

# 1 New perspectives on global inequality throughout history

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This chapter provides an introduction to, and summary of, the contents of this book. It outlines the aim of the project and provides an overview of the indicators covered, comparing them with those used in the OECD Better Life Initiative. The chapter also presents the criteria used through the report to assess the quality of the indicators used and discusses practical and methodological issues. Finally, the chapter summarises the content of each chapter and its main highlights.

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## Introduction

“Black Lives Matter” is the battle-cry of the movement against racism that suddenly dominated the news and the public debate in many countries in mid-2020. It reminds us, if that were still necessary, how deep social inequalities are rooted in our societies, in this case going back to the tragic history of slavery and the slave trade centuries ago. At the same time, the refugee crisis, which was on top of political agendas in recent years, is a reflection of another dimension of inequality, the huge differences in “citizen rent” (the concept coined by Branko Milanovic to describe the economic benefits that accrue to people just by virtue of their residence in a given country) within the world economy. Global inequality in real incomes (and in citizen rent) has been a persistent feature of the world economy since, at least, the Industrial Revolution that began some 200 years ago. Around 1820, average real incomes in the richest regions in the world were at most about five times the levels in the poorest regions. And, as shown in this volume, the spread in terms of other welfare measures was even smaller. Since then a “Great Divergence” has resulted in the massive levels of cross-country inequality that characterise the world today.

But the picture of long-term trends in inequality is quite complex. In some parts of the world some types of inequality have declined substantially: gender inequality is a case in point, but inequalities in life expectancy and educational attainment have also shown a declining trend. The overall picture of changes in inequality in the world economy is highly complex, with many country-specific patterns – such as the dramatic rise of almost all dimensions of inequality in the United States in the period since 1980.

Most of what we know about long-term trends in welfare is based on the historical estimates of real Gross Domestic Product (GDP) by Angus Maddison, summarised in his books. In his view, which is confirmed by more recent research, Western Europe was already much more economically prosperous than the rest of the world at the start of the industrialisation process (i.e. around 1820). The gap between the United Kingdom, the “productivity leader” at the time, and the poorest parts of the world was at most 5 to 1. The 19th century was a period of divergence, during which the rich became richer – Western Europe and its offshoots (the United States, Canada, Australia) profited from the technological changes unleashed by the Industrial Revolution – whereas other parts of the world economy (China, India, Indonesia) saw their GDP per capita fall or stagnate at best, due in part to de-industrialisation and colonial exploitation. During the first half of the 20th century, it was mainly the United States that forged ahead, but the Transatlantic income gap that emerged as a result narrowed again during the so-called Golden Years of Capitalism that saw the Western European countries grow rapidly between 1950 and 1973.

Gradually, other parts of the world also began to participate in the process of modern growth, sometimes helped by decolonisation. In particular, East Asia became the most dynamic centre of the world economy after 1980, when China also joined the convergence club. On the other hand, economic growth in Africa has been much more incidental, and this continent has continued to lag behind the rest of the world.

In the previous *How Was Life* report, published by the OECD in 2014 (van Zanden et al.<sup>[1]</sup>), we tried to find out whether these patterns based on the reconstruction of GDP estimates were confirmed when we broadened the scope of analysis beyond GDP and included several other indicators reflecting trends in aggregate well-being at the level of the nation, such as earnings, health and personal security.

The first report was a contribution to the “beyond GDP” debate. The measurement of welfare based solely on GDP has been criticised for quite a long time, and this debate has received new impetus thanks to the seminal report by Stiglitz, Sen and Fitoussi (2009<sup>[2]</sup>). There is an increasing awareness that GDP provides only a partial perspective on the multidimensional nature of well-being – what matters to people’s lives – and has limited power in explaining changes in other aspects. Many old and new indicators of quality of life such as life expectancy and level of schooling have been suggested to supplement GDP estimates. Much progress has also been made to derive complementary summary measures. The Human Development Index (HDI) of the United Nations Development Programme (UNDP, 1990<sup>[3]</sup>; 2013<sup>[4]</sup>) was a

pioneering effort. More recently, scoreboards have been constructed based on headline indicators such as the one used by the OECD in its Better Life Initiative (OECD, 2020<sup>[5]</sup>).

An alternative measure of well-being that has been much discussed is subjective well-being, as measured by national or international surveys that ask people to evaluate their lives as a whole. There are, however, problems in international comparisons of this kind (language and cultural issues regarding what “happiness” or “life satisfaction” means in different parts of the world), which apply to an even larger degree to comparisons over time. And there is the obvious insurmountable problem that there are simply no social surveys for the period before 1970. Attempts to find a suitable proxy – such as the use of the word “happiness” in the literature – have so far been only partly successful (Hills, 2019<sup>[6]</sup>).

Against this background, the 2014 *How Was Life?* report (van Zanden et al.<sup>[1]</sup>) provided a synthesis of what was known about historical developments in various dimensions of well-being in the world economy since 1820. This co-operative effort by the OECD and its Development Centre, in collaboration with Clio-Infra and the Maddison Project, covered GDP per capita and Income Inequality, Real Wages, Educational Attainment, Life Expectancy, Human Height, Personal Security (Homicides), Political Institutions, Environmental Quality and Gender Inequality, together with a composite indicator summarising developments in all well-being dimensions. It presented as a result the first overview of the evolution of global well-being and global inequality over the long time-period 1820-2000.

## Aim of this report

The present report continues this line of work, and develops an even more ambitious research agenda. One implication of the “beyond GDP” debate is that we should not measure inequality within countries – and at the global level – on the basis of estimates of income disparities only, but broaden our approach to other aspects of social and economic inequality. In other words, if we are interested in inequality of well-being, we have to try to measure the development of the inequalities of all dimensions of well-being that are, for example, included in the OECD Better Life Initiative. This has been the first goal of this report: to collect and standardise historical data about inequalities of various dimensions of well-being. This is a new and experimental area for historical research. Such data have not been collected systematically in the past, and their use requires the collection and analysis of large new datasets (as presented in the various chapters of this report).<sup>1</sup>

We know rather well what happened to income inequality in the various parts of the world, thanks to the huge literature about this topic (Milanovic, 2016<sup>[7]</sup>). But, with few exceptions (OECD, 2020<sup>[5]</sup>), trends in the inequality of other dimensions of well-being have not been studied in the same, systematic way. We list the major advances that are made in this report:

- **Inequality of Longevity** (or of life expectancy) is an obvious candidate for such a study. The recent work by Case and Deaton (2019) about “Deaths of Despair” in the United States, and the current Covid-19 pandemic, which has affected different social classes very differently, are examples of its huge relevance. Chapter 6, authored by Lamar Crombach, Jeroen Smits and Christiaan Monden, presents a dataset that makes it possible to chart this dimension of the inequality of well-being for many countries over the past 200 years (Chapter 6).
- **Inequality of Educational Attainment** has also changed dramatically over time, and is at the same time highly relevant for well-being; in a way, the social-economic structure of society, with all its inequalities, is reproduced by the educational system. Bas van Leeuwen and Jieli Li provide the data to measure this in the very long run (Chapter 7).
- **Wealth inequality** has received renewed attention thanks to the research by Thomas Piketty. But research on global patterns throughout history is still very scarce. Chapter 5 by Guido Alfani and Sonia Schifano present measures for parts of the world economy in the long run.

- The extent of **Extreme Poverty** is another aspect of within-country inequality that is highly relevant for any assessment of well-being, as reflected by its inclusion in both the Millennium Development Goals and, now, the Sustainable Development Goals agreed by world leaders in 2015. Research by Michail Moatsos presents new historical measures of extreme poverty based on the “basic diet” poverty line pioneered by Allen (2017<sup>[8]</sup>) (Chapter 9).
- **Gender Inequality** is another aspect of within-country inequality that affects the well-being of the whole society. While it was already covered in our 2014 report, it is taken up again in this new book because of its relevance for the research agenda. Selin Dilli, Sarah Carmichael and Auke Rijpma have compiled new data on the issue covering additional dimensions (Chapter 8).

These topics cover many dimensions of inequality, but not all. How unequal is personal security distributed in a society – when the rich live in gated communities and the poor in ghettos infected by crime and drugs addiction? How unequal is access to a clean environment and a rich nature – with, traditionally, the rich residing in clean neighbourhoods upstream of the urban pollution, and the poor in dirty, polluted slums? The long-term trends in hours worked may be surprisingly different – the rich developing from a 19th century leisured class to an elite that is obsessed by hard work, whereas the working class at the same time has drastically reduced its workload since the late 19th century (as shown in Chapter 3). At the same time, the new precariat that has emerged in the rich countries in recent times (and that has, as “informal labour”, been the dominant form of labour in large parts of the developing world) does not have access to such privileges, and is often pressured to combine long working hours and very low wages. How have political institutions developed – from the egalitarian ideal “one man one vote” to political systems in which only money matters, and the social “underclass” is strongly discouraged from active political participation? These are some of the other inequalities that do matter for people’s lives – to get the full picture of societal inequality of well-being all dimensions count, of course.

The second aim of the present volume is to broaden the scope of the 2014 *How Was Life?* report by including new datasets covering additional dimensions of well-being. This concerns:

- **Working Hours.** Oisín Gilmore presents a new dataset of the Working Week in Manufacturing, providing an insight into work-life balance, a dimension not covered by the first report (Chapter 3).
- New estimates of **GDP per capita**, created as part of the Maddison Project. Jutta Bult and Jan Luiten van Zanden discuss the consequences of integrating a new set of PPPs, the ICP-round of 2011, into the Maddison dataset (Chapter 2).
- **Biodiversity Development** is crucial for understanding the environmental costs of economic development. Thomas van Goethem and Jan Luiten van Zanden provide measures changes in biodiversity through history (Chapter 10).
- While **Social Transfers** are not a well-being dimension *per se*, they represent one of the key policy levers through which governments have attended to the living conditions of their citizen. Peter Lindert presents evidence on the historical evolution of social transfers as a share of GDP throughout most of the world (Chapter 4).
- Finally, **Multi-dimensional measures of welfare** (Chapter 11) are discussed by Auke Rijpma in the final chapter, which also helps to summarise some of the key results of the volume.

The methodological underpinnings for approaching well-being as done in this report are most clearly expressed by Sen (1993<sup>[9]</sup>), (1985<sup>[10]</sup>) and Nussbaum (2000<sup>[11]</sup>). Sen’s theoretical framework is based on the distinction between functionings and capabilities. Functionings can be interpreted as actual achievements of a person, i.e. what he or she manages to do or be; they comprise an individual’s activities and his or her states of being, for example, being in good health or being able to move freely. On the other hand, capabilities are the individual’s abilities to achieve these functionings, e.g. the person’s freedom to choose between different ways of living (Kuklys and Robeyns, 2005<sup>[12]</sup>). This approach moves away from the traditional utility or resource-based views of well-being that relates welfare to income, enabling us to view life as a combination of various “doings and beings”, with quality of life assessed in terms of the

capability to achieve valuable functionings (Sen, 1993<sup>[9]</sup>). Nussbaum (2000<sup>[11]</sup>) identified ten different groups of capabilities that fit Sen's framework.<sup>2</sup> Some of these capabilities relate to the dimensions of well-being used by the OECD in its *How's Life?* report. For example, Nussbaum's capabilities "Life" and "Bodily health" can, to some extent, be proxied by measures of life expectancy.

The choice of indicators presented in this report has been guided by three considerations: the theoretical literature summarised above, the OECD's Better Life Initiative, and the availability of historical data and international comparative datasets. All chapters in this book present state-of-the-art datasets on historical developments in various dimensions of well-being, many of which are the result of recent research by the Clio-Infra team in co-operation with groups of experts in specific fields (such as in the Maddison project). Most of this research has resulted in publications in international journals (see the lists of publications in the various chapters). While most chapters focus on just one key indicator (e.g. GDP), some present several indicators covering various aspects of the well-being dimension considered (e.g. gender inequality).

The topics covered in this volume mirror the dimensions of well-being covered by the OECD's *How's Life?* report (see Table 1.1). Because of data limitations, this book does not cover housing conditions, subjective well-being or social connections, which were part of the *How's Life?* report. The unit of observation is, in most chapters, the 19th-21st century nation-state.

The data and the datasets underpinning the series are available online on the Clio-Infra website.<sup>3</sup>

**Table 1.1. Correspondence between the historical indicators included in *How Was Life?* (I and II) and the well-being dimensions in the OECD's *How's Life?* report**

Historical indicators featuring in <i>How Was Life?</i> (volumes I and II)	Corresponding dimensions in the OECD <i>How's Life?</i> report
GDP (I, II)	
Income inequality (I)	Income and wealth
Wealth inequality (II)	
Extreme poverty	
(Measures not available)	
Real wages (I)	Housing
Life expectancy (I)	Work and job quality
Life expectancy inequality (II)	
Working week - manufacturing (II)	Health (human capital)
Personal security (I)	Work-life balance
Institutions (I)	Safety
(Measures not available)	Civic engagement
Educational attainment (I)	Social connections (social capital)
Educational inequality (II)	
Environmental quality (I)	Knowledge and skills (human capital)
Biodiversity (II)	
(Measures not available)	Environmental quality (natural capital)
Gender inequality (I, II)	Subjective well-being
Social transfers (II)	
Composite indicator of well-being (I, II)	(Better Life Index)

Note. The framework underpinning the *How's Life?* report distinguishes between dimensions of current well-being, and resources (in the form of different types of capital) needed to ensure sustainability, while no such distinction is implemented in the *How Was Life?* reports; "resources" for sustainability are indicated (in parenthesis) in the right-hand column of the table. The *How's Life?* framework also considers "inequalities" as a cross-cutting aspect, rather than a separate dimension. While no composite indicator is included in *How's Life?*, the Better Life Index is a communication tool that allows users to set their weight to each of the 11 dimensions of the *How's Life?* framework, to derive a summary view of overall well-being in different countries; the Better Life Index is also indicated (in parenthesis) in the table above.

### **Practical issues**

One of the recurrent issues in historical research is the changing borders of countries. For example, Germany in 2013 is different from Germany in 1989, 1938 or 1913 – not to mention Germany before 1871 or 1798. This applies to almost all the countries covered in this report, although not to the same extent. Maddison created a dataset for GDP and population that took the borders of 1990 as the starting point and tried to correct historical data for past changes in national borders whenever these occurred. The idea was to create a consistent set of estimates of countries based upon the 1990 borders. This report follows this approach whenever possible.

The unit of observation is, as in most comparable studies, the 19th-21st century nation-state. We present values for individual countries and, based on these, for broad world regions and, if possible, for the world as a whole. We aggregate country data weighted by their populations, thus giving China a much bigger weight than Belgium or Nepal. In the presentation of the data, we focus on long-term trends; hence, we present most estimates in the form of averages over a ten-year period, where the 1820s is the average from 1820 to 1829. In other cases, where we do have annual observations – such as GDP estimates – we present these as such (i.e. without averaging across the decade); this is always clearly indicated in the tables included in this book, i.e. "1820" relates to the annual observation of that year.

We also concentrate on regional averages, distinguishing between the eight world regions that already featured in Angus Maddison's analysis. These are Western Europe, Eastern Europe and the former Soviet Union, the Western Offshoots, East Asia, South- and Southeast Asia, the Middle East and North Africa, Sub-Saharan Africa, and Latin America and the Caribbean.<sup>4</sup> Eastern and Western Europe are divided by

the former “iron curtain”, a somewhat arbitrary border that is, however, conveniently almost identical to Hajnal’s line used in many economic-historical and demographic studies as the border between different family systems in Europe. Eastern Europe, as defined in this report, also includes the territory of the former USSR, including its Asian parts. The Western Offshoots consists of the United States, Canada, Australia and New Zealand, regions of immigration from Western Europe that shared a common developmental path. East Asia consists of China, Japan, Taiwan, Korea and Hong Kong, while South- and Southeast Asia covers the rest of Asia, except for countries to the west of Afghanistan, which are part of the Middle East. The Middle East and North Africa region covers all African countries bordering the Mediterranean, Iran, the Arab world and Turkey. Finally, Latin America and the Caribbean consists of the Americas except for the United States and Canada.

Some of these regions are dominated by one large country (China towers over East Asia, the United States has a huge weight among the Western Offshoots). To deal with this, we present in this book tables with data for a sample of the 25 focus countries that together cover a large part of the world’s historical population. Regional averages are based on all country observations that are available in the Clio-Infra database for the region concerned. Going back in time, the number of observations is generally declining, and simple algorithms are used to create a set of consistent regional (and, on that basis, global) estimates. Usually it is assumed that “missing countries” develop in the same way as countries in the region for which data are available, and sometimes as countries with a similar economy.

To assess the quality of the historical data, each chapter includes a table that presents our assessment of the reliability of the statistics used. Data quality is broadly assessed in terms of **credibility** (the degree to which the sources of the data can be confidently relied on); **accuracy** (the extent to which the data are valid and reliably represent what they purport to measure); and **comparability** across countries (the extent to which data from different sources are collected under the same methodology and measure the same thing). Four classes of data are distinguished:

1. **High-quality** data are the product of official statistical agencies (national or international) or derived by techniques that ensure equivalent credibility; this implies that high standards of accuracy are maintained, and data are collected based on a consistent methodology across countries.
2. **Medium-quality** data are the product of historical research using the same sources and methods as applied by official statistical agencies; comparability is deemed to be generally good, but differences do exist (across countries and over time) that limit comparability.
3. **Moderate-quality** data result from historical research that relies on indirect data (for example, data of the proceeds of a tax on production are supposed to reflect the “underlying” output) and estimates, resulting in some loss of accuracy; also, not all country estimates are based on data collected with the same methodology.
4. **Low-quality** data are estimates based on various proxies. There may be significant inconsistencies between countries or gaps in coverage.

Much effort has been put into making the data comparable in time and space. However, we are aware of the fact that all data, contemporary and historical, have their weaknesses, and that international comparison – in particular on the global scale that we are doing here – is a “high risk, high gain” business. Even contemporary estimates of GDP are not beyond criticism, as regular revisions demonstrate, and margins of error are getting larger going back in time. We have always tried to collect and compare the best data available, but as Maddison’s work and the Maddison project demonstrate, this is an on-going and cumulative process: gradually, rough estimates (which Maddison called “guesstimates”) are replaced by more accurate ones based on more research, and comparisons in time and space help to filter out the highly implausible ones. This report should therefore not be seen as the endpoint of this kind of research, as many data will be refined and improved by future work, but as a review of the current state of the evidence from historical research about long-term trends in well-being in the world economy over the past 200 years.

## Introduction to individual chapters

The first part of the volume deals with between-country inequality. It investigates the aggregate levels of well-being of each country and compares countries with one another as if they were uniform entities. The volume opens with a discussion of the new estimates of GDP, the workhorse of all well-being studies. World **GDP per capita** increased by a factor of 13 between the 1820s and the 2010s. As the total population increased seven-fold, total GDP went up by a factor of 90. But this growth was spread very unevenly over the globe: until about 1950, the rich countries grew faster than the poor ones, resulting in a huge increase in international income disparities. Maddison based his seminal study of GDP on 1990 purchasing power parities and prices. For 2011, a new dataset of global prices is now available through the International Comparison Programme (ICP). The chapter investigates the consequences of using these alternative prices when computing historical estimates of GDP for the years before 1950. It argues that simply moving from the 1990 to the 2011 price benchmark does not improve estimates for the historical period, probably due to the greater distance between 2011 and the historical benchmark estimates in the dataset. The evidence summarised in the chapter suggests that the 1990 benchmark created by Maddison is probably the best compromise solution for historical estimates, in particular when used in combination with the 2011 PPPs for the most recent period.

Chapter 3 deals with one of the crucial missing elements in the first *How Was Life?* report (van Zanden et al., 2014<sup>[1]</sup>). Working hours and time off from work are central to people's work-life balance. When considered globally, we observe substantial disparities in working time, with people in some countries working significantly more than in others. Amongst OECD countries, the **working week in manufacturing** has declined dramatically since the 19th century. Full-time workers in manufacturing worked 60 to 90 hours per week in the 19th century. Today they work roughly 40 hours. In the second half of the 20th century, the Middle East and North Africa, as well as Sub-Saharan Africa, experienced an increase in working time in manufacturing. In the case of the Middle East and North Africa, the working week rose to close to 55 hours.

Chapter 4 presents estimates of the value of **social transfers**. While these transfers typically aim at addressing various risks that people face during their lives, they also play an important role in mitigating within-country inequalities. Such efforts were tiny or non-existent until political developments assigned greater responsibility for addressing more of these risks to the government in the last hundred years. In 1900, no national government transferred more than 3% of GDP via social programmes. This has increased gradually in most countries, to a level in some of them above 15% in 1970, and to around 30% today. While initially governments transferred most of these funds to support young people attending school, gradually the make-up of these transfers has shifted to old-age pensions and support to the elderly. Since the richest countries tend to have the most developed social programmes, social safety nets tend to be strongest where they are least needed on social and economic grounds.

Chapter 5 pushes forward the frontier of historical research on within-country economic inequality by investigating **wealth inequality**, as measured by the Gini coefficient and by the wealth share controlled by the richest 10 percent of the population. Different regions of the world have followed different long-term trends in wealth inequality. While in Western Europe wealth inequality has decreased in the past two centuries, in the Western Offshoots it increased, a tendency stopped only by World Wars I and II and by the troubled times in-between. Despite this difference, one can see a general pattern, with an overall tendency for wealth inequality to increase during the 19th century, and seemingly during the first decade of the 20th century. There is no clear correlation between the level of GDP per capita and wealth inequality.

Chapter 6 focuses on **inequality in** one of the crucial outcomes of economic development, i.e. length of life. Until 1900, **life expectancy** in the best-performing countries was limited to 65 years for men and 67 years for women. For men, it then increased to about 72 around 1950, where it plateaued until about 1970, after which it increased gradually to reach its current value of around 82. For women, the increase was more continuous, although a slight slowdown is visible after 1950, reaching the current value of



about 87 in the best-performing countries. Throughout the period, women had a higher life expectancy than men, a gap that reached 13 years in Russia in the 2000s. Inequality in life expectancy, as measured by the Gini index, is much lower than for income, and has decreased over time with only few exceptions (Mexico and Egypt in the 2000s and 2010s). Moreover, inequality in life expectancy has changed relatively little in countries such as India, Indonesia, Nigeria, Argentina, Brazil and Mexico, while it is higher in the United States compared to other developed countries.

Chapter 7 investigates **inequalities in educational attainment**, a factor that has crucial importance for equality of opportunity. The Gini coefficient in the years of schooling of the population declined significantly over the 19th and 20th centuries. This reduction was caused mostly by the fall in the share of people without any educational qualification. While the Gini coefficient is a measure of relative inequality (when the educational attainment of everyone doubles, the Gini coefficient does not change), a measure of absolute inequality such as the standard deviation highlights the existence of an educational Kuznets's curve: whereas initially a rise in education led to more inequality, after a certain point inequality starts to decrease. While most countries reached this tipping point in the 20th century, other countries are still in the "rising part" of the curve, implying that they confront a trade-off between stimulating education and reducing educational inequality.

Chapter 8 investigates **gender inequality** – a major determinant of well-being for, at least, half of the population – providing new estimates dating back to 1900 and sometimes earlier. These include new historical measures of the gender gap in wages and unemployment in the 20th century as well as new data on the share of female-headed households. While the post-World War II era has been traditionally seen as a period of progressive narrowing of gender gaps, the new evidence suggests that progress towards greater gender equality had started already in the pre-War era.

Chapter 9 discusses perhaps the most important benefit of economic growth – the reduction of **extreme poverty** – using a metric (based on the inability to purchase a near-subsistence basket of goods and services) that overcomes some of the limitations of the traditional 1.9 USD-a-day standard. Based on this measure, 53% of the world's population lived in extreme poverty in 1950, which is 23 percentage points lower than the level in 1820. By 1990, the rate had dropped further to 31%. The fall of extreme poverty continued in the following years, and by 2018 global extreme poverty had dropped to 10%, with reductions in India and China as the main drivers. Countries continue to have differing levels of extreme poverty. In Western Europe and the Western Offshoots, extreme poverty fell below 1% as early as the 1970s. When considering other world regions, the biggest declines include Russia (from a staggering 98% in 1820 to 2% in 2018) and Japan (where extreme poverty was eradicated by 1975 from levels as high as 95% in 1820). However, by 2018 the absolute number of persons living in conditions of extreme poverty was on par with that in 1820, at about three-quarters of a billion people.

Chapter 10 pushes the frontier of knowledge about the historical interaction between human activity and the natural environment by focusing on **biodiversity loss**. Globally, species populations declined by 36% to 52% in abundance between 1970 and 2010. But historical records suggest that biodiversity has been declining at least since 1500, and probably for the better part of the Holocene. A case study reconstructing biodiversity change in the Netherlands from 1900 onwards based on different assemblages of species shows a long-term decline in biodiversity between 1900 and 1970 and a partial recovery since the 1980s. Population growth, the intensification of agriculture, pollution and the expansion of infrastructure are identified as the key human drivers of biodiversity loss in the Netherlands.

The final chapter synthesises the results of the report through two **composite indices of well-being**. The first is an overall indicator compiled as the average of the average well-being measures of each country presented in the current and previous volumes (i.e. a "mean-of-means"). Adding the new average well-being measures included in this book does not fundamentally change the global picture drawn in 2014: that there was great progress throughout the 1820-2010 period, which is more evenly distributed across countries than in the case of GDP per capita. The estimated indices of well-being show less divergence

than GDP per capita, and therefore smaller global differences, as well as considerable convergence of large parts of the world (East Asia, Eastern Europe and the Middle East). However, in particular Africa did lag behind relative to the rest of the world, although well-being there did also increase substantially.

The second is a composite indicator of the within-country measures of well-being inequality (i.e. a “mean-of-inequalities”), which weights four different inequality measures (inequality of educational attainment, life expectancy, income and gender). The long-term declines in three aspects (income inequality being the exception) means that this composite inequality indicator has declined in many parts of the world since 1820, with a stronger reduction in Africa and Asia compared to Western Europe and its Offshoots. The 20th century therefore featured both large improvements of average levels of well-being and massive reductions in well-being inequality in life expectancy, educational attainment and gender relations. The decline in income inequality, which characterised the 20th century, lasted only until about 1970, and was followed by an often dramatic reversal. While we still live in a highly unequal world, where the place of birth – via the citizen rent – and other non-personal features – gender, race, religion, social class – strongly affect the choices that people have to lead a better life, this report has identified at least some changes that point to convergence and reductions of social and economic inequalities.

## References

- Allen, R. (2017), “Absolute poverty: When necessity displaces desire”, *American Economic Review*, Vol. 107/12, pp. 3690-3721. [8]
- Hills, T. (2019), “Historical analysis of national subjective wellbeing using millions of digitized books”, *Nature Human Behaviour*, Vol. 3, pp. 1271-1275. [6]
- Kuklys, W. and I. Robeyns (2005), “Sen’s Capability Approach to Welfare Economics”, in *Capability Approach. Studies in Choice and Welfare*, Springer, Berlin, Heidelberg, [https://doi.org/10.1007/3-540-28083-9\\_2](https://doi.org/10.1007/3-540-28083-9_2). [12]
- Milanovic, B. (2016), *Global Inequality: A New Approach for the Age of Globalization*, Harvard UP, Cambridge, Mass. [7]
- Nussbaum, M. (2000), *Women and Human Development: The Capabilities Approach*, Cambridge University Press, Cambridge. [11]
- OECD (2020), *How’s Life? 2020: Measuring Well-being*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9870c393-en>. [5]
- Piketty, T. (2014), *Capital in the Twenty-First Century*, Harvard University Press. [14]
- Sen, A. (1993), “*Capability and well-being*”, Clarendon Press. [9]
- Sen, A. (1985), “Well-being, agency and freedom: The Dewey lectures 1984”, *The Journal of Philosophy*, Vol. 82/4, pp. 169-221, <https://doi.org/10.2307/2026184>. [10]
- Stevenson, B. and J. Wolfers (2008), “Economic Growth and Subjective Well-Being: Reassessing the Easterlin Paradox”, *Brookings Papers on Economic Activity*, Vol. 2008, 1, pp. 1-87, <https://doi.org/10.1353/eca.0.0001>. [13]
- Stiglitz, J., A. Sen and J. Fitoussi (2009), *Report by the Commission on the Measurement of Economic Performance and Social Progress*. [2]

- UNDP (2013), *Human Development Report 2013. The Rise of the South: Human Progress in a Diverse World*, <http://hdr.undp.org/en/content/human-development-report-2013>. [4]
- UNDP (1990), *Human Development Report 1990: Concept and Measurement of Human Development*, <http://www.hdr.undp.org/en/reports/global/hdr1990>. [3]
- van Zanden, J. et al. (eds.) (2014), *How Was Life?: Global Well-being since 1820*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264214262-en>. [1]

## Notes

<sup>1</sup> A focus on well-being inequalities (beyond income), their causes and consequences also features in the Deaton Review of Inequalities launched by the IFS (Institute for Fiscal Studies) in May 2019 (<https://www.ifs.org.uk/inequality/about-the-review/>).

<sup>2</sup> These capabilities are: (1) life, (2) bodily health, (3) bodily integrity, (4) senses, imagination and thought, (5) emotions, (6) practical reason, (7) affiliation, (8) other species, (9) play and (10) control over one's environment.

<sup>3</sup> [www.clio-infra.eu](http://www.clio-infra.eu).

<sup>4</sup> The regions used in this report are those used by Maddison in his own work for the OECD.