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Gender indicators of the United Nations Development Programme

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Abstract: The Human Development Report published by United Nations Development Programme (UNDP) introduced new measures to evaluate progress in reducing poverty and empowering women: Inequality-adjusted Human Development Index (IHDI), Multidimensional Poverty Index (MPI), Gender Inequality Index (GII), Gender Development Index (GDI). In the paper GDI and GII indicators are presented and analysed, what is supplemented with a detailed analysis of the individual components of these indices for Poland. Additionally, this article wants to evaluate reduction of gender inequality in Poland.

Keywords: Human Development Index, gender, inequality

JEL codes: Q56, J16

1. Introduction

Human Development Index (HDI) is the leading indicator of the Human Development Report which is an independent report commissioned annually by the United Nations Development Programme (UNDP). Human Development Report was published first in 1990. Since then UNDP is publishing HDI estimates annually.

The present formula of HDI is the geometric mean of standardized estimates from each of three measurements: a long and healthy life, being knowledgeable, and have a decent standard of living. The specialized technical notes of UNDP describe the progress to compute the HDI, information sources and the concept used to justify the system of wages (UNDP, 2015)¹. However,

¹ For a full elaboration of the strategy behind the indicator and its scientific justification, see: Anand and Sen, 2000; Maddison, 2010; Oeppen and Vaupel, 2002; Kahneman and Deaton, 2014; Klugman et al., 2011; Riley, 2005.

in addition to the UNDP very positive work, it has to be stressed that HDI is just one measurement proposal occurring among a wide variety of indicators designed to monitor the human progress.

At present, the Human Development Report published by UNDP includes several new measures to evaluate progress in reducing poverty and empowering women: Inequality-adjusted Human Development Index (IHDI), Multidimensional Poverty Index (MPI), Gender Inequality Index (GII), Gender Development Index (GDI). In this paper HDI is discussed and evaluated from the point of view of gender issue. In particular, in the paper GDI and GII indicators are discussed and this presentation is supplemented by an assessment and analysis of gender oriented indicators for Poland. The goal of this article is to present new HDI-related gender inequality indicators and to use them to evaluate reduction of gender inequality in Poland since the year 2008.

2. HDI framework

Human Development Report published on the 4th of November 2010, and updated on the 10th of June 2011, was already the new HDI calculated as the geometric mean of normalized indexes for each of the three dimensions: health, education, income. Thus, HDI is a geometric mean of three components: LEI (Life Expectancy Index), EI (Education Index), II (Income Index). Modifications to HDI, continued 2011 onwards, can be summarized as follows (Śleszyński, 2016):

- Minimum LE set at the level of 20 years;
- Education Index calculation based upon Mean Years of Schooling (MYS) and Expected Years of Schooling (EYS) defined as follows:
 - MYS: Years that a 25-year-old person or older has spent in schools,
 - EYS: Years that a 5-year-old child will spend with his education in his whole life;
- The Gross National Income (GNI) used instead of GDP because:
 - GNI is the total domestic and foreign output claimed by residents of a country, consisting of Gross Domestic Product (GDP) plus factor incomes earned by foreign residents, minus income earned in the domestic economy by nonresidents,
 - GNI better than GDP describes the standard of living in the country;
- Maximum GNI, in the 2014 Human Development Report set at the level of \$75000.

The latest modification in HDI methodology include 90 (Śleszyński, 2016) the change in maxima for normalization of dimensional indices – previously they were equal to the observed maxima

over the period since 1980. Now they are fixed at 85 years for LE, 15 years for MYS, 18 years for EYS, and \$75,000 for GNI per capita. The previously used approach of "observed maxima" was criticized mainly on the grounds that the HDI of the country should depend only on the country's own achievements, however when using the observed maxima the HDI was also depended on other countries, in fact on those whose values were used as maxima.

The other recent change is in the way the education indicators are aggregated. Geometric aggregation previously proposed for a new method of calculation was criticized on the grounds that a typical developing country has a (much) higher value of expected years of schooling than of mean years of schooling. By aggregating these two indicators with the geometric mean such a country is "penalized" because of the difference, although the country is improving education level by having more children attending school at all levels. The use of the arithmetic mean provides an equal treatment to both indicators. However, these changes have a minimal impact on values and ranks.

Basically, as it was necessary in the old formula of HDI, the same standardization equation was applied: in general, the index is equal to the actual value minus the minimum value divided by the difference between the maximum and the minimum values. Obviously, minimum and maximum values (goalposts) were set in order to transform the indicators expressed in different units into indices between 0 and 1. These goalposts act as the "natural zeroes" for the minimum value and as the "aspiration goals" for the maximum value, respectively, from which component indicators are standardized. However, as was already shown and discussed in the previous section of this paper, several modifications were applied to the goalposts.

The maximum LE is fixed at 85 years. The justification for placing the natural zero for life expectancy at 20 years is based on historical evidence that no country in the 20th century had a life expectancy of less than 20 years (Maddison, 2001), (Oeppen and Vaupel, 2002), (Riley, 2005). Thus, health of the nation is represented by Life Expectancy (LE) and Life Expectancy Index (LEI) is calculated as follows:

$$LEI = \frac{LE - 20}{85 - 20}$$

Society can subsist without formal education, justifying the education minimum of 0 years. The maximum for mean years of schooling is fixed at 15 years because this is the projected maximum

of this indicator for 2025. The maximum for expected years of schooling is determined at 18 years because this is equivalent to achieving a master's degree in most countries. For the education dimension, the standardizing equation is first applied to each of the two indicators, MYS and EYS, to calculate two indexes: MYSI and EYSI. Next, the arithmetic mean of the two resulting indices is taken to calculate the Education Index (EI):

$$\begin{aligned} \text{MYSI} &= \frac{\text{MYS}}{15} \\ \text{EYSI} &= \frac{\text{EYS}}{18} \\ \text{EI} &= \frac{\text{MYSI} + \text{EYSI}}{2} \end{aligned}$$

The minimum value for Gross National Income (GNI) per capita set on \$100 is justified by the considerable amount of unmeasured subsistence and nonmarket production in economies close to the minimum, which is not captured in the official data. The maximum is set at \$75,000 per capita. Kahneman and Deaton (2010) have shown that there is a virtually no gain in human development and well-being from annual income beyond \$75,000. Assuming annual growth rate of 5 percent, only three countries are projected to exceed the \$75,000 ceiling in the next five years. Because each dimension index is a proxy for capabilities in the corresponding dimension, the transformation function from income to capabilities is likely to be concave (Anand and Sen, 2000) - that is, each additional dollar of income has a smaller effect on expanding capabilities. Thus for income, the natural logarithm of the actual, minimum and maximum values is used. Income Index (II) results from the formula:

$$\text{II} = \frac{\ln(\text{GNI}) - \ln(100)}{\ln(75000) - \ln(100)}$$

Finally, the HDI is the geometric mean of the previous three normalized indexes:

$$\text{HDI} = \sqrt[3]{\text{LEI} \cdot \text{EI} \cdot \text{II}}$$

3. UNDP gender indicators

With the 2010 Human Development Report (HDR) three new indices based on HDI were introduced to capture important multidimensional aspects of the distribution of well-being for inequality, gender equity and poverty:

- Inequality-adjusted Human Development Index (IHDI),
- Multidimensional Poverty Index (MPI),
- Gender Inequality Index (GII).

HDR from year 2014 introduced Gender Development Index (GDI) as the second index for examining gender equality. In this paper both GII and GDI as two gender-related indices are presented and supplemented by an assessment and analysis of this indicators for Poland.

In fact, the Gender Inequality Index was not the first gender-related development index published by UNDP, but it reflects advances in methods and better data availability. The first global tools for examining gender equality were launched in the 1995 HDR ²:

- Gender Empowerment Measure (GEM);
- Gender-related Development Index (GDI).

The Gender Empowerment Measure focused on political and economic participation and power over economic resources, measured by women's shares of parliamentary seats, share in professional and managerial jobs and income gaps between men and women (UNDP, 1995). It examined whether women and men are equally empowered to participate in economic and political life and take part in decision-making.

The Gender-related Development Index measured inequalities by gender in the HDI dimensions - life expectancy, educational attainment and adjusted real income (UNDP, 1995). Value of GDI falls when the overall achievements of both women and men decrease or when the disparity between their achievements in a country goes up.

The main merit of GDI and GEM was to stress the importance of collecting and analysing gender-disaggregated data and to provoke debate about how to construct a better and more complex gender index. Critics have noted that these pioneering indices combined absolute and relative achievements (Klasen and Schöler, 2010). The main disadvantage of GDI is that it cannot be

² In earlier Human Development Reports, attempts were made to construct a gender-disparity-adjusted HDI. First each of the three components of the HDI was expressed in terms of the female value as a percentage of the male value and then HDI was multiplied by this simple average female-male ratio.

interpreted independently of the HDI, and for that reason it cannot be interpreted on its own as an indicator of gender gaps in well-being. The GII due to data limitations couldn't capture many aspects of empowerment, as within the household, or in community life or in rural areas. Moreover, in both indices the relative income shares were needed, and due to lack of data for more than three-fourths of countries this numbers were estimated.

As the respond to abovementioned discussion, the UNDP extended their methods and introduced new indexes, as an important advance on existing measures of inequality to gender. In particular, the GII combines educational attainment, economic and political participation and female-specific health issues in the unique way.

4. Gender Inequality Index

The Gender Inequality Index (GII) measures gender inequalities in three important aspects of human development – reproductive health, empowerment and economic status – and captures these three dimensions in one synthetic index (UNDP, 2010). The GII accounts for inequalities by comparing women and men and considering inequalities between them at the country level. It ranges from 0 (no inequality) to 1 (complete inequality). The methodology of the GII implies that, the more correlated the disparities between genders across dimensions, the higher the index. None of the underlying measures are related to a country's general level of development (measured by HDI), so developing countries can achieve high rank if gender disadvantages are small.

The Gender Inequality Index is based on three components: HI (Health Index), EI (Empowerment Index), ESI (Economic Status Index):

- HI calculation based upon Maternal Mortality Ratio (MMR) and Adolescent Birth Rates (ABR) defined as follows:
 - MMR: maximum value is truncated at 1,000 deaths per 100,000 births and the minimum value at 10,
 - ABR: births per 1000 women ages 15–19;
- EI calculation based upon Share of Parliamentary Seats (PR) and Population with at least some Secondary Education (SE) defined as follows:
 - PR: the share of female and male seats in parliament,
 - SE: attainment at secondary and higher education levels;

- ESI equals to Labour Force Participation Rate (LFPR) of female and male populations aged 15 years and older.

The first step to calculate the GII is to compute Health Index for women, Empowerment Index and Economic Status Index separately for women and men as follows:

$$HI_f = \sqrt[2]{\frac{10}{MMR} \cdot \frac{1}{ABR}}$$

$$EI_f = \sqrt[2]{PR_f \cdot SE_f} \text{ and } EI_m = \sqrt[2]{PR_m \cdot SE_m}$$

$$ESI_f = LFPR_f \text{ and } ESI_m = LFPR_m$$

Afterwards, the geometric mean of the previous three indexes is calculated separately for women (G_f) and men (G_m), with HI for men set to 1:

$$G_f = \sqrt[3]{HI_f \cdot EI_f \cdot ESI_f} \text{ and } G_m = \sqrt[3]{1 \cdot EI_m \cdot ESI_m}$$

In order to obtain equally distributed gender index these means are then aggregated using a harmonic mean, which allows to capture inequalities between genders and accounts for disparities or overlap across dimensions:

$$HARM(G_f, G_m) = \left[\frac{(G_f)^{-1} + (G_m)^{-1}}{2} \right]^{-1}$$

Finally, the Gender Inequality Index is calculated by comparing the harmonic mean across genders to the reference standard:

$$GII = 1 - \frac{HARM(G_f, G_m)}{G_{f,m}}$$

The reference standard is computed by aggregating Health Index, Empowerment Index and Economic Status Index for male and female using equal weight and then aggregating the indices across dimensions:

$$G_{f,m} = \sqrt[3]{HI \cdot EI \cdot ESI}$$

where:

$$\overline{HI} = \left(\sqrt{\frac{10}{MMR} + \frac{1}{ABR} + 1} \right) / 2$$

$$\overline{EI} = (\sqrt{PR_f \cdot SE_f} + \sqrt{PR_m \cdot SE_m}) / 2$$

$$\overline{ESI} = (LFPR_f + LFPR_m) / 2$$

The \overline{HI} shouldn't be interpreted as an average of female and male indices but as half the distance from the norms established for the reproductive health indicators – less maternal deaths and adolescent pregnancies (Gaye et.al., 2010).

The Gender Inequality Index measures gender inequalities in three aspects very important for women. Maternal mortality ratio is directly related with women's status in society. The risk of death in childbirth can be reduced by rather inexpensive services as adequate nutrition, access to contraceptives and skilled attendants at birth. Nevertheless, even countries at similar incomes show enormous variation in maternal mortality ratios. Early childbearing compromise health and limits future opportunities of young mothers, because it often prevents women from getting better education, destining them to low-skilled and low-paid jobs.

The ratio of female to male representatives in parliament reflects women's visibility in political leadership and in society more generally. Unfortunately, among majority of countries women participation in governance and decision-making is very low at all levels. Higher educational attainment is considered important, because educated women are more likely to have satisfying well-paid work and participate in public life. Moreover, it expands women's freedoms - financial and intellectual.

Labour force participation does not take into account occupational segregation in the labour market and the gender wage gap, but direct measures of income disaggregated by sex are not available for a sufficiently large number of countries.

5. Gender Development Index

With the 2014 HDR new Gender Development Index (GDI) was introduced. This index accounts for disparities between women and men in three basic dimensions of human development (UNDP, 2014):

1. Health measured by life expectancy.
2. Education measured by mean years of schooling and expected years of schooling.
3. Income measured by Gross National Income per capita.

The GDI is the ratio of female HDI to male HDI calculated separately, so it uses the same component indicators and the same methodology as in the HDI. As previously described, HDI is a geometric mean of three components: LEI (Life Expectancy Index), EI (Education Index) and II (Income Index) – normalized indices for each of the three dimensions. In the methodology of GDI, the indicators, which come in different units, are transformed into a scale of 0 to 1 using the same goalposts as for the HDI. The only difference concerns life expectancy at birth, which is adjusted for the average of five years biological advantage that women have over men³.

Consequently, the male and female HDI values are the geometric means of the three dimensional indices for each gender calculated as follows:

$$\text{HDI}_f = \sqrt[3]{\text{LEI}_f \cdot \text{EI}_f \cdot \text{II}_f} \text{ for women, and } \text{HDI}_m = \sqrt[3]{\text{LEI}_m \cdot \text{EI}_m \cdot \text{II}_m} \text{ for men.}$$

Finally, the GDI is the ratio of female HDI to male HDI:

$$\text{GDI} = \frac{\text{HDI}_f}{\text{HDI}_m}$$

The important difficulty with calculating male and female HDI is to count Income Index (II), as income indicators separated by gender are not available for most of the countries in the world. Human Development Report Office estimates earned income based on female and male shares of economically active population, ratio of female to male wage in all sectors and gross national income. In order to calculate estimated incomes, the share of the wage bill for each gender is calculated as follows:

³ Minimum LE set at the level of 22.5 years for women and 17.5 years for men. The maximum LE is fixed at 87.5 years for women and 82.5 years for men.

$$S_f = \frac{W_f/W_m \cdot EA_f}{W_f/W_m \cdot EA_f + EA_m} \text{ for women, and } S_m = 1 - S_f \text{ for men,}$$

where W_f/W_m is the ratio of female to male wage, EA_f is the female share of the economically active population and EA_m is the male share of the economically active population.

Finally, estimated female and male earned income per capita is obtained from GNI per capita, first by multiplying it by the share of the wage bill of each gender and then rescaling it by the share of the population of each gender.

6. Gender Inequality Index for Poland

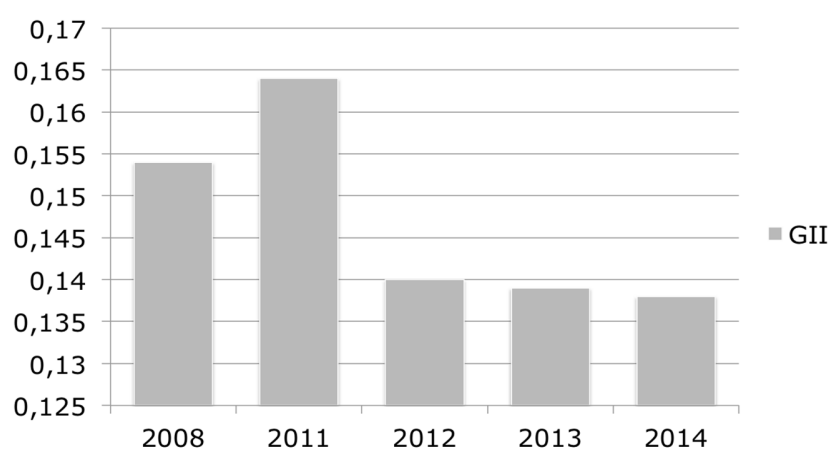
Poland's performance on the Gender Inequality Index is relatively good and situates Poland in the top 30 countries in the world. The table below presents the value of GII and its component indicators for Poland for years 2008-14, as given in 2010 HDR to 2015 HDR.

Table 1. Gender Inequality Index and its component indicators for Poland 2008-14

Year	GII	Rank	Maternal Mortality Ratio (MMR)	Adolescent Birth Rate (ABR)	Share of Parliamentary Seats (PR)		Population with at least some Secondary Education (SE)		Labour Force Participation Rate (LFPR)	
					Female	Male	Female	Male	Female	Male
2014	0,138	28	3	12,2	22,1	77,9	79,4	85,5	48,9	64,9
2013	0,139	26	5	12,2	21,8	78,2	79,4	85,5	48,9	64,8
2012	0,140	24	5	12,2	21,8	78,2	76,9	83,5	48,2	64,3
2011	0,164	25	6	14,8	17,9	82,1	79,7	83,9	46,2	61,9
2008	0,154	26	8	13,9	18,0	82,0	79,7	83,9	56,9	71,0

Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

As mentioned earlier, GII ranges from 0 (no inequality) to 1 (complete inequality). The value of index can thus be interpreted as characterizing where a country lies in reference to normative ideals. The Gender Inequality Index for Poland is currently below 0,14 and a downward trend could be observed in the recent years.

Graph 1. Gender Inequality Index for Poland 2008-14

Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

Based on data published in 2010 HDR to 2015 HDR, the three component indices of Gender Inequality Index were calculated for Poland in order to analyse trends and dynamics of change in three dimensions: women's health, empowerment and economic status. GII index in total allows us to understand, how situation of women in Poland changes over time and compare to other countries, however it is also important to capture in which areas improvement is still needed, and this is possible by tracking changes in particular GII components.

Component 1: Health Index

The Health Index (HI) is measured by two indicators - the Maternal Mortality Ratio (MMR) and the Adolescent Birth Rate (ABR). Health Index is calculated only for women, as reproductive health indicators used in the GII do not have equivalent indicators for males. For this reason, the national reproductive health is compared to assumed norms of fewer maternal death and fewer adolescent pregnancy. Thus, the higher value of Health Index, the better situation of women. The table below presents value of the HI and its components indicators for Poland.

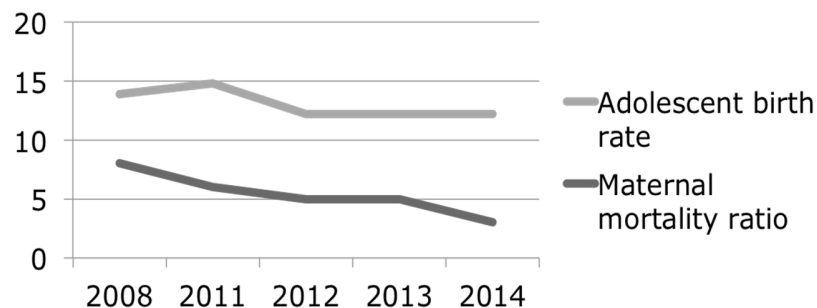
Table 2. Health Index and its components for Poland 2008-14

Year	Maternal Mortality Ratio (MMR)	Adolescent Birth Rate (ABR)	Health Index Female (HI _f)
2014	3	12.2%	0.2868
2013	5	12.2%	0.2868
2012	5	12.2%	0.2868
2011	6	14.8%	0.2599
2008	8	13.9%	0.2682

Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

Maternal Mortality Ratio in Poland stays below 10 deaths per 100,000 births, comparing to the world's average of 210 in year 2014, and the Adolescent Birth Rate is about 12% - also well below the world average – 47.4% in 2014 (UNDP, 2015). In analyzed period both MMR and ABR were falling with only small increase of ABR in 2011.

Graph 2. Component indicators of Health Index for Poland



Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

As mentioned earlier in the article, for the Maternal Mortality Ratio the minimum value is truncated at 10 deaths per 100,000 births, as countries with 10 or fewer deaths per 100,000 births are considered to perform at essentially the same level of maternal care. For that reason, the observed decline of MMR in Poland in recent years did not influence the level of HI, as it was below 10 in the analyzed period. Assuming that the maternal mortality ratio will stay at this low level in the future, only decrease in adolescent birth rate can improve the value of Health Index for Poland.

Component 2: Empowerment Index

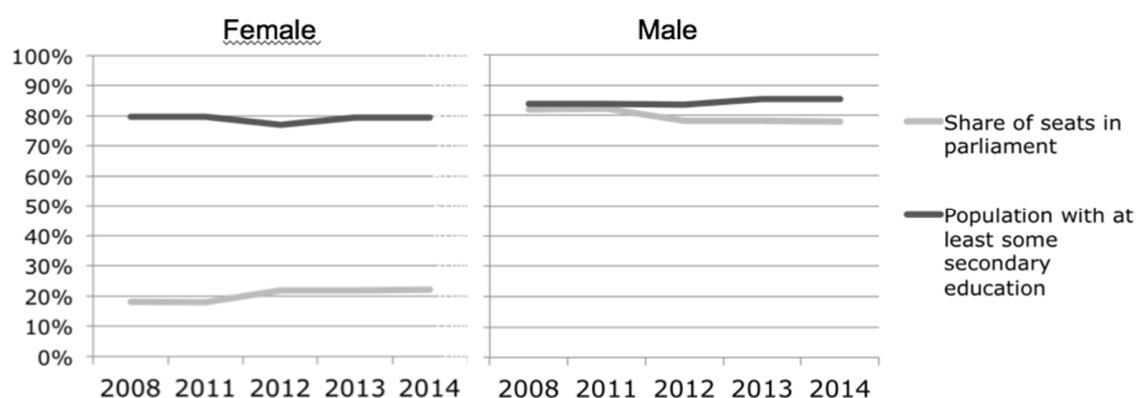
There are two measures of empowerment that are internationally comparable and used to calculate Empowerment Index (EI) - the Attainment at Secondary and Higher Education levels (SE) and the Share of Parliamentary Seats held by each sex (PR). The table below presents value of the Empowerment Index and its components indicators for Poland.

Table 3. Empowerment Index and its component indicators for Poland 2008-14

Year	Share of Parliamentary Seats (PR)		Gap in PR (Male – Female)	Population with at least some Secondary Education (SE)		Gap in SE (Male – Female)	Labour Force Participation Rate (LFPR)	
	Female	Male		Female	Male		Female	Male
2014	22.1%	77.9%	55.8 pp	79.4%	85.5%	6.1 pp	0.419	0.816
2013	21.8%	78.2%	56.4 pp	79.4%	85.5%	6.1 pp	0.416	0.818
2012	21.8%	78.2%	56.4 pp	76.9%	83.5%	6.6 pp	0.409	0.808
2011	17.9%	82.1%	64.2 pp	79.7%	83.9%	4.2 pp	0.378	0.830
2008	18.0%	82.0%	64.0 pp	79.7%	83.9%	4.2 pp	0.379	0.829

Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

The parliamentary representation of women at 22.1% of seats in 2014 is close to the world average of 21.8%. The gap in attainment at secondary and higher education is in favour of men (about 6 percentage points higher for men relative to women) and is smaller than the world average gap which is about 11 percentage points in favour of men (UNDP, 2015).

Graph 3. Component indicators of Empowerment Index for Poland

Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

The positive tendency in time of the female Empowerment Index can be observed in Poland in analyzed period. This could show constant improvement of gender inequality in this dimension, however, more detailed analysis reveals that the gender gap in one of the indicators – Attainment at Secondary and Higher Education levels – increased from 4.2 to 6.1 percentage points. Therefore it may be important to monitor the index itself and its components in future years in order to identify the actual trend. In the years 2008-2014 the representation of women in polish parliament increased from 18% to 22.1%. On the other hand, the gap is still significant, and exceeds expected level for developed countries.

Component 3: Economic Status Index

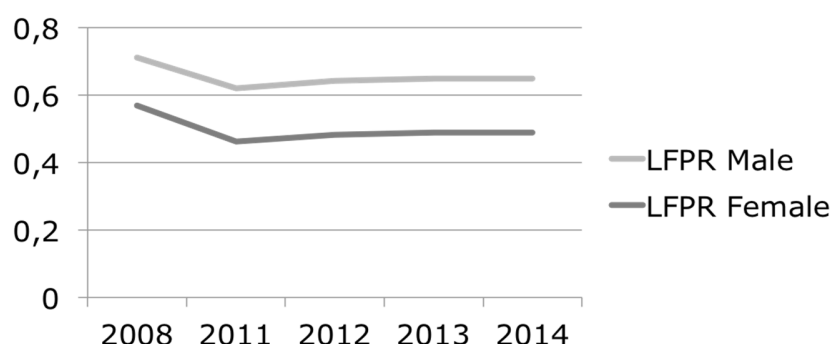
The Economic Status Index (ESI) is measured by female and male labour force participation rates. Relative labour force participation can reflect the degree of economic activity of women versus men, although it ignores the important contributions of women in unpaid work. The table below presents value of the ESI and its components indicators for Poland.

Table 4. Economic Status Index and its component indicators for Poland 2008-14

Year	Labour Force Participation Rate (LFPR)		Gap in LFPR (Male – Female)	Economic Status Index (ESI)	
	Female	Male		Female	Male
2014	48.9%	64.9%	16.0 pp	0.489	0.649
2013	48.9%	64.8%	15.9 pp	0.489	0.648
2012	48.2%	64.3%	16.1 pp	0.482	0.643
2011	46.2%	61.9%	15.7 pp	0.462	0.619
2008	56.9%	71.0%	14.1 pp	0.569	0.710

Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

Poland's gap in labour force participation between women and men is smaller than the world average of 26.4 percentage points (UNDP, 2015), but it is still over 15 percentage points. After significant fall after year 2008, the participation of women in labour force in Poland increases every year in analyzed period, as well as the participation of men. What is important is that the gender gap in this dimension did not improve over time and stayed more or less at the same level in past few years.

Graph 4. Component indicators of Economic Status Index

Source: Author's own elaboration based on HDRs (UNDP, 2010-2015).

7. Gender Development Index for Poland

The Gender Development Index (GDI) was introduced with the 2014 HDR, so only two values of this index are available to analyse. The table below presents the value of GDI and its component indicators for Poland for years 2013 and 2014, as given in 2014 HDR and 2015 HDR.

Table 5. Gender Development Index and its component indicators for Poland 2013-14

Year	GDI	HDI		Life Expectancy at birth (LE)		Expected Years of Schooling (EYS)		Mean Years of Schooling (MYS)		Estimated Gross National Income per capita (2011 PPP \$)	
		Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
2014	1.007	0.844	0.839	81.4	73.4	16.3	14.7	11.7	11.9	18 423	28 271
2013	1.010	0.837	0.828	80.5	72.3	11.9	11.7	16.3	14.7	16 462	26 871

Source: Author's own elaboration based on HDRs (UNDP, 2014-2015).

The Gender Development Index for Poland is above 1 in analysed period, what implies better situation of women than men. In year 2015 only 15 countries in the world had value of GDI higher than 1 (UNDP, 2015). Disparities between genders are relatively small, what situates Poland in the Group 1 of countries with high equality in HDI achievements between men and women (absolute deviation of less than 2.5%).

As previously described, the GDI is the ratio of female HDI to male HDI, which are calculated as a geometric mean of three components: Life Expectancy Index (LEI), Education Index (EI) and Income Index (II) calculated separately for each gender. With so limited

observations, it is impossible to analyse dynamics and trends of change in this three key aspects of development. Short analyse of component indicators of GDI is presented instead, which allows to point out main reasons of disparities between genders in Poland. Based on available data, the three component indices of Gender Development Index were calculated for more detailed view situation of women in Poland in three dimensions: health, education and income.

Component 1: Life Expectancy Index

In GDI health of the nation is represented by Life Expectancy (LE) at birth, which is adjusted for the average of five years biological advantage that women have over men. Life Expectancy Index (LEI) calculated separately for each gender is presented below.

Table 6. Life Expectancy Index and its component indicators for Poland 2013-14

Year	Life Expectancy at Birth (LE)		Life Expectancy Index (LEI)		Ratio LEI _{female} /LEI _{male}
	Female	Male	Female	Male	
2014	81.4	73.4	0.906	0.860	1.054
2013	80.5	72.3	0.893	0.843	1.059

Source: Author's own elaboration based on HDRs (UNDP, 2014-2015).

Component 2: Education Index

The measurement of Education Index (EI) is based on two indicators: Mean Years of Schooling (MYS) and Expected Years of Schooling (EYS). The table below presents value of the Education Index calculated for each gender and its components indicators for Poland.

Table 7. Education Index and its component indicators for Poland 2013-14

Year	Expected Years of Schooling (EYS)		Mean Years of Schooling (MYS)		Education Index (EI)		Ratio EI _{female} /EI _{male}
	Female	Male	Female	Male	Female	Male	
2014	16.3	14.7	11.7	11.9	0.843	0.805	1.048
2013	16.3	14.7	11.9	11.7	0.850	0.800	1.062

Source: Author's own elaboration based on HDRs (UNDP, 2014-2015).

Component 3: Income Index

The calculation of Income Index (II) is based on one indicator - income. Estimated gross national income per capita is derived from the ratio of female to male wages, female and male shares of economically active population and GNI, as described earlier in the article. The table below presents value of the Income Index and its components indicators for Poland.

Table 8. Income Index and its component indicators for Poland 2013-14

Year	Estimated Gross National Income per capita (GNI)		Income Index (II)		Ratio I_{female}/I_{male}
	Female	Male	Female	Male	
2014	18 423	28 271	0.788	0.853	0.924
2013	16 462	26 871	0.771	0.845	0.912

Source: Author's own elaboration based on HDRs (UNDP, 2014-2015).

Both Education Index and Life Expectancy Index have lower values for men, showing small gender disparities in favour of women in year 2013 and 2014 in Poland. The income is the only dimension of Human Development Index in which situation of women is worse than men in analysed period. Of course it is important to remember, that the level of income is estimated due to lack of data, so the real situation can be slightly different.

8. Conclusion

“People are the real wealth of a nation.” - with these words the 1990 Human Development Report began a forceful case for a new approach to thinking about development (UNDP, 2010). The objective of development is to create an environment in which people could enjoy long, healthy and creative lives. Unfortunately, access to assets, education, health system and governance is not equal among citizens in most countries in the world, what remains a major barrier to human development.

Gender equity is considered one of the most important dimensions of human development. Still women are systematically denied freedoms, opportunities and disadvantaged in the political arena at all levels of government. In order to track how situation of women in societies changes over time and capture in which areas improvement is still necessary, a composite index to measure and monitor gender inequality is needed. The Gender Inequality Index captures three important

dimensions for women – reproductive health, empowerment and labour market participation in one synthetic index. Single summary numbers allow facilitate comparisons across time and countries and also identify key dimensions of gender disparities.

The Gender Inequality Index is based on indicators, which are quite comparable at a global level. As a result, the GII is calculated for 138 countries around the world, covering all regions and countries with different value of HDI. From the obtained results we can conclude that gender inequalities appear in all countries and regions, but with significant variation. What more, these disparities actually reduce human development achievements and the estimated global loss due to gender inequality is 56 percent (UNDP, 2015).

Situation of women in Poland in the last few years cannot be evaluated unambiguously. In general, we are seeing sustained improvement in most of areas. In analyzed period both Maternal Mortality Ratio and Adolescent Fertility Rate in Poland were falling constantly. Health Index staying at very low level signify high status of women in polish society, good access to healthcare and education. The parliamentary representation of women is far away from total equality, but is constantly improving.

On the other hand, the gap in labour force participation between women and men is smaller than the world average, but it is still over 15 percentage points. Moreover, the gender gap in this dimension did not improve over time and stayed more or less at the same level in past few years. The gap in attainment at secondary and higher education is still in favour of men and unfortunately this difference is rising. Furthermore, the estimated income of women is lower than of men, which implies worse economic status of women.

To sum up, in the particular analyzed areas, situation of polish women is similar or better in comparison to the world. Unfortunately, not in all indices improvement can be observed and the distance to the leaders is rising.

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Wskaźniki równości płci w Programie Rozwoju ONZ

Streszczenie

Raporty Rozwoju Społecznego (Human Development Report) publikowane przez agendę Organizacji Narodów Zjednoczonych zajmującą się Planowaniem Rozwoju (United Nations Development Programme - UNDP) wprowadziły nowe wskaźniki, których celem jest mierzenie zmian zachodzących w poszczególnych krajach w zakresie walki z ubóstwem i równouprawnienia kobiet: Inequality-adjusted Human Development Index (IHDI), Multidimensional Poverty Index (MPI), Gender Inequality Index (GII), Gender Development Index (GDI). Artykuł wymienia i komentuje dostępne oszacowania GII oraz GDI dla Polski, które uzupełniono szczegółową analizą poszczególnych składowych tych indeksów. Celem artykułu jest ocena szybkości i kierunku zmian zachodzących w Polsce, które mają doprowadzić do równości płci.

Słowa kluczowe: Wskaźnik Rozwoju Społecznego, gender, nierówności.