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The Composite Measures of Social and Economic Welfare – The Idea of the New – Social Economic Welfare Index (N-Sewi)

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ABSTRACT

The paper presents methods of measuring welfare and sensitive points of concern and controversy around so doing research. The article attempts to construct a composite measure that will create social welfare ranking countries in terms of GDP per capita, accumulated wealth and social stratification in terms of disposable income. The author presents his own idea of new research method that investigates new social and economic welfare index (N-SEWI) and points at further directions of researches within this scope. The aim of the paper is to show the essence of the research on the social and economic wealth on the basis of popular synthetic indexes and contemporary dilemmas resulting from its measuring and the perspective of their solutions and the development of measurement methods.

Keywords: *Social Welfare, Methods of Measurement, Growth and Development of the Economy, Composite Measure, N-SEWI (New - Social Economic Welfare Index).*

INTRODUCTION

Good state of economy is perceived as good results of the economic measures in comparison to other countries along with further increase and economic development. The economic growth means increase of the annual production of goods and services of the country. If in subsequent year more goods and services are sold than in the previous year, then the economic growth occurs. If we are able to earn more, our work constitutes the source of the growth, but if at the same time the prices of goods which we buy increase by the same amount, then we deal only with the nominal growth, because we cannot buy more than before [26]. That is why the actual growth occurs due to the real growth *i.e.* after taking the inflation into consideration. On the other hand, the economic growth involves changes of quality nature *e.g.* by using better, latest methods of production and management what influences the work effectiveness. Improvement of the standard of life, better social situation and bigger public safety constitute advantages resulting from the economic growth. The economic growth is a measure of quantity changes in economy and can be measured, whereas economic development can be noticed. Nowadays, knowledge and technology is a key factor supporting socio-economic development. Intellectual capital gained key importance for the development, becoming a major factor of success, and thus affecting the transformation of environment and increasingly stronger competition. The implementation of information technology and having a skilled staff intensifies the activity of companies. An educated person, due to the substantial amount of work needed to carry out the activities requiring extraordinary skills and abilities, can be compared to an expensive machine. The quality of human capital has become of special importance for the economies of developed countries, together with the acceleration of globalization, reduced costs, and increased availability [14]. The state of economy measured by the current state of the GDP per capita should be clearly and noticeably correlated with the citizens' wealth.

The processes of economic growth accompanied by changes in the structure of national product and the economy [23]. The economic development includes [3]:

- Technological progress (improvement of technique, work, management),
- Structural changes of the production process (changes in quality of produced goods and

services, changes in the structure of the product sales),
- Social, political and institutional changes,
- Balanced growth of the values of GDP, or GNP,
- Improvement of the living conditions of country's population.

The economy can also show economic growth, which does not have to be in economic growth's favour. Only economic growth which aims at financing investments which change the structure of production system (production technologies) can contribute to the economic development. Therefore, it is very difficult to present the process of economic development by means of one, universal measure. In addition, the current process of globalization and the subsequent changes in management [13] cause changes and necessary development among the measures aiming at capturing the wealth of societies.

The aim of the paper is to show the essence of the research on the social and economic wealth on the basis of popular synthetic indexes and contemporary dilemmas resulting from its measuring. The author presents his own idea of research method that investigates social and economic welfare (N-SEWI) and points at further directions of studies within this scope.

Literature Review and Instrumentation – The Essence and Examples of Popular Synthetic Measures of The Social and Economic Development

The level of social and economic development refers not only to the economic values reflecting size of production and state of owned fortune, but also refers to such elements as: safety, state of self-realization, participation in management and possibilities of having influence on significant national events, or the state of natural environment where one lives. Therefore it can be noticed that many diverse features have influence on the welfare. The current researches (of psychologists, sociologists and economists) analyzing welfare take into consideration following factors:

- Health care – 98%,
- Safety of life – 88%,
- State of the natural environment – 84.7%,
- Standard of living of the residents – 82.3%,
- State of the transport and public transport – 78.4%,
- Housing situation – 71.3%,
- Possibilities of education and training – 67.4%,
- Sport facilities – 64%,
- Access to culture – 56%,
- Trade network – 33.4%.

Percentages describing hierarchy of importance of respective factors refer to the researches carried out in 2010 by the Institute for Market Economics [29]. All indexes of the level of social welfare (social and economic development) depending on the degree of aggregation can be divided into three groups [25]:

- Aggregate indexes – characterizing social and economic development in a general way *e.g.* GDP, MEW, NNW, EAW, ISEW, HDI, Quality of Life Index and others.
- Symptomatic indexes – characterized only selected fields, but enough synthesizing processes of socio - economic development that allow applying the general level and its dynamics. For these indicators include: steel production (in the previous century), the production of electricity, implementation of innovation.
- Detailed indexes – showing chosen fields of social and economic development *e.g.* the investment rate, number of TV sets for 100 households, number of computers for 100 households.

Many measurable and immeasurable factors have influence on the social and economic welfare *e.g.* number of consumer durables, length of life, state of health, or the state of natural environment [9]. That is why it is so difficult to create recognized and full synthetic index of this phenomenon. GDP for instance is only measure of production and not welfare and it should be interpreted in this way [1]. The Table 1 presents measures and indexes and their result is synthetic value expressed in money which is to present image of the quality of life. The Measure of Economic Welfare (MEW) and Net National Welfare (NNW) came into existence as a result of changes in GDP namely by change of expenses which are taken into consideration in the Gross Domestic Product [15], whereas the Index of the Economic Aspects of Welfare (EAW) and – Index of Sustainable Economic Welfare (ISEW) came into existence in the last years of the previous century. The correction concerning the distribution of income was introduced to the idea of the Index of

Sustainable Economic Welfare worked out by H.E. Daly and J.B. Cobb Jr [11]. The basis of counting this index is weighted personal consumption counted on the basis of the distribution of income. The society was divided into five income groups and each of them was provided with weights calculated on the basis of so called personal consumption [21].

Social inequalities were seen during construction of the ISEW. It is in common knowledge that the more considerable stratification of income is, the lower is value of this index. Moreover it is known that ”quality of life worsens for most of people, if the division of income becomes unfair – even, if at the same time the economic efficiency increases” [18].

Table1. *Aggregate monetary indexes of economic and social welfare*

Index	Elements taken into consideration during calculations
MEW	Division of GDP into: consumption, investment and instrumental expenses (+) advantages from property, free time, external effects (-) unavoidable loses, instrumental expenses
NNW	(+) government consumption (+) private consumption of the strict sense (+) participation of capital of consumer goods (+) value of the free time (+) effects of activity in households (-) expenditures for the environmental protection (-) losses of the title of environmental pollution
EAW	(+) value of public buildings (+) value of consumer durables (+) value of work in households (+) value of free time (+) expenditures for health care (+) expenditures for education (-) expenditures for protection (-) costs of pollution of environment (-) loss of natural resources
ISEW	(+) increase of net capital, (+) balance of investments abroad and foreign investments in the country (-) health care and education (-) expenditures connected with commuting (-) urbanisation costs (-) expenditures connected with road accidents (-) pollution of environment (-) expenditures for consumption durables (-) loss of natural resources (-) losses resulting from the long-term changes in environment (*e.g.* greenhouse effect) (+/-) difference in the net capital (+/-) changes of international position

Source: *own study on the basis of: [6], [16], [28].*

On the other hand the non-cash indexes of social and economic welfare is so called Geneva Index which takes into consideration quality categories of food, housing conditions, heath, education, recreation, or social support. One of the most popular and also easiest index joining cash and non-cash measures is Human Development Index (HDI). Place on the list which takes into consideration social development within the frames of the Human Development Report worked out by the UN since 1990 in one third depends on GDP per capita [30]. The other two elements which are taken into consideration concern life at the moment of birth (infant mortality, poverty line) and achievements on the field of education (illiteracy, percentage of people with primary, secondary and higher education) [2]. It is a basic range of information for HDI, which is calculated according to the formula [27]:

$$I_i = (X_i - \min X_i) / (\max X_i - \min X_i) \quad (1)$$

I – index; X – value of index;

i – Component of index (health, GDP or education).

Economic and political systems and also models of social policy and internal differences and disproportions hiding behind synthetic values can be determined on the basis of trends

characterizing height of HDI and place in the world ranking [22]. According to the report of 2017 for the data from 2015 taking this index into consideration Poland occupies 36th position in the world [24].

Table2. *Ranking of countries according to the HDI index in 2015*

Position	The value of the HDI indicator	Country
1	0,949	Norway
2	0,939	Australia
3	0,939	Switzerland
4	0,926	Germany
5	0,925	Denmark
6	0,925	Singapore
7	0,924	Netherlands
8	0,923	Ireland
9	0,921	Iceland
10	0,920	USA
…		…
16	0,909	Great Britain
17	0,903	Japan
…		…
21	0,897	France
…		…
26	0,887	Italy
27	0,884	Spain
28	0,878	The Czech Republic
29	0,866	Greece
…		…
36	0,855	**Poland**
37	0,848	Lithuania
38	0,847	Chile
…		…
43	0,836	Hungary
44	0,830	Latvia
…		
185	0,402	Burkina Faso
186	0,396	Chad

Source: *own study on the basis of: [24].*

More complex set of indexes which was proposed by the United Nations Commission on the Sustainable Development (Agenda 21 of 1992) has to be taken into consideration in order to analyze the living conditions in a respective country in details. This document contains fundamental set of actions aiming at sustainable and equal development as well as need of analyzing set of 130 indexes [5]. These tools let examine quality of life in four fields: social, economic, ecological and institutional. The examples of these measures are [28]:

- Social indexes of permanent development: fighting poverty, stability of demography, promotion of education and social awareness, protection and promotion of health, promotion of permanent settlement.
- Economic indexes of permanent development are: production indexes such as: GDP, international cooperation, changes in the consumption model, financial resources and mechanisms, transfer of eco-technology.
- Environmental indexes of permanent development are: protection of quality and availability of resources on the surface of Earth, protection of atmosphere, prevention of deforestation and droughts, promotion of sustainable development of rural areas, protection of biodiversity, biotechnologies, environmental friendly dealing with waste.
- Institutional indexes of permanent development are: integration of the environmental issues and development in the process of making decisions, role of big social groups, learning for permanent development, international legal mechanisms.

Quality of Life Index was worked out in 2005 in order to reflect the level of life and life satisfaction in respective countries and is based on

methodology which joins results of survey concerning subjective life satisfaction with objective factors of quality of life in different countries [19]. The parameters of quality of life and measures used for presenting these parameters are [17]:

- Financial situation – GDP per capita in USD, taking into consideration parity of the purchase power.
- Health – expected length of life, in years.
- Political stability and safety – quality assessment.
- Family life - index of divorces (for 1000 inhabitants), expressed in the scale form 1 (the lower index of divorces) to 5 (the highest index of divorces).
- Community life – this variable adopts either value 1, or 0.
- Climate and geography – in order to differentiate between hot and cold climate.
- Safety of employment – unemployment rate in per cent. Political freedom – average indexes of freedom scale from 1 (total free) to 7 (no freedom).
- Sex equality – proportion of average earnings of men and women.

Whereas in this article, due to a number of different research problems related to subjective evaluations, including difficulties in obtaining, or variation of results depend on many factors, presents the problem of measures based on objective quantitative values expressed in money. The analysis of quantitative monetary indicators suggested an original concept N-SEWI of the meter, which determines evenly value of socio - economic country.

Results and Discussion – The Idea of the New – Social Economic Welfare Index (N-SEWI)

Nominal GDP is calculated according to the current value of money and the real GDP according to the real value of money, so taking the inflation into consideration [4]. The calculation consists in division of the nominal GDP by the price index. The real GDP describes value of all final goods and services produced in the examined time on the territory of respective country calculated in the market prices in the base period [20]. The values of economies in nominal GDP can be used by investors and entrepreneurs to enter the market, which in current monetary values is characterized by the highest value. On the other hand the real GDP is the appropriate measure of changes in the production at the time (of economic growth), because it changes only because of physical size of the national production. Rising of current prices (inflation) does not have any influence on the GDP. In the statistic statements the real GDP is foremost presented in the constant prices from the chosen base year. The rise or fall of the real GDP constitutes the measure of the economic development. The GDP is calculated according to the current exchange rate usually to US dollars, or according to parity of the purchase power in order to make international analyses. Comparison of world countries according to their GDP weighted by the parity of the purchase power is more appropriate and reflects the real comparison better, than only if the nominal GDP is taken into consideration. The parity of the purchase power is the exchange rate calculated on the basis of comparison of the prices of set basket of goods and services in different countries at the same time expressed in currencies of these countries. The parity of the purchase power lets solve the problem of making international comparisons using the GDP measure. Collection of the data concerning prices from the aggregated list of goods and services, which contains comparable and representative products for analyzed countries constituted the core issue. The parity of the purchase power is more appropriate index from the financial exchange rate because it includes the people's purchase power. GDP weighted by the parity of the purchase power shows at the same time apart from the size of economy also its purchase power. However, it is thought that pure GDP is wrong measure of society's welfare, because it does not take the population into consideration [2]. Therefore GDP per capita is considered as the best measure of welfare, because the pure GDP is measure of only the size of economy. GDP per capita is measure of average social welfare *i.e.* it is measure of the level of life of population. The GDP per capita has to be presented in order to analyze the wealth of a society [7]. It is stated that the growth of GDP should be faster than the growth of population, what should let improve material living conditions of the population. GDP per capita reflects average monetary value at disposal which a respective citizen of a country possesses. That is why the real GDP per capita will be the first value which is part of the New - Social Economic Welfare Index.

Another component of the discussed measure is so called Gini Coefficient *i.e.* used in statistics and econometrics measure of concentration (irregularity) of dispersion of a random variable. The Gini Index is used often in econometrics to number expression of irregular dispersions of goods *e.g. a*mong others for analysis of unequal dispersion of income. Therefore it is often called – the index of social inequality. The dispersion of incomes in societies is much differentiated and the causes of their occurrence are of a very complex nature. The height of income depends on numerous factors such as: education, performed profession, intensity of work, place of residence, predispositions etc. This factor lets analyze so called economic stratification in society. The Gini Coefficient should be interpreted in such way: the higher it is, the bigger differences in incomes of the citizens of respective country are. For observation categorized under ascending order of the Gini coefficient takes the following formula [12]:

$$G(y) = \frac{\sum_{i=1}^{n}(2i-n-1)*y(i)}{n*n*y(sr)} \quad (2)$$

Where:

G (y) – the value of the Gini coefficient,

y (i) – The value of the i-th observation (income i-th household),

y (sr) – average value of all observation (average income households).

It is worth to underline that diversity constitutes a natural feature of every society what is often source of social development and strength of a society. However, it happens that social stratification of economic nature is so visible that it inhibits social development and constitutes source of conflicts. This measure lets also see effectiveness of creating added value per capita in the examined economy.

Table3. *Ranking of countries according to the New- Social Economic Welfare Index (N-SEWI) in 2016 year*

Country	N-SEWI	PKB per capita	Wealth/property per capita	Gini coefficient
Luxemburg	**1**	2	3	4
Switzerland	**2**	3	1	6
Norway	**3**	4	2	5
Singapore	**4**	6	5	1
Sweden	**5**	9	7	7
Australia	**6**	5	4	16
Belgium	**7**	15	9	2
Denmark	**8**	7	12	8
Canada	**9**	8	11	12
Finland	**10**	12	20	3
France	**11**	15	6	15
Austria	**12**	11	15	11
USA	**13**	10	8	20
Netherlands	**14**	13	18	10
Japan	**15**	14	14	17
Qatar	**16**	1	22	22
Germany	**17**	16	16	14
Iceland	**18**	17	17	13
Great Britain	**19**	20	13	18
Italy	**20**	22	10	19
Hong Kong	**21**	21	21	9
New Zealand	**22**	18	19	21

Source: *own study on the basis of data from: [8], [10].*

The third component of the N-SEWI measure is collected property per capita. The property of households is defined as value of possessed financial assets and general non-financial assets (foremost house and lands) minus debt. The author aims at dividing this component into two elements namely: value of financial assets which are measured in monetary value of defined currency *e.g.* US dollars and value of non-financial assets which should be measured by the parity of state ownership. Currently in order to show how the N-SEWI measure works in praxis the ranking of countries according to property per capita will be presented on the

basis of data in the US dollars, because of lack of access to such kind of data. Unfortunately such solution has a disadvantage namely the welfare is influenced by the current exchange rate strongly. If one says that the country is rich, one means both its incomes and the property collected by the inhabitants. These two measures are correlated with each other in an obvious way, but there are also divergences between them. Analyzing the Gini Coefficient at the same time an image of welfare of a country can be obtained.

The ranking of countries according to the N-SEWI measure is an arithmetic mean of a position of a country among components of the social economic welfare.

Nowadays more detailed research is conducted along with analyses of both economic and social development in order to look for more precise measures. As a result the perspectives of the development of the methods of research aim at creation of new aggregate measures which let use a few different indexes and due to it the analysis of respective issues becomes extensive.

CONCLUSION

While conducting research and making assessment of the social welfare on one hand we want to make as insightful, in-depth and multidimensional description of the social development as possible, and on the other work out a clear one index measure. In case of the first solution few important obstacles occur: unavailability of numerous data, opacity of an image built of hundreds of indexes, substantial cost of conducted research and ignoring such indexes by economists and politicians looking up to economic success measured by the GDP growth. One index measures have the same disadvantages, but also the same advantages, as indexes of the economic growth *e.g.* GDP, because during the research many important issues are also not taken into consideration. Therefore we do not come to many important conclusions and governing bodies will not see what spheres of life require changes. It is in common knowledge that all measures have dis- and advantages. Nowadays the most popular measures are: HDI despite enumerating only three factors (much facilitation). However, because of the fact that one can calculate it quite quickly and easily, it is used in the broadest scope, whereas the Quality of Life Index is considered as index which delivers much important information from different fields of life, but it requires many, sometimes very difficult calculations. That is why the economists still work on finding more optimal index, or set of index for measuring social and economic welfare such as presented in the article author's N-SEWI measure, what constitutes an important issue for further research.

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