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A Multi-Criteria Analysis of Human Development Indicators in Europe

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Abstract

The paper reflects a multi-criteria analysis examining the human development trends and structure, considering correlation between 'static' (metaphysical) and 'dynamic' (dialectical) human development components. In the first two parts of the paper, the relevant scientific and business experience on the research question is presented and developed. The third part includes our theoretical study, which is based on the connection between human development concepts and their evolution, considering the practice of the knowledge-based economy value estimation within the chosen timeframe. The research

methodology examines HDI and HCI common features and differences. The empirical study provides vertical and horizontal research on human development indicators in Europe.

Keywords: human capital, social investments, socially-oriented business, education, Human Development Index (HDI), Human Capital Index (HCI), European area

JEL Classification: G17, I11, I21, I31

Introduction

Human development has emerged as a powerful platform for social and economic development throughout the world. Traditionally, the national economy competitiveness is based on economic growth and Gross Domestic Product (GDP). However, in recent times, the role of economic indicators has changed due to the growing problems in terms of environmental destruction, pollution, education, health, freedom, and security. One of the most significant current discussions concerns the questions on the connection between human development problems and national competitiveness decrease (Bratt, 1995). For instance, the Global Competitiveness Index (GCI) divides national economies into factor-driven, efficiency-driven, and innovation-driven economies, paying attention to twelve main pillars of competitiveness, including human development, namely good health and primary education, higher education and training, along with stable macroeconomic framework, financial markets, market size, etc. (GCI, 2018).

Despite their worldwide expansion, human development pillars are not still widely understood as the ultimate objective of national economy competitiveness. At the same time, socially-oriented business calls for some specific activities to look for social investors who are able to support primary social goals, sacrificing their own short-term profit to get it in the long run. In light of current social and economic development tendencies in Ukraine, human development issues are becoming extremely important to understand. Attention is paid to foreign experience, particularly of highly developed European countries, and the implementation of human development principles within national strategies.

Thus, the researchers face a need to link economic enrichment (for instance, GDP) with human development (for instance, Human Development Index (HDI), Human Capital Index (HCI), etc.). The academics and experts of international organisations have made a great effort to rethink the human development concept and its measurements. In particular, a lot of previous studies have reported on the human development problems, including the one of the World Business Council for

Sustainable Development (*Vision-2050. The innovative business agenda*); the United Nations programmes (*Transformation of the world: Sustainable Development Agenda 2030*; *World Investment Report 2017*); NATO (*The Shared Perspective of the World in 2030 and Beyond: Themes and Drivers*; *Multiple futures project – Navigating towards 2030*); World Bank (*Knowledge Assessment Methodology (KAM)*) (Derek, 2006; NATO, 2009, 2012; UN, 2015; UNCTAD, 2017; WEF, 2018; WBCSD, 2018). However, there is still a lack of human development tendencies comparative analyses, where attention is paid to the peculiarities of national economies.

The main question for the current research concerns the peculiarities of European human development estimation within specific indicators. In order to answer the research question, the scientific problem of this article is formulated, which lies upon revealing the human development essence and its estimation, concerning the comparison of the tendencies of human development in Europe, including the experience of Germany, the United Kingdom, France, and Scandinavian countries. The hypothesis of the paper centres around the human development involvement based on complex views of the issue. The empirical study focuses on identifying the main indicators, considering human development within the European area.

The object of the research is human development in Europe. The subject is the tendencies of human development in particular European countries. The research methodology is based on the review of scientific literature and human development reports analysis.

Quantitative information, namely human development rankings and statistical data are used to analyse the tendencies of human development in Europe. The main social and economic parameters are calculated, defining the differences of the indicators for each national economy. Qualitative and quantitative data are analysed to interpret the potential of human development in Europe.

This study is organised as follows:

- in the next section, some theoretical assumptions of human development are presented;
- then, a comparable analysis of human development indicators is provided;
- finally, a multi-criteria analysis of human development tendencies in Europe is provided and concluded.

The outcomes of the study can be used within national human development strategies and policies implementation. The suggestions and workable solutions, examples and proposals can be inspirational for future scientific research.

Literature review

Since our society faced the need of human development progress, much has been written and explained about the new human development concept in the field of innovative social and economic policy and strategies.

The primary ideas of human development concept were introduced within the framework of Haq's (1990) work. Evidence suggests that human development consists of particular indicators, including life expectancy, mean years of schooling, and the standard of living, namely gross national income per capita. Human development has been the subject of much systematic investigation, conducted by Anand and Sen (1994), who emphasised the fundamental characteristics of human development components. Anand and Ravallion (1993) conducted a study on life expectancy factors, concerning an index of poverty and public health spending per person. Lately, there has been renewed interest in human development goals, including particular priorities and effects on human development. The linkage of the main human development components has been analysed in terms of the Millennium Development Goals (Fukuda-Parr, Yamin, & Greenstein, 2014). A considerable literature has grown around the theme of the growing importance of the connection between economic factors and human development. The current evidence proves the importance of regular financial support within human development strategies and policy (Heckman & Mosso, 2014).

Determining the impacts of human development factors on the total economic growth has become an important part of society structure analysis. From this point of view, the modern society is competitive instead of maintaining its sustainability, including human development indicators (Weber, 2017). Kail and Cavanaugh (2019) conducted human development research through the concept of life stages, considering human development in childhood and adolescence. Redmond and Nasir (2020) provided a broader view of social and economic development, considering the Human Development Index in addition to traditional indicators of economic growth. Luetz and Walid (2019) considered human development in the context of social responsibility and the sustainable development concepts that are integrated within national strategies and international policies. Kiseľáková, Šofranková, and others (2019) paid attention to the human development and business impact on sustainability and competitiveness. Some peculiarities and characteristics of human development and human capital essence are considered within the research of Ukrainian scientists, including Shkoda (2015) and Gernego (2018).

However, despite the existing body of research on the human development issue, there is a constant need to analyse the human development tendencies in accordance

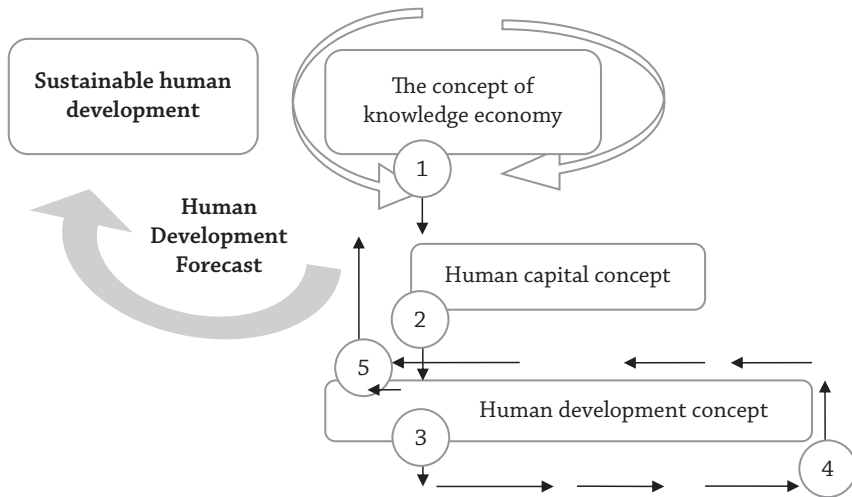
with the available criteria. Moreover, international organisations provide yearly summaries to measure the average achievements in main human development dimensions, including the standard of living, health and educational levels. Thereby, it is necessary to provide their comparable analyses.

The current study seeks to obtain data which will help to address these research gaps. The research aims to examine HDI and HCI common features and differences, providing vertical and horizontal research of human development indicators in Europe. A wide range of methods have been applied to achieve the research goal. However, further research is needed to develop reliable analytical methods, namely methods of comparison, synthesis, and system analysis, to measure the level of human development within the European area.

Theoretical background to human development

Evidence suggests that due to the complexity of human development, it is based on the number of socially-oriented concepts (Figure 1).

Figure 1. Human development concepts



- 1) – actualisation of theoretical research within the human capital concept as a result of the role of the 'knowledge' component growth;
- 2) – transformation of the human capital concept, concerning implementation of its 'dynamic' nature;
- 3) – implementation of human development concept priorities;
- 4) – the concept of human development evolution;
- 5) – forecast for the knowledge economy concept development, concerning transformation and sustainable human development concept formation.

Source: the authors' comparison based on Gernego (2018).

The concept of knowledge economy was developed by Machlup (1962), who estimated the value of knowledge-based economy as nearly 29% of GDP. Thus, it was the primary concept, which indicated the possibility of measuring intangible assets of human development and its components, namely scientific knowledge, research and development (R&D), communication and information. Thereafter, Drucker (2007) proposed the theory of knowledge society, identifying new knowledge as the main economic resource.

The role of knowledge economy has received increased attention across a number of World Bank studies in recent years. The research, related to the knowledge economy, started under the *World Development Report 1998/99: Knowledge for Development* (World Bank, 1999). Moreover, it was the primary attempt to estimate the value of knowledge. The research was conducted on the basis of reports on income per capita in Ghana and the Republic of Korea. As a result, the difference between such economies in the 40 years' timeframe was defined. It was conclusively shown that both economies had the same economic potential in the primary research phase. However, the Republic of Korea's income per capita was six times higher than the same economic indicator of Ghana by the 90s. Such a success is largely connected with knowledge gaps between both economies. The next step of examining the knowledge economy concept concerned its practical implementation within the European Union Member States (Rodríguez, 2002).

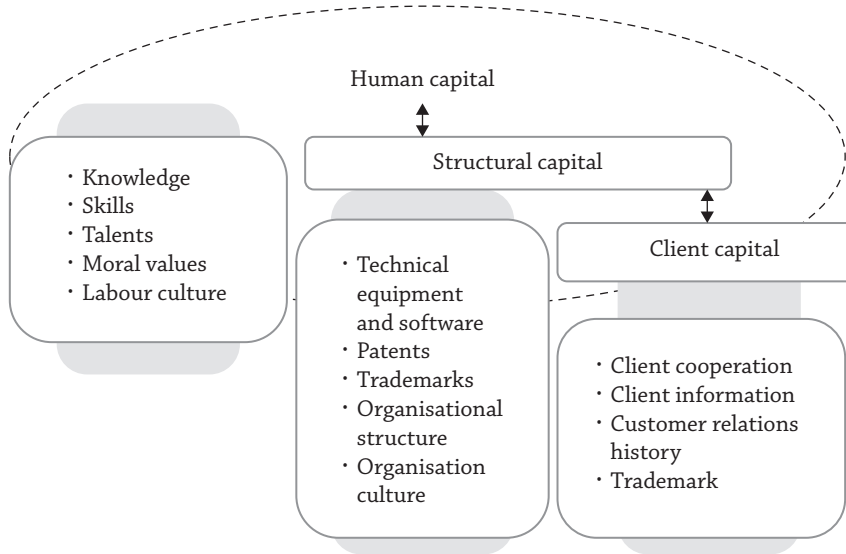
Thereafter, the concept of knowledge economy was widely known and transformed into the intellectual capital applied concept by Edvinsson at the request of Skandia, the Swedish insurance company. The structural model of intellectual capital, Skandia Value Scheme, was developed (Edvinsson, 2000). As a result, the represented model became the basis of the traditional approach to the intellectual capital structuring as a set of the following varieties:

- 1) human capital – HC;
- 2) structural capital – SC;
- 3) client capital – CC (Figure 2).

Instead of considering the intellectual capital structure, its main component is human capital, which has a pivotal role in formation and further development of other above-mentioned components. Structural capital is fast becoming a key instrument in providing support for the transition to a qualitatively new level of intellectual capital. The client capital can play an important role in successful collaboration inside the intellectual capital structure.

Thus, evidence suggests that the problems of using labour resources are transformed into the problems of forming qualitatively new workforce in the conditions of scientific and technological progress within the applied research and the theory of economic science. The human capital concept is developed.

Figure 2. Intellectual capital structure



Source: the authors' comparison on the basis of Edvinsson (2000).

The multiplicity of human capital, its ability to change the form of manifestation and structural characteristics are the determining components of human capital dynamism. The traditional system of social activity has lost its relevance. At the same time, there is a growing body of literature and practical evidence that recognises the importance of conceptual research, considering collaboration between human capital objects. The emphasis is transformed from the stable characteristics to the process and the direction of time, emphasising the need for change. Thus far, the human development concept was a permanent (metaphysical) idea, whereas the innovative human development concept is based on the principles of dialectics, considering unity and interaction of opposites.

One of the most significant current discussions in economic and social sciences is the nature of the dialectics concept, which leads to a significant number of innovative scientific points of view on the civilisation progress worldwide. A qualitatively new human development concept, which focuses on the possibility of material goods accumulation for human potential development preserving the environmental needs, has received increased attention across a number of disciplines in recent years.

The human capital concept discovers the economic expediency of human perfection as a factor of production. However, understanding human capital value and dynamic is vitally important within the human development concept. At the same time, due to the complexity of human development, the substantiation of its

quantitative and qualitative components has long been a question of great interest in a wide range of fields, including economic and financial forecasting.

Research methodology

Determining the impacts of human development is important for the future of social and economic development worldwide. Recently, there has been renewed interest in the indexes which were created by international organisations to emphasise the additional criteria besides the economic ones to measure human development. In particular, recent evidence of the United Nations (UN) development programme experts suggests that the same level of GDP per capita is able to be measured with different human development outcomes. The existing research recognises the critical role played by human development components, namely: life expectancy at birth, knowledge and education, a decent standard of living. The Human Development Index (HDI) was created as a measure of average achievement in the above-mentioned human development dimensions (HDI, 2018).

The Human Development Reports give some reliable methods for calculating the value of the above-mentioned components, namely:

$$HDI = (I_{HEALTH} * I_{EDUCATION} * I_{INCOME})^{1/3}, \quad (1)$$

I_{HEALTH} is calculated as the indicator of life expectancy at birth that demonstrates the measurement for further long and healthy life.

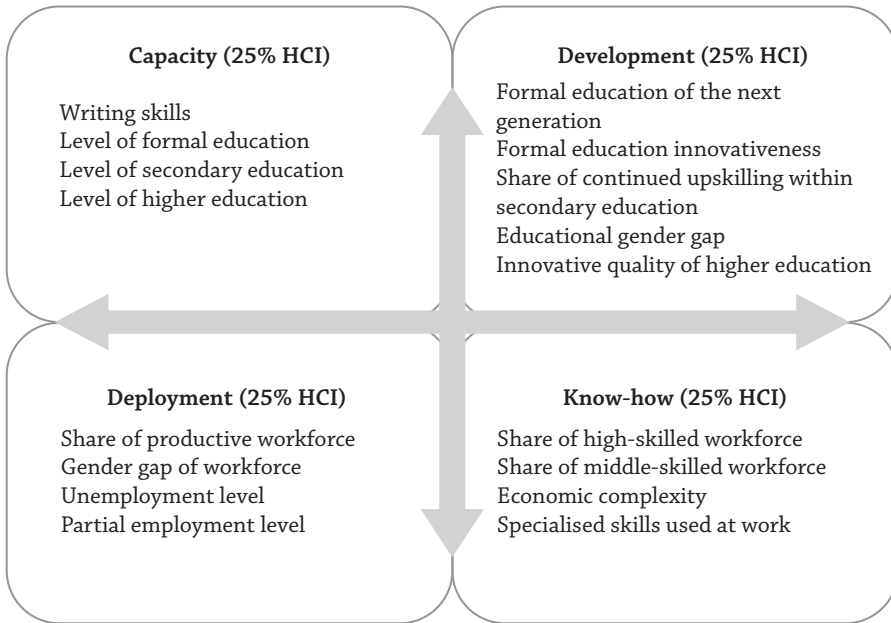
$I_{EDUCATION}$ identifies the expected and mean years of schooling that measure the potential for further human development, based on the current level of 'national health'.

I_{INCOME} provides us with a number of important financial conditions for further educational development, based on human development 'health conditions'. To examine this issue, the Gross National Income per capita indicator is examined.

The HDI is most commonly associated with people and their capabilities to achieve social and economic development goals. However, the above-mentioned approach is not able to detail the knowledge and skills providing value. At the same time, the human development concept is closely associated with the human capital concept.

To accelerate more and better investments in people, the research of the World Bank experts reproduces the findings on the Human Capital Index (HCI). The HCI is a summary measure of a wide array of knowledge and skills, including creativity (Acemoglu, 2012). In particular, the human capital estimation has been carried out using four groups of indicators (Figure 3).

Figure 3. Human capital indicators



Source: the authors' comparison on the basis of HCI (2017).

Human capital indicators are measured based on the following formula:

$$Score1 = \frac{Country\ Indicator\ Value - Logical\ Minimum\ Value}{Logical\ Maximum\ Value - Logical\ Minimum\ Value}, \tag{2}$$

Thus, the differences between the values of the current indicator for the country and its minimum value and the largest value of the indicator and its minimum value are compared.

The above-mentioned human development indicators are focused on the different human development effects. However, there have been no controlled studies which compare differences in the HDI and HCI. Therefore, the current research critically examines their common features and differences (Table 1).

The correlation between the static and dynamic aspects is related to the human development methodology research. Therefore, such methodology is more complicated than economic indicators. The current research shows the prospects for further discussion. In particular, determining the level and structure of human development and human capital in European countries is important for their social and economic competitiveness worldwide.

Table 1. HDI and HCI common features and differences

	HDI	HCI
1	2	3
Common features	Both indexes assess the global human development dimension and the measure of human development at the country level These studies highlight the educational component complexity The challenges of gender inequality and unemployment are considered The equivalence of key indicators that determine the human development A comparative analyses of human development /capital structure and dynamics	
Differences		
Purpose	Determination of the human development level (dynamics)	The existing human capital analysis (static approach)
Consideration of the main human development components	Health, education, and the standard of living are considered	Educational and professional levels of the labour force are considered
Absolute assessment (points)	No	Yes
Relative assessment (index)	Yes, the assessment is represented	Yes, the ranking of the absolute assessment is represented
Applied aspect	Available, the forecast of human development is made	Available, the human capital reserve is estimated

Source: own work.

Main results

Firstly, the study aims to define human development rankings of particular European countries. Secondly, the chosen countries' structural HDI and HCI analysis (vertical and horizontal analysis) are presented. Finally, the average estimation of human development indicators in Europe is made (Table 2).

The current sample was chosen based on two criteria, namely:

- current long-term national economies' positions in human development rankings, which indicate the 'traditional leading countries' in the European area;
- the human development forecast, which indicates the leading and developed European countries with the highest standard of living or quality of life.

The first group consists of Germany, France, and the United Kingdom. The second group is represented by Scandinavian countries, namely Norway, Sweden, and Finland.

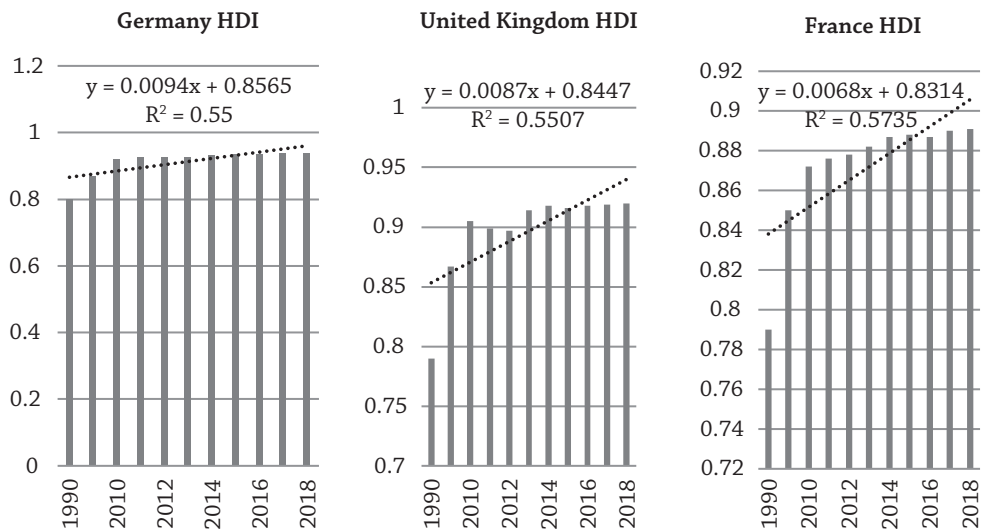
Table 2. Human development indicators within the European area

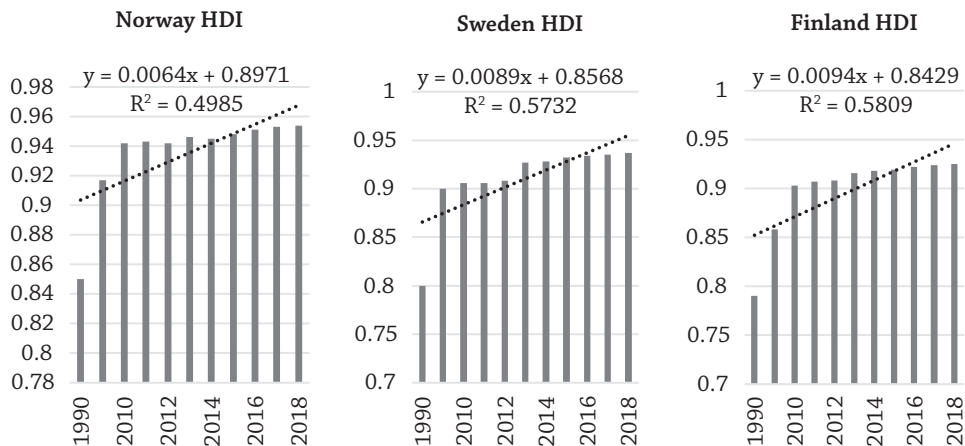
	HDI			HCI						
	Report 2018	Report 2017	Report 2016	Report 2018 The general index	Report 2017					Report 2016 (The general index)
					The general index	Capacity	Development	Deployment	Know-how	
1	2	3	4	5	10	11	12	13	14	15
Norway	1	1	1	2	1	13	6	24	6	2
Germany	4	4	4	12	6	29	12	40	7	11
Sweden	8	14	15	10	8	31	16	39	3	5
United Kingdom	15	16	16	16	23	54	17	21	10	19
France	26	21	22	23	26	39	20	86	14	17
Finland	12	23	23	5	2	8	1	68	2	1
The average estimation	11	14.6	14.9	10.8	12.5	28.4	13.5	48.1	8.4	11.0

Source: the authors' comparison on the basis of human development and human capital reports.

The current analysis and interpretation of data for both groups shows that the chosen national economies are a guide to the successful human development trends that lead to social and economic growth (Figure 4).

Figure 4. Human development trends and approximation

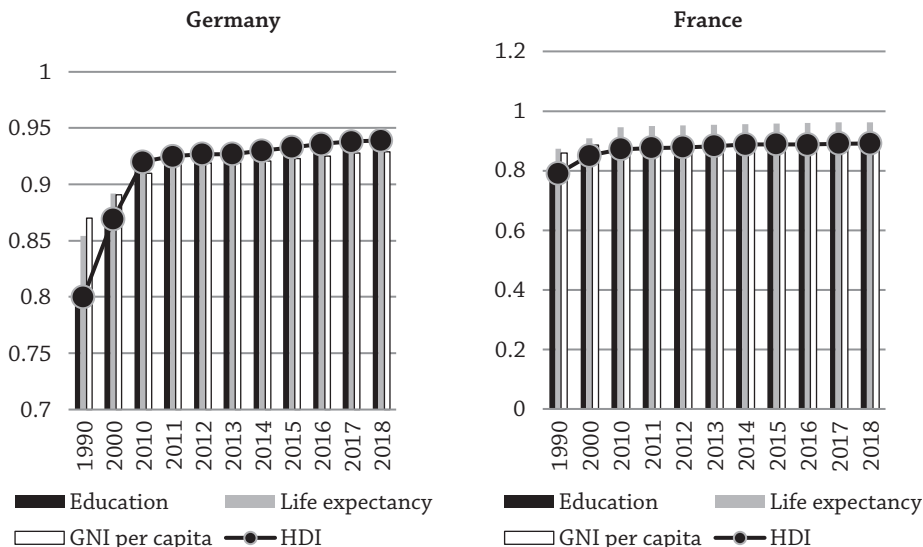


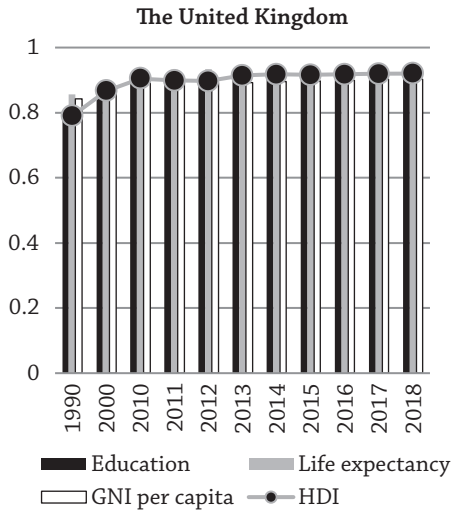


Source: the authors' comparison on the basis of human development reports.

The summarised human development data and calculated approximation shows rather a high probability for human development increase. However, considering the variety of human development manifestations, there is a need to estimate human development structural trends that are relevant for our analysis (Figure 5 and Figure 6).

Figure 5. Human development structural trends in Europe (criterion 1)

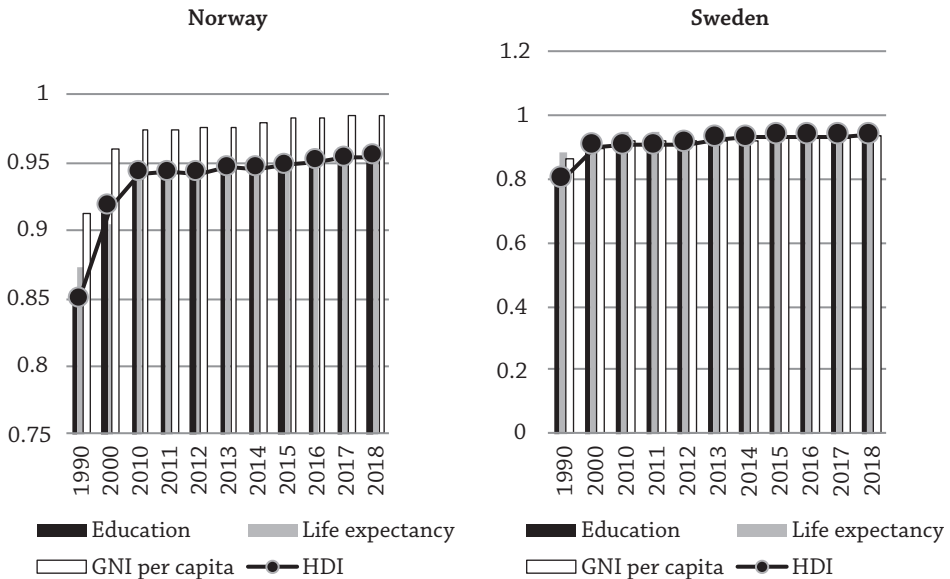


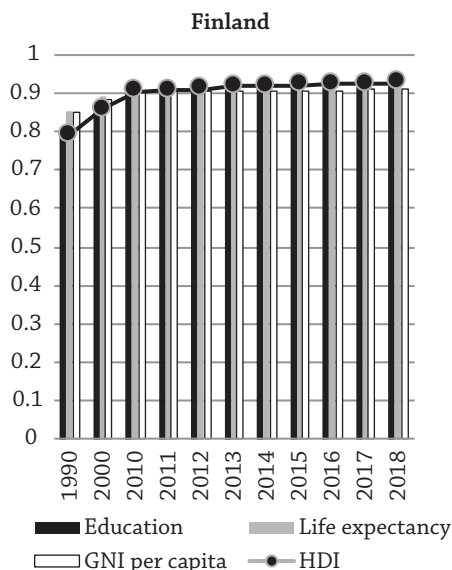


Source: the authors' comparison on the basis of human development reports.

Figure 5 reveals that there has been a sharp increase in human development. However, the graph shows that the structure of human development is not balanced. At the same time, the model of balanced human development is proposed within the human development structural trends in accordance with criterion 2 (Figure 6).

Figure 6. Human development structural trends in Europe (criterion 2)





Source: the authors' comparison on the basis of Human Development Reports of the United Nations Development Programme.

Figure 6 provides the summary statistics for the human development structural trends in Scandinavian countries. The results obtained from the current human development analysis show the balance within the human development structure.

In order to meet the goals of our empirical study, such a structural dynamic balance is considered as the main factor of social and economic stability and growth.

Along with this growth in human development and its structural dynamic balance, however, there is an increasing concern over the static component, namely human capital. Results from the current study demonstrate a strong and consistent association between HDI and HCI structural trends (Table 2). In particular, the HCI increase is largely based upon the know-how and development components that are represented in this research.

Conclusion

Human development represents one of the main factors that influences and is influenced by social and economic development nowadays, determining national economies' global competitiveness.

Our research was focused on underlining human development and human capital peculiarities, describing common features and differences between their measures. In

order to answer the main question of the research, the current study set out to gain the understanding of human development concepts evolution within the theoretical background of human development. The novelty of this research is represented by the insights of the static and dynamic nature of human development. In particular, the contribution of the current study has been to confirm human capital multiplicity and its static nature. Taken together, these findings suggest a role for human capital in promoting the dynamic human development component. The additional theoretic and methodological contribution of our study has been to confirm a permanent (metaphysical) nature of development, determining the components of human capital dynamism.

The results of the empirical study establish a quantitative framework for detecting the human development indicators. This new understanding should help to improve predictions of the impact of human capital and human development on chosen national economy competitiveness worldwide. The current research is focused on the Euro Area. However, the methods used for human development research in Europe may be applied to other types of analytical research elsewhere in the world.

Other results of the empirical study present that within the examined timeframe and for the selected panel of data and countries human capital and human development structural trends influence social and economic trends, defining national economies' competitiveness in Europe and worldwide.

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