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Living Standards, Inequality, and Human Development since 1870: A Review of Evidence

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Abstract
During the last one-and-a-half centuries, average world income grew 10-fold, the composition of output and relative factor returns shifted, and globalization occurred. How have the fruits of growth been distributed among different income groups and countries? How did the *West* compare to the *Rest* of the world in terms of improving well-being? In this survey, we conclude that consumption per person has grown over time, but more slowly than GDP per capita, as the share of private consumption declined, although was partly offset by the rising share of public consumption. Income inequality within countries fell from the early to late twentieth century and has risen in the recent decades. Living standards improved across the world, but the gap between the *West* and the *Rest* increased, and between-country inequality widened over time until the 1990s, when the trend reversed. Among world inhabitants, income distribution has followed a similar trend, with inequality increasing up to 1990 and declining in the 21st century. Impressive long-run gains in human development have taken place in the world without being interrupted by the economic slowdown and globalization backlash during 1914-50.

Keywords: Living Standards, Inequality, Well-being, Human Development.
JEL Classification: I00, N30, O15

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During the last one and half centuries, technological development improved living standards, shifted the composition of output, drove globalization, and changed relative factor returns, hence income distribution. These changes occurred in parallel with the improvement in well-being, which depends on health, education, political and civil liberties, the environment, leisure, and security as well as the consumption of goods and services.

How much have living standards improved, and how equally have the fruits of economic growth been distributed among different income groups during the last one-and-a-half centuries? How did different regions of the world perform in terms of raising income and improving welfare? Did high-income countries (western Europe, its offshoots and Japan), referred to as the *West* hereafter, do better vis-à-vis the developing countries, the *Rest* hereafter?

In this essay, we focus on three issues. Firstly, we look at the average improvement in material welfare, as captured by per capita GDP and consumption. Then, we discuss the extent to which the less affluent members of different countries benefited from economic growth and how income inequality affected welfare. Lastly, we look beyond GDP to examine human development, which includes achievements in education and health.

GDP and Consumption

Per capita GDP is one of the most commonly used measures of living standards. Comparing per capita GDP of different countries converted into a common currency unit (say the U.S. dollar) using market exchange rates usually provides misleading pictures of inter-country income gap, because the procedure does not take into account international differences in price level.

Correcting for cross-country price gaps, known as purchasing power parity (PPP) adjustment, is no straightforward undertaking, because it involves painstaking collection of price information for a large number of goods and services in different countries. The comparative assessment of growth performance is an even more daunting task because it requires estimating cross-country price gaps in more than one year. For this reason, to construct a panel dataset showing how per capita GDP in different countries evolved over time, Angus Maddison (2006) resorted to a shortcut, which was to project backwards and forwards the PPP-adjusted per capita output for 1990 (expressed in Geary-Khamis

international dollars, referred to as GK$1990 hereafter), using growth rates derived from historical per capita GDP series for individual countries.

This procedure is based on the assumption that the relative prices prevailing within the basket of goods and services used to construct the PPP for 1990 are applicable to non-benchmark years, which may be harmless for short periods, but introduces serious distortions over one and half centuries.[2] Despite the biases caused by shifts in relative prices over time, Maddison's database has been used in numerous studies exploring the causes of economic development and growth. The following paragraphs outline the growth performance of different regions in the past one and half centuries as it is suggested by the Maddison Project Database (Maddison Project, 2013).

In 2015, the world average per capita income was nearly ten times higher than in 1870. Over the past one and a half centuries, per capita output grew at widely different rates in different parts of the world as is indicated by the 30-fold increase in Japan, the 15-fold increase in the European Offshoots and China, and the threefold increase in Sub Saharan Africa. Between 1870 and 2015, per capita output grew fivefold in North Africa, eightfold in India and Eastern Europe, and 12-fold in Russia. Per capita output growth in Latin America, the rest of Asia outside China and Japan, and Western Europe roughly matched the world average (Table 1).

Table 1. **Real GDP per Head: World Regions, 1870-2007 (Geary-Khamis $1990)**

	W. Offshoots	West Europe	East Europe	Russia	Latin America	North Africa	SSA	Japan	China	India	Rest of Asia	World
1870	2126	1970	1033	762	800	740	558	737	505	533	636	853
1913	5142	3435	1847	1422	1507	1021	674	1387	464	673	921	1491
1929	6551	3995	2116	1386	1921	1101	687	2026	473	728	1142	1743
1950	9456	4272	2300	2841	2452	1133	825	1921	376	619	924	2099
1970	14613	9646	4696	5575	3935	1803	1233	9714	776	868	1781	3736
1990	22353	15464	5903	7779	5086	2705	1129	18789	1448	1309	3251	5060
2015	31840	20728	8746	9222	7630	4289	1779	22791	7582	4332	6480	8301
1870-1913	2.1	1.3	1.4	1.5	1.5	0.8	0.4	1.5	-0.2	0.5	0.9	1.3
1913-1950	1.6	0.6	0.6	1.9	1.3	0.3	0.5	0.9	-0.6	-0.2	0.0	0.9
1950-1970	2.2	4.1	3.6	3.4	2.4	2.3	2.0	8.1	3.6	1.7	3.3	2.9
1970-1990	2.1	2.4	1.1	1.7	1.3	2.0	-0.4	3.3	3.1	2.1	3.0	1.5
1990-2015	1.4	1.2	1.6	0.7	1.6	1.8	1.8	0.8	6.6	4.8	2.8	2.0
1870-2015	1.9	1.6	1.5	1.7	1.6	1.2	0.8	2.4	1.9	1.4	1.6	1.6

Note: SSA, Sub Saharan Africa *Sources*: Maddison Project (2013).

[2] See the discussion in Prados de la Escosura (2000). For an illustration of the index number problem, see Fukao, Ma, and Yuan (2006)'s comparison of Japan, Korea, and Taiwan in the early twentieth century.

The average world per capita output grew faster in some periods than in others, with per capita output growth falling below the growth trend rate during 1870-2015 (1.6%) during the first half of the twentieth century in the wake of the World Wars and the Depression (0.9%), rising above the trend growth rate in "the Golden Age of Capitalism" (1950-1970) (2.9%) and, then, converging to the trend growth rate in the last half a century (1.8% over 1970-2015).

Furthermore, the pattern of comparative growth differed depending on period. During the first wave of globalization (1870-1913), the US thrived, China suffered stagnation, and India and Sub-Saharan Africa achieved sluggish growth, with Europe (including Russia) and Latin America growing at rates close to the world average. During the first half of the twentieth century, the Soviet Union achieved remarkable advance, and the European Offshoots made respectable progress, which was followed not far behind by Latin America's performance. The average income growth in Europe, Africa, and Asia (China in particular) was below the world average with the exception of Japan, where income grew in the first half of the twentieth century at a rate close to the world average. In the Golden Age (1950-1970), both Western Europe and Japan far outperformed the rest of the world, and socialist Eastern Europe, China, and the rest of Asia (less India) also did better than the world average. Although the world income growth slowed down considerably after 1970, Asia, and particularly India and China, forged ahead, while Sub Saharan Africa and Russia fell behind.

How did these gains in average incomes translate into improvements in living conditions? Although a straightforward way of answering this question is to look at consumption, unfortunately, the available evidence on per capita consumption mostly refers to present-day developed countries. Robert Barro and José Ursúa's (2008) dataset allows one to compare trends in real per capita GDP and private consumption across world regions. As Table 2 shows, private consumption per person improved less rapidly than per capita income. The difference reflects the faster growth of other demand components of GDP, capital formation and public consumption, in particular. However, per capita consumption likely increased more rapidly than the Barro and Ursúa dataset suggests, because more and more of the goods and services that used to be privately supplied (education, health, etc.) came to be provided by the government. As an increasing number of countries made the transition to democracy, fiscal redistribution took place in the form of tax-based social transfers, which included assistance for poor families, unemployment compensation, public

non-contributory pensions, housing subsidies, and public health expenditures (Lindert, 2004).

Table 2. Real Per Capita Consumption and GDP Growth (%)

	1870-2006		1913-2006		1950-2006	
GDP pc	**GDP**	**Consumption**	**GDP**	**Consumption**	**GDP**	**Consumption**
Latin America			1.8	1.7	1.8	1.6
Western Offshoots	2.0	1.8	1.9	1.7	1.9	2.0
Europe	1.8	1.6	2.1	1.9	2.8	2.6
Asia			3.2	2.5	3.5	2.9
S. Africa					1.2	1.4

Sources: Barro and Ursúa (2009)

Although an international and historical database on private and public consumption is unavailable, we may draw on the systematic variations in the composition of aggregate demand associated with rising levels of per capita income to infer how private and public consumption evolved over time. Panel A of Table 3 shows that as per capita income rose from 1,000 to 12,000 GK$1990 in European countries during the late 19th and the 20th century, the share of private and government consumption in GDP trended in opposite directions, with the share of private consumption shrinking by 27 percentage points of GDP (from 87.7% to 60.4%) and the share of public consumption expanding by 11 percentage points (from 5.8% to 16.7%).[3] As a result, the share of total consumption (including both private and public) shrank only by 16, rather than 27, percentage points, from 93.5% per cent to 77.1%, of GDP. Meanwhile, capital formation raised its share significantly (from 8.3% to 23.0%) suggesting the presence of powerful incentives to sacrifice present day consumption in order to achieve higher levels in the future.

Panel B of Table 3 compares the composition of the aggregate demand in pre-World War I Europe and the developing world during the Golden Age, which were estimated, respectively, by Prados de la Escosura (2007) and Hollis Chenery and Moshe Syrquin (1975). Within the GK $ 1,000-4,000 income range, which corresponds to average world income between the late 19th and mid-20th century, overall consumption, including both private and public consumption, accounted for a larger part of the aggregate output in pre-1914 Europe than in the post-1950 developing world, because the smaller share of public consumption was more than offset by the smaller share of investment in pre-1914 Europe.

[3] Public consumption includes national defence expenditure which does not necessarily increase welfare.

Table 3. Patterns of Development (Geary-Khamis $1990)

Panel A. Modern Europe

Real GDP per Head	1000	2000	3000	4000	6000	8000	10000	12000
Demand (% GDP)								
Private Consumption	87.7	80.1	75.7	72.5	68	64.9	62.4	60.4
Government Consumption	5.8	8.8	10.6	11.9	13.7	14.9	15.9	16.7
Total Consumption	93.5	88.9	86.3	84.4	81.7	79.8	78.3	77.1
Investment	8.3	12.4	14.8	16.5	18.9	20.6	21.9	23.0

Panel B. Pre-1914 Europe and Golden Age

Real GDP per Head	1000	2000	3000	4000
Private Consumption (% GDP)				
Modern Europe (1850-1990)	87.7	80.1	75.7	72.5
Pre-World War I Europe	84.7	82.0	80.5	79.4
Developing Countries 1950-70	66.7	64.5	62.5	61.7
Public Consumption (% GDP)				
Modern Europe (1850-1990)	5.8	8.8	10.6	11.9
Pre-World War I Europe	6.2	6.9	7.3	7.6
Developing Countries 1950-70	13.5	13.8	14.4	14.8
Total Consumption (% GDP)				
Modern Europe (1850-1990)	93.5	88.9	86.3	84.4
Pre-World War I Europe	90.9	88.9	87.8	87.0
Developing Countries 1950-70	80.2	78.3	76.9	76.5
Investment (% GDP)				
Modern Europe (1850-1990)	8.3	12.4	14.8	16.5
Pre-World War I Europe	8.8	11.1	12.4	13.3
Developing Countries 1950-70	19.0	21.0	22.6	23.3

Sources: Prados de la Escosura (2007).

In short, over the course of the past one and half century, per capita real output growth translated into less than proportional improvements in per capita private and public consumption, and the gap between per capita output growth and per capita private consumption growth widened over time.

Finally, the composition of consumer expenditure shifted dramatically as a result of technological progress, a more assertive role of government, and higher average income. In the United States, for example, between 1869 and 2013, the share of perishable goods (including food, beverages, tobacco, printed material, and fuel) in consumer expenditure declined from one half to one-tenth, while the share of services jumped from one-fourth to two-thirds. Moreover, in 2013, spending on categories that did not exist in 1869 (recreation,

motor vehicles, appliances, communication, education) represented more than half of all consumer expenditure (Gordon, 2016: 38-39).

Living Standards at the Bottom

Referring to averages, per capita consumption or output is mute about the welfare of those at the bottom of income distribution. How did the lower income groups fare as different countries of the world were successively engulfed by the waves of industrialization and globalization?

Real wages of unskilled workers, i.e. nominal wages divided with a consumer price index (CPI), are the standard measure of the living standards enjoyed by the poor. Real wage indices typically do not tell how well off workers are, but whether their living standards improve or deteriorate. Welfare ratios, derived by dividing "average annual earnings … by the cost of a poverty line consumption bundle for a family" (Allen, 2001: 425), provide information on the levels of as well as changes in workers' material well-being. Specifically, welfare ratios exceeding 1 indicate income levels allowing consumption above the poverty line, and those below 1 unsustainably low living standards.[4] Hence, one can compare welfare ratios across different places as well as over time.

Welfare ratios can be calculated using a relatively limited amount of information, which includes nominal wage rates and prices of goods comprising a consumption basket required for subsistence. To derive historical welfare ratios in Europe, Robert Allen (2001: 245) supposed that an adult worked 250 days per year to support a family of two adults and two children, an assumption that became standard in subsequent studies estimating welfare ratios in the rest of the world. Welfare ratios are usually calculated using nominal wages observed in urban areas, where unskilled workers may have worked as many as 250 days per year. In the countryside, however, a typical work year was likely to be considerably shorter, and significant nominal urban-rural wage gaps existed, especially outside Europe and its Offshoots (Heldring and Robinson, 2012). All this implies that the welfare ratios derived following Allen's (2001) procedure are likely to overestimate workers' living standards.

Table 4 reproduces and summarizes the welfare ratios estimated for different countries between the mid-nineteenth and mid-twentieth centuries. Welfare ratios more

[4] Allen et al. (2011) refined his metric distinguishing between 'barebones' and 'respectability' baskets, with the cost of the barebones basket defining an absolute poverty line.

than doubled from about 2 to nearly 6 by 1913 in the Netherlands (Amsterdam) and Germany (Leipzig) from 1870-1913, while in Britain (London) the ratio, already as high as 4 in 1870, achieved a two-fold increase (Allen et al., 2011). In Austria-Hungary, between mid-nineteenth century and the eve of World War I, welfare ratios improved in the western regions (present-day Austria and Czechia), but remained stagnant in the eastern regions (including present-day Slovakia, Hungary, Croatia, Slovenia, and Romania) (Cvrcek, 2013).

Table 4. Welfare Ratios: A Global View

	1850s	1860s	1870s	1880s	1890s	1900s	1910-1913	1910s	1920s	1930s	1940s	1950s	1960-65
EUROPE													
Amsterdam	2.4	2.1	2.2	2.8	3.5	4.7	5.5						
London	4.5	4.8	5.3	6.4	7.6	7.4	8.1						
Leipzig	2.3	2.6	2.4	3.3	4.5	4.4	5.8						
Milan	0.8	1.0	1.1	1.3	1.6	1.3	1.9						
LATIN AMERICA													
Mexico City	2.1	1.9	2.5	2.6	2.1	2.5	2.4	1.9	2.9				
ASIA													
China								1.3	1.2				
Japan								1.5	2.2	2.3			
Korea								1.3	1.5	1.4			
Taiwan								1.6	1.9	1.7			
Calcutta/Bengal			1.3	1.8	1.4	1.5							
Istanbul	3.4	2.9	3.0	3.4	3.9	3.9	4.4						
Cyprus				2.9	2.5	2.0	1.7						
AFRICA South Africa Cape Colony													
European	3.8	3.7	4.3	4.4	4.4	5.8	5.4						
Colour.	2.5	2.4	2.8	2.4	2.1	2.8							
Nyasaland						0.5	0.7	0.7	0.7	1.2	1.0	1.3	1.4
West Africa													
Gold Coast				1.9	2.2	2.4	2.4	2.4	2.6	3.4	3.1	4.1	5.1
Sierra Leone				1.5	1.8	1.9	1.9	1.4	1.2	1.8	1.6	2.4	3.1
Nigeria				2.1	2.8	3.0	2.6	2.3	1.9	2.2	1.9	2.0	2.3
The Gambia				2.5	2.7	2.8			1.6	2.4	2.0	2.6	4.3
East Africa													
Tanganyika									2.0	1.4	1.1	1.6	2.7
Kenya						1.3	1.3	1.2	1.0	1.1	1.3	1.7	2.2
Mauritius				1.4	2.1	2.2	1.9	1.8	3.3	3.4	2.5	3.7	4.5
Uganda						1.1	0.7	1.0	1.6	1.6	0.9	1.1	

Sources: Allen et al. (2011), Caruana-Galizia (2015), Cha (2015), Challú and Gómez-Galvarriato (2015), de Zwart (2011), Frankema and van Waijenburg (2012).

Meanwhile, in the Americas, welfare ratios rose from below 2 in the mid-nineteenth century to above 5 in the early twentieth century in the United States (Philadelphia) (Allen, 2014), while in Mexico (Mexico City), the welfare ratio increased moderately from the 1870s to 1930 despite the setback during the revolutionary 1910s (Challú and Gómez-Galvarriato, 2015).

In Asia, including Japan (Kyoto/Tokyo), China (Beijing, Canton, Suzhou/Shanghai), India (Bengal), and Turkey (Istanbul), welfare ratios, remaining above the subsistence level, tended to rise during 1870-1913 (Allen 2007; Allen et al., 2011; Caruana-Galizia, 2015). In Istanbul, welfare ratios increased by 60 per cent between the 1860s and the eve of World War I, but stagnated around the subsistence level in Egypt.[5]

In the early twentieth century, welfare ratios exceeded unity in East Asia, as the evidence gathered on main cities in China (Beijing), Taiwan (Taipei), Korea (Seoul), and, especially, Manchuria (Dalian) shows (Cha, 2015). Between 1900 and 1938, welfare ratios grew only in Japan, stagnating in Korea and Taiwan and declining in China and Manchuria (Cha, 2015). On the eve of World War II, welfare ratios in Japanese cities were above 2, with those in Taiwan and Manchurian cities staying not far behind, but the stagnant welfare ratio of unskilled workers in Korean cities did not differ significantly from the level of subsistence.

Turning to Sub-Saharan Africa, welfare ratios exceeded subsistence levels in Natal and the Cape Colony for both white and coloured workers, while in Natal native workers were below the subsistence level until the 1880s (de Zwart, 2011). White labourers enjoyed improvement in living standards over time while real wages of coloured workers stagnated, which resulted in widening income differentials across racial lines. The living standards of natives also improved over time to reach the subsistence level by the end of the nineteenth century. White workers enjoyed similar levels of welfare ratio to those prevailing in Western Europe, and coloured labourers fared better than Asian workers.

Ewout Frankema and Marlous van Waijenburg's (2012) studied living standards in nine countries in British Africa from 1880 to the early 1960s.[6] Their results suggest that

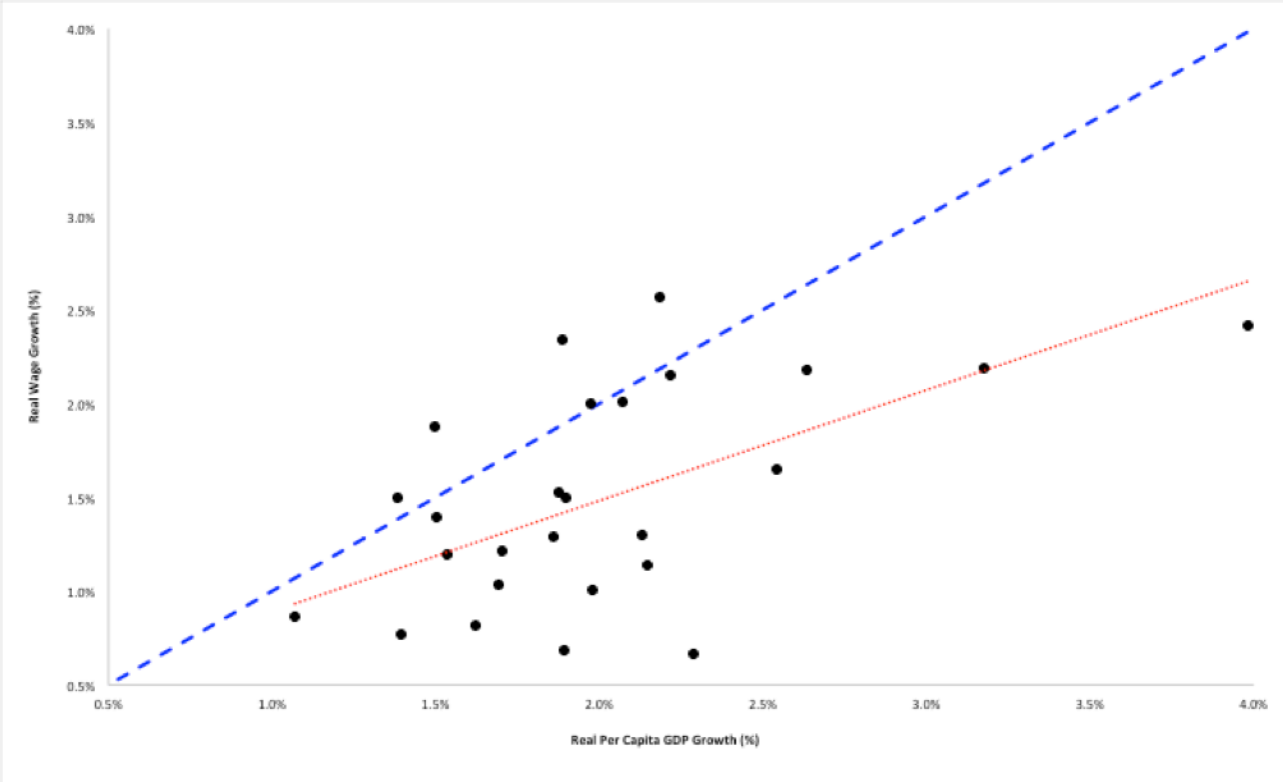
[5] Özmucur and Pamuk (2002), Allen (2014). In Istanbul, the welfare ratio rose by 15 per cent between the 1820s and 1914, because most of the 60% represented a recovery after the early nineteenth century decline (Özmucur and Pamuk, 2002).

[6] The welfare ratios for Sub-Saharan Africa have been computed by assuming 312 working days per year, rather than the standard 250 days. As Juif and Frankema (2018) point out, 312 working days refer to regular workers while temporary migrants usually worked below 200 days per year.

unskilled urban workers enjoyed a level of consumption well above the subsistence level already during 1880-1914, except in Nyasaland (present-day Malawi). It is worth noting that welfare ratios were significantly higher in West than in East Africa. In the interwar period, long–term improvement took place across the board, although more slowly in East than in West Africa. Lastly, Dácil Juif and Frankema (2018) show remarkable improvements occurring in Katanga (Congo) and Northern Rhodesia (Zambia) where miners moved from around subsistence in the early 1920s to welfare ratios of 7-8 by the late 1950s but these levels were exceptionally high among African workers.

To sum up, welfare ratios increased in most places from the late nineteenth to the early twentieth centuries, and around 1913 unskilled workers' living standards were often above the 'poverty line' (Table 4).

Figure 1. Per Capita GDP and Real Wage Growth %)



Sources: Williamson (1995); Maddison Project Database (2013); Mizoguchi (2008); Cha (2014); Makino and Minami (2015); Astorga (2017); **http://www.stat.go.jp/english/data/chouki/**

While existing estimates of welfare ratio typically refer to pre-World War II era, standards real wage indices exist for unskilled workers for the post-1945 period. Figure 1 plots the annual growth rate of unskilled real wages (Y-axis) against per capita output growth (X-axis) in 26 countries in the Americas, Australasia, and Europe. Real wage growth

typically refers to the period 1870-1988 for the West and 1900-2000 for the Rest. On average, real wage grew 1.4% per year, with growth taking place more rapidly in East Asia than in Latin America. Per capita output growth achieved by the 26 countries is positively correlated with unskilled real wage growth. Except for Britain, Denmark, Ireland, and Sweden, the data points lie below the 45 degrees line from the origin, suggesting that lower income groups benefited less from the economic growth occurring in the past one and half century than higher income groups. The differential growth in unskilled real wages and per capita output is also indicated by the slope of the regression line showing that one percent increase in per capita output growth was associated with 0.59% increase in unskilled real wages.

From 1870-2000, the number of hours worked per employee fell from over 3,000 to roughly 1,500 in Europe and from slightly less than 3,000 to 1,800 in North America and Oceania (Huberman and Minns, 2007). In East Asia, working hours declined from 3,200 in 1930 to 2,000 in 2015 in Japan, from 3,225 to 2,216 in Taiwan over 1950-2001, and from 2,470 to 2,267 in South Korea during 1963-2015.[7] Working hours contracted in Latin America as well. In 1950, the number of working hours was about 2,000 in Argentina and Brazil, 2400 in Mexico, and 2,700 in Chile, which fell to 1,700 in Argentina and Brazil, and 2,000 and 2,200 in Chile and Mexico by 2015 (Conference Board, 2018). Some of the real wage growth in Figure 1 being based on hourly or daily wage rate, and other referring to wage earning per month or year, the reduction in working hours implies that the gap between per capita output and annual wage earnings growth would have been wider than the slope of the regression line in Figure 1 suggests.

Different trends in real wages and real incomes per head is anything but puzzling, as they refer to different types of income: while per capita GDP is based on the returns to all factors of production (including physical and human capital, natural resources, and raw labour), unskilled wages represent the rewards for raw labour. Thus, the gap per capita output and unskilled real wage growth as seen in Figure 1 suggests changes occurring in the distribution of income in the past century.

[7] The sources for Japan, Korea, and Taiwan are, respectively, from http://www.stat.go.jp/english/data/chouki/19.html, http://kosis.kr, and Mizoguchi (2008).

Inequality

While the Gini coefficient represents one of the best known and most comprehensive measure of income inequality, it has been computed for only a limited number of countries and usually for a relatively recent period. Hence, we begin by presenting the somewhat more abundantly available evidence on the concentration of income at the top of the distribution to compare income inequality across countries and to track changes in income inequality over time.

Pioneered by Simon Kuznets (1953), the estimation of top income shares has been carried out in an increasingly refined way for an increasingly large number of countries by Tony Atkinson and Thomas Piketty and their collaborators over the last two decades. Income tax returns data are essential for the calculation, which entailed that long run estimates of top income share are available typically for OECD countries. Available estimates, typically beginning from 1913 and presented as Figure 2, suggest 1) a drop in income concentration in the early 20th century, a development known as the Great Levelling, which was not reversed after World War II and 2) the resurgence of income inequality after 1980, particularly in Anglo-Saxon countries (Figure 2a).

Figure 2. Top 1% Share in Total before Tax Income in OECD and in the *Rest*

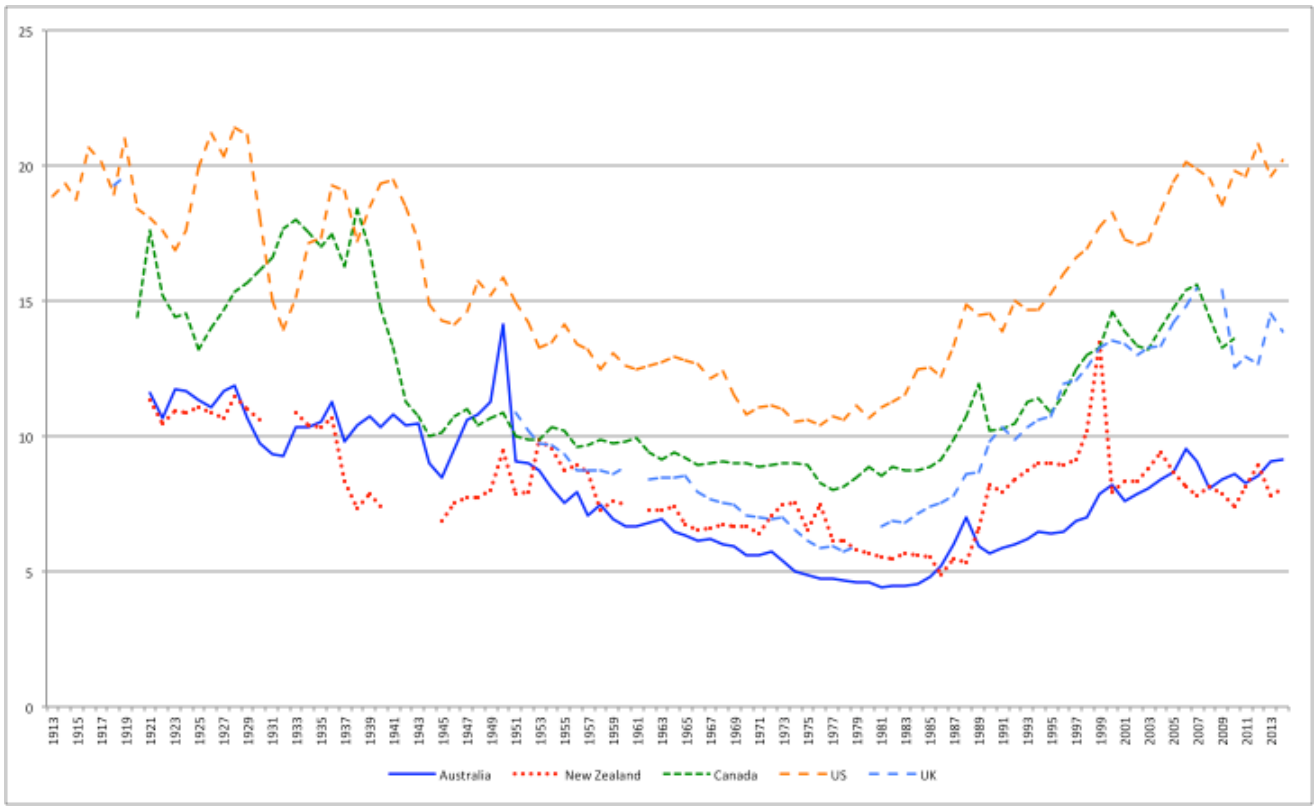


Figure 2a. Anglo-Saxon Countries

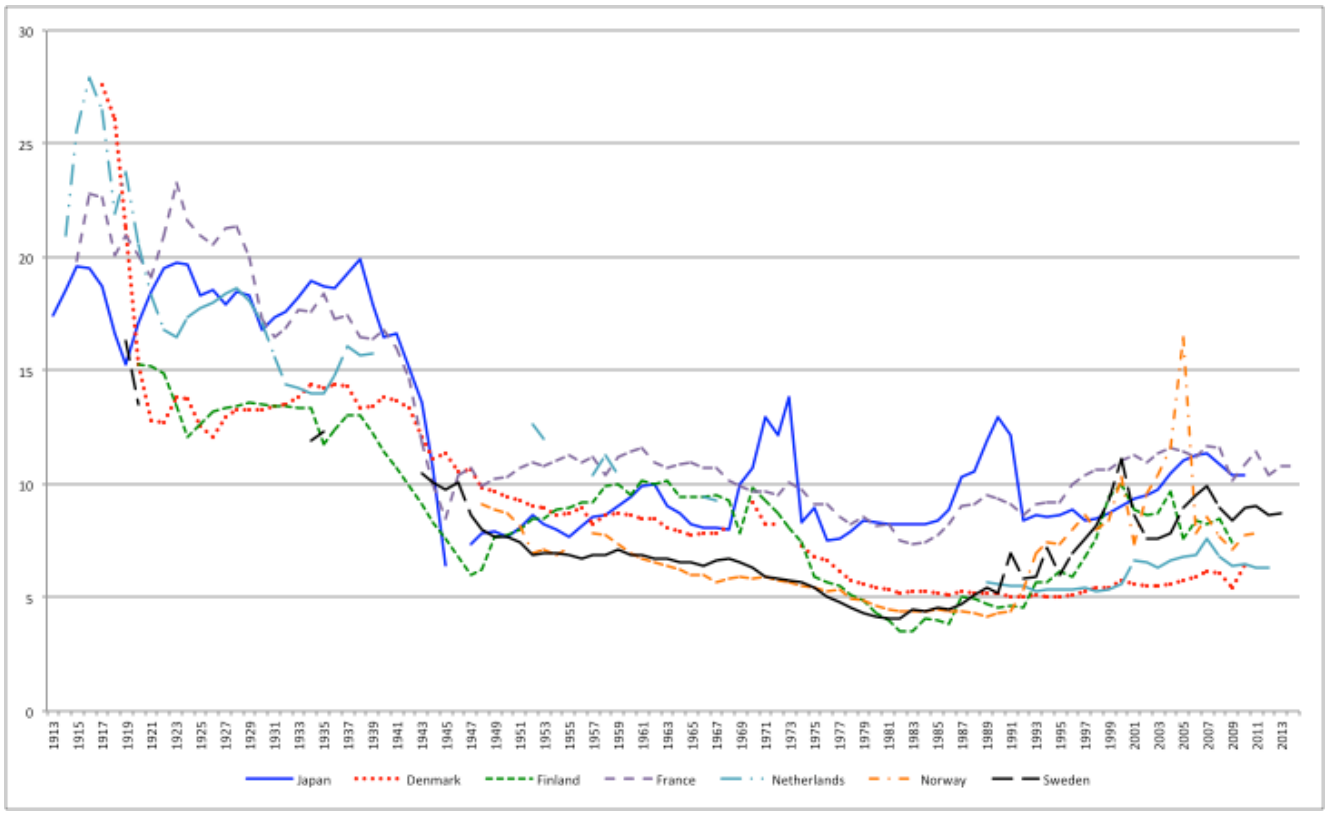


Figure 2b. Other OECD Countries

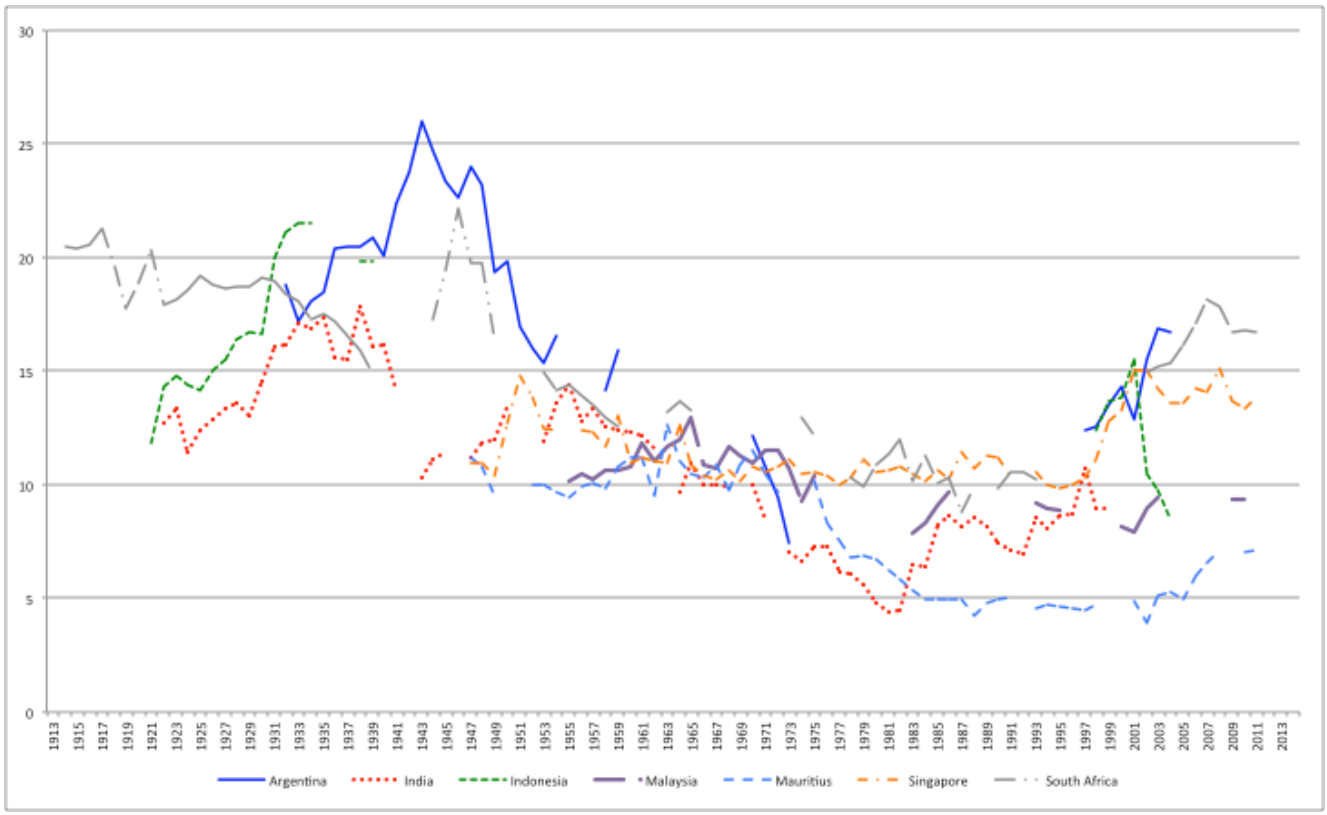
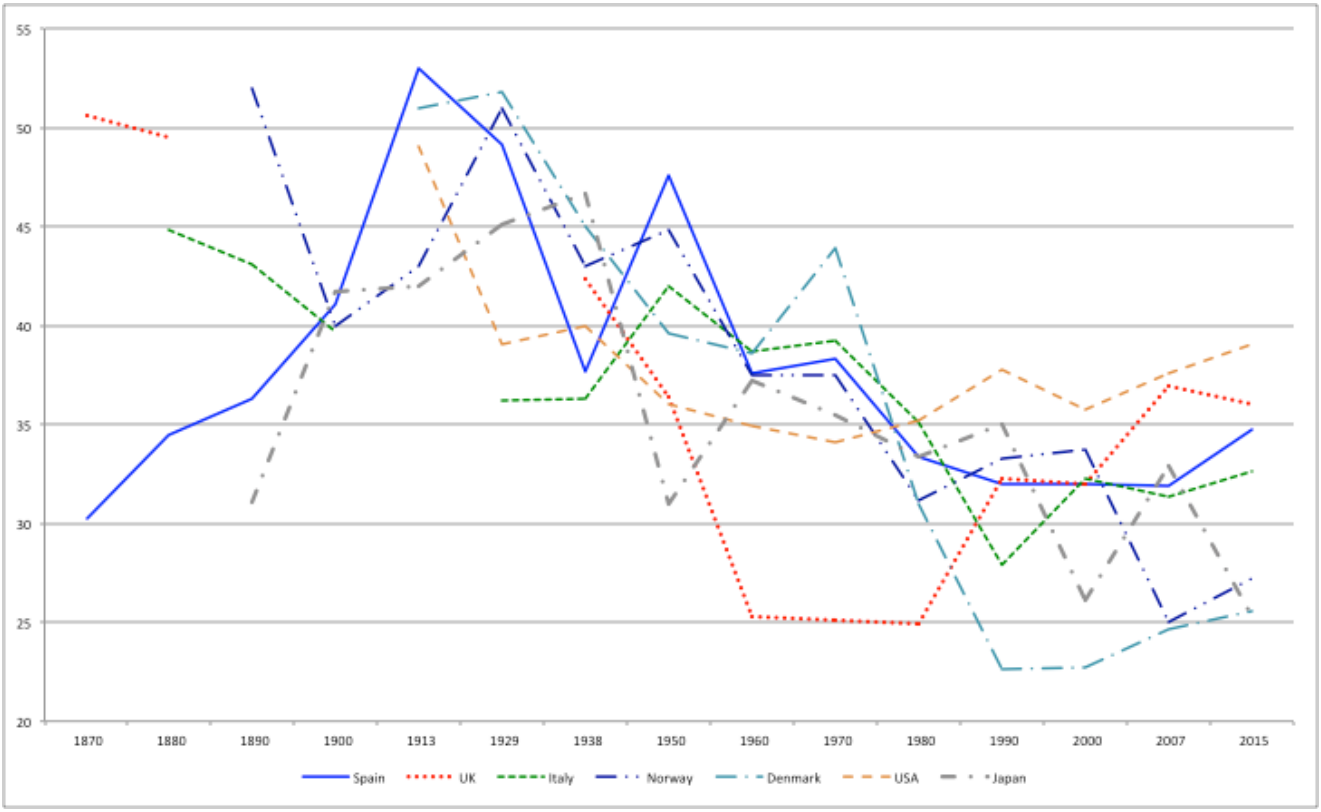


Figure 2c. The Rest
Sources: World Inequality Database (WID) http://wid.world/es/series/

Figure 3 presents the Gini coefficients for the seven rich countries from the late nineteenth to early twenty first centuries. They convey impression of income inequality first rising and then falling, which confirms the hypothesis known as the Kuznets curve, an inverted U-shape association between income inequality and the level of per capita income. Studies on income inequality in the Kuznetsian tradition explain inequality in terms of economic forces such as the supply of and demand for skilled labour. Kuznets (1955) posited an inverted U-shape association between income inequality and the level of per capita income, the so-called Kuznets Curve. Kuznets (1955) explained the non-linear relationship in terms of widening and then narrowing of skill premium, which depends on the supply of demand for skills.

Figure 3. Income Inequality in OECD Countries, 1870-2015 (Gini)



Sources: Prados de la Escosura (2008) and OECD

As Branko Milanovic (2016) observed, the two separate measures of income inequality are broadly consistent with each other in the sense that the falling top income share in the early twentieth century corresponded with the downswing in the Gini coefficient, and that indications are found of the Ginis rising in recent decades.

Nevertheless, it should be noted that the two measures look at different parts of the distribution. The Gini focuses on the middle (mode) and excludes the very top and bottom of

the distribution, while the top income share is mute about the middle and the bottom of the distribution. In addition, the two measures are affected in different degrees by tax evasion and by the fact that only a very small fraction of the population was subjected to income taxation in many countries prior to the mid twentieth century. It makes sense, therefore, that the trends seen in Figures 2 and 3 do not match perfectly.

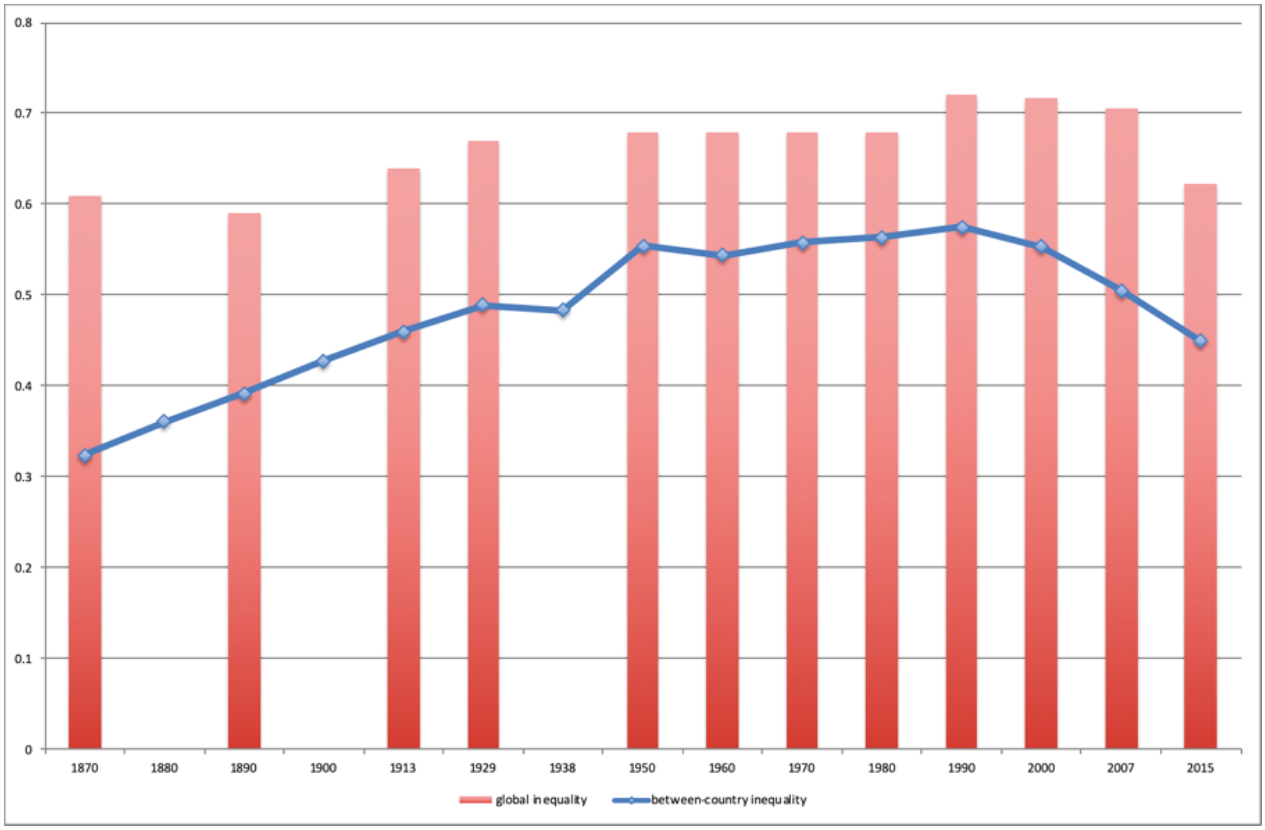
The recent rise in income inequality, particularly in high-income countries, has been accounted for by skill-biased technological change expanding the demand for skilled workers and widening the earning gap between skilled and unskilled workers (Kaplan and Rauh, 2013; Goldin and Katz, 2008). This development was reinforced by globalisation lowering the price of capital goods and thereby encouraging the substitution of capital goods for unskilled labour (Milanovic, 2016).

Studies focusing on top income shares tend to highlight politics as the drivers of income inequality however. In this interpretation, the decline of income concentration between 1913 and 1950 is accounted for by a fall in top capital incomes due to wealth destruction, inflation, bankruptcy, and policies to finance war debts. Additionally, progressive income and estate taxation, which was introduced to a great extent under the communist threat and under the pressure coming from trade unions and left-wing parties, not only prevented the inequality contraction from being reversed, but also speeded up the decline in top income shares in the post-WWII era. In the last decades of the 20th century, when the Soviet threat was over, economic liberalisation caused the concentration income at the top of distribution by giving favour to property and high salary income earners.[8]

Is the post-1980 increase in inequality primarily due to politics and rent-seeking? Or is it due to supply and demand-interaction between technology and education? Do higher incomes of the top 1% reflect market imperfections or higher productivity? As the comparison of Figure 3a and 3b shows, the top income shares rose irrespective of whether a country underwent the political and policy shocks as highlighted by the political explanation or not, which suggests that technological progress and globalization should be an essential part of any account of the recent rise in income inequality.

[8] The proponents of the political explanation emphasise tax cuts, de-regulation, liberalization of capital markets, and privatization as the main causes of rising inequality in the U.S. and the U.K. since the 1980s (Alvaredo et al., 2013). Furthermore, new executive remuneration policies raised political pressure for cutting top taxes (Atkinson et al., 2011).

Figure 4. Global and Between-countries Income Inequality, 1870-2015 (Gini)



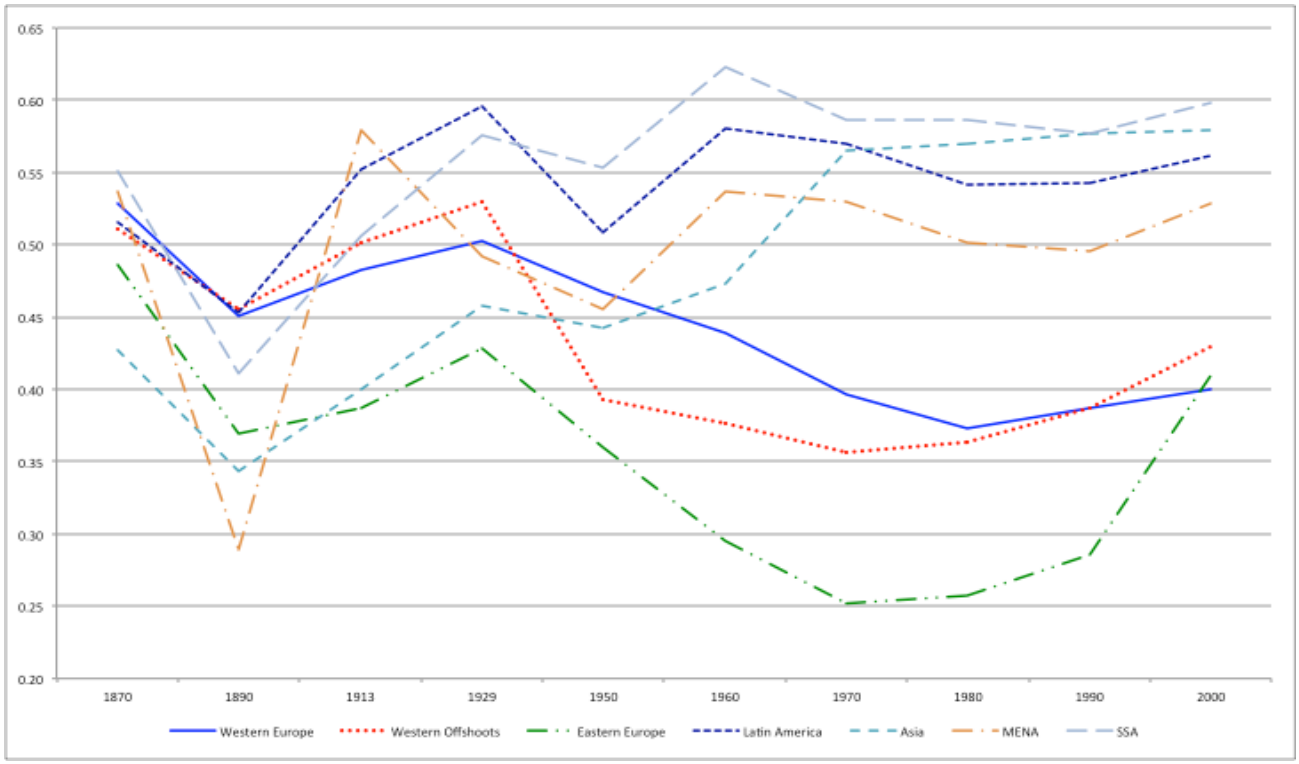
Note: Although van Zanden et al. (2014) provide also estimates derived from per capita GDP at 1990 international dollars, we have chosen their estimates with per capita GDP at 2005 international dollars estimates to keep consistency with Lakner and Milanovic (2016) estimates.
Sources: Between-countries inequality (GK$1990), Prados de la Escosura (2018); Global inequality (PPP $2005), van Zanden et al. (2014), pre-1990, and Lakner and Milanovic (2016), post-1990.

The long-run evidence on interpersonal income inequality, mostly for Europe and its offshoots, tends to suggest that the level of income inequality today is roughly comparable to that in the mid-19th century, even though some world regions (Latin America, Sub Saharan Africa) have not experienced the sharp decline in within-country inequality we find in the West. If within-country inequality typically remained trendless over the long run (Ravallion, 2018), it follows that global income equality, which is the sum of within- and between-country inequality, would have followed the trend in between-country inequality. Using GK$1990 per capita GDP, Prados de la Escosura (2018) calculated between-country inequality (that is, population-weighted income dispersion among countries in the world), which tended to rise from 1870 to 1990 and then fell. These trends are consistent with the estimates of global income inequality, which first rose from the early nineteenth century to the mid-twentieth century, then stabilized during the second half of the century (van Zanden et al., 2014), and finally declined slightly since 1990 (Lakner and Milanovic, 2016). Figure 4

confirms that global and between-countries inequalities exhibit a common trend and that the latter has been the main driver of global dispersion of world citizens' incomes over the last one and a half centuries.

As van Zanden et al. (2014) shows, income inequality trended in different ways in world regions. Figure 5 shows that income inequality peaked in 1929 in all regions (no data are available for the 1930s and 1940s). World regions parted ways in the subsequent decades. In Europe and its Offshoots, inequality declined to a trough in 1970 (1980 for Western Europe) and increased from around 1980, especially in Eastern Europe. In the rest of the world, after a contraction during the Depression and World War II, inequality surged in the 1950s reaching a plateau that stabilised in the second half of the century. Peaking in 1970, inequality subsequently stabilized in Asia.

Figure 5. Income Inequality in World Regions, 1870-2000 (G-K $1990) (Gini)

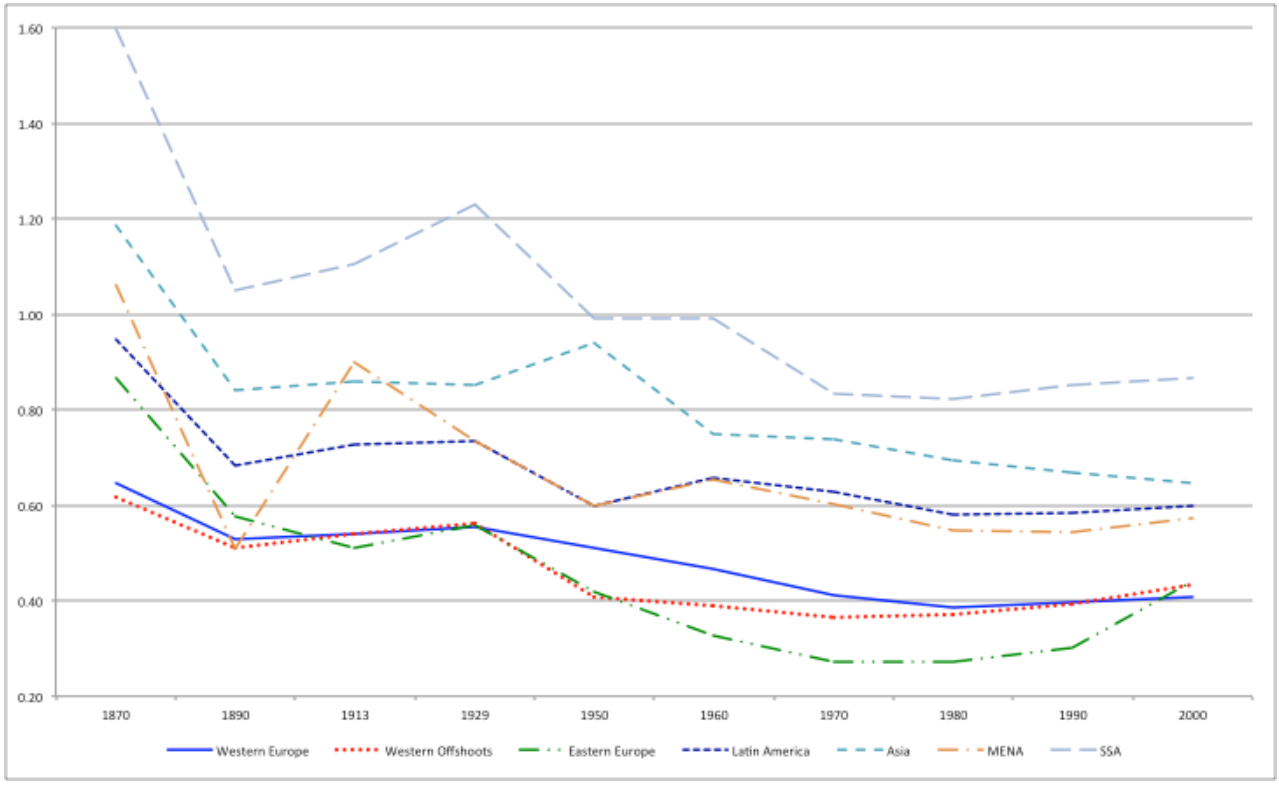


Note: MENA, Middle East and North Africa; SSA, Sub Saharan Africa *Sources*: van Zanden et al. (2014)

Branko Milanovic's Inequality Extraction Ratio (IER) is an alternative measure of income inequality. The IER measures the distance from a country's inequality to the inequality possibility frontier, namely, "the maximum Gini that is achievable at a given level of mean income provided that all population but an infinitesimally small elite live at the subsistence minimum" (Milanovic, 2011: 501). That is, the IER compares the actual level of

inequality to the maximum potential inequality that can be endured without the population starving to death.[9]

Figure 6. Inequality Extraction Ratio in World Regions (G-K$1990)



Note: MENA, Middle East and North Africa; SSA, Sub Saharan Africa *Sources*: See the text

The IER shows declining trend in the IER because rising income levels increased the maximum potential inequality (Figure 6). During 1890-1929, the IER rose in different parts of the world, as a joint result of sluggish growth and rising income inequality. These two developments also accounted for the surging IER in Eastern Europe and Sub Saharan Africa and the more moderate rise in Latin America at the end of the twentieth century. In the Western Offshoots and Western Europe the IER increased since 1990, which reflected primarily the rise in inequality. Finally, while the Gini rose in Asia and remained largely stable in Latin America during the second half of the twentieth century, the IER fell in both regions, and more rapidly in Asia than in Latin America, because living standards improved more rapidly in Asia.

According to Figure 6, the IER exceeded unity in Sub-Saharan Africa in 1870 and 1929 (and not far away from 0.9 until 1960) and also in Asia in 1870. The implication is that the

[9] IER is equal to G / G*, where G and G* are observed and maximum feasible Gini. And G* (μ) = (α – 1) / α, where α is the ratio between the mean income (μ) and the subsistence minimum (s) set equal to GK$ 300.

income inequality prevailing in these societies were not sustainable given the low income levels. However, the Asian and African IERs may not be too accurate, because inequality estimates are over-estimated or per capita income underestimated or both.

The IER can be seen as showing the impact of income inequality on welfare. Although the Sub-Saharan Africa and Latin America had similar Gini coefficients (0.55-0.60) during the second half of the twentieth century, they differed significantly in terms of the IER, around 0.8 in Sub-Saharan Africa and 0.6 in Latin America. Vis-à-vis the state of perfectly equal distribution of incomes, the comparable Ginis in the two regions would have resulted in a substantially larger reduction in welfare in Africa than in Latin America, because the similar income inequality would have reduced consumption of poorer families having higher marginal utility to a greater extent in Africa than in Latin America.

There are reasons to believe that the IER depends on political regime, which defines the ability of elite to extract surplus from producers. In Eastern Europe, after falling to 0.25 in the 1970s, the IER jumped to 0.4 with the demise of socialism. Meanwhile, in regions under democratic rule including Western Europe and the European Offshoots, although inequality rebounded after 1980, IERs in 2000 were not much different than in 1980, which was about 0.4, revealing the *West*'s economic progress and relatively low inequality. Finally, the declining trends in the IER across different regions may reflect political regimes becoming less oppressive, as elites lose power to extract as democratic transitions take place.

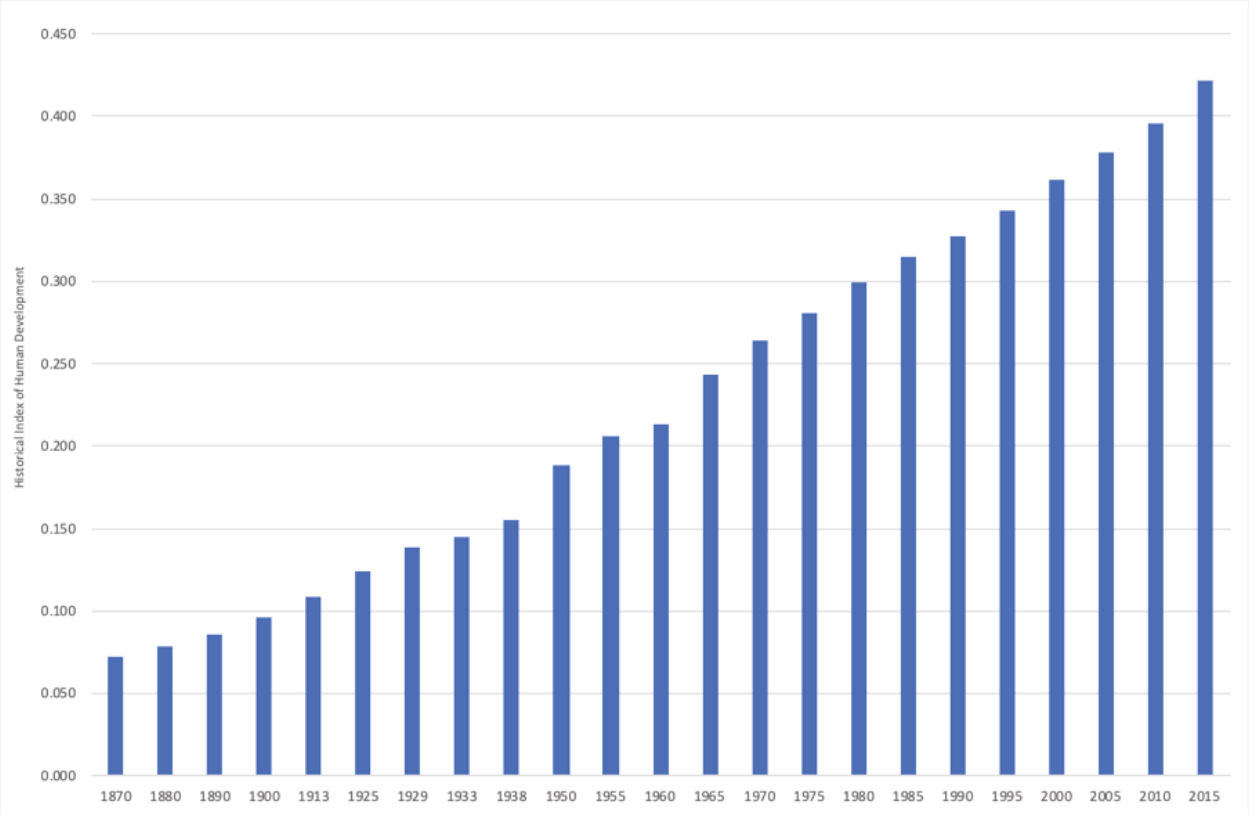
Well-being beyond GDP

So far, trends in well-being have been discussed entirely in terms of material welfare. The concept of human development, defined as 'a process of enlarging people's choices', provides a multidimensional measure of well-being. The United Nations Human Development Index (HDI) has three dimensions: a healthy life, access to knowledge, and all other aspects of well-being, which are proxied, respectively, by life expectancy at birth, years of schooling, and per capita income. Per capita income is log-transformed since its power to expand capabilities declines as its level raises (Anand and Sen, 2000). These are combined into a synthetic measure using a geometric average (UNDP, 2010). Since each of the three dimensions are considered as indispensable, they are assigned equal weights.

The Historical Index of Human Development (HIHD) improves on the UNDP HDI allowing for the fact that in social dimensions (life expectancy and schooling) quality improvements are associated with increases in quantity, so an increase in a quantity indicator of the same magnitude represents a greater achievement the higher the level at which they take place (Prados de la Escosura, 2015).

World human development as measured by HIHD shows a long-run upward trend, increasing six-fold between 1870 and 2015, at a pace of 1.2% per year (Figure 7). Three main phases can be distinguished: first, steady and moderate progress up to 1913; second, acceleration during the period 1913–70 (except for the Second World War); and third, deceleration from 1980.

Figure 7. World Human Development, 1870–2015

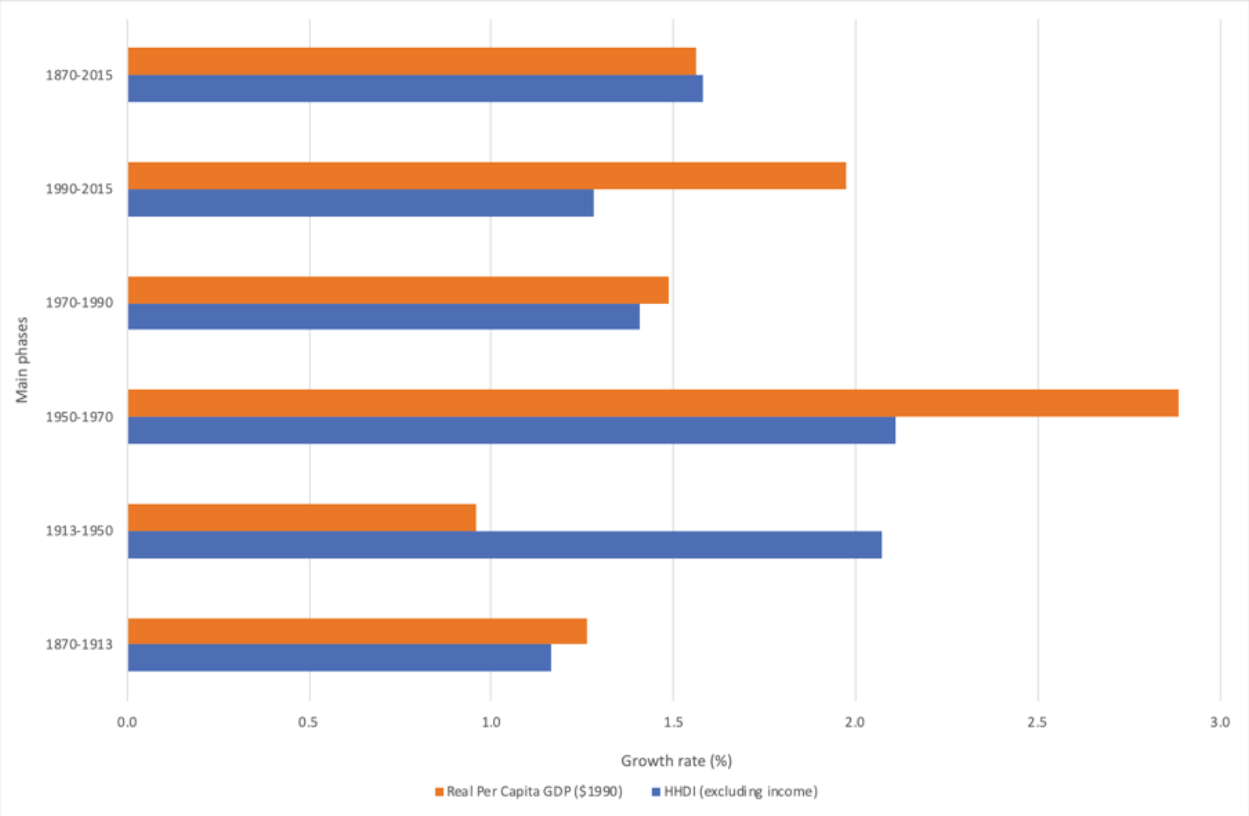


Sources: Prados de la Escosura (2015, updated)

Although human development (excluding the income dimension) and real per capita GDP followed similar growth trends over the long run, they grew at different rates in the shorter run (Figure 8). Specifically, during the globalization backlash, occurring from 1914–50, clear discrepancies emerged. Although real per capita GDP stagnated or declined as

world commodity and factor markets disintegrated, the spread of health and education around the world was not interrupted.

Figure 8. World Human Development (HIHD*) and GDP per Head Growth, 1870–2015 (%)



Note: HIHD* excluding the income dimension. *Sources*: Prados de la Escosura (2015, updated)

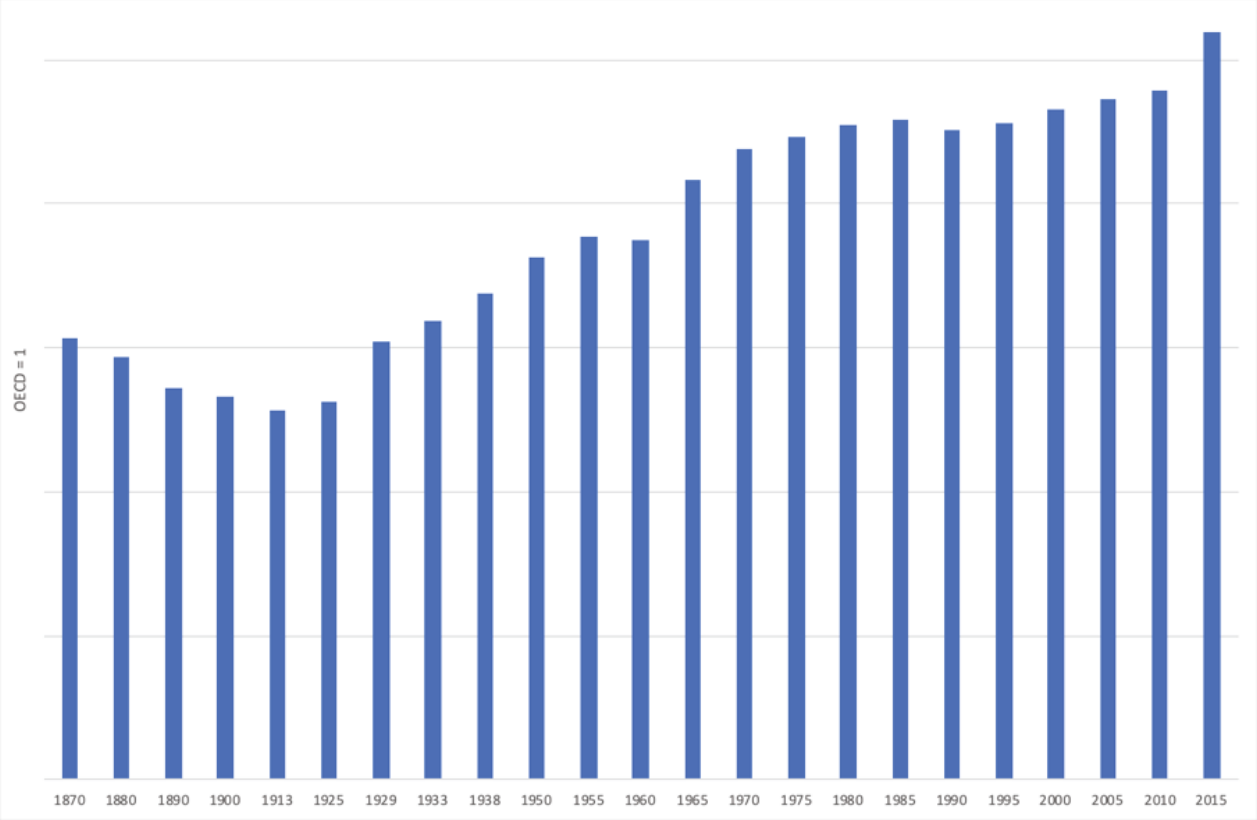
The absolute gap in the level of HIHD widened between OECD countries and the *Rest* of the world since 1870. However, in relative terms, the *Rest* has been catching up with the *West* since the late 1920s, which was more rapid in pre- than in post-1970 decades. However, by 2007 human development level in the *Rest* represented only half of the *West*'s (Figure 9).

A sustained progress in life expectancy at birth and education occurred in different world regions in the past one and half centuries. It was the advance in social dimensions that caused the world human development over time, with life expectancy being the driving force before the 1950s and education taking the lead thereafter.

Advance in medical knowledge has been responsible for the sustained increase in life expectancy since the late 19th century (Riley, 2005; Cutler et al., 2006). Technological advances resulted in two distinct health transitions occurring in sequence. The first health transition was driven by the diffusion of the germ theory of disease since the 1880s (Preston,

1975), that led to the introduction of new vaccines (since the 1890s) and drugs to cure infectious diseases (sulpha drugs since the late 1930s, and antibiotics since the 1950s) (Easterlin, 1999; Jayachandran et al., 2010). The result was to reduce mortality for all age groups, but especially for infants and children. The second health transition refers to mortality falling among the elderly as a result of better treatment of respiratory and cardiovascular disease and of better health and nutrition in their early years (Eggleston and Fuchs, 2012; Deaton, 2013). It was the second transition that has accounted for the sustained gains in life expectancy at birth and healthy life years in the late 20th and early 21st centuries. Health improvements have resulted not only in a longer life but also in longer and healthy life years (Mathers et al., 2001). In the *West*, improvements in life expectancy associated with the second health transition have driven human development advance since 1870. In the *Rest*, the role of life expectancy in human development advance was crucial during 1913–70, when infectious diseases gave way to chronic diseases under the first health transition. But life expectancy gains have slowed down in the Rest since the late 20th century as the demographic and first health transitions came to an end.

Figure 9. Relative Human Development in The *Rest*, 1870–2015 (OECD = 1)



Sources: Prados de la Escosura (2015, updated)

Conclusions

How economic growth, industrialization and globalization have affected the well-being of different income groups in different parts of the world over the last one and a half centuries? Here there are some of the answers we suggested in this chapter:

- Consumption per person has grown over time, but more slowly than GDP per capita, because the share of private consumption declined, although it was partly offset by the rising share of public consumption often with a redistributive aim.

- Available estimates of top income shares and the Gini coefficients suggest within-country income inequality fell from the early to late twentieth century to rise in recent decades.

- Although living standards improved in different parts of the world, the gap between the West and the *Rest*, and between-country inequality more generally, widened over time until the 1990s, when the trend reversed.

- Income inequality among world inhabitants followed a similar trend, increasing up to 1990 and finally declining in the 21st century.

- Substantial long-run gains in human development have taken place in the world without being slowed down during 1914-1950, a period of economic stagnation and globalization backlash.

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