Is GDP a Suitable Indicator of Welfare?  
How to Define and Measure Welfare

The paper deals with the problem of how to define and measure welfare, which can be seen either as a part of social policy or as a state of mind. Central to the discussion is the question, whether GDP can be used as a measure of welfare. Descriptive methods are used, besides of statistical estimations. A sample of authors which discuss the relation between GDP and welfare are presented.

Keywords: welfare, gross domestic product, human development index, correlations and regressions of welfare variables, international comparison of countries.

Introduction

Both economists and the scholars of other disciplines are interested in how to define, express and measure welfare. It seems that one of the central points of the discussion is the question, whether GDP and other related variables like GNP etc. are suitable measures of welfare or not. While the discussion is rather critical about the use of national accounts measures as welfare indicators, the Human Development Index (HDI) of the United Nations Development Programme (UNDP, 2013) has become more and more popular as an indicator of welfare. Yet, it can be mentioned already here, that the HDI consists of components, which are related to health and education, but even includes GDP pc or GNI pc.

Welfare is yet not only of scientific interest. Probably every citizen has ideas how to define welfare and well-being, especially for his or her own person or family. Yet, not only in the scientific debate, but even in the public discussion no commonly accepted definition seems to exist. As one of the main questions in this debate we can ask, whether welfare should be defined as
a one-dimensional variable, like GDP, or as an index with several components like the HDI.

The aim of this paper is to discuss how to define and measure welfare. As limitations can be mentioned that we concentrate on the countries included in the Human Development Report for 2013, i.e. more than 180 countries, which even is our main data source. Furthermore, we are using both descriptive methods and statistical estimations to investigate relations between factors which could influence welfare and well-being. Finally, it can be mentioned that we use some Swedish and international sources of literature for the discussion of defining and measuring welfare.

How to Express Welfare, Well-being and Living Standard

This section consists of a discussion regarding the relations between the following features: welfare, well-being, living standard, quality of life, GDP and the Human Development Index (HDI). To start with, welfare can be expressed and defined at least in two ways: either as a part of social policy to support the unemployed, the poor, the sick, the elderly people and the young ones, or as a subjective experience or feeling of the citizens about their economic and social situation. Social policy is not only dependent of the political ideology of a country, but even on the resources which are put into the different aspects of welfare policy. The subjective experience of the citizens regarding their personal welfare is dependent on their material situation, but even on other factors.

Usually, economists do not see GDP and other related national account variables as indicators of welfare. GDP measures three aspects of national or regional production: consumption and investment of final goods and services, factor incomes for labour and capital and value added.

Let us have a short look on some authors and their ideas about GDP and welfare. We will use the term GDP as an expression for total production, sometimes even mentioned as social product or national product. R. Peto (1977) discusses the following lacks of GDP as a measure of welfare. GDP measures total production as quantities, while nothing is said about quality. Usually, when buyers perceive that the quality of goods and services has grown, they are willing to pay higher prices. A part of what is called inflation and therefore eliminated from time series of GDP can instead be seen as quality increases. Furthermore, GDP is showing the production of companies and the public sector, while the production of private households is not measured and excluded from GDP. A third lack of GDP-accounting consists of the fact that goods, bought by private households are counted as consumed during the period when they are bought. Fourthly, only production is counted, but not leisure time, which probably increases the quality of life and welfare. The fifth problem of GDP consists of the fact, that negative environmental effects are not measured and included in GDP. As a sixth problem, R. Peto (1977) mentions congestion in certain regions, where production is concentrated. Finally, expenditures for defense, police, crime fighting etc. are included in GDP, but probably are seen by many citizens as negative for welfare.

The USA has a higher GDP per capita than most of the European countries. Does this mean that the average welfare in the USA is higher than in Europe? Not necessarily,
as the following figures show. According to the OECD Factbook (2009), the employment rate in the USA is 71.8%, while it is 65.4% in the EU27 (for 2007). Furthermore, while the average employed American works 1794 hours a year, the average Dutch employed works 1392 hours a year (2007). With other words, the average Dutch works 400 hours less a year than the average American, which probably influences welfare in both countries. According to these figures, many Europeans have more leisure time than Americans.

A. Stobbe (1989) mentions the following lacks of GDP and comparable national account measures as welfare indicators. The first one is the one of income distribution. Probably two countries with the same population and GDP have different levels of welfare, when they have different income distributions. Later in this paper some arguments will be presented regarding production and income distribution. Secondly, according to A. Stobbe (1989), part of GDP is used to compensate for negative aspects of production. Thirdly, the use of streets etc. by private households is not included in GDP. As a fourth point of view differences in working hours are mentioned. Finally, the health and education status of the population, the situation at working places, the physical environment, crime and other factors are influencing welfare.

D. Brümmerhoff (1992) argues in a comparable way against GDP as an indicator of welfare. According to this author, three arguments can be mentioned: (1) GDP includes factors which diminish welfare, (2) GDP includes factors, which level out aspects of diminishing welfare, (3) GDP excludes factors, which either influence welfare negatively or positively, usually called (negative or positive) externalities. As other authors, D. Brümmerhoff (1992) also mentions income distribution as a factor influencing welfare. Furthermore, he argues that the composition of GDP is important for welfare. Let us take an example from Sweden. While many people prefer higher expenditures for child care, education and the care for old people, etc., most of the politicians and many journalists believe that the country needs higher expenditures for the military.

K. E. Case et al. (1996) argue in a comparable way, why GDP often is a misleading measure of welfare. These authors even point out that we should have a look at GDP per head of population (GDP pc). Furthermore, different countries have different price levels. Therefore, when we make international comparisons of GDP pc or the standard of living, well-being, etc., we convert national money terms not with the exchange rate, but with Purchasing Power Parities (PPP) to eliminate national differences in price levels. Often we can observe that relatively poor countries have lower prices for goods and services, which are not traded internationally, compared with richer countries in terms of GDP pc.

Even W. Frank (1996) asks the question whether GDP is a suitable indicator of welfare or prosperity. Among other arguments against this interpretation, he mentions that GDP does not include the production within private households, the shadow economy and illegal production and consumption. Furthermore, he mentions that externalities, both negative and positive ones, are not included in GDP, but influence welfare.

The Swedish economist B. Sandelin (2005) discusses that GDP or GDP pc is not a measure of a country’s “national happiness”, well-being or welfare. GDP is only
an imperfect measure of production of goods and services. Let us have a look at some of his arguments. As other authors, he mentions differences in income distribution. Secondly, not only the size of GDP is important for the citizens of a country, but even the composition. Thirdly, quality changes are not always included. Fourthly, not all production is counted as a part of GDP. A fifth argument discusses, whether GDP or other measures of national accounting should be used, e.g. Gross National Product (GNP), which includes incomes to or from other countries, or Net National Product (NNP) or Net Domestic Product (NDP), which exclude wear and tear of physical capital. Finally, the depletion of the environment is mentioned as a negative factor.

Yet, B. Sandelin (2005) asks the question whether there exist positive relations between GDP and other important welfare increasing factors. In his case GDP could be used as an approximation for welfare. Later in this paper, we will deal with this question.

As a summary of arguments, regarding GDP as a measure of welfare, we can present the following: 1) not GDP, but GDP pc should be used; 2) the income distribution influences welfare of the average citizen; 3) there are differences in working hours; 4) positive and negative externalities influence welfare; 5) the grey, black and illegal economy is not included; 6) production within private households is not counted; 7) for international comparisons, instead of exchange rates, PPP should be used; 8) the composition of GDP is important for welfare.

A measure of living standard, well-being, etc., which has become more and more used in international comparisons, is the Human Development Index (HDI) of the United Nations Development Programme (UNDP, 2013). The HDI summarizes three aspects of living standard: average per capita national income in purchasing power parities, life expectancy at birth and some educational variables.

The Swedish economists M. Olsson et al. (2003, 2004 and 2011) discuss how to define and measure welfare. In general they suggest indices of welfare which include production, life expectancy and the environment. Positive statistical relations can be found between production on one hand, expressed as GDP pc and other national account variables, and non-economic indicators, which influence welfare. One of the purposes of welfare measures is to compare countries internationally. M. Olsson et al. (2003) present an indicator which consists of the following components: GDP pc, expected length of life for men and women, pollution, potential labour force, human capital, research and development expenditure per head (R&D), availability of information and communication technology (ICT). Welfare indicators which consist of different components are more convincing than one-dimensional ones, like GDP pc, but there exist at least two problems: 1) because different variables like e.g. length of life and GDP pc just cannot be added, the procedure of normalization is important; 2) which weights should be placed on each component? Because welfare indicators and a country’s international ranking position are often used as signs of success or failure of national economic and social policy, there is some space for discussions in the national economic debate. M. Olsson et al. (2003) show by using e.g. the HDI, depending on the procedure of normalization and the weights for the components of the welfare indicators in the case of Sweden they can...
show different positions for the country regarding international comparisons. While the ruling parties probably chose for their argumentation a welfare indicator which places Sweden on the highest possible level, the political opposition searches for a ranking as low as possible. As M. Olsson et al. (2003) show, the choice for Sweden could be either the 2nd or the 17th position regarding one type of ranking or the 5th and the 14th position in another ranking. As we will observe later in this paper, the differences regarding HDI for the highest ranked countries in relative terms are quite small.

M. Olsson et al. (2004), C. I. Jones and P. J. Klenow (2010) suggest a welfare measure, which combines different components, like consumption, leisure, inequality and mortality.

The Swedish Naturvårdsverket (2011), i.e. the national environment protection board, asks several questions about GDP as a suitable measure of welfare. How does GDP influence welfare? Is GDP sustainable? How does GDP influence the draining of natural resources? And finally: How does GDP influence physical, human, social and natural capital?

According to our own research (Olsson, Schuller, 2012), we can mention the following. For 27 EU member countries we found a high and positive correlation coefficient between HDI and GDP pc (0.767). This means that rising GDP pc is connected with rising HDI, which yet can be seen as a consequence of the construction of the HDI. We even used the Quality of Life Index (QLI) of the Economist (2007), consisting of the following nine components: (1) Cost of living; (2) Leisure and culture; (3) Economy; (4) Environment; (5) Freedom; (6) Health; (7) Infrastructure; (8) Risk and safety; (9) Climate. Here we found some interesting correlation coefficients, e.g. HDI and QLI (0.632), QLI and GDP pc (0.494).

For 46 European countries or countries in the European neighbourhood, we found the following correlation coefficients: HDI and GDP pc (0.858), HDI and QLI (0.883), QLI and GDP pc (0.703). Our conclusion is therefore, that strong positive correlations exist between HDI, GDP pc and QLI.

Finally, some results can be shown regarding statistical relation between GDP pc and an income distribution variable, the Gini coefficient. According to D. N. Weil (2009) economies with more equal income distributions have more human capital and a higher potential for high GDP pc. Furthermore, human capital, strongly influenced by health care and education, is the most important factor of production in economically highly developed countries. The following correlations for more than 120 countries can be mentioned (Schuller, 2013): Gini coefficient and GDP pc in exchange rates (–0.221), Gini coefficient and GDP pc in PPP (–0.342). Even our regressions gave some interesting results: the regression coefficients for the Gini coefficient and GDP pc (both in exchange rates and PPP) were negative and highly significant. Our conclusion is therefore the following one: as higher the Gini coefficient and, therefore, as more unequal the income distribution, as lower GDP pc, other things equal.

The Variables

In this section we present the variables used in the paper. All of them are chosen from the Human Development Report (HDR) 2013 (UNDP, 2013), with the exception of the Gini coefficient, which in
part is taken from earlier versions of the HDR.

The following variables are used: Human Development Index (HDI) for 2012, published in UNDP, 2013, which summarize the following four variables:

- Life expectancy at birth in years, 2012 (Life ex);
- Mean years of schooling in years, 2010 (School 1);
- Expected years of schooling in years, 2011 (School 2);
- Gross national income per capita in 2005 purchasing power parities in $ for 2012 (GNI pc 12).

In the HDR (UNDP, 2013), countries are ranked according to their HDI. In older editions of the HDR, instead of Gross national income per capita (GNI pc), Gross domestic product per capita (GDP pc) was used. Therefore, we even used GDP pc in 2005 PPP $ for the year 2011. Both GNI pc and GDP pc are used as approximation for average income and standard of living.

The HDI is formulated in decimals (between 0 and 1) and the interesting point is the position of the countries in relation to each other and not so much the difference. Furthermore, the difference in HDI between countries does not say very much. On the other hand, when countries are ranked according to national account terms like GNI pc or GDP pc, both the position of a country and the difference to other countries are interesting. As an example we can compare Sweden and Lithuania: In the Human Development Report for 2013, Swedish GNI pc was 36 143 PPP $, while the one of Lithuania was 16 858 PPP $, i.e. less than 50 % of the Swedish GNI pc. The HDI for Sweden the same year was 0,916 (7th position) and for Lithuania 0.818 (41st position). UNDP presented figures for more than 180 countries.

While GNI pc and GDP pc are total GNI or GDP, respectively, divided with total population, two countries can have approximately the same GNI pc or GDP pc, but very different economic situations for the average citizen because of the income distribution, represented here by the Gini coefficient. According to the source, in which the Gini coefficient unfortunately is omitted for many countries, the variable is on average from the years 2000 to 2010.

While life expectancy at birth can give a picture of the health situation of the population, another variable of interest in this connection is the maternal mortality ratio, i.e. deaths per 100 000 live birth for the year 2010. Furthermore, we even have shown the infant mortality ratio as a health variable, i.e. death per 1 000 live birth, for the year 2010.

Economic variables like GDP, GNI etc. are expressed either in current or in constant prices. Furthermore, to eliminate the differences in price levels for goods and services between different countries, GDP and GNI are usually expressed in purchasing power parities (PPP). Yet, sometimes, we even can find international GDP and GNI figures, which are expressed in a common currency, usually the US$. When we compare figures in common currencies with the ones in PPP, we can observe, that in richer countries often the GDP figures in US$ are higher than the ones in PPP, while the situation in poorer countries is usually the opposite one. This can be explained with the fact that price levels in poorer countries are usually lower than the ones in richer countries, especially for goods and services, which are not traded internationally.
Methods

In this paper we use different types of methods. To start with we present a sample of both Swedish and international authors, who discuss the relation between GDP and other variables of national accounts on one hand and welfare on the other hand. The authors are usually rather skeptical regarding GDP as a measure of welfare. Furthermore some descriptive methods are used to exemplify the argumentation. Finally, we estimate statistical relations between GDP and other factors which could influence welfare and well-being. Correlations and regressions are presented in a descriptive way, without the explicit formulation of hypotheses.

Correlations between the Variables

In this section we present the correlations between the above presented variables (with the exception of the Gini coefficient): HDI, GNI pc, life expectancy at birth, mean years of schooling, expected years of schooling, GDP pc, infant mortality and maternal mortality. Though the last two variables are not included in the HDI, we would argue that infant and maternal mortality are interesting welfare variables.

### Correlations

|                | GNI pc 12 | GDP pc 11 | HDI | Life ex | School 1 | School 2 | Mat m |
|----------------|-----------|-----------|-----|---------|----------|----------|-------|
| GDP pc 11      | corr 0,989| corr 0    |     |         |          |          |       |
|                | P-value 0 | P-value 0 |     |         |          |          |       |
| HDI            | corr 0,742| corr 0,744|     |         |          |          |       |
|                | P-value 0 | P-value 0 |     |         |          |          |       |
| Life ex        | corr 0,621| corr 0,617| 0,9 |         |          |          |       |
|                | P-value 0 | P-value 0 |     |         |          |          |       |
| School 1       | corr 0,566| corr 0,573| 0,91| 0,725   |          |          |       |
|                | P-value 0 | P-value 0 |     |         |          |          |       |
| School 2       | corr 0,625| corr 0,626| 0,91| 0,782   | 0,821    |          |       |
|                | P-value 0 | P-value 0 |     |         |          |          |       |
| Mat m          | corr –0,497| corr –0,497| –0,823| –0,856  | –0,717   | –0,706   |       |
|                | P-value 0 | P-value 0 |     |         |          |          |       |
| Infant m       | corr –0,578| corr –0,575| –0,907| –0,931  | –0,78    | –0,801   | 0,885 |
|                | P-value 0 | P-value 0 |     |         |          |          |       |

**Note:** School 1 – mean years of schooling; School 2 – expected years of schooling; Mat m – maternal mortality; Infant m – infant mortality.

**Source:** Constructed by the author using UNDP (2013).
Though in this paper no explicit hypotheses are formulated, it can be mentioned that the signs of all correlation coefficients are expected. We start with having a look at HDI and the included variables. As Table 1 shows that HDI has high and positive correlation coefficients with life expectancy at birth, mean schooling, expected schooling and GNI pc. This is no surprise, but a consequence of the construction of the HDI.

The correlation coefficient between GNI pc and GDP pc is the highest one in the table, which too is no surprise, because the two variables are very close to each other. Furthermore, the correlation coefficient between HDI and GDP pc is very close to one for HDI and GNI pc.

We can even observe that GNI pc and GDP pc respectively are positively correlated with expected schooling, mean schooling and life expectancy at birth. The inhabitants of a country with higher GNI pc or GDP pc have with other words higher life expectancy and more schooling, compared with other countries. If we see GNI pc and GDP pc as measures of average income, this is no surprise: when average income is higher the citizens can afford more of health care and other expenditures. Regarding schooling the question is probably more complicated: on one hand countries with higher average income can afford higher expenditures for education, while on the other hand a better educated population probably is more productive and can achieve a higher GNI and GDP. Even health of the population probably influences productivity.

GNI pc and GDP pc seem even to be important for infant and maternal mortality. According to the correlation coefficients, higher GNI pc or GDP pc means lower infant and maternal mortality. This seems to be convincing because when GNI pc and GDP pc are higher on average the population can afford higher expenditures for health care, which probably leads to lower mortality for mothers and infants.

As mentioned before, in this connection even the income distribution is important. In countries with a very unequal income distribution, but relatively high average income, we would expect that the average expenditures for health care are lower than in countries with a more equal income distribution. Even the average level of education is probably influenced by the income distribution. In an earlier paper (Schuller, 2013) we found negative correlations and negative regression coefficients for the Gini coefficient and GDP pc. This is in line with the argumentation of D. N. Weil (2009), who mentioned that countries with a more equal income distribution probably have a higher level of average education and health care, which improves GDP and even the long-term possibilities of economic growth.

Finally in this section we have a look at the correlations between the variables which are giving a picture of some aspects of the health and education situation. Infant and maternal mortality have high and negative correlations with HDI. Furthermore the correlation coefficients between infant and maternal mortality on one hand and life expectancy on the other hand are high and negative, which is no surprise. Even the high and positive correlation between infant and maternal mortality is expected. There are even strong and negative statistical relations between schooling and mortality. According to the correlations, countries with higher levels of education (mean schooling and expected schooling) have lower infant and maternal mortality. This is no surprise and could be explained...
with the following: more schooling means higher competence in the society and even higher average income. This probably implicates lower mortality for mothers and infants.

As mentioned above, several years ago in the HDR to calculate the HDI the variable GDP pc was substituted with GNI pc. Both variables can be seen as aspects of average national income. The substitution is in a way convincing, because GNI is somewhat broader than GDP. While GNI includes even net factor incomes from abroad, which can be positive or negative, GDP excludes these incomes. Yet we can observe that the correlation coefficients between GNI pc and GDP pc on one hand and the other variables on the other hand show only small differences.

Regression Equations to Explain HDI Statistically

In this section we have a look at some regressions with HDI as the dependent variable and the explaining variables GNI pc, GDP pc, respectively, Life expectancy at birth, and the two education variables. Regression 1 uses GNI pc and regression 2 GDP pc as one of the independent variables.

As the two regression equations show (Table 2), the independent variables GNI pc (GNI pc 12), GDP pc (GDP pc 11), life expectancy at birth (Life ex), mean years of schooling (School 1) and expected years of schooling (School 2) have positive effects on HDI (HDI 2013), because the regression coefficients are positive. This is no

| Regress 1 | HDI | GNI pc 12 | Life ex | School 1 | School 2 |
|-----------|-----|-----------|---------|----------|----------|
| **Equation 1** |     |           |         |          |          |
| Constant | 0,11331 | 0,00000221 | 0,0062621 | 0,020115 | 0,013497 |
| HDI | -6,55 | 12,23 | 18,79 | 18,06 | 10,68 |
| P | 0 | 0 | 0 | 0 | 0 |
| Regress 2 | HDI | GDP pc 11 | Life ex | School 1 | School 2 |
| **Equation 2** |     |           |         |          |          |
| Constant | 0,11479 | 0,00000222 | 0,0062968 | 0,019858 | 0,013535 |
| HDI | -6,75 | 12,54 | 19,18 | 18,02 | 10,85 |
| P | 0 | 0 | 0 | 0 | 0 |

**Note**: Life ex – life expectancy at birth; School 1 – mean years of schooling; School 2 – expected years of schooling; Regress 1 – regression 1; Regress 2 – regression 2.

**Source**: Constructed by the author using HDR (2013).
surprise, but a consequence of the construction of the HDI. We can even observe that the T-values and therefore the levels of significance are very high.

Let us have a closer look at the first regression (Regress 1) equation with GNI pc as the income variable. We can observe that the variable School 1 has the highest regression coefficient, followed by School 2, life expectancy at birth and GNI pc. With other words, a rise in the non-income variables has a much higher positive effect on HDI than a rise in GNI pc. Perhaps it should be mentioned, that GNI pc is positive correlated with life expectancy at birth and the two education variables. Therefore it could be argued that a high average income probably means that the average citizen can afford high expenditures for health care – which probably leads to higher life expectation – and education. Therefore GNI pc as an indicator of average income has several positive effects on HDI: firstly a direct, but rather small positive effect on HDI, secondly by influencing life expectancy and schooling positively, an indirect positive effect on HDI.

In the second regression (Regress 2) equation, GNI pc is substituted with GDP pc as an income variable. As we can observe, the regression coefficients in the second equation are comparable to the ones of the first equation. Even in the second regression equation, the two education variables (School 1, School 2) have the highest positive regression coefficients, followed by life expectancy and GDP pc. Even here we can argue that the income variable has directly positive effects on HDI and indirect positive effects, because GDP pc is positive correlated with the education variables and life expectancy. Finally we can mention that the T-values are quite high and the regression coefficients are positive and significant.

It can be argued that there is not only a positive effect of income (GNI pc and GDP pc) on the health and education variables, but probably even a positive effect of health and education on the income variables. A healthier and more educated population probably even has a more productive labour force, which will produce a higher GDP and GNI. This means that there are even positive indirect effects of life expectancy and the education variables on GDP pc and GNI pc and therefore even on HDI.

Though we in this paper did not calculate correlation and regression coefficients for the Gini coefficient as a variable expressing the income distribution and the other variables, something can be mentioned about earlier results (Schuller, 2013). In the paper from 2013 it could be shown, that the correlation for the Gini coefficient with GDP pc (both in purchasing power parities and in exchange rates) was negative. Furthermore, it was found that the regressions for the Gini coefficient and GDP pc were negative and significant. With other words, according to these results, a more unequal income distribution, expressed by a higher Gini coefficient, would lead to lower GDP pc.

Differences between the 20 Highest Ranked Countries according to HDI in 2013

In this section, we have a closer look at the 20 countries, which are highest ranked according to the UNDP 2013. We are even looking at GNI pc and GDP pc. Furthermore, because income distribution seems to be important for average welfare, we are
showing the Gini coefficients for the countries. Finally, we have a look at the differences between GNI pc and GDP pc for our countries.

As the Table 3 illustrates, regarding the HDI, the differences between the 20 countries are relatively low. Among the countries, France has the lowest position with a HDI which is 6% lower than the one of Norway, which has the highest position. The differences between countries, regarding GNI pc and GDP pc, are obviously much higher. Singapore has the highest value, while New Zealand has the lowest one. Obviously, for the position in the HDI ranking, the life expectancy and education variables have higher importance than the economic variables.

We even have a look at the differences between GNI pc and GDP pc, both negative and positive ones. A country which has a positive difference between GNI pc and

| HDI | HDI ind | GNI pc 12 | GNI ind | GDP pc 11 | GDP ind | Gini | Diff |
|-----|---------|-----------|---------|-----------|---------|------|------|
| Norway | 0,955 | 100 | 48688 | 100 | 46982 | 100 | 25,8 | 3,63 |
| Australia | 0,938 | 98 | 34340 | 71 | 34548 | 74 | 35,2 | –0,6 |
| USA | 0,937 | 98 | 43480 | 89 | 42486 | 90 | 40,8 | 2,34 |
| Netherlands | 0,921 | 96 | 37282 | 77 | 37251 | 79 | 30,9 | 0,08 |
| Germany | 0,92 | 96 | 35431 | 73 | 34437 | 73 | 28,3 | 2,88 |
| New Zealand | 0,919 | 96 | 24358 | 50 | 24818 | 53 | 36,2 | –1,85 |
| Ireland | 0,916 | 96 | 28621 | 59 | 35640 | 76 | 34,3 | –19,69 |
| Sweden | 0,916 | 96 | 36143 | 74 | 35048 | 75 | 25 | 3,12 |
| Switzerland | 0,913 | 96 | 40527 | 83 | 37979 | 81 | 33,7 | 6,71 |
| Japan | 0,912 | 95 | 32545 | 67 | 30660 | 65 | 24,9 | 6,15 |
| Canada | 0,911 | 95 | 35369 | 73 | 35716 | 76 | 32,6 | –0,97 |
| Korea | 0,909 | 95 | 28231 | 58 | 27541 | 59 | 31,6 | 2,51 |
| Hong Kong | 0,906 | 95 | 45598 | 94 | 43844 | 93 | 43,4 | 4 |
| Iceland | 0,906 | 95 | 29176 | 60 | 33618 | 72 | – | –13,21 |
| Denmark | 0,901 | 94 | 33518 | 69 | 32399 | 69 | 24,7 | 3,45 |
| Israel | 0,9 | 94 | 26224 | 54 | 26720 | 57 | 39,2 | –1,86 |
| Belgium | 0,897 | 94 | 33429 | 69 | 33127 | 71 | 33 | 0,91 |
| Austria | 0,895 | 94 | 36438 | 75 | 36353 | 77 | 29,2 | 0,23 |
| Singapore | 0,895 | 94 | 52613 | 108 | 53591 | 114 | 42,5 | –1,82 |
| France | 0,893 | 94 | 30277 | 62 | 29819 | 63 | 32,7 | 1,54 |

Note: Diff – GNI pc minus GNP pc, %; HDI ind – Index for HDI, Norway 100; GNI ind – Index for GNI pc, Norway 100; GDP ind – Index for GDP pc, Norway 100. For Ireland Gini coefficient is not applicable.

Source: Constructed by the author using Human Development Report (2013 and earlier editions).
GDP pc has positive net inflows of factor incomes from abroad. 13 of the 20 countries have positive net inflows, while 7 have negative ones. Furthermore, with the exception of Ireland, Iceland, Switzerland and Japan, the differences are usually not higher than 3–4 % of GNI pc.

As mentioned above, for average welfare and well-being in a country, probably income distribution is important. We have therefore even shown the Gini coefficient for 19 of the 20 countries with the exception of Iceland. For this country, we could not find Gini coefficients in our source. The following is worth mentioning. Together with Japan, the three Nordic countries (Norway, Sweden and Denmark) have the lowest Gini coefficients, or according to the definitions the most equally distributed incomes in our sample. Six Central European countries (the Netherlands, Germany, Switzerland, Belgium, Austria and France) have somewhat higher Gini coefficients, followed by five English speaking countries (Australia, USA, New Zealand, Ireland and Canada) and five Asian countries (Hong Kong, Singapore, Korea, Japan and Israel).

Income distribution is not only important for welfare, but can even have an influence on economic activity, expressed as GDP and other related terms in national accounts. According to D. N. Weil (2009), a more equal income distribution has at least in economically highly developed countries a positive influence on the level and growth of GDP. Furthermore, we have found interesting statistical relations between the Gini coefficient and GDP pc (Schuller, 2013). The correlation coefficients between Gini and GDP pc in PPP and GDP pc in Exchange rates were negative, which can be interpreted in the following way: as more unequal the income distribution, as lower GDP pc. Even the regressions with GDP pc as the dependent variable and total GDP, Population and the Gini coefficient as the independent variables showed a negative and significant relation between GDP pc and the Gini coefficient, i.e. other things equal, when the income distribution is more unequal, the GDP pc is lower. If GDP pc is seen as an indicator of average welfare, when the income distribution is more unequal, average welfare is lower.

Conclusions

As a sample of Swedish and international authors show, economists are usually quite skeptical to use GDP as an indicator of welfare. The following arguments are presented in this paper. First of all, not GDP, but GDP pc should be used. Furthermore, the income distribution is important. Thirdly, differences exist between countries and groups regarding the working hours. Fourthly, externalities influence welfare. Fifthly, the grey, black and illegal economy is not included. Sixthly, production within households is not counted. Seventhly, the composition of GDP is important. Finally, when we make international comparisons, purchasing power parities instead of exchange rates should be used for currency conversion.

Yet, as B. Sandelin (2005) argues, GDP probably influences non-economic factors of welfare and therefore can be seen as an approximation.

A measure of welfare, living standard or well-being is the Human Development Index (HDI) of the United Nations Development Programme. The HDI consists of three types of variables: life expectancy at birth, some education variables and GNI
pc or GDP pc. As we can show, the differences between countries regarding the HDI are in relative terms much lower than the ones regarding GDP pc or GNI pc.

The paper investigates correlations between the components of HDI. All correlation coefficients are positive and quite large, which is expected. Furthermore, we presented the correlation coefficients between the variables of the HDI and maternal and child mortality, which can be seen as welfare indicators. We found that the correlations between GDP pc and GNI pc on one hand and maternal mortality and child mortality on the other hand were quite large and negative.

Finally, we presented regressions for the components of the HDI. Here we found that life expectancy and the education variables have a stronger influence on HDI than GDP pc and GNI pc.

Our final conclusion is therefore that the economic measure probably can be used if not as a welfare indicator, but an approximation.

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Straipsnyje nagrinėjama kaip išreikšti, apibrėžti ir išmatuoti gerovę, kuri gali būti suvokiamą arba kaip valstybės ekonominės ir socialinės politikos dalis, arba kaip emocija ar psichologinė būsena, susijusi su piliečiais ir jų subjektyviu požiūriu į gerovę. Straipsnyje plačiau analizuojamas antrasis gerovės aspektas. Manoma, kad pagrindinis diskusijos apie gerovę klausimas yra, ar BVP ir kitų nacionalinių sąskaitų kintamieji gali būti taikomi kaip gerovės matai. Ekonomistai ir kitų disciplinių mokslininkai pažymi keletą BVP, BNP, BVP vienam gyventojui ir BNP vienam gyventojui, kaip gerovės matų trūkumų: pvz., neatsižvelgiama į išorės veiksnius (išlaidos policijai, kariuomenei, nusikalstamumo prevencijai, apsaugai nuo žmogaus sukeltų ir gamtos katastrofų ir t.t.), kad gerovė ir gerbūvis nekyla kartu su BVP – bent jau kyla neproporcingai. Be to, minim, kad darbas namų ūkyje nėra įtrauktas į BVP. Tarp JAV ir Europos pasitvirtinimų yra daugybė veiksnių, įskaitant pažeistą ir nepajėgų darbo skirstymą tarp gyventojų. Tai gali turėti įtakos įvairioms kultūroms ir veiksmams.