjusted income index with MVA per capita and the CIP index, all measured in 2017.

Source: UNDP IHDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

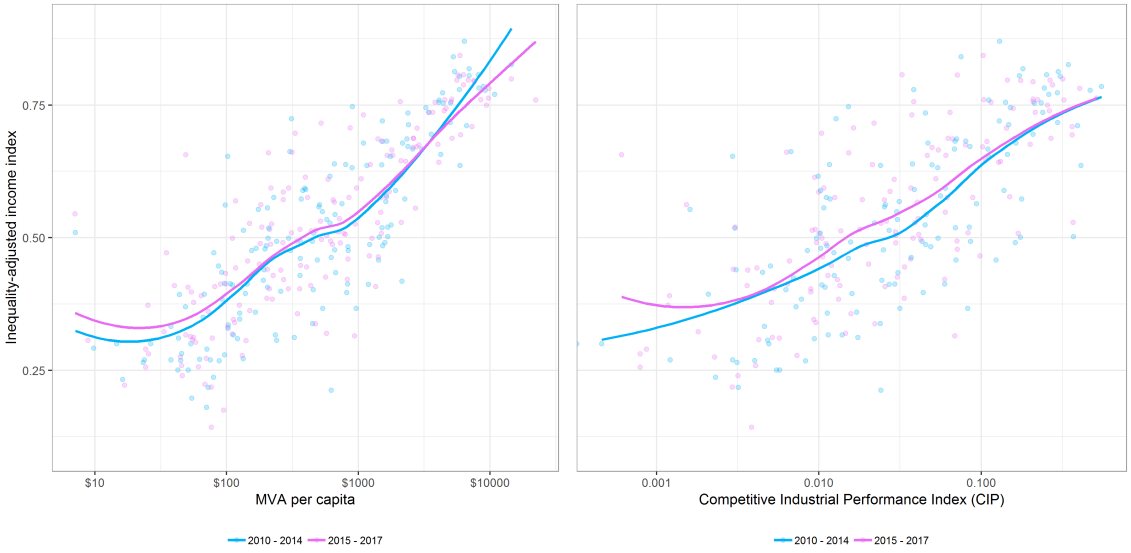

Figure 13: Progression of the relationship between the inequality-adjusted income index and MVA per capita and the CIP index since 2010.

Source: UNDP IHDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

A comparison of the value of the inequality-adjusted income index with MVA per capita and the CIP scores indicates a clear relationship between these indicators (Figure 12). The high values of the inequality-adjusted income index are typical for countries with a high MVA per capita and for economies at the top of the CIP ranking. Moreover, the distribution of the inequality-adjusted income index also follows the country classification in accordance with its level of industrialization. One interesting exception of this trend is Timor-Leste, which has one of the lowest MVA per capita values but a high value of its inequality-adjusted income index which accounts for 0.55. Timor-Leste was not included in the CIP index and ranking in 2017.

Although the values of the inequality-adjusted income index have only been available since 2010, a comparison of their median values in the time periods 2010–2014 and 2015–2017 indicates a relatively stable pattern of the relationship with MVA per capita and the CIP scores (Figure 13). A moderate growth of the index's overall value over time is noticeable.

Multidimensional Poverty Index

Another international measure of poverty is published by UNDP in its Human Development Reports Series as the Global Multidimensional Poverty Index (MPI). The MPI includes health, education and standard of living indicators to determine a population's degree of poverty. It contributes to the measurement of acute poverty across more than 100 developing countries since 2010, when it replaced the Human Poverty Index (UNDP and Oxford Poverty, 2019).

The global MPI is disaggregated by age group and geographic area to display poverty patterns within countries. It is further broken down to highlight which particular deprivations characterize poverty and drive its reduction or intensification. These analyses often play a crucial role for policymakers.

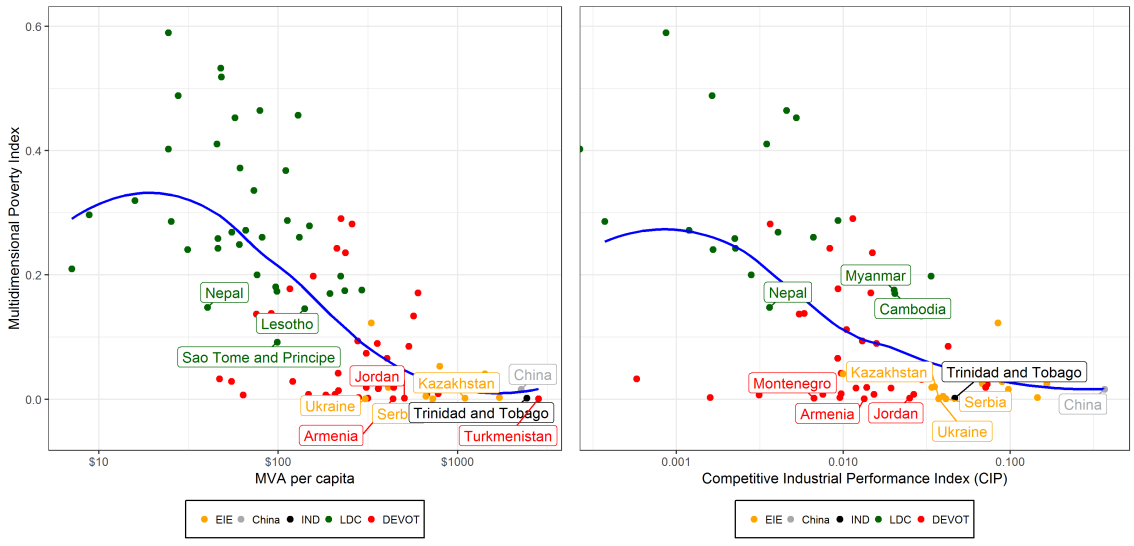

Figure 14: Comparison of the MPI, reported for the period 2007-2018, with MVA per capita and the CIP index, measured in 2017.

Source: UNDP MPI 2019 (UNDP and Oxford Poverty, 2019), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

The relationship of the global MPI with MVA per capita and the CIP scores is depicted in Figure 14. Although the global MPI covers developing economies only, both plots support the findings based on the poverty headcount ratio at USD 1.90 a day. LDCs, in particular, registered a decline in the MPI as they experienced industrial growth. Countries with an MVA per capita of more than USD 1,000 or a CIP score above 0.1 have a global MPI that is close to zero. Figure 14 also highlights that two countries have very low global MPI values together with a low MVA per capita and CIP index: Iraq and Maldives.

V

EMPLOYMENT

Employment

Sustained economic growth requires a structural transformation of the economy towards activities with higher levels of productivity. Structural transformation towards inclusive and sustainable industrial development serves as an engine to create the competitive job opportunities necessary in both developed and developing countries today. Besides quantity, it is the quality of jobs that matters. When labour productivity increases, industry upgrades employment opportunities to higher skilled and higher paid jobs, accompanied by increases in social protection and worker security (UNIDO, 2015).

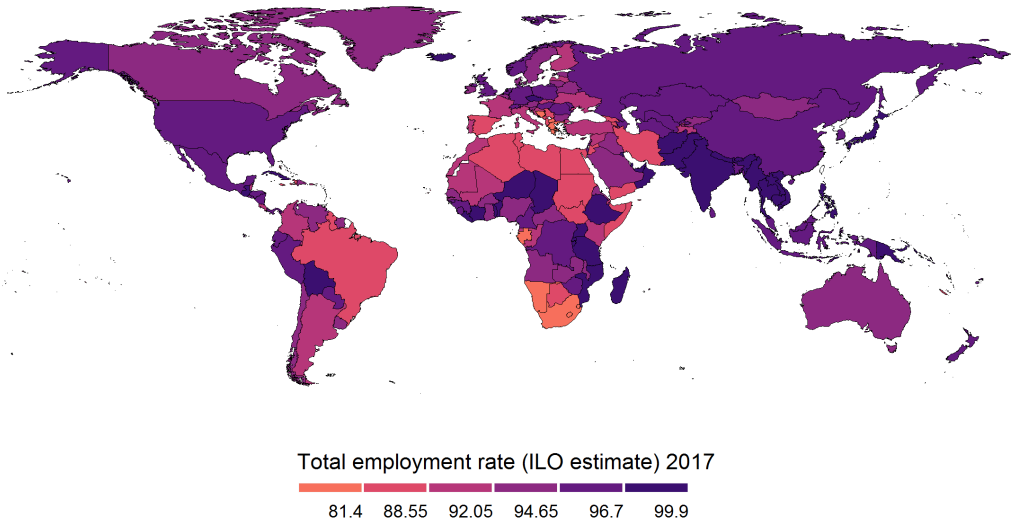

Figure 15: World map of total employment rates reported in 2017.

Source: ILO modelled estimates, November 2018 (ILO, 2019)

The importance of employment as a pathway to economic development, social inclusion and well-being has long been recognized. Most developing economies struggle with high unemployment or underemployment. Many people can barely sustain themselves from what they earn. This is why creating new jobs, but also improving the incomes and working conditions

of existing jobs, is extremely important. As economies develop, jobs are reallocated from agriculture and other labour-intensive primary activities to industry and finally to the services sector. Since the industrial revolution, manufacturing has been at the core of structural change, consistently creating higher levels of output and employment, and leading to unprecedented growth in incomes (UNIDO, 2013).

Total employment rate

Total employment rate is defined as a measure of the extent to which available labour resources (people available to work) are being used. It is calculated as the ratio of the employed to the working age population. Employment rates are sensitive to the economic cycle, but are considerably affected by governments' higher education and income support policies in the longer term and by policies that facilitate the employment of women and disadvantaged groups.

Data were sourced from the ILO modelled estimates database and are available from 1991. The ILO modelled estimates series serve as a complete set of internationally comparable employment statistics, including both nationally reported observations and imputed data for countries with missing data. The imputations are produced through a series of econometric models maintained by the ILO. Estimates for countries with very limited labour market information have a high degree of uncertainty, however (ILO, 2019).

Figure 15 presents the variance of the total employment rate across most continents. The lowest employment rates for 2017 were reported for the State of Palestine (72.6 per cent), South Africa (72.7 per cent), North Macedonia (77.6 per cent) or Greece (78.5 per cent). Some countries had very high employment rates, like Qatar (99.9 per cent) and Niger (99.7 per cent). Values above 99 per cent were not reported for any of the European countries, where the best performers were Iceland (97.3 per cent) and Czech Republic (97.1 per cent).

Total child labour rate

Child labour is often defined as work that deprives children of their childhood, their potential and their dignity, and that is harmful to their physical and mental development. Not all work carried out by children should be classified as child labour that must be eliminated. This includes activities such as helping their parents around the home, assisting in a family business or earning pocket money outside school hours and during school holidays. Data on child labour are provided by the Statistical Information and Monitoring Programme on Child Labour (SIMPOC), which is the statistical arm of the International Programme on the Elimination of Child Labour (IPEC).

The challenge of ending child labour remains formidable. A total of 152 million children — 64 million girls and 88 million boys -– are engaged in child labour globally, accounting for nearly one in ten children worldwide. Nearly half of all children engaged in child labour — 73 million children in absolute terms -– perform hazardous work that directly endangers their health, safety, and emotional development. Children in employment, a broader measure comprising both child labour and the permitted forms of employment involving children of a legal working age, account for 218 million (ILO, 2017).

Figure 16 presents the relationship between the child labour and countries' industrial development. Data are available from the household surveys conducted mostly in developing economies. The largest share of child labour is reported in the agricultural sector. Child labour fills the income gap in many countries. As countries industrialize, income increases and the share of child labour declines.

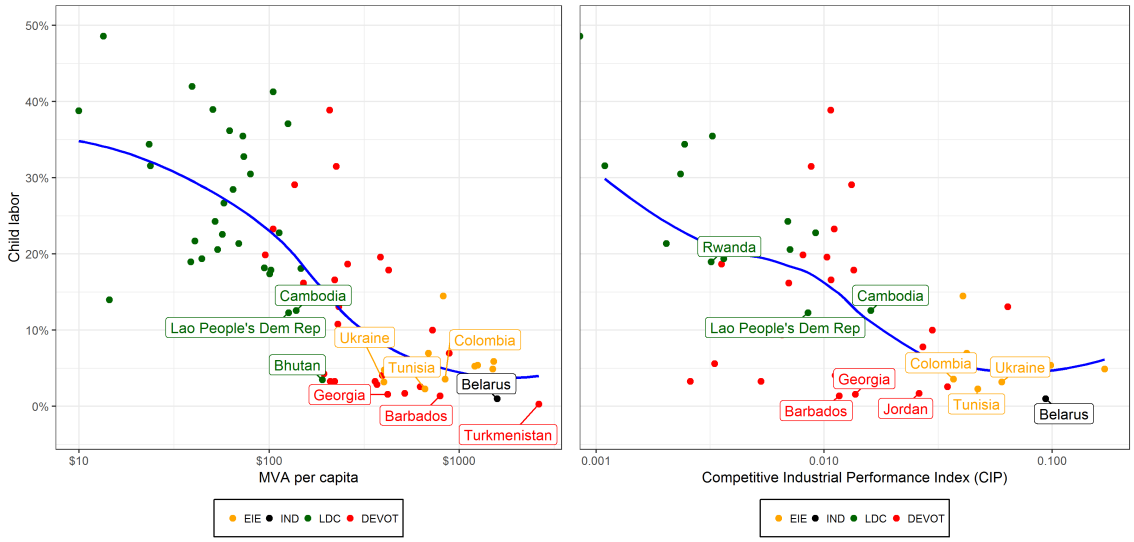

Figure 16: Comparison of the total child labour rate, reported for 2010-2016, with MVA per capita and the CIP index, both measured in 2017.

Source: ILOSTAT 2019 (ILO, 2017), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

VI

EDUCATION

Education

Education is in every sense one of the fundamental factors of development. No country can achieve sustainable economic development without substantial investment in human capital. Education enriches people's understanding of themselves and the world. It improves the quality of their lives and leads to broad social benefits for individuals and society. Education raises people's productivity and creativity and promotes entrepreneurship and technological advances. In addition, it plays a crucial role in securing economic and social progress and improving income distribution.

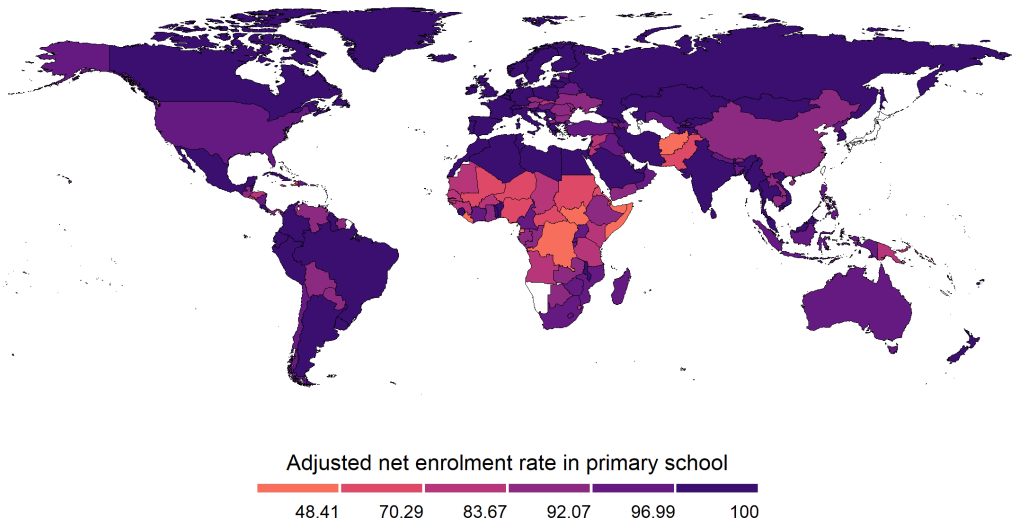

Figure 17: World map of adjusted net enrolment rate in primary school, most recent available values.

Source: UNESCO Institute for Statistics 2019 (UNESCO, 2019)

There is a two-way relationship between industrial development and education. Growth in industrialization creates high demand for a skilled and trained workforce thereby encouraging education among youth, while at the same time providing revenues that can then be directed

towards further developing education. A lack of job opportunities for youth in developing countries, however, has forced many to emigrate to industrialized countries, which has been the root cause for international human trafficking, one of the worst humanitarian problems the global community faces today. Only industrialization and the creation of employment opportunities can provide the livelihoods that allow people in many developing countries to flourish in their place of origin.

This section presents statistical evidence based on the main education indicators – the adjusted net enrolment rate in primary school, the net enrolment rate in secondary school and the inequality-adjusted education index.

Adjusted net enrolment rate in primary school

The adjusted net enrolment rate in primary school is represented as the total number of pupils of official primary school age who are enrolled in primary or secondary education. The indicator is expressed as a percentage of the corresponding population. Data are collected annually by the UNESCO Institute of Statistics from official responses to its education surveys. While the net enrolment rate only reflects the number of pupils in the official primary school age group at the primary education level, the adjusted net enrolment rate extends this measure to those of the official primary school age range who have reached the secondary education level because they might have accessed primary education earlier than the official entrance age or might have skipped a grade due to exceptional performance.

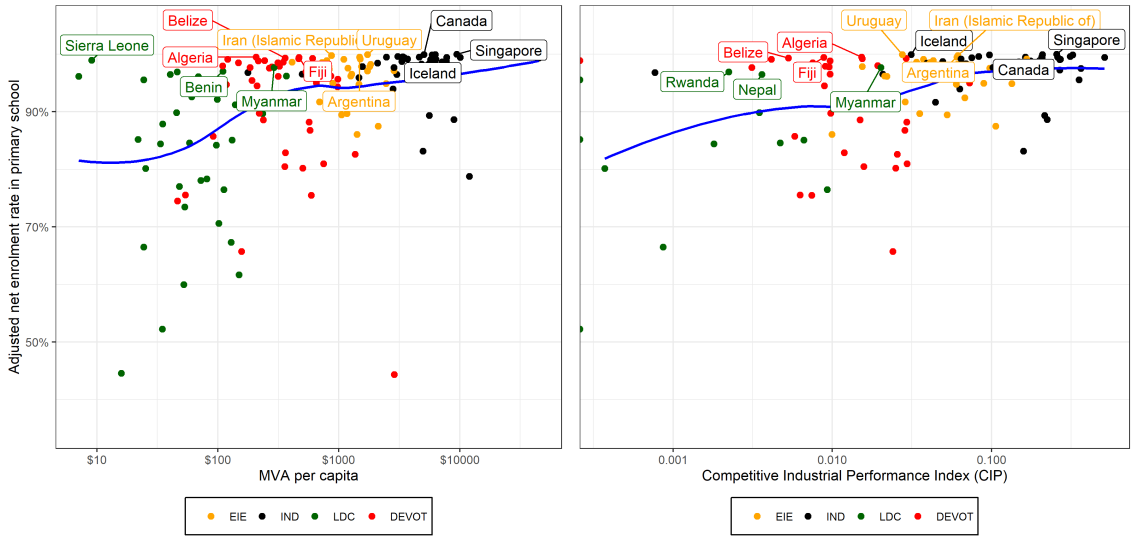

Figure 18: Comparison of the adjusted net enrolment rate in primary school with MVA per capita and the CIP index, all measured in the period 2015-2017.

Source: UNESCO Institute for Statistics 2019 (UNESCO, 2019), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

The global distribution of the adjusted net enrolment rate in primary school is presented in Figure 17. Due to the high sparsity of the data in recent years, the latest available value for each country was used. The lowest net adjustment enrolment rates in primary school are generally observed in the sub-Saharan African region. The countries with the lowest reported value of the adjusted net enrolment rate in primary school were South Sudan (32.25 per cent

in 2015), Afghanistan (26.77 per cent in 1993) and Somalia (14.45 per cent in 1980). The best performing countries were Canada, Singapore and Viet Nam, all reporting more than 99.9 per cent enrolment in primary school.

Figure 18 illustrates the relationship between the adjusted net enrolment rate in primary school and indicators of industrial development. Both plots support the positive synergies between education and industrialization. The higher variability of the adjusted net enrolment rates in primary school is demonstrated by countries with low industrial performance, i.e. other developing economies and least developed countries. The adjusted net enrolment rates in primary school in countries with higher MVA per capita values and CIP scores are exclusively above 90 per cent.

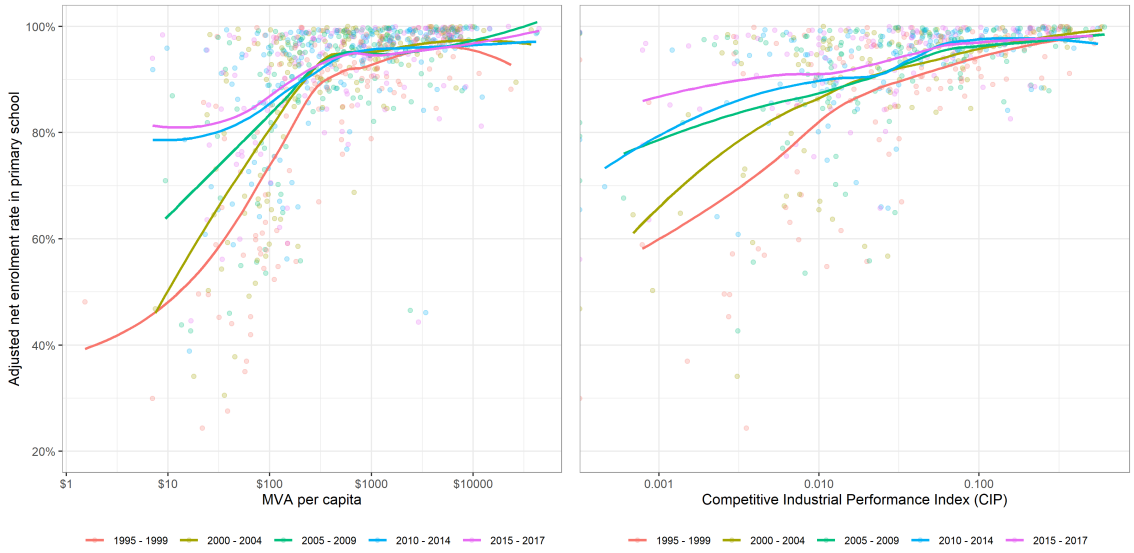

Figure 19: Progression of the relationship between the adjusted net enrolment rate in primary school and MVA per capita and the CIP index since 1995.

Source: UNESCO Institute for Statistics 2019 (UNESCO, 2019), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

The positive correlation between the adjusted net enrolment rate in primary school and the high level of industrial development has also been observed in the long-term perspective. Figure 19 demonstrates how progress in enrolment in primary education clearly fosters industrial development and as countries industrialize, they require high skilled workers. Moreover, the rapid improvement of the adjusted net enrolment rate in primary school has been recorded in LDCs over the last 20 years.

Net enrolment rate in secondary school

Many countries have pledged their commitment to achieve higher levels of education than universal primary education only and have extended their target to include the secondary education level. The net enrolment rate is the ratio of pupils of official school age who are enrolled in school to the population of the corresponding official school age. Secondary education completes the provision of basic education that began at the primary level, and aims to lay the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction provided by more specialized teachers. Data are collected annually by the UNESCO Institute of Statistics from official responses to its education surveys.

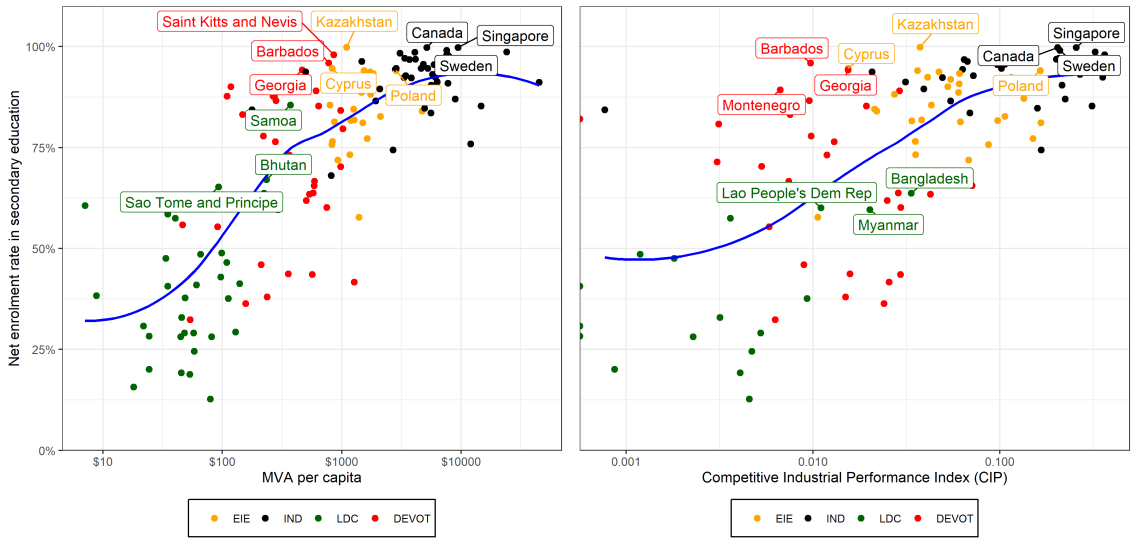

Figure 20: Comparison of net enrolment rate in secondary school with MVA per capita and the CIP index, all measured in the period 2015-2017.

Source: UNESCO Institute for Statistics 2019 (UNESCO, 2019), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

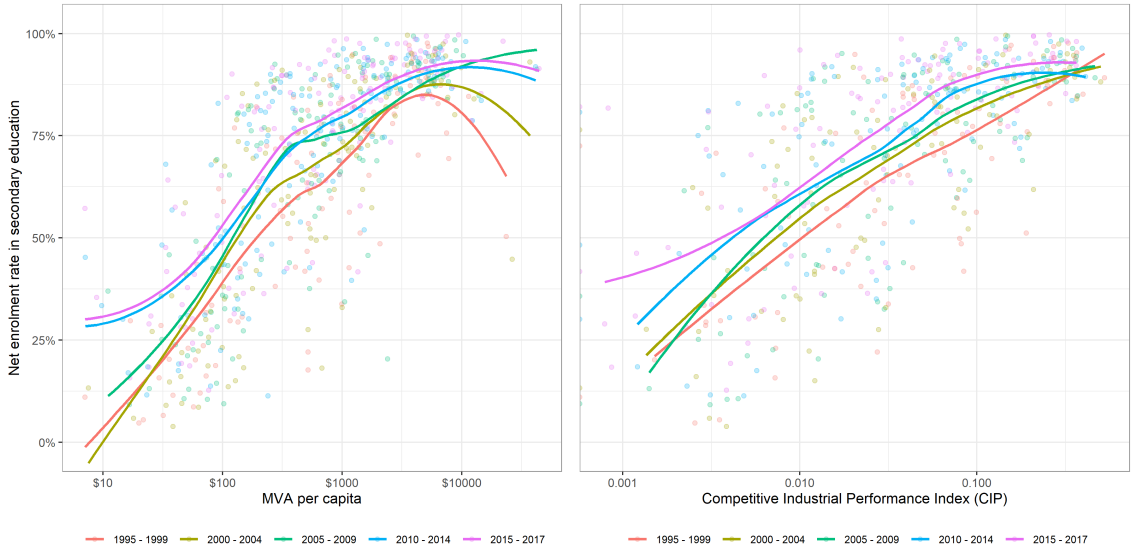

Figure 21: Progression of the relationship between net enrolment rate in secondary school and MVA per capita and the CIP index since 1995.

Source: UNESCO Institute for Statistics 2019 (UNESCO, 2019), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

In comparison to the adjusted net enrolment rate in primary school, the relationship between industrial development and the net enrolment rate in secondary school is much stronger. A clear positive correlation pattern is visible in Figure 20. The countries' classifications according to level of industrial development are perceptibly separated and thus suggest an important role of industrialization for education. In LDCs with a low MVA per capita, the enrolment rate is

usually reported to be below 50 per cent. By contrast, the net enrolment rate in secondary school in industrialized economies with a high MVA per capita was above 80 per cent in 2017.

The change in the progression of the net enrolment rate in secondary school over time is depicted in Figure 21. An overall improvement in net enrolment rates in secondary school seems to be positively correlated with industrial development. The global secondary school enrolment rate has increased over the past 20 years. While LDCs reported enrolment rates close to zero in the period 1995-2004, a rapid upward trend has been noted since 2010.

Inequality-adjusted education index

The inequality-adjusted education index is part of the calculation process of the HDI index and represents the HDI education index adjusted for inequality in the distribution of years of schooling based on data from household surveys (UNDP, 2018).

Figure 22 depicts a strong relationship between the inequality-adjusted education index and industrial development variables. Countries with high values of MVA per capita and CIP scores generally also achieve high scores in the inequality-adjusted education index and vice versa. Moreover, economies are organized in accordance with their classification by level of industrial development, which indicates a substantial correlation between education and industrial development.

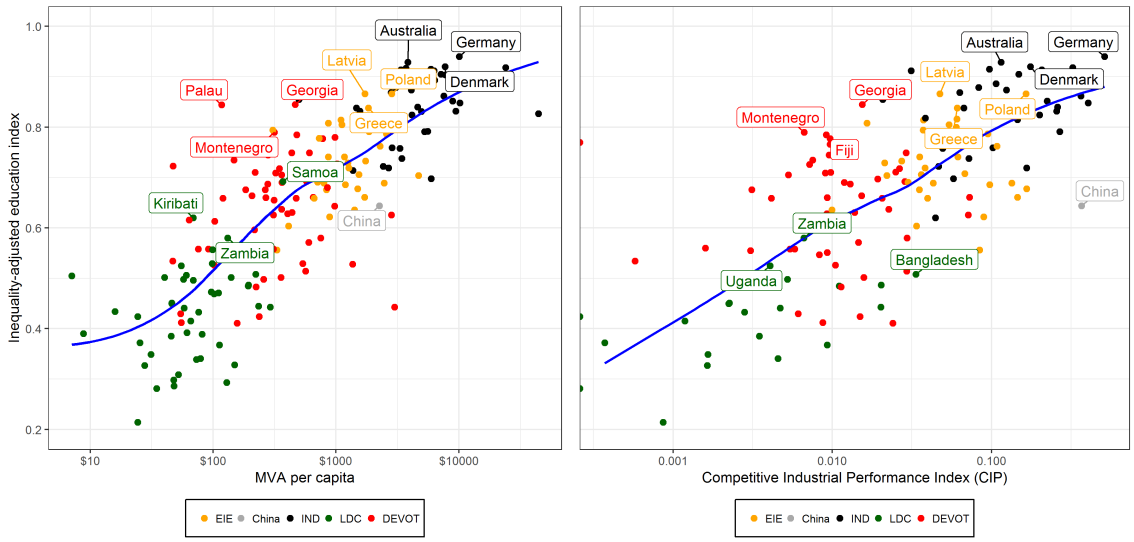

Figure 22: Comparison of the inequality-adjusted education index with MVA per capita and the CIP index, all measured in 2017.

Source: UNDP IHDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Both plots in Figure 23 reveal a strong relationship between both variables throughout the last 20 years, which remains unchanged. Furthermore, the relationship seems to be constantly increasing over time (1995-2017), regardless of industrial development group.

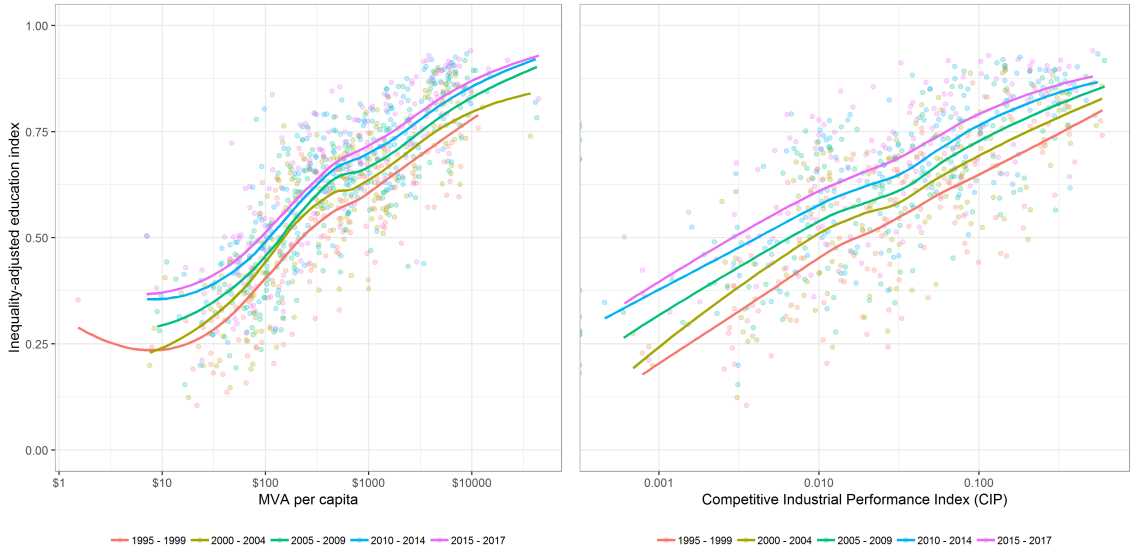

Figure 23: Progression of the relationship between the inequality-adjusted education index and MVA per capita and the CIP index since 1995.

Source: UNDP IHDI 2018 (UNDP, 2018), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

VII

HEALTH

Health

Universal health coverage remains a major global challenge. Health is a crucial social and economic asset – a cornerstone of human development. Many deaths and injuries could be prevented with timely and affordable access to appropriate pharmaceutical products and related health care services.

Inclusive and sustainable industrial development prioritizes high-level innovation and scientific research, including the development of new medical treatments, vaccines and medical technologies. Through their expertise and resources, locally operating pharmaceutical and medical equipment industries can play a decisive role in meeting the global health challenge by developing innovative, safe and effective pharmaceutical products and working with other stakeholders to make them available, affordable and accessible to people who lack them, especially the most marginalized groups (UNIDO, 2015).

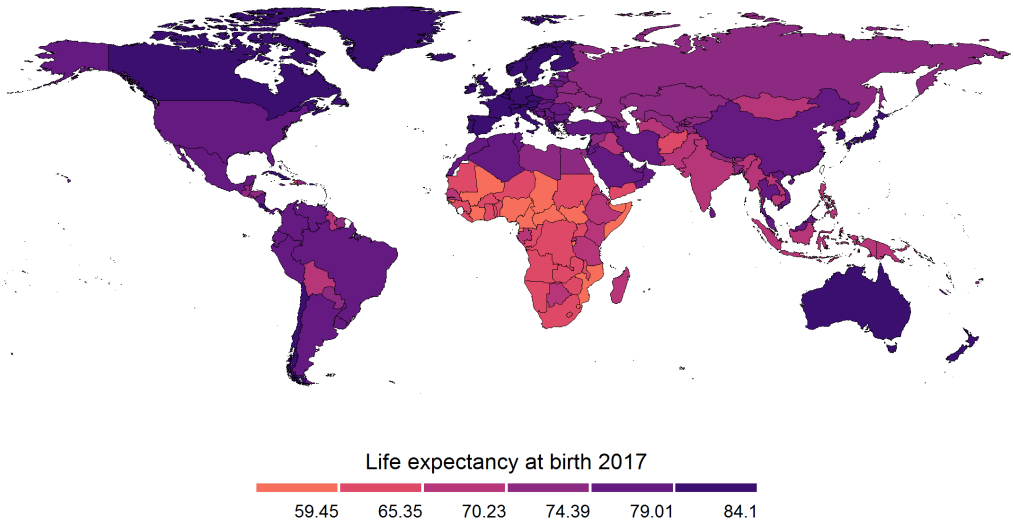

Figure 24: World map of life expectancy at birth reported in 2017.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b)

Industrial development has also been associated with negative environmental effects such as pollution, climate change, habitat destruction and over-exploitation of natural resources, and thus has a fundamental impact on human health. Nonetheless, the process of industrialization has radically changed in recent years. One of the prerequisites for industry to flourish in a sustainable manner is the availability of a guaranteed supply of affordable and clean energy, together with improved resource efficiency. Many countries have introduced norms and regulations to ensure that adverse impacts are minimized, starting with the planning stage, choice of location and adoption of best available technologies.

Five indicators linked to human health were selected for this report to demonstrate their level of association with industrial development – life expectancy at birth, infant mortality rate, lifetime risk of maternal death, prevalence of undernourishment and people using at least basic drinking water services.

Life expectancy at birth

Life expectancy at birth refers to how long, on average, a new-born can expect to live if current death rates do not change. However, the actual age-specific death rate of any particular birth cohort cannot be known in advance. If rates fall, actual life spans will be higher than the life expectancy calculated using current death rates. Life expectancy at birth is one of the most frequently used health status indicators. Increases in life expectancy at birth can be attributed to a number of factors, including rising living standards, improved lifestyle and better education, as well as greater access to quality health services. This indicator is measured in number of years.

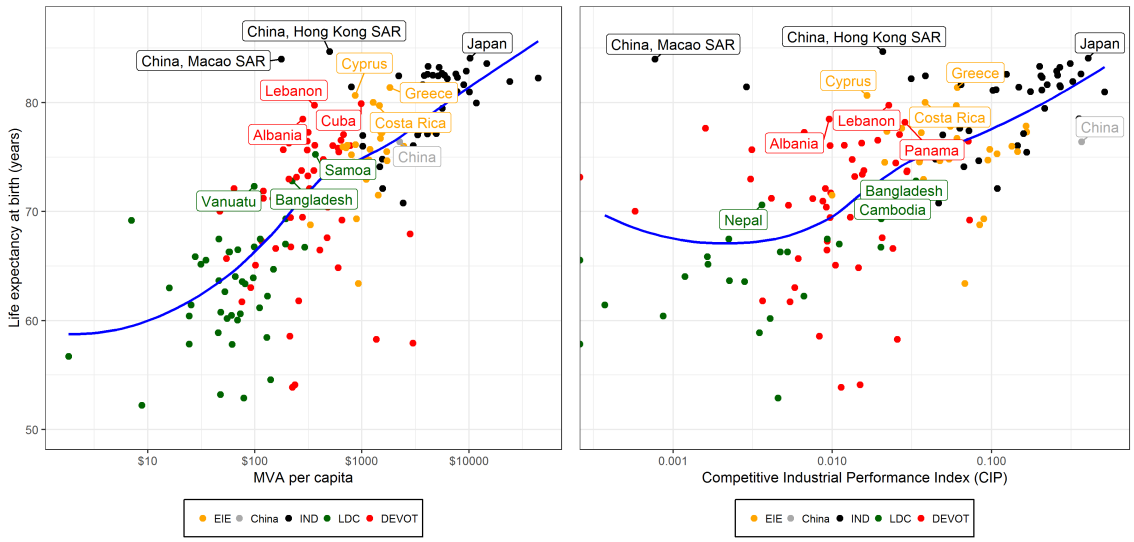

Figure 25: Comparison of life expectancy at birth with MVA per capita and the CIP index, all measured in 2017.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Life expectancy at birth refers to the average number of years a new-born is expected to live if mortality patterns at the time of the child's birth remain constant in the future. In other words, it considers the number of deaths among people of different ages in a given year, and provides a snapshot of these overall mortality characteristics of the population for that year.

The data used in this report come from the World Development Indicators (WDI) database. The figures are taken from various data sources: (1) the United Nations Population Division. World Population Prospects: 2019 Revision; or derived from male and female life expectancy at birth from sources such as: (2) census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) the United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

The regional differences in life expectancy at birth (in years) between countries are depicted in Figure 24. In most of African countries, life expectancy is below 65 years, which is much lower than that in the rest of the world. More specifically, the life expectancy in Sierra Leone is 52 years and only 23 years in the Central African Republic or Chad. By contrast, Algeria reported a life expectancy of above 73 years. The highest life expectancy rate for 2017 was reported by Hong Kong ROC (85), Japan, China Macao SAR and Switzerland (all around 84 years).

The close positive relationship between industrial development and life expectancy at birth is shown in Figure 25. Countries with a long life expectancy rate are typically those with high MVA per capita or CIP scores and vice versa. On the other hand, a relatively high variability can be observed within the group of other developing economies, including countries with a high life expectancy like Lebanon or Cuba (80 years), as well as countries with a very low life expectancy at birth, namely Nigeria and Côte d'Ivoire (54 years).

Looking at the overall trend of life expectancy at birth and industrial development over the last 20 years, extremely positive progress has been made (Figure 26). The improvement is substantial in all countries, regardless of their stage of industrial development measured by MVA per capita or CIP scores. The progress made by LDCs is obviously notable.

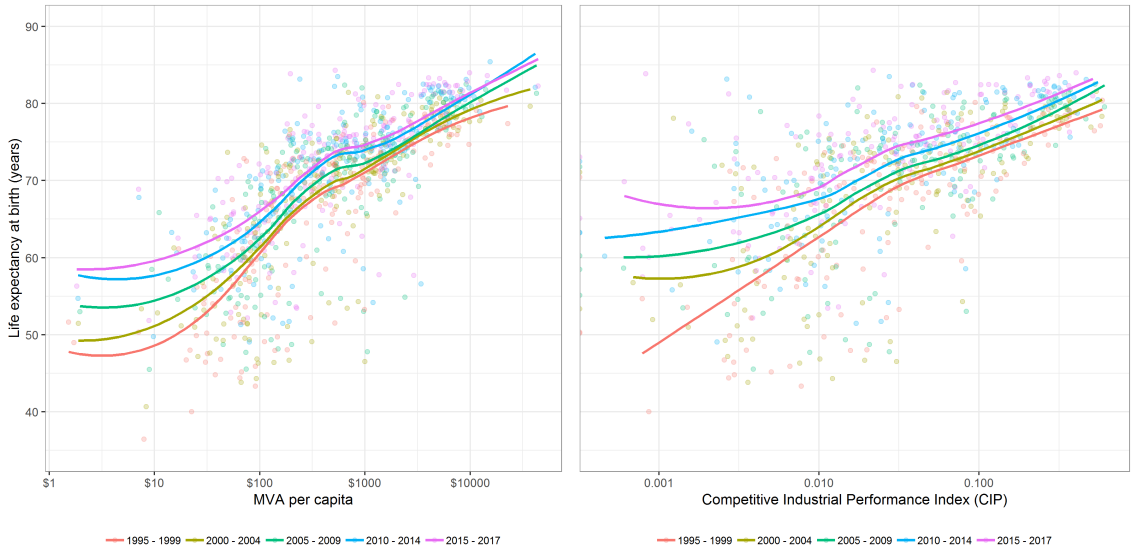

Figure 26: Progression of the relationship between life expectancy at birth and MVA per capita and the CIP index since 1995.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Infant mortality rate

The infant mortality rate represents the ratio of the number of deaths of children under one year of age in a given year to the number of live births in that year. The value is expressed per 1,000 live births. The main sources of mortality data are important registration systems and direct or indirect estimates based on sample surveys or censuses.

Estimates of neonatal, infant, and child mortality tend to vary by source and method for a given period and place. Years of available estimates also vary by country, making comparisons across countries and over time difficult. To make neonatal, infant, and child mortality estimates comparable and to ensure consistency across estimates by different agencies, the United Nations Inter-agency Group for Child Mortality Estimation (UN IGME), which comprises the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the World Bank, the United Nations Population Division, and other universities and research institutes, developed and adopted a statistical method that uses all available information to reconcile differences. The method uses statistical models to obtain a best estimate trend line by fitting a country-specific regression model of mortality rates against their reference dates.

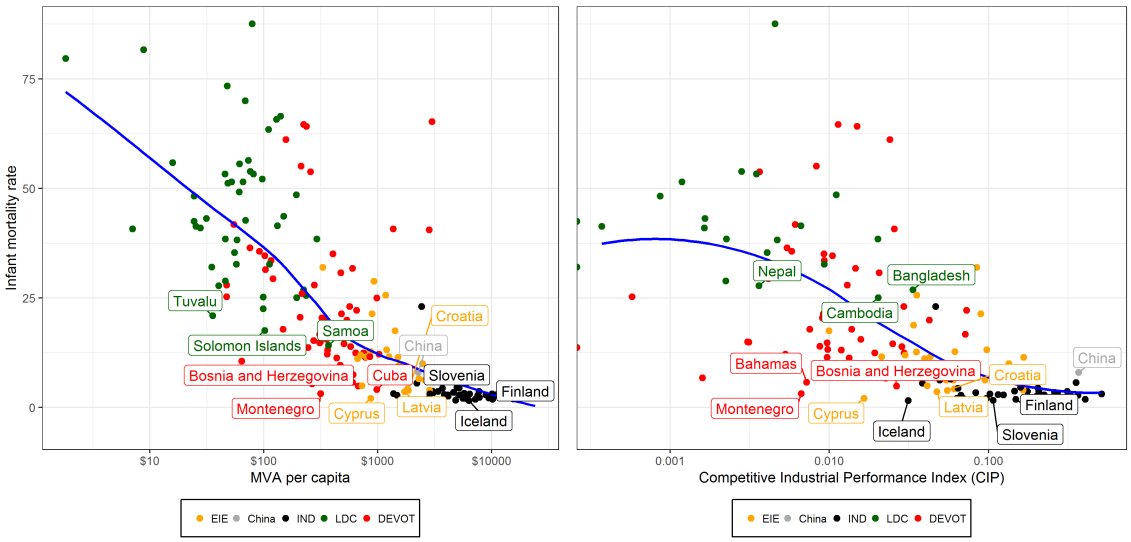

Figure 27: Comparison of infant mortality rate per 1,000 live births with MVA per capita and the CIP index, all measured in 2017.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Despite declining infant mortality rates, marked disparities exist across regions and countries. The infant mortality rate is typically higher in economies with lower levels of industrial development (Figure 27). Although industrialized countries report values very close to zero, the opposite is visible for LDCs, i.e. the Central African Republic with 87.6 and Sierra Leone with 81.7 deaths per 1,000 live births. These two countries also reported the lowest life expectancy rates, indicating a close relationship between these two indicators.

The overall trend since 1995 suggests a significant decline in the infant mortality rate as illustrated in Figure 28. This general trend has been particularly obvious in countries with a lower MVA per capita or CIP scores, in which the overall rate of infant mortality has decreased by nearly half over the past 20 years.

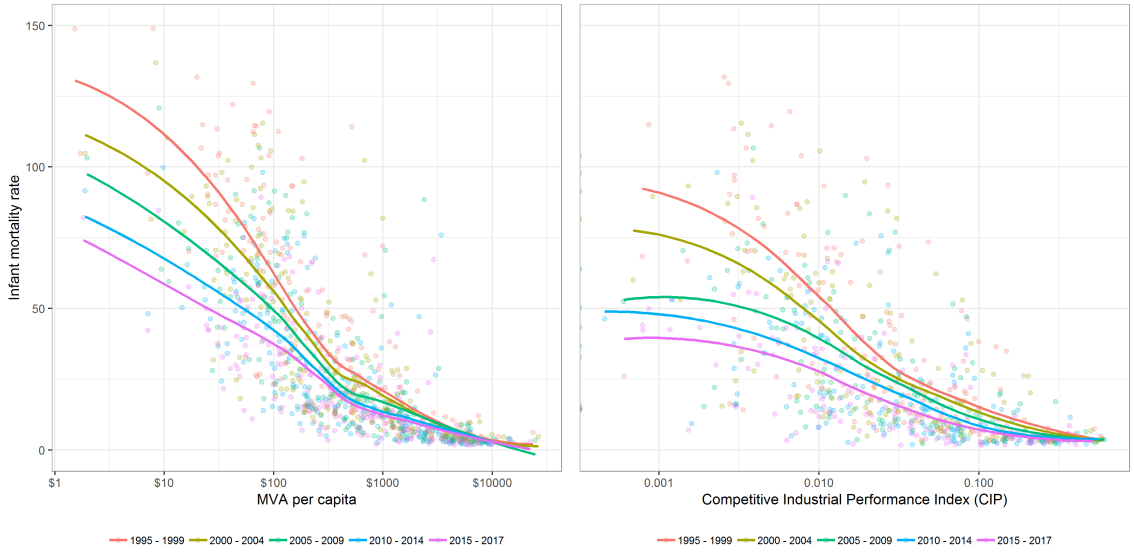

Figure 28: Progression of the relationship between infant mortality rate and MVA per capita and the CIP index since 1995.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Lifetime risk of maternal death

Life time risk of maternal death is the probability of a 15-year-old female eventually dying from a maternal cause assuming that current levels of fertility and mortality (including maternal mortality) do not change in the future, taking into account competing causes of death.

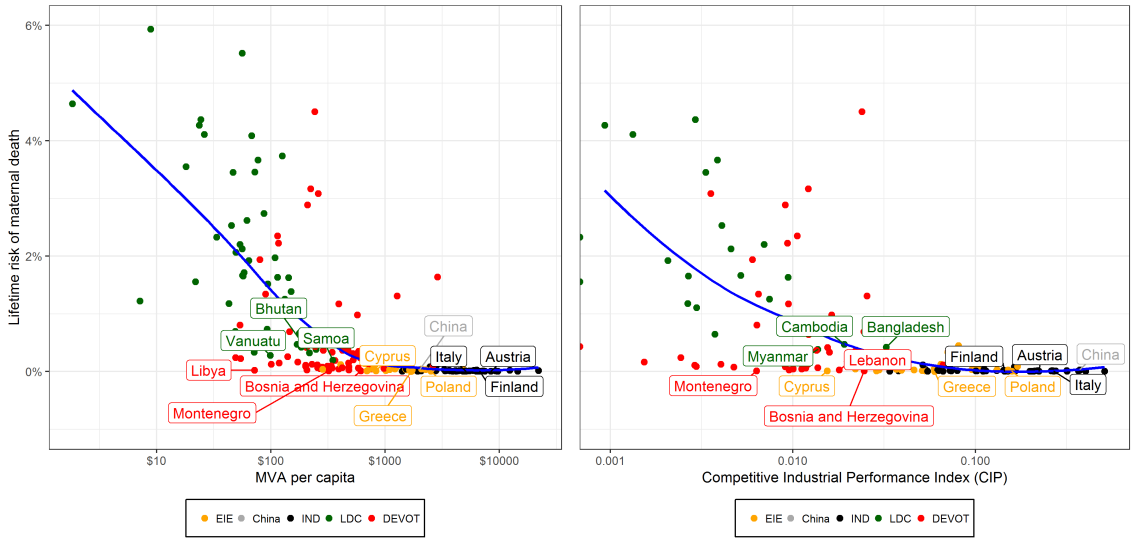

Figure 29: Comparison of lifetime risk of maternal death with MVA per capita and the CIP index, all measured in 2015.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Similarly to the previous variables, lifetime risk of maternal death is also closely related to industrial development. The higher risk is connected to the lower value of MVA per capita and CIP score. The highest lifetime risk of maternal death in 2015 were reported by Sierra Leone (5.94 per cent), Chad (5.52 per cent), Somalia (4.64 per cent) and Nigeria (4.51 per cent), i.e. by countries with the highest infant mortality rate and lowest life expectancy.

The link between lifetime risk of maternal death and industrial development has improved significantly over all time periods since 1995 (Figure 30). For countries with an MVA per capita of above USD 100 and a CIP score above 0.01, the values of lifetime risk of maternal death are close to zero in all time periods. A positive trend is observable in countries with a lower MVA per capita and CIP scores. In LDCs, lifetime risk of maternal death reduces by approximately half, a trend that is similar to that observed for infant mortality rate.

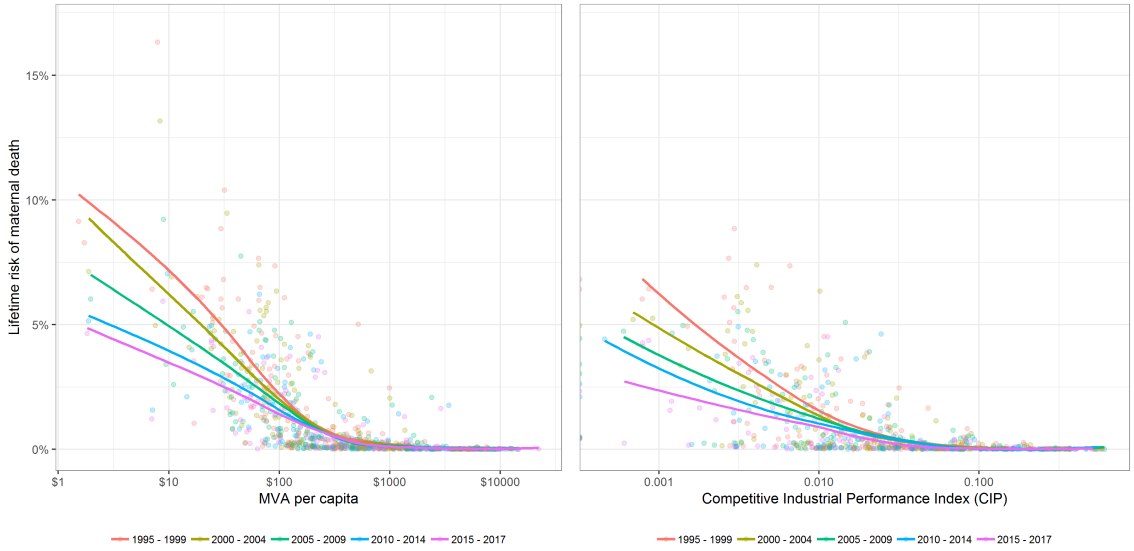

Figure 30: Progression of the relationship between lifetime risk of maternal death and MVA per capita and the CIP index since 1995.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Prevalence of undernourishment

The prevalence of undernourishment represents an estimate of the share of the population whose habitual food consumption is insufficient to provide the dietary energy levels required to maintain a normal active and healthy life. It is expressed in percentages. Data on undernourishment come from the Food and Agriculture Organization (FAO) and measure food deprivation based on the average food available for human consumption per person, the level of inequality in access to food, and the minimum calories required by an average person.

Good nutrition is the cornerstone of survival, health and development. Well-nourished children perform better in school, grow into healthy adults and in turn give their children a better start in life. Well-nourished women face fewer risks during pregnancy and childbirth, and their children set off on more solid developmental paths, both physically and mentally.

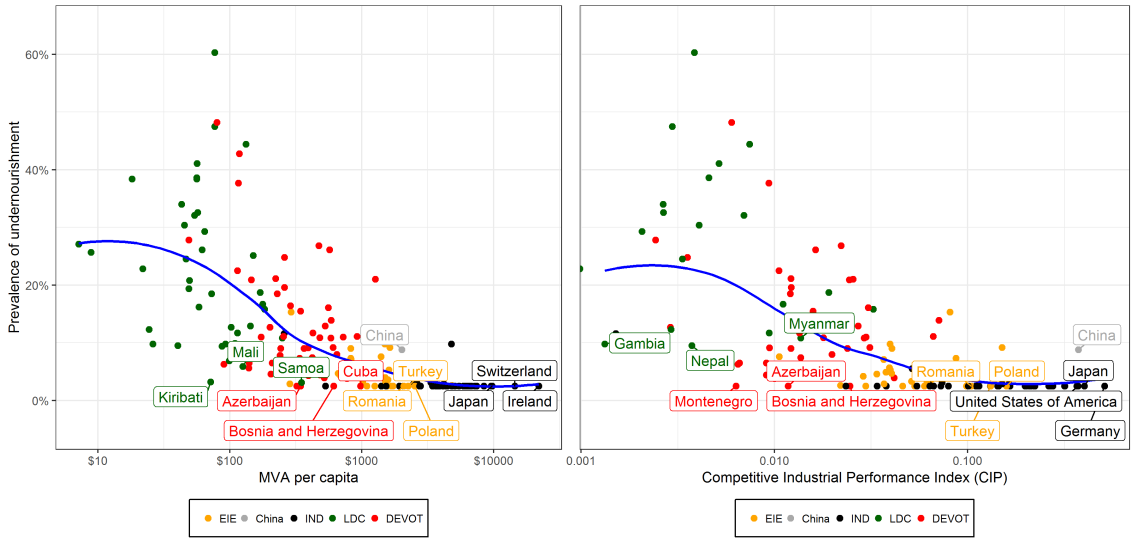

Figure 31: Comparison of the prevalence of undernourishment with MVA per capita and the CIP index, all measured in 2015.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

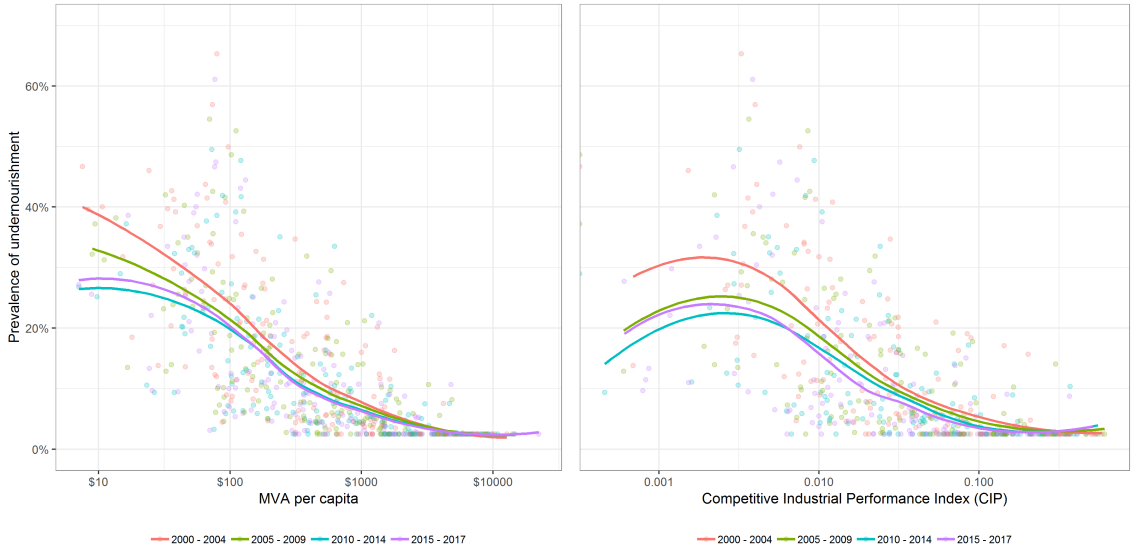

Figure 32: Progression of the prevalence of undernourishment and MVA per capita and the CIP index since 2000.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

The positive influence of industrial development on the prevalence of undernourishment is depicted in Figure 31. In general, a higher prevalence of undernourishment is typical for countries at lower stages of industrial development, i.e. in LDCs and other developing economies. The highest levels of undernourishment in 2015 were reported for countries with an MVA per capita of less than USD 100, such as the Central African Republic (60.3 per cent),

Zimbabwe (48.2 per cent) and Haiti (47.5 per cent). By contrast, industrialized and emerging industrial economies are clustered together and the prevalence of undernourishment prevails at around 2.5 per cent for the majority of these countries.

Improvements in the prevalence of undernourishment since 2000 are not as striking as for the previously mentioned health-related indicators (Figure 32). This notwithstanding, the prevalence of undernourishment has experienced an overall decrease in the last 15 years. The positive trend is most visible in the case of LDCs. Figure 32 reveals a similar pattern as that depicted in Figure 31, namely that countries with the highest prevalence of undernourishment are those with an MVA per capita of around USD 100 or CIP scores with a value of 0.003.

People using at least basic drinking water services

The indicator people using at least basic water services encompasses both people who use basic water services as well as those who use safely managed water services. Basic drinking water services is defined as drinking water from an improved source, provided collection time is not more than 30 minutes round trip. Improved water sources include piped water, boreholes or tube wells, protected dug wells, protected springs, and packaged or delivered water.

Data on drinking water, sanitation and hygiene are produced by the Joint Monitoring Programme of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) based on administrative sources, national censuses and nationally representative household surveys.

Global access to safe water and proper hygiene education can reduce illness and death from disease, leading to improved health, poverty reduction, and higher socio-economic development. Access to safe drinking water is also considered to be a human right, not a privilege, for every man, woman, and child. The economic benefits of safe drinking water services include higher economic productivity, more education, and health care savings.

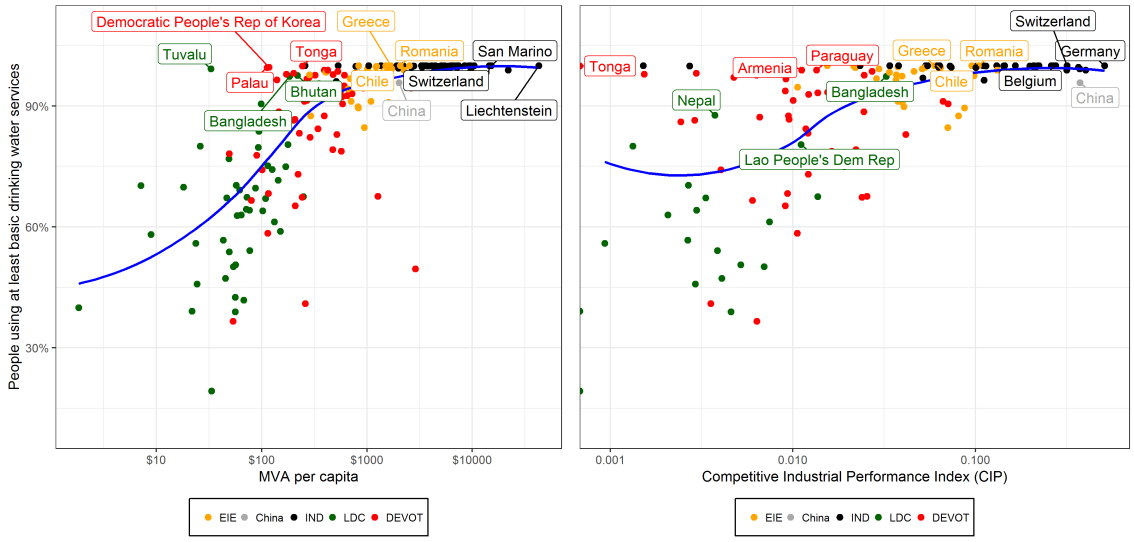

Figure 33: Comparison of the percentage of people using at least basic drinking water services with MVA per capita and the CIP index, all measured in 2015.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

Figure 33 shows that in countries with an MVA per capita of above USD 1,000, basic drinking water services are available for nearly the entire population, with two exceptions, namely Eswatini with 67.6 per cent and Equatorial Guinea with 49.6 per cent. The availability of drinking water tends to be problematic in LDCs where low values of MVA per capita or CIP scores imply a low percentage of the population using drinking water services and vice versa. The lowest share of the population using at least basic drinking water services in 2015 were reported by Eritrea (19.3 per cent), Papua New Guinea (36.6 per cent) and Uganda (38.9 per cent).

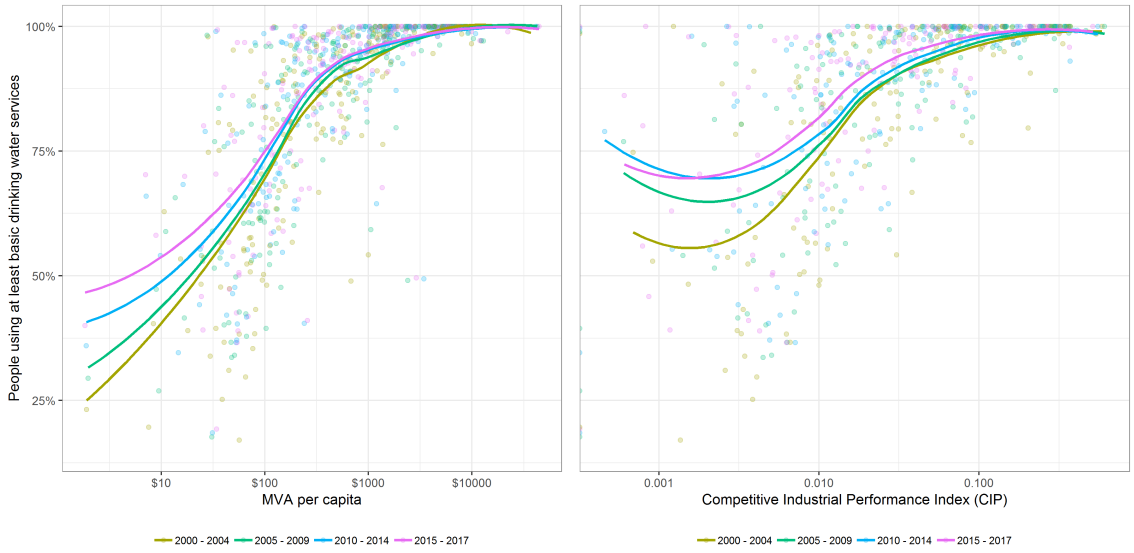

Figure 34: Progression of the percentage of people using at least basic drinking water services and MVA per capita and the CIP index since 2000.

Source: The World Bank, World Development Indicators 2019 (World Bank, 2019b), UNIDO CIP 2019 Database (UNIDO, 2019a) and UNIDO MVA 2019 Database (UNIDO, 2019d)

A higher level of industrial development has always been related to a higher percentage of the population using at least basic drinking water services. Regardless of the country's stage of industrial development, the overall access to basic drinking water services has increased since 2000. More substantial growth in this regard has been registered by countries at lower stages of industrial development, as is evident in Figure 34.

VIII

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Methodological Note

The visualization of the indicators of interest and their relationship with level of industrial development is based on three types of plots. Maps allow us to study local dependencies as well as to perform a worldwide comparison. The most recent values for the year 2017 were selected where possible. In the case of sparse data, the last reported value for each country was used. The distribution of values to the classes was done using the Fisher-Jenks algorithm.

Relationships between the given indicator and MVA per capita and the CIP index are visualized on scatter plots. Where possible, values from the same year (2015 or 2017) are compared. In the case of sparse data, the last available values from the period 2015–2017 are compared with the MVA per capita and CIP scores reported in the same year. The only exception is the total child labour rate, which was reported for the period 2010–2016 and compared with the industrial development indicators for the year 2017. The overall trend of the relationship is indicated by the Loess smoothing curve. The Loess regression is a non-parametric technique that uses a local weighted regression to fit a smooth curve through points in a scatter plot. Loess curves can reveal trends and cycles in data that might be difficult to model with a parametric curve. Moreover, countries are differentiated according to colour reflecting their stage of industrial development (UNIDO, 2019c). The top three performing countries from each group (according to the indicator of the interest) are highlighted in the graph by using labels.

The last type of plots shows the progression of the relationship throughout a longer time span. Each country is represented in the given time period by the median value reported for the relevant years. The overall trend within the period is again indicated by the Loess smoothing curve.

Appendix

Appendix I - List of countries and areas included in selected groupings [1]

INDUSTRIALIZED ECONOMIES

EU[2]
Austria
Belgium
Czechia
Denmark
Estonia
Finland
France
Germany
Hungary
Ireland
Italy
Lithuania
Luxembourg
Malta
Netherlands
Portugal
Slovakia
Slovenia
Spain
Sweden
United Kingdom

Other Europe
Andorra
Belarus
Iceland
Liechtenstein
Monaco
Norway
Russian Federation
San Marino
Switzerland

East Asia
China, Hong Kong SAR
China, Macao SAR
China, Taiwan Province
Japan
Malaysia
Republic of Korea
Singapore

West Asia
Bahrain
Kuwait
Qatar
United Arab Emirates

North America
Bermuda
Canada
Greenland
United States of America

Others
Aruba
Australia
British Virgin Islands
Cayman Islands
Curaçao
French Guiana
French Polynesia
Guam
Israel
New Caledonia
New Zealand
Puerto Rico
Trinidad and Tobago
United States Virgin Islands

[1] International Yearbook of Industrial Statistics (UNIDO, 2019c)
[2] Excluding non-industrialized EU economies.

DEVELOPING AND EMERGING INDUSTRIAL ECONOMIES
By Development

EMERGING INDUSTRIAL ECONOMIES

Argentina
Brazil
Brunei Darussalam
Bulgaria
Chile
Colombia
Costa Rica
Croatia
Cyprus
Egypt
Greece
India
Indonesia
Iran (Islamic Republic of)
Kazakhstan
Latvia
Mauritius
Mexico
North Macedonia
Oman
Peru
Poland
Romania
Saudi Arabia
Serbia
South Africa
Suriname
Thailand
Tunisia
Turkey
Ukraine
Uruguay
Venezuela (Bolivarian Rep. of)

CHINA

OTHER DEVELOPING ECONOMIES

Albania
Algeria
Angola
Anguilla
Antigua and Barbuda
Armenia
Azerbaijan
Bahamas
Barbados
Belize
Bolivia (Plurinational State of)
Bosnia and Herzegovina
Botswana
Cabo Verde
Cameroon
Congo
Cook Islands
Côte d'Ivoire
Cuba
Dem. People's Rep of Korea
Dominica
Dominican Republic
Ecuador
El Salvador
Equatorial Guinea
Eswatini
Fiji
Gabon
Georgia
Ghana
Grenada
Guadeloupe
Guatemala
Guyana
Honduras
Iraq
Jamaica
Jordan
Kenya
Kyrgyzstan
Lebanon
Libya
Maldives
Marshall Islands
Martinique
Micronesia, Fed. States of
Mongolia
Montenegro
Montserrat
Morocco
Namibia
Nicaragua
Nigeria
Pakistan
Palau
Panama
Papua New Guinea
Paraguay
Philippines
Republic of Moldova
Réunion
St. Kitts and Nevis
St. Lucia
St. Vincent and the Grenadines
Seychelles
Sri Lanka
State of Palestine
Syrian Arab Republic
Tajikistan
Tonga
Turkmenistan
Uzbekistan
Viet Nam
Zimbabwe

LEAST DEVELOPED COUNTRIES

Afghanistan
Bangladesh
Benin
Bhutan
Burkina Faso
Burundi
Cambodia
Central African Republic
Chad
Comoros
Dem. Rep. of the Congo
Djibouti
Eritrea
Ethiopia
Gambia
Guinea
Guinea-Bissau
Haiti
Kiribati
Lao People's Dem Rep
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Mozambique
Myanmar
Nepal
Niger
Rwanda
Samoa
Sao Tome and Principe
Senegal
Sierra Leone
Solomon Islands
Somalia
South Sudan
Sudan
Timor-Leste
Togo
Tuvalu
Uganda
United Republic of Tanzania
Vanuatu
Yemen
Zambia

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Vienna International Centre · P.O. Box 300
1400 Vienna · Austria
Tel.: (+43-1) 26026-0
E-mail: unido@unido.org
www.unido.org