Politická ekonomie
2023, Volume 71, Issue 2
https://doi.org/10.18267/j.polek.1378
Open Access

PRAGUE UNIVERSITY OF ECONOMICS AND BUSINESS

Human Development Index: Changes in East Central Europe, 1913–2010*

Stanislav Holubec [a], Béla Tomka [b]

a Institute of History, Czech Academy of Sciences, Prague, Czech Republic

b Institute of History, Philosophical Faculty of the University of Hradec Králové, Department of Contemporary History, University of Szeged, Hungary

E-mail: holubec@hiu.cas.cz; tomka@hist.u-szeged.hu

Abstract

Studies on the long-term trends of quality of life, and more specifically, the Human Development Index (HDI), have thus far largely neglected East Central Europe, and the existing scholarship tends to be fragmented. The paper seeks to address these shortcomings in research by investigating the trends of the HDI in Poland, Czechoslovakia and its successor states, Czechia and Slovakia, as well as Hungary between 1913 and 2010 within a broader international context. The analysis is based on a new data set developed by the authors. The results demonstrate that the HDI performance of the later decades of state socialism was more moderate than it is commonly assumed.

Keywords: Human development index of East Central Europe, 20th century, measuring, labour and consumers, demography, education, health, welfare, income, wealth, religion, philanthropy

JEL Classification: N3, O11, O15, N3

* Dedication. This work was supported by the University Hradec Králové at the Institute of History, Philosophical Faculty of the University of Hradec Králové in 2019 (program Mobility – Incoming 2: Working Visits of Senior Researchers from Abroad in the Czech Republic (50%, Béla Tomka) and by the Institute of History, Czech Academy of Sciences (50%, Stanislav Holubec).

Citation: Holubec, S., Tomka, B. (2023). Human Development Index: Changes in East Central Europe, 1913–2010. *Politická ekonomie*, 71(2), 130–152, https://doi.org/10.18267/j.polek.1378

1. Introduction

Since the Human Development Report of the United Nations introduced the Human Development Index (HDI) in 1990, this measurement of well-being has attracted considerable attention among social scientists, decision makers and even members of the wider public. This development reflected the growing awareness of the fact that conventional indicators of income and economic output, such as real wages or GDP per capita, are unsatisfactory for the assessment of living standards and well-being. Already in the 1990s, economic and social historians also began to apply the concept in order to measure living standards in the past (Costa and Steckel, 1997; Crafts, 1997a; Crafts, 1997b; Floud and Harris, 1997). Historical studies dealing with the HDI and related concepts have further advanced in the past two decades, and several ambitious projects were implemented in that field (Crafts, 2002; Prados de la Escosura, 2010; Szilágyi, 2019).

The emerging historical scholarship on the HDI has significantly enriched our insights into the past. Researchers have gone beyond the criticism of economic output as a measure of well-being and established the HDI as an alternative method for the study of well-being in the past as well. This is not a simple task, since – to highlight only one difficulty – relatively consistent GDP time series are available for the nineteenth and twentieth centuries in Europe, but we do not have similarly reliable historical data for several other aspects of well-being.

While these efforts produced promising results, historical well-being research has recently undergone a process of fragmentation. The new waves of research tend to apply diverging definitions of the HDI, which is also related to the fact that the aforementioned Human Development Report published regularly by the United Nations has also changed the definition of the HDI several times (United Nations Development Programme 1990; 2009). The perpetual shifts in how the HDI is calculated create significant obstacles to the refinement of long-term HDI data sets and to comparative research.

Symptomatically, Leandro Prados de la Escosura, who carried out what is probably the most elaborate historical research in the field (Prados de la Escosura, 2010), has also introduced a distinct definition and calculation, renaming the concept the Historical Index of Human Development (HIHD), which was later modified again to the Augmented Historical Human Development Index (AHHDI; Prados de la Escosura, 2019). These new concepts have arguably contributed to a better understanding of the past trends of well-being in many regions of the world. However, because the method of calculation diverges from the United Nations' definitions of the HDI, the extensive new data sets can no longer be compared to the results of other researchers.

As another important feature of related research, studies on the historical trends of the HDI have concentrated on specific regions. While Western Europe in a wider sense belongs to the relatively well-researched areas, several other regions, including East Central Europe, have attracted much less attention. While the Human Development Report has always been inclusive and covered East Central Europe as well, it offers systematic data only from the 1980s and some less

systematic information from the 1970s onwards (United Nations Development Programme, 1990, 1993, 2001, 2009; Brainerd, 2010; Sil, 2016). As far as this region is concerned, Nicholas Crafts' eminent study only considered some selected years between 1913 and 1999 and left out Czechoslovakia altogether (Crafts, 2002, p. 396). As a result of the gaps in research, we do not have reliable information on the HDI or other related indices of well-being in East Central Europe prior to the 1980s (Tomka, 2020, pp. 222–226).

Moreover, publications dealing with the historical trajectories of the HDI often present their data in a non-transparent way (Milward and Baten, 2010, pp. 255–258). They do not specify the sources of the data on which the calculations of the HDI time series are based, as a result of which the quality of the data cannot be assessed. To give an example concerning the East Central European region: we can only speculate whether the 1913 data for Hungary published in Crafts' study refer to the 1913 territory or to the post-WWI territory (Crafts, 2002, p. 396). Similar issues emerge in the case of Prados de la Escosura's data set: while it includes almost all regions of the world, as far as East Central Europe is concerned, the quality of some of the data the HIHD are based on is poor. As an example, to fill the data gaps, the author routinely assumes that life expectancy and literacy in specific periods in specific East Central European countries evolved along the same path as those in other countries (Prados de la Escosura, 2010, p. 884, 887). This lack of transparency can hardly be justified by reasons of space or by similar practical motives, because the quality of the sources decisively determines the results. Obviously, this neglect hinders constructive discussion on how the quality of the historical data related to well-being in East Central Europe and elsewhere could be improved.

This paper aims at addressing these shortcomings of research and intends to contribute to the field in four major areas. Firstly, it will apply a definition of the HDI that makes long-term historical research possible and is compatible with the approaches of major surveys in the field, thus allowing us to carry out comparisons. Secondly, it will investigate the HDI trends in East Central Europe in the twentieth century and put them into the context of broader developments. Thirdly, the goal of the article is to carry out a comparative analysis of the components of the HDI, both within East Central Europe and by comparing East Central Europe to Western Europe. Finally, the research intends to be fully transparent, so that the data quality can be critically assessed by other researchers, thus enabling improvements to the time series if necessary. We will detail the sources for the research in the online Appendix.

The study comprises a time period stretching from WWI to the early 21st century. The beginning of WWI is traditionally considered by historians to be the starting point of a new historical epoch. The final year of the study was determined by the fact that after this date the UN changed the definition of the HDI; thus, no comparative data are available for the 2010s and beyond for several Western European countries. It could be the task of another research project to produce comparable data for the periods before and after 2010. Consequently, we do not regard the period 1913–2010 as anything like a uniform historical era: several important dividing lines

could be drawn through this span of nearly a century. At the same time, it is precisely the relatively long time span that allows us to mark off various phases and contrast them.

One of the aims of the article is to compare the changes of the HDI in four East Central European countries and Western Europe. In choosing Western European societies for this comparative work, it was our intention to group together countries that had achieved similar levels of socio-economic and political development over the course of the twentieth century. Thus, the thirteen countries studied in the paper include the EU-15 states, except Luxembourg, Greece, Spain and Portugal but including Norway and Switzerland. Nevertheless, the inclusion of other countries would not be unwarranted; in some cases, such additions were impeded simply by practical concerns such as the lack of accessible sources.

2. HDI Estimates in East Central Europe and Beyond

As noted earlier, since 1990, the Human Development Report has been released annually by the United Nations Development Programme (UNDP), publishing the Human Development Index (HDI) for a great number of countries around the world. As is widely known, the HDI is based on the notion that human development is a process of enlarging people's choice to ensure that they are able to lead a long and healthy life, to acquire knowledge and to have access to resources for a decent standard of living (United Nations Development Programme, 1990, p. 10). The HDI intends to provide a synthetic measure of human development by taking proxies for three specific dimensions of well-being. A healthy and long life is proxied by longevity, the availability of knowledge by education, and access to resources needed for a decent standard of living by per capita income (Stanton, 2007).

The core concept of the HDI has remained unchanged since 1990. However, the composition and the calculation of the index has undergone several changes over time. The changes to the HDI – which are documented in detail elsewhere (Klugman *et al*., 2011, p. 4) – have been manifold, but they have affected three major aspects of the index. Firstly, observed thresholds were replaced by fixed ones from 1994. Secondly, the measurement of the education dimension has undergone several modifications: mean years of schooling were introduced in 1991, but they were dropped four years later owing to a lack of data in favour of the total student enrolment ratio. In 2010, the rates of total (primary, secondary and tertiary) student enrolment and adult literacy combined in an index form as a weighted arithmetic average (two-thirds literacy and one-third enrolment) was replaced by the expected years of schooling for a school-age child and the mean years of schooling for population aged 25 and older, combining an unweighted arithmetic average. Thirdly, major changes have also affected the treatment of income. In 1991, the logarithmic transformation of income with a cap was substituted by the Atkinson formula with a threshold value derived from the poverty line, and in 1994 the cap was replaced by the global average GDP per capita. In 1999, this was superseded again by the logarithm of income, with an upper bound. In 2010, in the case of income, PPP-adjusted

GDP per capita was replaced by PPP-adjusted GNI per capita. Moreover, new goalposts were introduced by the publication in 2010 and 2014 (Klugman *et al.*, 2011, pp. 4–5).

There are strong arguments that the changes in the composition and calculations of the HDI have made the index more plausible. For example, the mean years of schooling are undoubtedly a more robust indicator for the dimension of knowledge than total enrolment or literacy. However, the changes have led to the fragmentation of research indicated above, that is, the different generations of studies on the HDI are hardly compatible with each other. Moreover, some of the new proxies, such as, again, the mean years of schooling, are not available for several countries in the long run. Accordingly, historical projects cannot make use of the new approach.

Therefore, when we establish the historical HDI series for East Central Europe, we rely on the formula appearing in the 2001 publication of the HDI. The 2001 definition of the HDI includes indicators that can be compiled in the long run for East Central Europe as well. This approach has been employed by several economic historians, such as Crafts in his major study (Crafts, 2002) and by Baines *et al.* (2010). Thus, our results can be put in the context of wider, global development. The formula used in the United Nations Development Programme publication (2001) and applied in this paper is as follows: $HDI = (E + I + L)/3$, where $E = 0.67LIT + 0.33ENROL$, $I = (\log y - \log 100)/(\log 40{,}000 - \log 100)$, and $L = (e_0 - 25)/(85 - 25)$. The variables in this equation are as follows: E is education, I is income, L is life expectancy, LIT is the adult literacy rate, $ENROL$ is the average percentage proportion of the appropriate age cohorts enrolled in primary, secondary and post-secondary education, y is GDP per capita based on purchasing-power parity, and e_0 is average life expectancy at birth. The value of the variables E, I, and L thus ranges between 0 and 1, as does the HDI itself.

We deal with the following entities in East Central Europe: Poland, Czechoslovakia and Hungary, and in some periods the successor states of Czechoslovakia, namely Czechia and Slovakia. All available statistical data from 1913–2010 were collected, even if a state did not exist in a given year, such as Czechia in 1913. In these cases, data for present-day territories were collected and analysed. However, in several cases data were not available respectively. For the now-defunct state of Czechoslovakia, aggregates were created by using data for its successor states. The benchmark group of Western European countries is composed of 13 countries: the United Kingdom, France, the Netherlands, Belgium, Ireland, Germany/FRG, Austria, Switzerland, Sweden, Denmark, Norway, Finland and Italy.

3. Results

The main goal of this section is to construct the HDI for East Central European countries in the twentieth century. Moreover, an attempt is made to assess the dynamics of the particular societies within the region compared to each other, as well as to the path that Western European countries took in the same period. The development of the specific components of the HDI will

also be analysed in a comparative way. Finally, we highlight how these results relate to the existing research literature on historical HDI development in the East Central European region.

Before WWI, as far as the partial data allow us to conclude, the societies of East Central Europe performed well below the Western European average in each of the three areas encompassed by the HDI. In 1913, Hungary – within the boundaries of its present-day territory – produced an HDI value of 0.473, which suggests it outperformed only Finland (0.450) among the 13 Western European nations in the sample under discussion here (Tables 1 and 2). According to this index, the territories that would later form the Czech part of Czechoslovakia performed slightly better. In comparison with the rest of Europe, the improvements made in East Central Europe over the following decades up to 1950 were considerable in absolute terms. Only the improvements in Finland, Austria and Italy were of greater size than Hungary's – though in Austria's case, some statistical distortions might occur due to the inclusion of different territories in 1913 and 1950, which should be clarified by further research. Even though Poland and Hungary still lagged behind every Western European country in 1950 – and Czechoslovakia surpassed only Italy at that time – the disadvantages of the East Central European countries had diminished somewhat by then (Table 2). While Hungary's HDI was only 79.7% of the Western European average in 1913, it was up to 85.3% by 1950, at which point Poland's had reached 86.0% and Czechoslovakia attained 91.2%.

Table 1: Human Development Index (HDI) in East Central European countries, 1913–2010

	1913	1920	1929	1940	1950	1960	1970	1980	1990	2000	2010
Poland	–	–	0.484	–	0.643	0.707	0.751	0.763	0.764	0.811	0.852
Czechoslovakia	–	0.553	0.614	–	0.682	0.757	0.760	0.780	0.791	0.812	0.854
Czechia	(0.541)	–	0.629	–	0.698	0.766	0.767	0.789	0.797	0.822	0.863
Slovakia	–	–	0.557	–	0.641	0.733	0.747	0.764	0.777	0.793	0.838
Hungary	0.473	0.476	0.554	0.604	0.638	0.714	0.736	0.754	0.757	0.806	0.833

Notes: See the text for the method of calculating the HDI; Hungary, 1913 and later: present territory, own calculation based on sources indicated below; Czechoslovakia, 1920: 1990 territory, own calculation based on sources indicated below; Poland, 1929 and Slovakia, 1929: present territory, own calculation based on sources indicated below.

Sources: Appendix: Tables A–E (Poland, 1929–2010, Czechoslovakia, 1920–2010, Czechia, 1929–2010, Slovakia, 1929–2010, Hungary, 1913–2010); Crafts, 2002, pp. 396–97 (Czechia, 1913).

The method of calculating the HDI is somewhat biased for countries with lower levels of the index: these countries are able to improve their HDI with relative ease. Thus, it is useful to consider another aspect: the change as a percentage of the maximum possible change of the HDI in a given period. If we take this into consideration, improvements are less significant in the East

Central European region in the first half of the twentieth century. The change in the territory of what constitutes Czechia today was similar to the relative change in the UK, Ireland, France and Germany, but lagged behind the other countries in the Western European sample. The relative change in Hungary was even more moderate and only kept pace with the improvement in France (Table 4).

Table 2: Human Development Index (HDI) in European countries, 1913–2000

	1913	1950	1980	1990	2000
United Kingdom	0.644	0.766	0.848	0.878	0.928
France	0.607	0.729	0.863	0.897	0.928
Netherlands	0.649	0.784	0.873	0.902	0.935
Belgium	0.590	0.751	0.861	0.896	0.939
Ireland	0.599	0.734	0.831	0.870	0.925
Germany/FRG	0.614	0.744	0.859	0.885	0.925
Austria	0.501	0.720	0.854	0.890	0.926
Switzerland	0.643	0.782	0.886	0.905	0.928
Sweden	0.641	0.780	0.872	0.894	0.941
Denmark	0.660	0.781	0.876	0.891	0.926
Norway	0.631	0.776	0.877	0.901	0.942
Finland	0.450	0.707	0.856	0.896	0.930
Italy	0.485	0.668	0.846	0.879	0.913
Poland	–	0.643	0.763	0.764	0.811
Czechoslovakia	–	0.682	0.780	0.791	0.812
Czechia	(0.541)	0.698	0.789	0.797	0.822
Slovakia	–	0.641	0.764	0.777	0.793
Hungary	0.473	0.638	0.754	0.757	0.806

Notes: See the text for the method of calculating the HDI; Hungary, 1913: present territory, own calculation based on sources indicated below.

Sources: Table 1 (Poland, 1950–2000, Czechoslovakia, 1950–2000, Czechia, 1950–2000, Slovakia, 1950–2000, Hungary, 1913–2000); Crafts, 2002, pp. 396 (Western Europe, 1913), 396–97 (Czechia, 1913), 397 (Western Europe, 1950); UNDP, 2002, p. 153 (Western Europe, 1980–2000).

While the development of the HDI in East Central Europe in the first half of the twentieth century was ambiguous, the period between 1950 and 1990 can be divided into two subperiods. In the first decades of this era, Poland and Hungary were still able to improve the relative levels of their HDI, but Czechoslovakia failed to follow: in 1980 Poland reached 88.5% and Hungary 87.5% of the Western European average, while in Czechoslovakia the respective ratio was 90.5%. At the end of the period, approximately between 1980 and 1990, however, all three countries diverged from Western Europe (Table 3; Zamfir, 2014, pp. 1025–32). Moreover, the pace of the relative improvement in each of the societies of East Central Europe between 1950 and 1990 was below the rate of change in the Western European countries – that is, the East Central European countries achieved smaller proportions of the changes that were possible for them than their Western counterparts. Measured in percentage terms, Poland, Czechoslovakia and Hungary realized only 33.9%, 34.3% and 32.9% of this potential for improvement, respectively, while these proportions generally ranged between 50% and 60% in Western Europe; even in the United Kingdom, the worst-performing country in the Western European sample, this ratio was 47.9%. As suggested earlier, the lag that Poland, Czechoslovakia and Hungary experienced at that time was a particularly significant development because of the method of calculating the HDI: although Poland, Czechoslovakia and Hungary had relatively low HDIs, they were unable to take advantage of this opportunity to catch up (Table 4).

Table 3: Relative value of Human Development Index (HDI) in East Central European countries, 1913–2000 (percentage of Western European average)

	1913	1950	1980	1990	2000
Western European average of HDI	0.593	0.748	0.862	0.891	0.930
Poland	–	86.0	88.5	85.7	87.2
Czechoslovakia	–	91.2	90.5	88.8	87.3
Czechia	91.2	93.3	91.6	89.4	88.4
Slovakia	–	85.7	88.7	87.2	85.3
Hungary	79.7	85.3	87.5	85.0	86.7
East Central European average of HDI	–	87.2	88.8	86.3	87.1

Notes: See the text for the method of calculating the HDI; Hungary, 1913: present territory; Czechoslovakia 2000: 1990 territory of Czechoslovakia; Czechia, 1913–1990: present territory of Czechia; Slovakia, 1950–1990: present territory of Slovakia.

Source: Own calculations based on Table 1

Table 4: Changes in Human Development Index (HDI) in European countries, 1913–2000

	Value of change			Actual change as percentage of maximum possible change		
	1913–1950	1950–1990	1990–2000	1913–1950	1950–1990	1990–2000
United Kingdom	0.122	0.112	0.050	34.3	47.9	40.1
France	0.122	0.168	0.031	31.0	62.0	30.1
Netherlands	0.135	0.118	0.033	38.5	54.6	33.7
Belgium	0.161	0.145	0.043	39.3	58.2	41.3
Ireland	0.135	0.136	0.055	33.7	51.1	42.3
Germany/FRG	0.130	0.141	0.040	33.7	55.1	30.8
Austria	0.219	0.170	0.036	43.9	60.7	32.7
Switzerland	0.139	0.123	0.023	38.9	56.4	24.2
Sweden	0.139	0.114	0.047	39.6	51.8	44.3
Denmark	0.121	0.110	0.035	35.6	50.2	32.1
Norway	0.145	0.125	0.041	39.3	55.8	41.4
Finland	0.257	0.189	0.034	46.7	64.5	32.7
Italy	0.183	0.211	0.034	35.5	63.5	28.1
Poland	–	0.121	0.047	–	33.9	19.9
Czechoslovakia	–	0.109	0.021	–	34.3	10.0
Czechia	(0.157)	0.099	0.025	34.2	32.8	12.3
Slovakia	–	0.136	0.016	–	37.9	7.2
Hungary	0.165	0.119	0.049	31.3	32.9	20.2

Notes: Austria and Germany: 1913 data on school enrolment, literacy and life expectancy cover the entire national territory at that time.

Sources: Own calculations based on Table 2

The East Central European countries consistently lagged behind the Western European societies in the Human Development Index between 1950 and 1990, and their relative decline continued for several years even after regime change. The prime movers were the fall in their relative GDP levels and their unfavourable mortality trends, both of which already prevailed at the end of the communist era. However, starting in the mid-1990s, the return to economic growth and

the end of the mortality crisis not only improved their HDI values, but also initiated a period in which they slowly began to catch up with Western Europe in these rankings (Tridico, 2007, p. 581). This process was very slow indeed, and at the turn of the millennium only Poland and Hungary exceeded their 1990 HDI levels as a percentage of the Western European average. The successor states of Czechoslovakia, Czechia and Slovakia, still lagged behind this level; in fact, they were farther away from the Western European average than they were in 1950 (Table 3). The territories of what constitutes Czechia today witnessed a divergence from Western Europe in all of the periods of the twentieth century addressed here (1913–1950; 1950–1990; 1990–2000).

The profound effect that the aforementioned transformational crisis and the mortality crisis exercised on the HDI in East Central Europe is even more evident if we consider how the East Central European countries were able to realize the potential of HDI change in the 1990s. Czechia only realized 12.3% and Slovakia 7.2% of the maximum possible change in this decade. The ratio of Hungary and Poland was higher: 20.2% and 19.9%, respectively. However, all four countries showed their worst performance in this respect in comparison with both their own performance in earlier periods of development and the change in Western Europe in the same decade (Table 4).

The analysis also shows that the years after 2000, the later phase of post-communist transformation, belong to the most successful decades for the region in the period 1913–2010 (and the available data suggest that this remains the case until today). Although the growth of HDI was faster in East Central Europe during the 1950s (calculated from the Table 1), the region only began to converge with Western Europe in the 2000s as the Western HDI developed rather slowly in this period.

As indicated earlier, no systematic research has been carried out so far concerning the long-term change of the HDI in East Central Europe. Thus, the results presented in this paper can only be contrasted with some sporadic data and suggestions related to the path of the East Central European countries. If we compare these results, the overall level of the HDI can be assessed as evolving at a more moderate pace in the East Central European countries throughout the twentieth century than was suggested by Crafts (2002) and Milward and Baten (2010). The dynamics of the HDI in the East Central European countries was also less strong in the first half of the twentieth century than was proposed by these authors. The increase in East Central Europe's HDI was similarly less powerful during communism than earlier studies suggested. Thus, convergence between East Central Europe and Western Europe was more moderate in both the first half of the century and between 1950 and 1990 than was assumed by former research (Milward and Baten, 2010, p. 258).

Finally, we consider how the components of the HDI evolved and we address convergences/divergences both among the East Central European countries and between East Central Europe and Western Europe. By 1970, the differences in life expectancy within the East Central European region had significantly narrowed, but they did not dissolve entirely and remain until

today at a level corresponding with the overall HDI levels, with Czechia leading and Hungary lagging behind the other countries. Meanwhile, differences in illiteracy had virtually vanished by 1970, and the levels of school enrolment converged between 1950 and 1980. Over the next twenty years, the gap began to widen again in school enrolment at the tertiary level. After 2000, however, the East Central European societies finally converged, with Poland ranking first and Hungary occupying the last place (Eurostat, 2020a). Obviously, the differences in illiteracy and primarily school enrolment before 1980 were related to the levels of economic development. After 1980, the dissimilarities in tertiary school enrolment can be attributed to the different policies of socialist and post-socialist state governments, and here Poland emerged as the country most successful in its attempts to catch up with Western European levels of tertiary education. Differences in GDP remained constant until 1950, then started to converge somewhat, diverged again in the 1980s, and their final and strong convergence occurred several years after 1990. This indicates that while the first three decades of state socialism and post-socialist transformation had relatively homogenizing effects in the region, the economic crisis of state socialism during the 1980s affected each country in specific ways: while Czechoslovakia and Hungary were left relatively untouched, Poland was hit the hardest. The difference between the lowest GDP (Hungary) and the highest (Czechia) of the four countries in 2020 is only 11%, while it was 43% in 1990, 40% in 1950 and 43% in 1930 (WB, 2020b; Maddison, 2010).

Concerning the dynamics of the HDI components in the four countries and Western Europe during the given period, while we can find some convergences, a number of divergences and persistent gaps remain. The gap in life expectancy barely changed in the first half of the twentieth century (Rothenbacher, 2002, p. 30), widened during WWII (O'Neill, 2019; Fialová and Šprocha, 2018, p. 174), shrank between 1950 and 1970, then it widened again and started to close after 1993, albeit very slowly (Rothenbacher, 2005, p. 115; *Eurostat*). With regard to illiteracy, the gap either did not exist at the beginning of the examined period (Czechia) or had closed by 1960 (Hungary, Poland, Slovakia) (Roser and Ortiz-Ospina, 2013). The number of students enrolled at the tertiary level also showed a converging tendency until 1970 (Kaelble, 2007, p. 392), then the gap started to widen again and was at its maximum during the 1980s (Reisz and Stock, 2006, p. 82). The final convergence occurred after 1995 and the gap more or less disappeared around 2005. Remarkably, Poland even climbed above the Western European level (Eurostat, 2020a; Mau and Verwiebe, 2009, p. 169). In terms of GDP, the gap barely changed between 1913 and 1950 in the case of Poland, it narrowed in the case of Hungary, and increased in the case of Czechoslovakia. In the period between 1950 and 1980, a small divergence of all four countries and Western Europe occurred, replaced by a strong divergence between 1980 and 2000, and a final strong convergence afterwards (Maddison, 2010; Murgescu and Lazor, 2020, pp. 346–50). From the comparisons both within the region and with Western Europe during the whole period, it is also clear that the differences in health and education expressed as percentages were smaller than the differences in GDP, which are also most difficult to overcome.

A closer look at the time series (Tables A, B, C, D, E in the Appendix) allows us to propose some periodization which is valid for more or less all four countries. Seven periods appear to emerge from the data:

1. The initial period between 1930 and 1940, when the gaps among the four countries and between them and Western Europe barely shifted.
2. The war, when all aspects saw a decline, particularly towards its end.
3. The successful post-war reconstruction and the first decade of state socialism, with fast growth in school enrolment, life expectancy and GDP.
4. The contradictory period of state socialism between 1960 and 1980, when GDP continued to expand, illiteracy was eradicated, but both life expectancy and school enrolment (from 1970 onwards) started to stagnate.
5. The final decade of state socialism with stagnating or declining GDP, stagnating life expectancy and school enrolment.
6. The post-communist transformation until 1995, which saw a decline in GDP and life expectancy.
7. Development after 1995 with strong growth in all variables, where only the gap in life expectancy between the four countries and Western Europe was not significantly reduced.

4. Conclusions

This paper examined the long-term change of the Human Development Index in East Central Europe. The results showed that HDI growth was weaker in East Central Europe between 1913 and 2000 than earlier research suggested. Prior to WWI, the East Central European countries not only lagged behind the Western European average, but behind practically all Western countries. Fragmented data suggest that the East Central European countries were able to significantly improve their HDI in the period between 1913 and 1950, and they got somewhat closer to the Western European levels. However, a more thorough look at the path that they followed gives more ambiguous results: the improvement is much less substantial if we consider the change as a percentage of the maximum possible change, that is, the increase was in part a result of the fact that the calculation method of the HDI favours less advanced countries.

In the communist era, the performance of the East Central European societies was more moderate if we consider the whole period between 1950 and 1990. They were able to improve the HDI in absolute terms, but they diverged from Western Europe. The negative tendencies gradually unfolded, since Poland and Hungary were able to improve their relative level of the HDI during the 1950s and 1960s, but in the late communist years all East Central European countries significantly diverged from Western Europe. These countries continued to lag behind the Western

European average until the mid-1990s, when they slowly began to catch up with Western Europe, first in Poland and Hungary, then in Czechia and Slovakia.

A closer look at the HDI components allows us to conclude that, although the internal differences between the East Central European countries were reduced by the 1970s, some disparities persist until today. Moreover, the overall ranking of the individual countries did not change during the time period in focus: Czechia and Slovakia remained in first and second place respectively throughout, while Poland was able to overtake Hungary. Fewer convergences occurred between the average HDI components of the four countries and the western European averages. With the exception of literacy, where a strong convergence to the Western European average can be found, there were convergences, divergences and stagnations (life expectancy, GDP and tertiary education). The gap in the GDP levels was clearly the most difficult difference to overcome, and the only breakthrough in this area occurred after 2000, resulting from the relatively fast pace of the GDP growth of the four countries and the more moderate growth in Western Europe.

Turning to the determinants of the changes in the HDI in East Central Europe, the scholarly literature often distinguishes between long-term and short-term factors, indigenous and exogenous causes, as well as economic, cultural, geographical, political and several other factors. Concerning economic development, the gap between East Central Europe and Western Europe is traced back to the less favourable starting position of East Central Europe in the late antiquity and the medieval period (Pounds, 1974, p. 111), as well as to the uneven economic exchange with Western Europe in the early modern era (Wallerstein, 1974), and primarily to the belatedness of the industrial revolution in the region (Maddison, 2020). Most of the relevant literature also considers the development of the health conditions of the population and education as primarily conditioned by economic development (Barro, 2013, p. 329; Zeira, 2009, p. 602), although cultural values, religion and state formation also significantly affected economy, education and health care systems (Nunn, 2014). The huge influence of the political factors on the economic development in the 20th century is widely discussed as well, highlighting the influence of such developments as the disintegration of the Habsburg monarchy, the two world wars and the establishment of state socialism (Berend, 1999; Feinstein *et al.*, 2008). In this respect, the role of state socialism is a controversial issue in the scholarly literature: some argue that it significantly accelerated the modernization of the region, while others see hardly any sign of this – and the results of this study clearly support the latter assessment. There is more agreement on the dynamics of growth of the planned economies in East Central Europe: significant GDP growth, great advances in health and education during the 1950s and the first half of the 1960s (Eichengreen, 2007; Harrison, 1998); this was followed by a phase of relative economic stagnation and even decline in the 1970s and 1980s, accompanied by similarly less favourable trends in the health status of the population and in higher education (Reisz and Stock, 2006; Popov, 2011; Holubec and Tomka, 2020) and, consequently, a fairly strong divergence from Western Europe in all of these areas. Most of the scholars argue for the primacy

of internal factors explaining the unfavourable performance (Mau and Starodubrovskaya, 2001; Popov, 2014; Harrison, 2014; Badia-Miró *et al*., 2015), but some emphasize the role of external factors (Sanchez-Sibony, 2014). As to the post-communist paths of the East Central European societies, most observers agree that the strong integration of East Central Europe in the world economy along with the adoption of the institutions of market economy were the major causes of convergence to Western Europe, and the European integration had the same effect on education. However, the literature also highlights the persistence of the gap in economic performance vis-à-vis Western Europe in the new millennium (Greskovits and Bohle, 2012), and a significant disparity between East Central Europe and the Western part of the continent is also visible in major health indicators, such as life expectancy, and concerning the qualitative aspects of education.

Appendix

Table A: Poland – HDI dimensions

Year	Life expectancy			Literacy	Total enrolment	Age group 5–24	Student ratio	GDP/ capita	*E* (Education)	*I* (Income)	*L* (Longevity)	Literacy new	Enrolment new	HDI new
	Male	Female	Total											
1929	–	–	45.90	74.70	3,606,600	12,877,100	0.28008	2,117	0.592916	0.509514	0.348333	0.747	0.280079	0.483588
1950	58.60	64.30	61.45	93.80	4,257,300	8,770,000	0.48544	2,447	0.788655	0.533660	0.607500	0.938	0.485439	0.643272
1960	64.80	70.50	67.65	95.30	6,044,300	10,430,000	0.57951	3,215	0.829749	0.579209	0.710833	0.953	0.579511	0.706597
1970	66.80	73.80	70.30	97.80	7,941,300	12,558,000	0.63237	4,428	0.863942	0.632648	0.755000	0.978	0.632370	0.750530
1980	66.90	75.40	71.15	98.80	6,362,700	11,497,000	0.55342	5,740	0.844589	0.675965	0.769167	0.988	0.553423	0.763241
1990	66.50	75.50	71.00	98.70	7,473,200	11,912,000	0.62737	5,113	0.868321	0.656676	0.766667	0.987	0.627367	0.763888
2000	69.70	78.00	73.87	98.70	8,625,300	11,865,300	0.72693	7,309	0.901178	0.716297	0.814500	0.987	0.726935	0.810659
2010	72.10	80.60	76.35	99.50	7,028,000	9,199,700	0.76394	10,762	0.918750	0.780886	0.855750	0.995	0.763938	0.851795

Notes: Life expectancy: in years; Literacy: percentage of the adult population; Total enrolment: number of students in primary, secondary and tertiary education; Age group 5–24: the number of people aged 5–24; Student ratio: the number of students per the number of people in the age cohort 5–24; GDP/capita: GDP per capita in USD (WB, 2020b).

Sources: Holubec and Tomka (2022)

Table B: Czechoslovakia – HDI dimensions

Year	Life expectancy			Literacy	Total enrolment	Age group 5–24	Student ratio	GDP/ capita	*E* (Education)	*I* (Income)	*L* (Longevity)	Literacy new	Enrolment new	HDI new
	Male	Female	Total											
1920	46.40	49.20	47.80	94.50	2,465,614	5,396,963	0.456852	1,933	0.783911	0.494330	0.380000	0.945	0.456852	0.55274
1929	51.92	55.18	53.55	96.70	2,246,494	4,996,011	0.449658	3,402	0.796277	0.570015	0.475833	0.967	0.449658	0.61404
1950	60.90	65.50	63.20	97.50	1,871,562	3,823,779	0.489453	3,501	0.814770	0.593433	0.636667	0.975	0.489453	0.68162
1960	67.80	73.20	70.50	97.70	2,694,498	4,432,487	0.607898	5,108	0.855196	0.656510	0.758333	0.977	0.607898	0.75668
1970	66.23	72.90	69.57	97.90	2,700,492	4,770,833	0.566042	6,466	0.842724	0.695856	0.742750	0.979	0.566042	0.76044
1980	66.78	73.90	70.34	98.20	2,716,781	4,601,325	0.590434	7,982	0.852783	0.731003	0.755667	0.982	0.590434	0.77981
1990	67.30	75.80	71.53	98.60	2,858,030	4,834,582	0.591164	8,513	0.855704	0.741745	0.775500	0.986	0.591164	0.79098
2000	70.43	77.99	74.20	98.80	2,785,372	4,478,549	0.621936	8,833	0.867199	0.747912	0.820067	0.988	0.621936	0.81172
2010	73.50	80.18	76.84	99.00	2,392,564	3,551,392	0.673698	13,020	0.885620	0.812669	0.864042	0.990	0.673698	0.85411

Notes: Life expectancy: in years; Literacy: percentage of the adult population; Total enrolment: number of students in primary, secondary and tertiary education; Age group 5–24: the number of people aged 5–24; Student ratio: the number of students per the number of people in the age cohort 5–24; GDP/capita: GDP per capita in USD (1990 Geary-Khamis international dollar).

Sources: Holubec and Tomka (2022)

Table C: Czechia – HDI dimensions

Year	Life expectancy			Literacy	Total enrolment	Age group 5–24	Student ratio	GDP/ capita	HDI	*E* (Education)	*I* (Income)	*L* (Longevity)	Literacy new	Enrolment new	HDI new
	Male	Female	Total												
1929	52.40	56.10	54.20	98.7	1,692,255	3,690,266	0.45857	3,381	–	0.81261909	0.58763	0.486667	0.987	0.458573	0.62897
1950	62.16	66.97	64.56	98.8	1,270,230	2,598,469	0.48884	3,896	0.721	0.82327649	0.61129	0.659333	0.988	0.488837	0.69797
1960	68.03	73.58	70.80	98.8	1,894,272	3,027,575	0.62567	5,609	–	0.86843210	0.67212	0.758000	0.988	0.625673	0.76618
1970	66.12	73.01	69.56	98.9	1,763,135	3,094,817	0.56971	6,933	–	0.85063289	0.70749	0.742666	0.989	0.569705	0.76693
1980	66.84	73.92	70.48	98.9	1,831,714	2,934,251	0.62425	8,400	–	0.86863338	0.73952	0.758000	0.989	0.624252	0.78872
1990	67.50	76.00	71.49	98.9	1,910,928	3,102,388	0.61595	8,895	0.835	0.86589479	0.74908	0.774833	0.989	0.615953	0.79660
2000	71.60	78.40	75.00	99.0	1,831,739	2,794,019	0.65559	9,156	0.849	0.87964565	0.75390	0.833333	0.990	0.655592	0.82229
2010	74.40	80.60	77.51	99.0	1,599,763	2,229,596	0.71751	13,097	–	0.90007913	0.81365	0.875167	0.990	0.717512	0.86296

Notes: Life expectancy: in years; Literacy: percentage of the adult population; Total enrolment: number of students in primary, secondary and tertiary education; Age group 5–24: the number of people aged 5–24; Student ratio: the number of students per the number of people in the age cohort 5–24; GDP/capita: GDP per capita in USD (1990 Geary-Khamis international dollar).

Sources: Holubec and Tomka (2022)

Table D: Slovakia – HDI dimensions

Year	Life expectancy			Literacy	Total enrolment	Age group 5–24	Student ratio	GDP/ capita	*E* (Education)	*I* (Income)	*L* (Longevity)	Literacy new	Enrolment new	HDI new
	Male	Female	Total											
1929	48.900	50.90	49.90	93.00	554,239	1,305,745	0.4244620	1,920	0.763172	0.49319	0.41500	0.930	0.424462	0.55712
1950	59.000	62.37	60.69	94.10	601,332	1,225,310	0.4907591	2,481	0.79242	0.53597	0.59475	0.941	0.490759	0.64104
1960	68.360	72.73	70.55	95.00	800,226	1,404,912	0.5695915	3,959	0.824465	0.61397	0.75908	0.950	0.569592	0.73250
1970	66.730	72.92	69.83	95.70	937,357	1,676,016	0.5592769	5,457	0.825751	0.66753	0.74708	0.957	0.559277	0.74678
1980	66.750	74.25	70.50	96.70	885,067	1,667,074	0.5309104	7,120	0.82309	0.71193	0.75833	0.967	0.53091	0.76445
1990	66.640	75.40	71.04	98.00	947,102	1,732,194	0.5467644	7,763	0.837032	0.72636	0.76733	0.980	0.546764	0.77690
2000	68.150	77.20	72.69	98.50	953,633	1,684,530	0.5611220	8,219	0.846767	0.73590	0.79483	0.985	0.56112	0.79250
2010	71.800	79.30	75.55	99.00	792,801	1,321,796	0.5997907	12,877	0.861231	0.81083	0.84250	0.990	0.599791	0.83818

Notes: Life expectancy: in years; Literacy: percentage of the adult population; Total enrolment: number of students in primary, secondary and tertiary education; Age group 5–24: the number of people aged 5–24; Student ratio: the number of students per the number of people in the age cohort 5–24; GDP/capita: GDP per capita in USD (1990 Geary-Khamis international dollar).

Sources: Holubec and Tomka (2022)

Table E: Hungary – HDI dimensions

Year	Life expectancy			Literacy	Enrol-ment	GDP/ capita	HDI	Average years of education	*E* (Education)	*I* (Income)	*L* (Longevity)	Literacy new	Enroment new	HDI new
	Male	Female	Total											
1913	39.07	40.48	39.78	81.90	0.348	2,098	(0.464)	–	0.663570	0.5079842	0.24633333	0.819	0.348	0.47262
1920	41.04	43.12	42.08	86.60	0.274	1,709	–	4.45	0.670607	0.4737562	0.28466667	0.866	0.2739	0.47634
1930	48.70	51.80	50.25	90.00	0.328	2,404	–	5.27	0.711207	0.5307081	0.42083333	0.900	0.3279	0.55424
1940	54.95	58.24	56.60	94.00	0.336	2,636	–	5.79	0.740680	0.5460848	0.52666667	0.940	0.3360	0.60447
1950	59.28	63.40	61.36	95.30	0.436	2,354	0.695	6.60	0.782258	0.5272001	0.60600000	0.953	0.4356	0.63848
1960	65.89	70.10	68.03	96.70	0.535	3,649	–	7.46	0.824539	0.6003604	0.71716667	0.967	0.5353	0.71402
1970	66.31	72.08	69.20	98.00	0.487	5,028	–	8.10	0.817310	0.6538647	0.73666667	0.980	0.4870	0.73594
1980	65.45	72.70	69.02	98.90	0.524	6,306	0.793	8.88	0.835649	0.6916650	0.73366667	0.989	0.5243	0.75366
1990	65.13	73.71	69.33	99.00	0.519	6,459	0.804	9.45	0.834768	0.6956662	0.73883333	0.990	0.5196	0.75642
2000	67.50	75.59	71.33	99.30	0.810	7,132	0.835	10.51	0.932610	0.7122093	0.77216667	0.993	0.8100	0.80566
2010	70.70	78.11	74.38	99.10	0.826	8,353	–	10.95	0.936649	0.738585	0.82300000	0.991	0.8263	0.83274

Notes: Life expectancy: in years; Literacy: percentage of the adult population; Total enrolment: number of students in primary, secondary and tertiary education; Age group 5–24: the number of people aged 5–24; Student ratio: the number of students per the number of people in the age cohort 5–24; GDP/capita: GDP per capita in USD (1990 Geary-Khamis international dollar).

Sources: Holubec and Tomka (2022)

References

Badia-Miró M., Pinilla V., Willebald H. (2015). *Natural Resources and Economic Growth: Learning from History*. London: Routledge. ISBN 9781138339620.

Baines, D., Cummins, N., Schulze M-S. (2010). Population and living standards, 1945–2005. In: Broadberry, S., O'Rourke, K. H. *The Cambridge Economic History of Modern Europe, Vol. 2: 1870 to Present*. Cambridge: Cambridge University Press, 390–420, ISBN: 9780521882033.

Barro, R. J. (2013). Health and Economic Growth. *Annals of Economics and Finance,* 14(2), 329–366.

Brainerd, E. (2010). *Human Development in Eastern Europe and the CIS since 1990*. Human Development Research Paper 2010/16. New York: United Nations Development Programme.

Costa, D. L., Steckel, R. H. (1997). Long-term trends in health, welfare, and economic growth in the United States. In: Steckel, R. H., Floud, R. *Health and Welfare during Industrialization*. Chicago: University of Chicago Press, 47–90.

Crafts, N. F. R. (1997a). Some Dimensions of the 'Quality of Life' during the British Industrial Revolution. *Economic History Review,* 50(4), 617–639.

Crafts, N. F. R. (1997b). The Human Development Index and Changes in the Standard of Living: Some Historical Comparisons. *European Review of Economic History,* 1(3), 299–322, https://doi.org/10.1017/S1361491697000142

Crafts, N. F. R. (2002). The Human Development Index, 1870–1999: Some Revised Estimates. *European Review of Economic History,* 6(3), 395–405.

Eichengreen B. (2007). *The European Economy since 1945: Coordinated Capitalism and Beyond.* Princeton: Princeton University Press. ISBN 9780691138480.

Eurostat (2020a). *Graduates in tertiary education by age groups – per 1000 of population aged 20–29*. Luxembourg: Eurostat. [Retrieved 2020-12-12] Available at: https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

Eurostat (2020b). *Life expectancy by age and sex*. Luxembourg: Eurostat. [Retrieved 2020-12-12] Available at: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_mlexpec&lang=en

Feinstein, C. H., Temin P., Toniolo, G. (2008). *The World Economy between the World Wars.* Oxford: Oxford University Press. ISBN 9780195307559.

Fialová, L., Šprocha, B. (2018). The population of Czechia and Slovakia in 1918–1945. *Demografie*, 60(3), 161–83.

Floud, R., Harris, B. (1997). Health, Height, and Welfare: Britain, 1700–1980. In: Steckel, R. H., Floud, R. *Health and Welfare during Industrialization*. Chicago: University of Chicago Press, pp. 91–126.

Greskovits, B., Bohle, D. (2012). *Capitalist Diversity on Europe's Periphery.* Ithaca: Cornell University Press. ISBN 978-0-8014-5110-2.

Harrison, M. (1998). Trends in Soviet Labour Productivity, 1928–85: War, Postwar Recovery, and Slowdown. *European Review of Economic History*, 2(2), 171–200, https://doi.org/10.1017/S1361491698000082

Harrison, M. (2014). Communism and Economic Modernization. In: Smith, S. A. *The Oxford Handbook of the History of Communism*. Oxford: Oxford University Press, pp. 387–406. ISBN 9780191756603.

Holubec S., Tomka B. (2020). Family and Demography. In: Borodziej, W., Holubec, S., von Puttkamer, J. *The Routledge History Handbook of Central and Eastern Europe in the Twentieth Century*, *Volume 1: Challenges of Modernity*. New York: Routledge, pp. 235–312, ISBN 9781138301641.

Holubec, S., Tomka, B. (2022). *Online Appendix to "The Human Development Index: Changes in East Central Europe, 1913–2010"*. Available at: https://jelenkor.bibl.u-szeged.hu/hdi-in-ece-appendix/

Kaelble, H. (2007). *Sozialgeschichte Europas: 1945 bis zur Gegenwart*. München: C. H. Beck. ISBN 978-3-406-54984-7.

Klugman, J., Rodríguez, F., Choi, H-J. (2011). *The HDI 2010: New Controversies, Old Critiques.* Human Development Research Paper 2011/01, https://doi.org/10.1007/s10888-011-9178-z

Maddison, A. (2010). Maddison Project Database. Groningen: University of Groningen. [Retrieved 2020-12-12] Available at: https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-database-2010

Maddison, A. (2020). Maddison Project Database. Groningen: University of Groningen. [Retrieved 2021-12-12] Available at: https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2020

Mau, V., Starodubrovskaya, I. (2001), *Challenge of Revolution. Contemporary Russia in Historical Perspective.* Oxford: Oxford University Press, ISBN 9780199241507.

Mau, S., Verwiebe, R. (2009). *Die Sozialstruktur Europas*. Bonn: Bundeszentrale für politische Bildung. ISBN 9783893319657.

Milward, R., Baten, J. (2010). Population and living standards, 1914–1945. In: Broadberry, S., O'Rourke, K. H. *The Cambridge Economic History of Modern Europe, Vol. 2: 1870 to Present*. Cambridge: Cambridge University Press, pp. 232–263, ISBN: 9780521882033.

Murgescu, B., Lazor, J. (2020). Economic development. In: Holubec, S., Borodziej, W., von Puttkamer, J. *The Routledge History Handbook of Central and Eastern Europe in the Twentieth Century, Volume 1: Challenges of Modernity.* New York: Routledge, pp. 314–384. ISBN 978-1-138-30164-1.

Nunn, N. (2014). Historical Development. In: Aghion, P., Durlauf, S. N. *Handbook of Economic Growth*. Oxford: North Holland, pp. 347–402, ISBN 9780444520418.

O'Neill, A. (2019). *Life expectancy (from birth) in Poland, from 1885 to 2020*. Hamburg: Statista. Available at: https://www.statista.com/statistics/1041400/life-expectancy-poland-all-time/

Popov, V. (2011). *Mortality Crisis in Russia Revisited: Evidence from Cross-Regional Comparison*. MPRA Paper No. 21311; CEFIR and NES Working Paper No. 157.

Popov, V. (2014). *Mixed Fortunes, An Economic History of China, Russia, and the West.* Oxford: Oxford University Press. ISBN 978-0198703631.

Pounds, N. J. F. (1974). *An Economic History of Medieval Europe.* London: Routledge.

Prados de la Escosura, L. (2010). Improving Human Development: A Long-run View. *Journal of Economic Surveys,* 24(5), 841–894, https://doi.org/10.1111/j.1467-6419.2010.00639.x

Prados de la Escosura, L. (2019). *Human Development in the Age of Globalisation*. Working Paper Series No. 421. Coventry: University of Warwick.

Reisz, R., Stock, M. (2006). Zwischen Expansion und Kontraktion: Zur Entwicklung der Hochschulbildung in Osteuropa 1950–2000. *Berliner Journal für Soziologie,* 16(1), 77–93, https://doi.org/10.1007/s11609-006-0006-4

Roser, M., Ortiz-Ospina, E. (2013). *Literacy*. Oxford: Global Change Data Lab. Available at: https://ourworldindata.org/literacy

Rothenbacher, F. (2002). *The European Population 1850–1945*. London: Palgrave. ISBN 978-1349656110.

Rothenbacher, F. (2005). *The European Population since 1945*. London: Palgrave. ISBN 978-1349656141.

Sanchez-Sibony, O. (2014). *Red Globalization: The Political Economy of the Soviet Cold War from Stalin to Khrushchev.* Cambridge: Cambridge University Press. ISBN 9781139628778.

Sil, R. (2016). *Post-Communist Human Development in World-Historical Perspective*. Unpublished research paper for presentation at the Annual Conference of the Western Political Science Association, Atlanta, March 24, 2016. Available at: http://www.wpsanet.org/papers/docs/Postcomm_HDI_Sil.pdf

Stanton, E. A. (2007). *The Human Development Index: A History.* Political Economy Research Institute Working Paper Series No. 127, https://doi.org/10.7275/1282621

Szilágyi, Z. (2019). Regional Differences in Development and Quality of Life in Hungary During the First Third of the Twentieth Century. *Hungarian Historical Review,* 8(1), 121–152.

Tomka, B. (2020). *Austerities and Aspirations: A Comparative History of Growth, Consumption and Quality of Life in East Central Europe since 1945*. Budapest and New York: Central European University Press. ISBN 978-963-386-351-0.

Tridico, P. (2007). Institutions, Human Development and Economic Growth in Transition Economies. *European Journal of Developmental Research,* 19(4), 569–593, https://doi.org/10.1080/09578810701667607

United Nations Development Programme (UNDP), (1990). *Human Development Report 1990*. New York: United Nations.

UNDP (1993). *Human Development Report 1993*. New York: United Nations.

UNDP (2001). *Human Development Report 2001*. New York: United Nations.

UNDP (2002). *Human Development Report 2002*. New York: United Nations.

UNDP (2009). *Human Development Report 2009*. New York: United Nations.

WB (2020a). *Life expectancy at birth, total (years) – Russian Federation*. Washington, D.C.: World Bank. [Retrieved 2020-12-12] Available at: https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=RU

WB (2020b). *GDP per capita, PPP (current international $) – European Union.* Washington, D.C.: World Bank. [Retrieved 2020-12-12] Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?locations=EU

Zamfir, C. (2014). Quality of Life in Communist Regimes. In: Michalos, A. C. *Encyclopedia of Quality of Life and Well-Being Research.* Dordrecht: Springer, pp. 1025–1032. ISBN 978-94-007-0752-8.

Zeira, J. (2009). Why and How Education Affects Economic Growth. *Review of International Economics*, 17(3), 602–614, https://doi.org/10.1111/j.1467-9396.2009.00836.x