

Škare, Marinko; Lacmanovic, Sabina

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HUMAN CAPITAL AND ECONOMIC GROWTH – HOW STRONG IS THE NEXUS?

Marinko Škare^{1)*} and Sabina Lacmanović²⁾
¹⁾²⁾ Juraj Dobrila University of Pula, Croatia

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Abstract

The link between human capital and economic growth still remains unexplained because of the measurement issues connected to the human capital stock. This study investigates the link between human capital stock and economic growth using inclusive wealth index and ratio of engaged to actively disengaged employees as proxy for human capital stock. Data from the global workplace and inclusive wealth reports are used in order to provide an international comparison of the link between human capital and inclusive wealth. Cross country comparison show human capital largely contribute to the inclusive wealth formation. Formal education is important but also motivating working environment is needed to achieve sustainable economic growth. The finding further indicates that standard human capital growth model should be revised taking into the account variables addressing sustainable growth (not just growth) and environmental variables (work conditions) affecting human capital stock. Countries encouraging investments in the development of individuals both through formal education and inspiring work environments achieve higher sustainable economic growth

Keywords: human capital, economic growth, inclusive wealth, cross-country comparison, employees engagement.

JEL Classification: E21, E24, J24, O00, Q56.

Introduction

This paper analyzes the relation between human capital and economic growth. In this study authors apply a different approach – the link between the two variables is explored through the Inclusive Wealth Index (IWI), which was chosen as a currently most representative measure of sustainable economic progress. The IWI gives a set of the main determinants of nations’ well-being where the component of human capital represents an important distinctive element. The focus on the role of human capital has led the authors to propose the introduction of a new variable in the measurement process that could reflect not only the stock of human capital but also its investment of time and energy (engagement) in the production process that is mostly relevant for the productivity and profitability levels.

* Corresponding author, **Marinko Škare** – mskare@unipu.hr

The strength of the nexus between human capital and economic growth was tested by analyzing the results of the until now two published IWR reports: IWR 2012 and IWR 2014. The focus of the analysis was the contribution of human capital to the inclusive wealth. The authors commented on the results in the context of available GDP and HDI data. The new variable, the ratio of engaged to actively disengaged employees as a measure of employee engagement, is discussed through the analysis of two recent global reports, State of the Global Workplace 2010 and 2013. The results of the research have led the authors to make several recommendations to different actors who have the power to make decisions that could improve the role human capital plays in economic growth.

The paper starts with the comparison of IWI, GDP, and HDI as the most used measures of economic progress (section 1). In section 2, the major findings of the IWR 2012 and IWR 2014 are summarized and commented. Section 3 deals with human capital, its measurement limitations and its significance as a critical contributor to the inclusive wealth. It also gives an explanation of why the measurement process could be improved by the introduction of a new variable (ratio of engaged to actively disengaged employees). In section 4, the results of the State of the Global Workplace reports from 2010 and 2013 are commented. In the following section 5, key findings of the conducted research and its implications, as well as policy recommendations, are listed. Concluding remarks are presented in section 6.

1. Measuring sustainable progress – Inclusive Wealth Index vs. GDP and HDI

There is a long history of discussion about the appropriateness of GDP as a measure of economic progress. It starts with its creator Simon Kuznets who commented long ago, in 1934, that the well-being of nation could hardly be traced from the level of GDP, and 30 years later he stated: “You should always consider the difference between the quantity and quality of growth, between the costs and benefits, and between the short-term and long-term business activity. When you thrive to increase growth, you should clearly define the growth of what, and with what purpose” (Rifkin, 2006). The list of different significant shortcomings of GDP is not short: GDP does not indicate whether the activities that generate growth will be possible in five years or fifty (GDP does not include information on the state of the resource base upon which production relies) or whether they enrich the few at the expense of the many; GDP ignores environmental and other externalities produced through the production process; it does not reflect scarcity arising from dwindling natural resources, which are often public goods with no market prices; it also overlooks some of the most valuable assets treating them as peripheral.

In order to address those issues a number of alternative measures has been proposed and developed, such as: Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), Fordham Index of Social Health (FISH), UN's Human Development Index (HDI), Index of Economic Well-Being (IEWB), Happy Planet Index (HPI), Green GDP, Inclusive Wealth Index (IWI), and others (such as NEF (New Economics Foundation), an independent „think and do“ tank, led by its slogan „Economics as if People and the Planet Mattered“. The Foundation continuously works on the development of new measures of progress. It was founded in 1986 by the leaders of alternative economic forum – The Other Economic Forum (TOES) - for more about NEF and its measures of progress see in materials available at their web-site: www.neweconomics.org)

For the purpose of this paper, the GDP measure is compared to the Inclusive Wealth Index (IWI) to track and compare the strength of the nexus between human capital and economic

growth based on the economic evaluation made in the GDP concept and the IW concept. The IWI was chosen as a new (on the determinants of well-being focused) internationally comparable measure of sustainable progress. The GDP growth rate still dominates in national and international statistics reports on growth, but it does not say anything about the sustainability of such growth and its equitability (many possible activities that enrich the few at the expense of the many). The GDP measure does not include many significant socio-economic aspects (costs) of growth/progress, i.e. it does not represent the broader more realistic view on the well-being of nations. More detailed analysis of GDP and its alternatives see in: Fleurbaey, 2009; Natoli and Zuhair, 2011; Brent, 2012; Schuller, 2014; Brent and Whitby, 2015.

The Human Development Index (HDI) was created in the 1990's as an initiative to provide an alternative to GDP in measuring human development progress regarding life expectancy, education, and income. Although it offers a broader look at progress, HDI still has significant – in sustainability terms – shortcomings. A primary drawback of HDI is its inability to adequately incorporate the ecological dimensions of sustainable development, and that it does not integrate social goods in capital accounts to complement GDP (UNU-IHDP and UNEP, 2014). Alternatives to HDI have been proposed such as Sustainability-Adjusted Human Development Index - SHDI (Pineda, 2012), Environmentally Stressed Human Development Index – ESHDI (Ray, 2014) or the multi-criteria approach to the computation of the HDI (Luque, Pérez-Moreno and Rodríguez, 2016) to address common shortcomings.

The concept of inclusive wealth was introduced through the inaugural publication on inclusive wealth issued jointly by UNU-IHDP and UNEP in 2012. The Inclusive Wealth Report (IWR) is meant to be a biennial effort to evaluate the capacities of nations around the world to improve their citizens' well-being, and do so sustainably for the benefit of present and future generations. The report provides a more comprehensive and accurate measure of human wealth, development, and progress. The IWR validates the suspicions that GDP is an inadequate measure for assessing long-term prosperity and reveals education, health, and the environment as investments that will truly unleash the potential of young and interconnected populations around the world for development. The Inclusive Wealth Index will be crucial to measuring progress toward the Sustainable Development Goals, and in the planning and evaluation of sustainable development as a policy paradigm (UNU-IHDP and UNEP, 2012).

Inclusive wealth represents the social value of an economy's capital assets. The assets comprise (i) manufactured capital (roads, buildings, machines, and equipment), (ii) human capital (skills, education, health), and (iii) natural capital (sub-soil resources, ecosystems, the atmosphere). Such other durable assets as knowledge, institutions, culture, religion – more broadly, social capital – were taken to be enabling assets; that is, assets that enable the production and allocation of assets in categories (i)-(iii). The effectiveness of enabling assets in a country gets reflected in the shadow prices of assets in categories (i)-(iii). For example, the shadow price of a price of farming equipment would be low in a country racked by civil conflict, whereas it would be high elsewhere, other things being equal (UNU-IHDP and UNEP, 2014).

The IW does not reject GDP. It acknowledges GDP's practicality for tracking the efficiency of resource use for production, and for providing an overview of interdependencies among economic sectors held within the system of national accounts. Neither does the IW aim to

modify GDP to accommodate missing elements, as Green GDP initiatives attempt. The IW starts from the premise that all development is conditional on the existence of several key assets and that the total value of these assets should not be allowed to decline if human well-being is to be furthered sustainably (UNU-IHDP and UNEP, 2014, p.3).

The inclusive wealth framework also takes a different approach to that of earlier efforts to capture a broader sense of human well-being and progress. Inclusive wealth directs its focus not on the constituents of well-being – measuring as does the HDI specific outcomes that reflect well-being – but rather the determinants of well-being, the set of “ingredients” necessary for nations to bring about those outcomes. These determinants can be found in several pools of national capital assets, or the productive base of economies (UNU-IHDP and UNEP, 2014, p.3).

The IWI provides a different perspective for assessing the performance of an economy – this by switching the focus of attention from flows (income) to stock metrics (wealth). This stresses the importance of preserving a portfolio of capital assets to ensure that the productive base can ultimately be maintained to sustain the well-being of future generations (UNU-IHDP and UNEP, 2012). The key premises and constituencies of the IW concept are shown in figure no. 1.

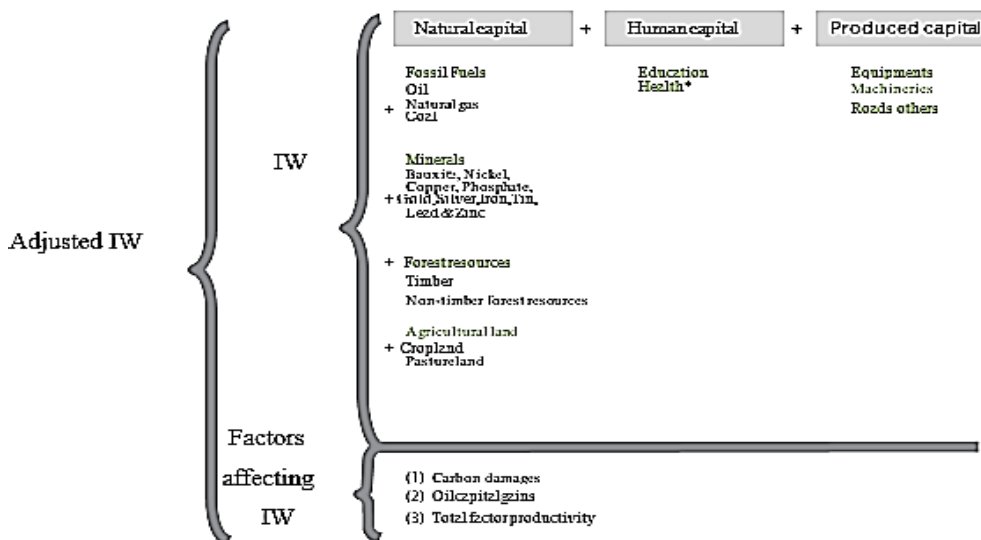


Figure no. 1: Schematic representation of the Inclusive Wealth Index (IW) and the Adjusted Inclusive Wealth Index (IW adj)

*Not included in the Inclusive Wealth Index Calculations

Note: Assets are added by evaluating their changes at their social (shadow) price.

Source: UNU-IHDP and UNEP, 2014, p. 20

Key variables used in the measurement of wealth are: human capital (population by age and gender, mortality probability by age and gender, discount rate, employment, educational attainment, employment compensation, labour force by age and gender), produced capital (investment, depreciation rate, assets lifetime, output growth, population, productivity), natural capital (fossil fuels – reserves, production, prices, rental rate; minerals – reserves, production, prices, rental rate; forest resources – forest stocks, forest stock commercially

available, wood production, value of wood production, rental rate, forest area, value of non-timber forest benefits (NTFB), percentage of forest area used for the extraction of NTFB, discount rate; agricultural land – quantity of crops produced, price of crops produced, rental rate, harvested area in crops, discount rate, permanent cropland area, permanent pastureland area; fisheries – fishery stocks, value of capture fishery, quantity of capture fishery, rental rate), health capital (population by age, probability of dying by age, value of statistical life, discount rate), adjustments in IWI (total factor productivity – technological changes; carbon damages – carbon emission, carbon price, climate change impacts, GDP; oil capital gains – reserves, oil production, oil consumption, prices, rental rate - data sources of variables that were used in the measurement see in Methodological Annex of UNU-IHDP (2012)).

2. Key findings of the IWR 2012 and IWR 2014 – comparison to the GDP and HDI results

The IWR 2012 contains data about changes in inclusive wealth per capita during 1990-2008 in 20 countries that represent various stages of economic development. The list of countries included in the report are: Australia, Brazil, Canada, Chile, China, Colombia, Ecuador, France, Germany, India, Japan, Kenya, Nigeria, Norway, Russian Federation, Saudi Arabia, South Africa, United Kingdom, United States and Venezuela. In 2014, the second report on inclusive wealth was published. The IWR 2014 extended the IWR 2012 in three ways: (a) the coverage is 140 countries and the time horizon includes additional data from 2009 and 2010; (b) the basis for the estimates of education as a capital asset is the more sophisticated approach developed by Dale Jorgenson and his collaborators (for detailed explanation of the used methodology see in UNU-IHDP and UNEP (2014, p.112)); and (c) health as a form of capital asset receives attention in the main body of work. The IWR 2012 had a particular focus on natural capital while the IWR 2014' focus is on human capital, a focus mostly relevant to the topic of this paper. The comments on the two reports in the following sections are in line with the researcher's main preoccupation – the role of human capital.

Spending on human capital has traditionally been considered as expenditure in core national accounts. The IWR 2014 treats education and another spending in human capital as investments, rather than expenditures. Education has long been considered a social good, and one that is crucial for future growth; however the IWR 2014 demonstrates it is also an engine of wealth today and puts numbers to this value. In increasingly knowledge-based economies, education's role as a driver of production has become more important than ever. That role is two-pronged: education is positively correlated to produced capital, as well as enhancing opportunity, which is at the core of human well-being. The two most important components of human capital are education and health. However, while health is a fundamental component of human capital, it was left out of the main human capital wealth accounts as in the IWR 2012. First, because of the relatively high value of health capital, it dominates and skews overall inclusive wealth figures. Also, the methodology used for computing health values is still under debate; until there is a consensus among health economists on these methods, it would be inappropriate to integrate as such into overall wealth accounts (UNU-IHDP and UNEP, 2014).

The IWR 2012 shows that 6 out of the 20 analyzed countries decreased their IWI per capita in the last 19 years. In 5 out of 20 countries, the population increased at a faster rate than inclusive wealth, resulting in negative changes in the IWI per capita. The majority of

the countries in the sample have had an increase in their stocks of manufactured capital per capita. In China, India and Chile, the positive changes in IWI has been mainly driven by manufactured capital. Russia, Nigeria, and Venezuela saw a decrease in their manufactured capital base. When the three capital forms measured are adjusted for total factor productivity, oil capital gains and carbon damages - the performance of some countries increases considerably, particularly for Nigeria, Saudi Arabia, and Venezuela. Human capital, being the prime capital form that offsets the decline in natural capital in most of the economies, has increased in every country.

Key findings of this first IWR 2012 report could be summarized as following (UNU-IHDP and UNEP, 2012):

- 70 percent of countries assessed in the 2012 Inclusive Wealth Report present a positive Inclusive Wealth Index (IWI) per capita growth, indicating sustainability.
- High population growth on IWI growth rates caused 25 percent of countries assessed to become unsustainable.
- While 19 out of the 20 countries experienced a decline in natural capital, six of them also saw a decline in their inclusive wealth, thus following an unsustainable track.
- Human capital has increased in every country, being the prime capital form that offsets the decline in natural capital in most economies.
- There are clear signs of trade-off effects among different forms of capital (manufactured, human, and natural capital) as witnessed by increases and declines of capital stocks for 20 countries over 19 years.
- Technological innovation and/or oil capital gains outweigh declines in natural capital and damages from climate change, moving some countries from an unsustainable to a sustainable trajectory.
- 25 percent of assessed countries, which showed a positive trend when measured by GDP per capita and the HDI, were found to have a negative IWI.
- The primary driver of the difference in performance was the decline in natural capital.
- Estimates of inclusive wealth can be improved significantly with better data on the stocks of natural, human, and social capital and their values for human well-being.

To put the IWI results in context to the GDP and HDI, the comparing average growth rates per annum in IWI per capita, GDP per capita and HDI are given in table no. 1.

Table no. 1: Comparing average growth rates per annum in IWI per capita, GDP per capita and HDI

Country	IWI per capita	HDI	GDP per capita	Country	IWI per capita	HDI	GDP per capita
Australia	0,1	0,3	2,2	Japan	0,9	0,4	1,0
Brazil	0,9	0,9	1,6	Kenya	0,1	0,4	0,1
Canada	0,4	0,3	1,6	Nigeria	-1,8	1,3	2,5
Chile	1,2	0,7	4,1	Norway	0,7	0,6	2,3
China	2,1	1,7	9,6	Russia	-0,3	0,8	1,2

Country	IWI per capita	HDI	GDP per capita	Country	IWI per capita	HDI	GDP per capita
Colombia	-0,1	0,9	1,7	Saudi Arabia	-1,1	0,5	0,4
Ecuador	0,4	0,6	1,8	South Africa	-0,1	-0,1	1,3
France	1,4	0,7	1,3	UK	0,9	0,6	2,2
Germany	1,8	0,7	1,5	United States	0,7	0,2	1,8
India	0,9	1,4	4,5	Venezuela	-0,3	0,8	1,3

Source: UNU-IHDP and UNEP, 2012

The report gives several recommendations based on its key findings (UNU-IHDP and UNEP, 2012):

- Countries witnessing diminishing returns in their natural capital should build up their investments in renewable natural capital to increase their inclusive wealth and the wellbeing of their citizens.
- Countries should mainstream the Inclusive Wealth Index within their planning and development ministries so that projects and activities are evaluated based on a balanced portfolio approach that includes natural, human, and manufactured capital.
- Countries should support/speed up the process of moving from an income-based accounting framework to a wealth accounting framework.
- Governments should move away from GDP per capita and instead evaluate their macroeconomic policies – such as fiscal and monetary policies – based on their contribution to the IWI of the country.
- Governments and international organizations should establish research programs for valuing key components of natural capital, particularly ecosystem services.

In the IWR 2014 empirical evidence shows positive average growth in per capita inclusive wealth – and thus, progress toward sustainable development – in 85 of the 140 countries evaluated (approximately 60 percent). Gains in inclusive wealth were in general lesser than those in GDP and HDI: 124 of 140 nations (89 percent) experienced gains in GDP while 135 of 140 (96 percent) showed improvement in HDI over the same period.

Other key findings from the report are as follows (UNU-IHDP and UNEP, 2014, p.15):

- Human capital is the foremost contributor to growth rates in inclusive wealth in 100 out of 140 countries. In 28 countries produced capital was the primary contributor. On average, human capital contributed 54 percent of overall gains in inclusive wealth, while produced capital contributed 33 percent and natural capital 13 percent. Those results are in line with some other contemporary empirical research. See for example Li et al. (2015).
- Population growth and natural capital depreciation constitute the main driving forces of declining wealth per capita in the majority of countries. Population increased in 127 of 140 countries while natural capital decreased in 127 of 140 countries. Although both factors each negatively affect growth in wealth, changes in population were responsible for greater declines.
- Produced capital, the capital type for which by far the most exhaustive (and reliable) data exists, represents only about 18 percent of the total wealth of nations. The

remaining capital types, which together constitute 82 percent of the wealth (54 percent of human capital and 28 percent of natural capital), are currently treated as, at best, satellite accounts in the System of National Accounts.

- After adjusting for carbon damage, oil capital gains, and total factor productivity, the number of overall progressing countries drops from 85 to 58 of 140 countries (41 percent). Results show that all three factors negatively affected inclusive wealth in most of the countries; of the three, total factor productivity adjustments had the greatest negative effect.

The relative contribution of different capital forms to IW growth are presented in table no. 2.

Table no. 2: Relative contribution (in percentage) of human, produced and natural capital to IW growth by sub-regions, regions, and total world average

	Human Capital	Produced Capital	Natural Capital
Africa	62	20	19
Eastern Africa	56	24	20
Middle Africa	47	13	40
Northern Africa	57	29	14
Southern Africa	66	27	7
Western Africa	72	12	15
Asia	54	32	14
Eastern Asia	29	56	15
South-central Asia	60	27	12
South-eastern Asia	46	37	17
Western Asia	61	26	13
Europe	44	50	6
Eastern Europe	36	51	14
Northern Europe	38	55	7
Southern Europe	50	48	2
Western Europe	55	45	1
Latin America and the Caribbean	61	26	13
Caribbean	67	23	10
Central America	64	26	10
South America	56	28	16
Northern America	54	41	5
Northern America	54	41	5
Oceania	49	31	21
Australia/New Zealand	48	43	8
Melanesia	49	18	33
Total world average	55	32	13

Note: The figures represent the average relative contribution by asset category of those countries comprising the (sub-)region to growth in IW. Contributions with a negative sign as in the case of natural capital are taken in absolute numbers.

Source: UNU-IHDP and UNEP, 2014, p. 26

The IWR 2014 report has given some valuable policy lessons (UNU-IHDP and UNEP, 2014, p.63):

- Countries are striving to improve their citizens' well-being – and do so sustainably – should reorient economic policy planning and evaluation away from targeting GDP growth as a primary objective toward incorporating inclusive wealth accounting as part of a sustainable development agenda.
- Investments in human capital – in particular, education – would generate higher returns for IW growth, as compared to investments in other capital asset groups, in countries with high rates of population growth.
- Investments in natural capital, in particular, agricultural land and forest, can produce a twofold dividend: first, they can increase IW directly; second, they can improve agricultural resiliency and food security to accommodate anticipated population growth.
- Investments in renewable energy can produce a triple dividend: first, they can increase IW directly by adding to natural and produced capital stocks; second, they improve energy security and reduce risk due to price fluctuations for oil-importing countries; third, they reduce global carbon emissions and thus carbon-related damages.
- Investments in research and development to increase total factor productivity, which decreased in 65 percent of countries, can immediately contribute to growth in inclusive wealth in nearly every country.
- Countries should expand the asset boundary of the present System of National Accounts (SNA), which currently captures only 18 percent of a country's productive base, to include human and natural capital, which are now measured only through satellite accounts, if at all.

Countries aiming to increase their productive base growth rate depending on the results of the report can invest in human and/or natural capital depending on the rate of return of these capital asset bases. It was found that investment in produced capital provides the lowest rate of return for the majority of countries. As some other empirical research have shown, the low-income countries can get higher returns than the other economies in case of investing human capital (Qadri and Waheed, 2013). Human capital, which in this IWR 2014 is primarily education, was found to be the greatest component of IW – nearly 54 percent of total inclusive wealth – in about 70 percent of countries. The largest contributions to IW – what we call inclusive investment – were also made in developing human capital (UNU-IHDP and UNEP, 2014, p.66).

Within education, there are some target areas in which investments can be made. The education-related accounts within the IW refer to years of schooling, gender dimensions, demographic profiles, and wage returns on education. A large number of countries have a low number of average years of schooling, and thus the significant potential for returns on investment. By investing in education, countries can improve present wellbeing, future productivity and income, and higher levels of long-term inclusive wealth – and thus sustainability. Most countries have not reached average education levels that include post-secondary schooling. Canada, Australia, the United States, and Norway have an average of 12 to 14 years of education. The majority of countries have achieved education levels that include secondary education (6 to 12 years) while most of the African and South Asian

countries have only reached education levels commensurate with primary school levels (0 to 6). The potential to increase human capital through further investment in education is, therefore, high. However, there is clear indication of a slowing-down of investment in education.

Six countries show a rate of growth in inclusive investment in education per capita greater than 2 percent. The majority of them fall in the -4 to 1 percent rate, which might explain the relatively low growth rate of IW in many of the countries. Several reasons can be assumed, but a key factor is likely the way education is presently factored in national accounts. Investments in education are considered expenditures since contributions to GDP are not direct (as with IW). Governments whose primary goal is GDP growth, particularly those lacking advanced educational monitoring and assessment facilities, will often focus on investments which are directly reflected in GDP, such as in produced capital.

Although produced capital is important, the results from the IWR 2014 indicate that many countries place disproportional emphasis on the growth rate of produced capital compared to those of human and natural capital, if one takes into consideration the relative weight these capitals have towards overall well-being. The recommendation of the IWR 2014 to increase investment in human capital resonates well with the proposed Sustainable Development Goals on education (UN-OWG 2014). The education inclusive wealth accounts go further than simply tracking literacy levels, providing information on the actual "value" generated by literacy rates (among other educational outcomes) for inter-temporal human well-being (UNU-IHDP and UNEP, 2014, pp. 66-68).

3. Human capital – the critical contributor to IW growth rates

3.1. The limitations of measuring human capital

There is a shared understanding that human capital is critical to individual and societal well-being. However, the complexity of the concept of human capital inevitably stresses some limitations in the process of determining the most appropriate human capital proxy. The restrictions are linked with the (non-)availability of data, the quality and sources of data, the used approach, and the (now)comparability of data that arises from different definitions and classifications of the main variables used in the measurement process. The recently most used cost-based and income-based approaches are also heavily dependent on researchers starting presumptions. In the cost-based approach, the researcher arbitrarily allocates expenditures between investment and consumption, sets the depreciation rate arbitrarily. In the income-based approach, some subjective judgments are necessarily made about the discount rate, the expected real income growth rate, the price deflators. It would also be important to separate wage premium due to educational attainment from those due to on-the-job training and other firms' characteristics, as failure to do so may lead to overstating the educational contribution to human capital. (For more detailed analysis of challenges and difficulties related to the data and the methodology choice in determining human capital proxy see in: Liu and Fraumeni (2014)). Moreover, there is, of course, the problem of reverse causality in the human capital - growth relation which should be tackled. The limitations should be bared in mind but only to give room to new initiatives (proxy) that would be better in overcoming (or at least mitigating) those limitations. A three-capital model of wealth creation used in IW concept is presented in figure no. 2.

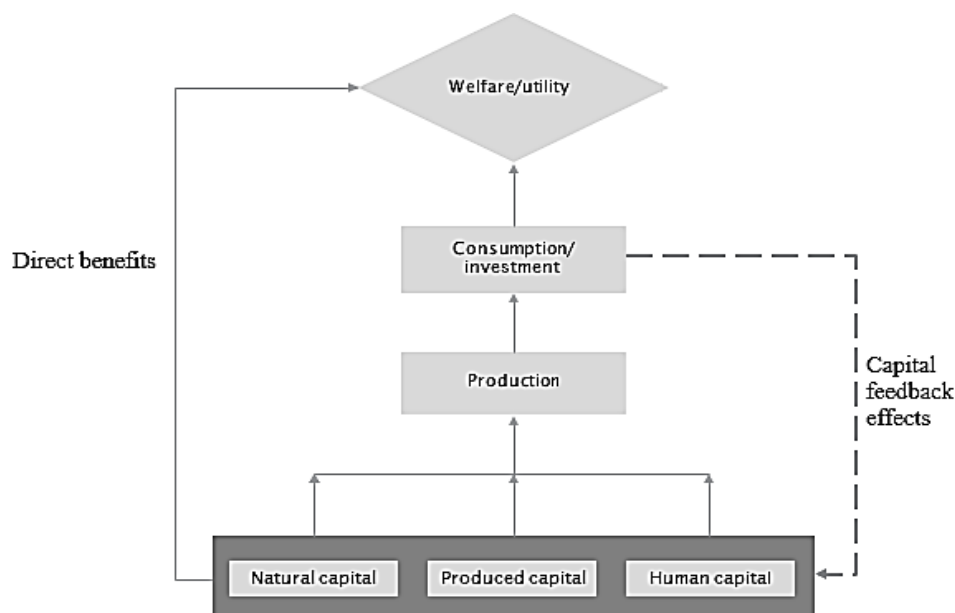


Figure no. 2: A three-capital model of wealth creation

Source: UNU-IHDP and UNEP, 2014, p. 18

3.2. Education level and the present value of future earnings - the most used indicators

The method used for calculating the wealth of human capital consists in general of three multiplied components, or «terms.» «Term I» is a function of education (i.e. human capital embodied per person/accumulated); «Term II» provides information on the population of a country that has reached the average education level; and “Term III” is the present value of the average labor compensation per unit of human capital received by workers over an entire life’s working period (UNU-IHDP and UNEP, 2014, p.39). Percentage contribution to the human capital growth of each term is presented in table no. 3

Table no. 3: Decomposition analysis of the three terms accounted in for human capital and their contribution to the changes in human capital (in %)

	percentage change with respect to 1990 (TERM)			percentage contribution to the human capital growth of each TERM				
	I	II	III	Total	I	II	III	Total
Africa	19	61	-1	79	24	72	4	100
Eastern Africa	18	56	-2	73	25	71	3	100
Middle frica	16	68	0	84	18	80	2	100
Northern Africa	27	49	-6	69	33	60	8	100
Southern Africa	18	52	-6	64	24	67	9	100
Western Africa	20	72	2	94	21	76	3	100
Asia	22	78	-3	98	26	65	8	100
Eastern Asia	18	25	-7	36	37	46	16	100

	percentage change with respect to 1990 (TERM)			percentage contribution to the human capital growth of each TERM				
	I	II	III	Total	I	II	III	Total
South-central Asia	24	54	0	78	33	62	5	100
South-eastern Asia	22	54	-3	73	29	66	5	100
Western Asia	22	132	-3	151	15	74	11	100
Europe	15	8	-3	21	48	36	16	100
Eastern Europe	13	1	-6	8	49	29	21	100
Northern Europe	16	8	-4	20	48	37	15	100
Southern Europe	16	12	-3	26	50	37	14	100
Western Europe	16	13	2	31	47	41	12	100
Latin America and the Caribbean	21	41	0	62	35	59	6	100
Caribbean	17	27	-3	41	35	52	13	100
Central America	24	56	1	80	31	67	2	100
South America	21	38	2	61	38	56	6	100
Northern America	12	25	-4	34	29	62	9	100
Northern America	12	25	-4	34	29	62	9	100
Oceania	9	42	1	52	17	80	3	100
Australia/New Zealand	8	35	3	45	17	77	6	100
Melanesia	10	49	0	59	18	82	0	100
Total world average	19	48	-2	65	32	59	9	100

Note: Term I = human capital embodied per person; Term II = adults who reached the average education level; Term III = capitalized labor compensation per unit of human capital. Negative changes in Term III are considered in absolute numbers to estimate the relative contribution of Term I, II, and III.

Source: UNU-IHDP and UNEP, 2014, p. 41

Measuring human capital can serve many purposes: it can help one better understand what drives economic growth; assess the long-term sustainability of a country's development path; measure the output and productivity of the educational sector, and facilitate informed discussions on social progress and well-being. Despite this, human capital has not yet been included within the asset boundary of the SNA. The multifaceted nature of the concept of human capital creates substantial challenges for its measurement. By focusing on formal education and economic returns for individuals – rather than on human capital in general and all the benefits due to human capital investment – we can begin from an empirically manageable and practical point of departure – which is the start point in the IW methodology/concept.

All existing approaches to measuring human capital have both advantages and disadvantages. However, the monetary measures generated from the cost-based and the income-based approaches should arguably be designated a “core” status. One reason for this is to enable direct comparison of figures with those for traditionally produced capital covered by the SNA, the construction of which is a primary task of national statistical offices.

Drawing on country experiences and international initiatives in the field of human capital measurement, one may conclude that an international trend is emerging toward an income-based approach, specifically the lifetime income approach. Estimates based on this approach can be used to assess the relative contribution of a range of factors (demographic, education, and labor market) to the evolution of human capital, and facilitate corresponding policy interventions.

Despite significant progress having been made, there remain considerable challenges regarding data availability, and detailed methodological choices inherent in applying monetary measures. Further research should, therefore, be encouraged, including toward the compilation of quality data for use in international and inter-temporal comparisons; the construction of experimental satellite accounts, in order to better understand and reconcile the discrepancies between estimates based on the cost-based and the income-based approaches; and, eventually, toward incorporating human capital measures into the SNA in the future (UNU-IHDP and UNEP, 2014, p.83).

The educational attainment of a country's younger cohort is frequently higher than the educational achievement of the older cohort; high levels of youth educational attainment correlate to high potential for improved well-being and economic growth in the future. However, human capital indicators which depend solely on educational attainment information fail to capture the full potential of a country's population. Human capital measures including information on present and future demographic trends, education, and wage or income components are essential for appropriate policy formulation and analysis (UNU-IHDP and UNEP, 2014, p.109).

The impact of health capital should also not be neglected because IWR 2014 shows it represents an important part of inclusive wealth. The economic model of health capital presented in this report allows health to affect human well-being through three distinct channels: direct well-being, productivity, and longevity. Most health capital services influence human well-being directly rather than through the production of goods and services that are counted in GDP. In the absence of better estimates of the direct and productivity effects, gains in life expectancy should be used as the primary measure of health capital. Annual gains in health capital in the United States are worth approximately US\$10,000 per person in monetary terms. (For more about the importance of including health as a significant component of human capital see in Pocas, (2014)).

3.3. The role of employee engagement as the driver of growth

When determining the link between human capital (most commonly measured by education and income, as pointed in previous sections) and growth, one question inevitably arises: Are more educated people contributing more to the production (level), i. e. the economic growth? The empirical evidence shows that this statement is not always true. It often depends on the industry and job type, and mostly on the workers' possibility/opportunity to find a job that makes use of their (through education acquired) knowledge. Higher education levels do not always imply higher engagement, i.e. higher productivity rates. In both advanced and developing economies, the problem of underemployment stresses the importance of introducing a new variable in the human capital measurement.

As several empirical papers are showing there is one critical dimension (variable) that could improve the human capital measurement methodology applied in growth models: that

is the level of employee engagement at work, i. e. the ratio of engaged to actively disengaged employees. Several authors and organizations have proposed and developed different approaches and instruments to measure the level of employee engagement at work (McKinsey & Company, 2010; Gallup Inc., 2010; Towers Watson, 2014). For the purpose of this paper, a Gallup's approach was chosen as a representative approach mostly because of the availability of comparable data for more than 140 countries, and because it has been proven in practice as an approach that successfully transforms actively disengaged to engaged employees through the implementation of adequate actions and processes.

The Gallup's approach (Q12) was developed in 1990 and has been applied since then. It classifies employees into the three categories: engaged, not engaged, and actively disengaged employees. Engaged employees work with passion and feel a profound connection to their company. They drive innovation and move the organization forward. Not engaged employees are essentially „checked out“. They are sleepwalking through their workday, putting time – but not energy or passion – into their work. Actively disengaged employees are not just unhappy at work; they are busy acting out their unhappiness. Every day, these workers undermine what their engaged coworkers accomplish (Gallup Inc., 2013, p.17). What is relevant for the purpose of this paper is that Gallup Inc. has proven the link between the ratio (engaged to actively disengaged employees) and performance outcomes including productivity and profitability which are leading to sustainable growth.

Gallup has conducted in 2012 its eighth meta-analysis on the Q12 using 263 research studies across 192 organizations in 49 industries and 34 countries. Within each study, Gallup researchers statistically calculated the business/work-unit-level relationship between employee engagement and performance outcomes that the organization supplied. Researchers studied 49,928 business/work units, including nearly 1.4 million employees. This eighth iteration of the meta-analysis further confirmed the well-established connection between employee engagement and nine performance outcomes: customer ratings, profitability, productivity, turnover (for high- and low-turnover organizations), safety incidents, shrinkage (theft), absenteeism, patient safety incidents, quality /defects (Gallup, Inc, 2013:21).

Given the timing of the eighth iteration of this study, it also confirmed that employee engagement continues to be a significant predictor of organizational performance even in a challenging economy. Gallup researchers studied the differences in performance between engaged and actively disengaged business/work units and found that those scoring in the top half on employee engagement nearly doubled their odds of success compared with those in the bottom half. Those at the 99th percentile had four times the success rate of those at the first percentile. Median differences between top-quartile and bottom-quartile units were 10% in customer ratings, 22% in profitability, 21% in productivity, 25% in turnover (high-turnover organizations), 65% in turnover (low-turnover organizations), 48% in safety incidents, 28% in shrinkage, 37% in absenteeism, 41% in patient safety incidents, and 41% in quality (defects). In short, the 2012 meta-analysis once again verified that employee engagement relates to each of the nine performance outcomes studied. Additionally, Gallup continues to find that the strong correlations between engagement and the nine outcomes studied are highly consistent across different organizations from diverse industries and regions of the world. (Gallup Inc., 2013, p.21).

Gallup's research also shows that companies with engaged workforces have higher earnings per share (EPS) and seem to have recovered from the recession at a faster rate. In a recent study, Gallup examined 49 publicly traded companies with EPS data available from 2008-2012 and (Q12) data available from 2010 and/or 2011 in its database and found that organizations with a critical mass of engaged employees outperformed their competition, compared with those that did not maximize their employees' potential. In fact, researchers discovered that as the economy began to rebound after 2009, having an engaged workforce became a strong differentiator in EPS. Companies with engaged workforces seemed to have an advantage in regaining and growing EPS at a faster rate than their industry equivalents. Conversely, those organizations with average engagement levels saw no increased advantage over their competitors in the economic recovery.

Organizations with an average of 9.3 engaged employees for every actively disengaged employee in 2010-2011 experienced 147% higher EPS compared with their competition in 2011-2012. In contrast, those with an average of 2.6 engaged employees for every actively disengaged employee experienced 2% lower EPS compared with their competition during that same period. Factors such as EPS, profitability, productivity, and customer ratings are all key indicators in determining an organization's health and its potential for growth. By intentionally focusing on measuring and managing employee engagement using Gallup's Q12 metric, companies gain a competitive advantage that keeps them moving forward. Research shows concentrating on employee engagement can help them withstand — and possibly even thrive in — challenging economic times (Gallup Inc., 2013, p.22).

Engaged workforces also create external benefits to the entire community through increased economic optimism among residents and improved performance outcomes among businesses (Gallup Inc., 2013, p.25), which are important elements of real economic growth (local and national).

4. Countries with highest ratio of engaged to actively disengaged employees – state of the Global Workplace Report 2010 and 2013

The State of the Global Workplace Report from 2010 is based on a study of engagement among more than 47,000 employees in 120 countries around the world. The overall results indicated that 11% of workers worldwide are engaged. In other words, about one in nine employees worldwide are emotionally connected to their workplaces and feel they have the resources and support they need to succeed. The majority of workers, 62%, are not engaged — that is, emotionally detached and likely to be doing little more than is necessary to keep their jobs. Moreover, 27% are actively disengaged, indicating they view their workplaces negatively and are liable to spread that negativity to others (Gallup Inc., 2010, p.2). The median productivity level among top-quartile business/work units was 18% higher than among bottom-quartile units. The median profitability level among top-quartile units was 16% higher than among those in the bottom quartile (Gallup Inc., 2010, p.3). Country-level engagement results are presented in table no. 4.

Table no. 4: Country-level engagement results (in %)

Country	E	NE	AD	Country	E	NE	AD
Asia				Commonwealth of Independent States			
Afghanistan	11	58	31	Belarus	6	50	44
China	2	67	31	Kazakhstan	8	42	51
India	8	55	37	Moldova	16	62	22
Japan	7	64	30	Russia	7	56	38
Malaysia	13	79	8	Turkmenistan	25	48	27
Pakistan	9	74	17	Ukraine	8	61	31
Singapore	2	78	21				
Europe							
Albania	12	70	18	Poland	11	64	25
Austria	23	62	15	Portugal	13	72	15
Bulgaria	8	63	28	Serbia	4	44	51
Croatia	2	47	52	Spain	19	59	21
Czech republic	3	60	37	United Kingdom	20	58	22
Denmark	20	73	8	Switzerland	23	68	9
France	11	61	28	Turkey	11	58	31
Germany	11	66	23	Sweden	20	66	14
Montenegro	10	42	48				
Latin America				Middle East and North Africa			
Argentina	16	62	22	Bahrain	27	60	13
Brazil	29	61	10	Egypt	13	55	32
Chile	22	55	23	Israel	14	72	14
Costa Rica	31	60	9	Kuwait	25	60	15
Guatemala	30	46	25	Qatar	21	64	16
Mexico	23	58	19	Saudi Arabia	13	75	12
Uruguay	18	57	25	Tunisia	21	44	35
Venezuela	12	65	23	UAE	25	67	8
North America				Australia & New Zealand			
Canada	20	64	16	Australia	18	61	21
USA	28	54	18	New Zealand	23	61	16

Note: E = Engaged; NE = Not Engaged; AD = Actively Disengaged.

Source: Gallup Inc., 2010, p. 27

Among the 142 countries included in the 2012 Gallup study (nearly 230 000 full-time and part-time employees), 13% of employees are engaged in their jobs while 63% are not engaged, and 24% are actively disengaged. However, these results vary substantially among different global regions.

East Asia has the lowest proportion of engaged employees in the world, at 6%, which is less than half of the global mean of 13%. The regional finding is driven predominantly by results from China, where 6% of employees are engaged in their jobs – one of the lowest figures worldwide. China's low engagement level may increasingly pose a barrier to its continued growth as the country makes the transition to a more consumer based economy and businesses come to rely more on front-line employees to attract and retain customers.

In Australia and New Zealand, 24% of employees are engaged, while 60% are not engaged, and 16% are actively disengaged. The resulting ratio of engaged to actively disengaged employees – 1.5-to-1 – is one of the highest among all global regions and similar to results from the U.S. and Canada (1.6-to-1). Gallup found the highest levels of active disengagement in the world in the Middle East and North Africa (MENA) region, particularly in Tunisia (54%), Algeria (53%), and Syria (45%). The region’s high unemployment rates may be a factor in these results, causing many disengaged workers to remain in their jobs despite their unhappiness at work.

Despite the country’s strong economic growth, only 8% of Indonesian employees are engaged in their jobs, while 15% are actively disengaged. By contrast, employees in the Philippines – another fast-growing economy in Southeast Asia – had the highest level of engagement in the region at 29%, with only 8% actively disengaged.

The data about the level and the structure of employee engagement in Europe is given in tables no. 5 and no. 6.

Table no. 5: Employee engagement (in %)

Country	E	NE	AD	COUNTRY	E	NE	AD
Western Europe							
Denmark	21	69	10	Germany	15	61	24
Malta	19	61	20	Slovenia	15	70	16
Portugal	19	65	16	Austria	14	74	12
Spain	18	62	20	Italy	14	68	18
United Kingdom	17	57	26	Iceland	16	75	10
Luxembourg	14	72	14	Belgium	12	66	22
Norway	16	77	7	Finland	11	76	14
Sweden	16	73	12	France	9	65	26
Switzerland	16	76	8	Netherlands	9	80	11
Central and Eastern Europe							
Poland	17	68	15	Slovakia	11	69	20
Estonia	16	64	20	Hungary	11	56	33
Latvia	13	72	15	Lithuania	10	62	28
Czech Republic	8	62	30	Bosnia and Herzegovina	9	58	33
Macedonia	12	57	32	Bulgaria	12	68	21
Albania	11	69	20	Turkey	7	60	33
Montenegro	11	58	31	Croatia	3	65	32

Note: E = Engaged; NE = Not Engaged; AD = Actively Disengaged.

Source: Gallup Inc., 2013, p.111-113

Table no. 6: Employee engagement by the educational level and by the job type (in %)

	E	NE	AD	E	NE	AD
	Western Europe			Central and Eastern Europe		
Elementary education or less	17	62	21	11	57	32
Secondary education	15	65	20	10	63	27
Tertiary education	12	69	19	17	68	15
Farming/fishing/forestry workers	22	63	15	2	58	40
Construction/mining workers	17	64	19	10	63	27
Managers/executives/officials	15	69	16	26	63	11
Professional workers	14	69	17	18	69	13

	E	NE	AD	E	NE	AD
	Western Europe			Central and Eastern Europe		
Sales workers	14	65	21	7	65	28
Service workers	14	65	21	11	59	30
Transportation workers	14	61	25	6	69	25
Clerical/office workers	13	63	24	13	68	19
Manufacturing/production workers	13	63	24	8	59	33
Installation/repair workers	9	68	23	11	67	22

Note: E = Engaged; NE = Not Engaged; AD = Actively Disengaged.

Source: Gallup Inc., 2013, p. 111-113

Organizations in Gallup's Q12 Client Database with an average of 9.3 engaged employees for every actively disengaged employee in 2010-2011 experienced 147% higher earnings per share (EPS) compared with their competition in 2011-2012. In contrast, those with an average of 2.6 engaged employees for every actively disengaged employee experienced 2% lower EPS compared with their competition during that same period.

Active disengagement is an immense drain on economies throughout the world. Gallup estimates, for example, that for the U.S., active disengagement costs US\$450 billion to \$550 billion per year (in lost productivity). In Germany, that figure ranges from €12 billion to €138 billion per year (US\$151 billion to \$186 billion). In the United Kingdom, actively disengaged employees cost the country between £52 billion and £70 billion (US\$83 billion and \$112 billion) per year (Gallup, Inc., 2013, p.7). Moreover, these costs are decreasing the inclusive wealth, i. e. negatively affecting economic growth.

In many countries, the low ratio of engaged to actively disengaged employees is often the reflection of the labor market conditions (demand for labor). Low level of confidence in the labor market often leads workers to remain in workplaces where they feel no emotional connection rather than seek more engaging employment elsewhere.

As Gallups' studies are showing the direct supervisor's role is crucial in creating such work environment that will attract best talents and make from them engaged employees. Those results indicate the relevance of people-oriented education for managers (both formal and informal). In the contemporary business environment where organizations are by far more fragile and could be significantly more damaged by the active disengagement of their employees (especially regarding the approach to sensitive information) creation of proper working conditions is becoming a prerequisite of high productivity, small fluctuation, and greater profitability. Gallup, therefore, developed the Engagement Creation Index – ECI (Gallup Inc., 2013, p. 40), an innovative tool designed to identify and measure the talent for engaging others which could help organizations in hiring the right managers and developing inspiring work environment.

Regional differences highlighted the need for different approaches to education in developing as opposed to economically advanced countries. While in developing regions engagement trends go upward with education level, in developed countries the opposite may be true as well-educated people may be less able to find jobs that they feel allow them to do what they do best. This stresses the importance of aligning education with labor market conditions to maximize employee engagement and productivity. In developed regions that could mean a need to expand the types of educational opportunities available, for example, trade and technical schools may require more focus on alternatives to colleges,

particularly in countries that are currently seeking to restore their manufacturing bases (Gallup Inc., 2013, p.106). This conclusion is in line with the recent empirical research that has stressed the relevance of specific human capital (an occupation that is used by a limited set of industries, that is its employment share exhibits a high degree of concentration across industries) in long-run economic growth (Jerbashian, Slobodyan and Vourvachaki, 2015).

5. Findings and implications

The results of the research show a strong nexus between human capital and economic growth which is most clearly seen in the IW growth statistics. In the IW concept, human capital is recognized as the most critical factor of sustainable economic growth and therefore a direct link between higher investments in education (and other determinants of human capital such as health) and higher growth rates could be traced. This finding stresses the importance of improving access to education and the quality of education (scholarships, investing in educational programs, investing in teachers' salary and their education, investing in learning environment) and the importance of increasing the average years of schooling.

The results are in line with the recent empirical research (Wu and Liu, 2009; Baldwin and Borrelli and New, 2011; Breton, 2013; Konopczynski, 2014; Azam and Ahmed, 2015 and others). If we start to consider the significant role of employee engagement in reaching high growth rates, then the investments in the education of managers (supervisors) become especially relevant, because these investments are indirectly affecting the future working environments and the level of organization performance (productivity, profitability, turnover).

The responsibility of universities is to create people-oriented programs (and influence young students through them) that transfer the knowledge and develop the people skills of future supervisors, and the states or local governments should have the interest to support such programs. It is up to them to promote qualitatively distinct and therefore competitive working environments which will produce a desirable ratio between engaged and actively disengaged employees, i.e. which will decrease the significant costs of actively disengaged workers (measured in productivity and profitability loss).

The companies should also embrace their role in improving engagement among their employees by bringing engagement into the company's everyday language, by using the right employee engagement survey, by focusing on engagement at the enterprise and local levels, by selecting the right managers, by coaching managers and holding them accountable for their employees' engagement, by defining engagement goals in realistic, everyday terms, by finding ways to meet employees where they are, by developing employees' strengths, and by enhancing employees' well-being (Gallup Inc., 2013, p.10-17).

Conclusions

The paper has searched for the strength of the nexus between human capital and economic growth. In distinction to the general economic growth research papers that are based on the GDP measure, this paper focuses on the IW concept where the role of human capital is more directly determined. In the IW approach, human capital is detected as one of the key contributors to the inclusive wealth, i.e. to the sustainable growth. In this paper, the researchers analyzed the key determinants of human capital, i.e. which human capital proxies were mostly used in the recent scientific research.

What is evident from the research is that by investing in education (programs, conditions, scholarships) the countries invest in economic growth. However, the papers' results also indicate the importance of investing in working environments (again mostly through educational people-oriented programs for managers) which will produce engaged employees willing to contribute to the growth of their company, i.e. the growth of the local, as well as national economy. The importance of investing in the development of individuals both through formal education and inspiring work environments should be stressed. The relevance of institutional capital that enables human capital asset for future growth thus becomes evident.

Today, when in many countries governments are reducing their contributions (investments) to the public education it should be more clearly stressed again: that by withdrawing funds aimed at education, they are directly cutting from their current and future wealth (sustainable growth). Human capital is the most significant contributor to inclusive wealth growth, and that message should often be said and presented to the decision-makers at the local and national level.

The paper introduced and proposed a new variable (ratio of engaged to actively disengaged employees) as an attempt to develop a more realistic human capital proxy that will more precisely reflect the contribution of the human capital to the inclusive wealth, i.e., profitability, and growth. Not all employees of the same educational level contribute the same, and this indicates the relevance of investments in other areas such as labor market conditions, desirable working environments in organizations, health, and other critical determinants.

The results of the research could be of use for economists, statisticians, relevant decision-makers at different levels and for all who thrive to search for a best applicable measure to qualitatively and quantitatively test the nexus between human capital and economic growth.

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