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CONSIDERATIONS ON WAYS OF CALCULATING THE INDEX OF WOMEN'S PARTICIPATION IN THE POLITICAL, ECONOMIC AND SOCIAL LIFE

1. Introduction

Lately, there has taken place a transfer of interest from synthetically indices of economic results to indices that reflect more closely the standard of living and the freedoms the population enjoys. If from a historical point of view the economic aspects have played a crucial role in the evolution of the human race, nowadays one can no longer consider the social, political and cultural circumstances to hold a subjacent role. Although the economic component is the key factor of human development, the other elements are also playing an even more important part. In 1946, Dimitrie Gusti made the following statement in his work "Sociologia militans-cunoaştere şi acţiune în serviciul naţiunii" (Militans Sociology – Knowledge and Action in the service of the nation): "*Whenever a society neglects the spiritual factors in favor of the economic ones or develops the economic factors to the disadvantage of the political ones and so on, necessity will lead to unbalance, and the complete elimination of one of the manifestations will lead to its destruction.*" Humans, consequently, do not exhibit existential needs only. D. Gusti emphasized the existence of two types of fundamental needs – material and spiritual – which entail the existence, in any social-economic system, of economic and spiritual manifestations, the latter including the religious, artistic, the scientific ones, and others.

Human development focuses on a multitude of aspects, ranging from economic growth and population employment, to the equality of sexes, environment protection and individual freedoms. The problem of equal opportunities for both sexes in social life is ever more topical, as it is a prerequisite for the construction of a society based on the respect of the fundamental human rights.

An. Inst. cerc. ec. „G. Zane", t. 10–11, Iaşi, 2001–2002, p. 31–49

In describing the complexity of reality and presenting it in a synthetical form, a major role is played by the index of human development. This is a relative amount, frequently subunitary, which results from aggregating four elementary indices, the minimum and maximum limits of which are established by the United Nations Development Programme as follows [2]:

– life expectancy at birth: 25–85 years;
– literacy rate: 0–100 %;
– combined gross enrolment ratio: 0 % and 100 %;
– GDP per capita 100 – 40,000 USD.

The need for information and measurement has led to the emergence of four synthetically indices characterizing human development:

– *the human development index* (HDI);
– *the gender-related development index* (GDI);
– *the women's participation index* (WPI);
– *the human poverty index* (HPI).

The object of this paper is the gender empowerment index, abbreviated as GEI. This reflects the way in which men and women enjoy the right to participate in, and acquire decision-making positions in the economic, political and social fields.

The calculation methodology is focused on the inequalities between the sexes. Consequently, the population will be structured in two main groups: *male subpopulation* and *female subpopulation.*

Aggregating an indicator that derives from this classification, by means of an arithmetic average will effectively mean ignoring the problems of distribution. Such an average fails to capture the differences between distinct population groups, here, women and men. Generalising, we will have to consider other gaps between social classes, between urban and rural populations, between regions, etc., therefore not only between two subpopulations.

Let us analyse the following example: in order to express inequality between the sexes, the pair (R_f, R_m) will be taken into consideration. It represents:

R_f = the achievements (results) of the female population;
R_m = the achievements (results) of the male population.

Considering three countries, C_1, C_2, C_3, having the following values of the literacy rates:

$C_1(0.67; 0.93)$, $C_2(0.70; 0.90)$, $C_3(0.75; 0.85)$.

This example will hierarchically classify the countries according to the inequalities between the two sexes, taking into account a constant average. Aggregating for each country by means of an arithmetic average, the values

will be $C_1(0.80)$, $C_2(0.80)$, $C_3(0.80)$, that is an equality relation between them. No one could claim that results in C_1 are superior to those in C_2 or C_3. However, there are considerable differences between these countries, regarding the achievements, and the literacy rate, respectively.

One will note in C_1 the highest levels of inequality between the two sexes, while in C_3 they take the lowest value. However, taking into consideration a fourth country C_4 with a 0.75 average, decomposed according to the two sexes as follows : (0.72; 0.78), one can note that C_4 is inferior to C_1 both from the point of view of average indicator and from that of the inequality between the two sexes. Can assess the county which holds the superior position?

This is why a specific way is proposed for calculating such indicators, which should emphasise inferior results and a certain average of the order $1-\delta<1$ ($\delta>0$).

R_f and R_m are the corresponding results of the feminine population and the male population respectively, and n_f and n_m the number of women and men in the respective populations.

The average results index is expressed by the following relation:

$$\overline{R}=\frac{n_f R_f+n_m R_m}{n_f+n_m}\Rightarrow \qquad (1)$$

$$\overline{R}=f_f R_f+f_m R_m$$

where: $f_f=\frac{n_f}{n_f+n_m}$ - represents the weights of the female population in the total researched population;

$f_m=\frac{n_m}{n_f+n_m}$ - represents the weights of the male population in the total researched population.

The new proposed manner of aggregating human results takes the form:

$$\widetilde{R}=\left[\sum_{k=1}^{n} f_k R_k^{1-\delta}\right]^{1/(1-\delta)} \qquad (2)$$

in which:

- $\widetilde{R}$ is an indicator measuring the inequality in human development in a specified field;

– f_k – the weight of population k in the total researched population (relative frequency);

– R_k – the rate of the indicator for population k in the respective field;

– δ – expresses the *preference for equality* of the evaluation function (aversion to inequality);

– n the number of populations taken into account.

Notice that the function takes the form of an average of the order (1–δ).

Relating the aggregation function to the arithmetic average and its components, one gets the following results:

– $\tilde{R} \leq \overline{R}$ pentru $\delta > 0$

– $\tilde{R} = \overline{R}$ pentru $\delta = 0$

– $R_f \leq \tilde{R} \leq R_m$

when one deals only with female and male populations.

As it can be noticed, an important role in the calculation of this function is played by δ (the preference for equality). Synthetically, the influences exerted by δ can be grouped as follows:

l) In case $\delta = 0$ there results an arithmetic average

$$\tilde{R} = \sum_{k=1}^{n} f_k R_k \tag{3}$$

2) In case $\delta = 2$ there results a harmonic average

$$\tilde{R} = \left[\sum_{k=1}^{n} f_k R_k^{-1}\right]^{-1} = \frac{1}{\sum_{k=1}^{n} f_k R_k^{-1}} = \frac{1}{\sum_{k=1}^{n} f_k \frac{1}{R_k}} \tag{4}$$

3) For $\delta \to 1$ there results a geometrical average

$$\log \tilde{R} = \sum_{k=1}^{n} f_k \log R_k \tag{5}$$

4) Taking into account the extremes the following results are obtained:

a) For $\delta \to 0$ – one gets close to the arithmetic average in which the greatest influence on the formation of the indicator is held by the high weight populations (in case there is only R_m and R_f, for $\delta \to 0$ and $R_f \to 0$ then $\tilde{R} \to R_m$).

b) The more $\delta \to \infty$ the more – the influence of low weight populations increases → we amplify the value of inequalities (in case there is only R_m and R_f, for $\delta \to \infty$ then $\tilde{R} \to R_f$).

2. The index of women's participation in the economical, social and political life

The index of women's participation in the economical, social and political life is determined starting from the calculus of certain explicitly defined variables to measure the control men and women exert in these domains, as the average of 3 indicators:

– participation in political (parliamentary) decision-making indicators (I_{PDP});

– participation in economic decision-making indicator (I_{PDE});

– labour income indicator (I_{VM}).

The final form of the index of female participation shall be:

$$IPF = \frac{I_{PDP} + I_{PDE} + I_{PVM}}{3} \tag{6}$$

All these indicators grouped according to fields of activity, used when calculating the IPF, must reflect the participation and the acquisition of decisional power.

In the present case there are two subpopulations: the male and female subpopulations.

Each indicator will have the form:

$$I_k = \left[f_f . R_f^{1-\delta} + f_m . R_m^{1-\delta} \right]^{\frac{1}{1-\delta}} \Leftrightarrow I_k = \left[\frac{1}{\frac{f_f}{R_f^{\delta-1}} + \frac{f_m}{R_m^{\delta-1}}} \right]^{\delta-1} \tag{7}$$

where $k = \overline{1,3}$ (three specific indicators).

For the calculation of index, value 2 is used to express the aversion to inequality:

$\delta = 2$.

The final form will be a harmonic average.

$$I_k=\left[f_f.R_f^{-1}+f_m.R_m^{-1}\right]^{-1} \Leftrightarrow I_k=\frac{1}{f_f\cdot\frac{1}{R_f}+f_m\cdot\frac{1}{R_m}} \quad (8)$$

As all these indicators reflect different realities, and are usually expressed in different measurement units, it is absolutely necessary to achieve normalization according to the maximal and minimal preestablished values. By means of this operation, indicators without concrete dimension will be obtained, taking values between 0 and 1.

In view of the fact that the higher the indicator the better their value is, normalization will be performed according to the formula below:

$$I_{k-normalizat}=\frac{I_k-I_k^{min}}{I_k^{max}-I_k^{min}} \quad (9)$$

where: – I_k level of k indicator;
– I_k^{min} – miminal level of k indicator;
– I_k^{max} – maximal k indicator;
– $k=\overline{1,n}$, n=3 in the current case.

Note: – $I_{normalised} \in [0, 1]$;
– if I_k tends to the maximal value then $I_{normalised} \rightarrow 1$;
– if I_k tends to the minimal value, then $I_{normalised} \rightarrow 0$.

3. The Index of Participation in Parliamentary/Political Decision-Making (I_{PDP});

This indicator takes into account women's participation in the political life only at the highest level – the Parliament of Romania. *This reflects only the direct participation in political decision-making.* It is worth noting that participation in political decision-making can be achieved at other levels too (leadership of parliamentary parties, party territorial branches, city and county councils).

The proportion of gender representation in Parliament will therefore be considered. These values, as stated earlier, are weighted with the proportion of population grouped by sex from the whole population.

An obvious suggestion would be to take into account only the population legally entitled to vote and participate in the political life (aged 18 or more). For example, in the year 2000, after the elections the proportions of the subpopulation grouped by sex from the population and from the parliament took the values:

- f_f weight of the female subpopulation in the population total (0.511);
- f_m weight of the male subpopulation in the population total (0.489);
- R_f representation of the female subpopulation in Parliament (9.7%);
- R_m representation of the male subpopulation in Parliament (90.3%).

Making due replacements in relation (8) one obtains:

$$I_{PDP} = \left[f_f . R_f^{1-\delta} + p_m . R_m^{1-\delta} \right]^{\frac{1}{1-\delta}} \Leftrightarrow I_{PDP} = \frac{1}{f_f \cdot \frac{1}{R_f} + f_m \cdot \frac{1}{R_m}} \quad (10)$$

As one can note I_{PPD} varies between 0-50% ($I_{PDE} \in [0\%, 50\%]$).

For the year 2000 the value of this indicator is:

$$I_{PDP} = \frac{1}{0.511 \frac{1}{9.7} + 0.489 \frac{1}{90.3}} = 17.21\%$$

Normalization will be achieved respecting the relation (9), obtaining:

$$I_{PDP-normalizat} = \frac{I_{PDP} - 0}{50\% - 0} = 0.344$$

Following the historical evolution of this indicator one notices an improvement of the participation in political decision-making owing to the rise in female representation after the 2000 elections as compared to 1995 (0.151) and 1998, respectively (1.97).

If these indicators were calculated only in relation to the Romanian population having the right to vote, then the results recorded for the year 2000 would be:

$$I^*_{PDP} = \frac{1}{0.516 \frac{1}{9.7} + 0.484 \frac{1}{90.3}} = 17.21\%$$

Table 1

Calculation of I_{PDP} (1995, 2000)

Indicators	Years			
	1995	1995*	2000	2000*
Female representation in Parliament (%)	4	4	9.7	9.7
Male representation in Parliament (%)	96	96	90.3	90.3
The weight of the female population in the total population	0.510	0.516	0.511	0.518
The weight of the male population in the total	0.490	0.484	0.489	0.482
I_{PDP}	7.547	7.455	17.21	17.036
$I_{PDP\text{-}normalised}$	0.151	0.149	0.344	0.340

Source: The Statistics Annuary of Romania, 2001, Bucureşti, 2002

* Only the citizens aged 18 or above were taken into consideration

As can be noticed, there has been an improvement of the rate of the index of both female and male participation in political decision-making after the 2000 elections. The evolution of this indicator is closely related to the evolution of the weight of the number of women in parliament, any improvement of this indicator bringing about a rise in the I_{PDP}. At the same time, the value of this indicator depends on the reference population taken into account (see Table 1).

A. Index of Participation in Economic Decision-Making (I_{PDE})

The calculation of this indicator will take into account the separation of the population by sex, in the total of senior public officials and senior staff in economic and social units, on the one hand, and on the other hand, in the number of specialists with intellectual and scientific preoccupations. Two amounts will be considered which will be aggregated by an arithmetic average to obtain the index of the participation in economic decision-making (I_{PDE}).

a) The indicator expressing the participation by sexes among the senior civil officials and senior staff of social and economic units ($I^{(1)}_{PDE}$). This indicator can also be regarded as representing the participation in high-level decision-making.

For example, in 2000, the starting values:

R'_f = representation of female population among the senior staff in public administration and economic and social entities (28.32%).

R'_m = representation of male population among the senior staff in public administration and economic and social entities (71.7%)

The resulting formula is:

$$I^{(1)}_{PDE} = \left[f_f \cdot \left(R'_f\right)^{1-\delta} + f_m \cdot \left(R'_m\right)^{1-\delta}\right]^{\frac{1}{1-\delta}} \Leftrightarrow I^{(1)}_{PDE} = \frac{1}{f_f \cdot \frac{1}{R'_f} + f_m \cdot \frac{1}{R'_m}} \quad (11)$$

$I^{(1)}_{PDE}$- takes values between [0%, 50%], while the percentage is the unit of measurement.

The calculation for the year 2000 will yield the following result:

$$I^{(1)}_{PDE} = \frac{1}{0.511\frac{1}{28.3} + 0.489\frac{1}{71.7}} = 40.2\%$$

Making the transformation one obtains:

$$I^{(1)}_{PDE-normalizat} = \frac{I^{(1)}_{PDE} - 0}{50\% - 0} = 0.804$$

As compared to the years 1995(0.696) and 1998(0.725), respectively, this indicator has seen a considerable rise, a deviation due mainly to the rise of the weight of the female subpopulation in this field.

As with the preceding indicator, f_m and f_f represent the weights of the male and female subpopulations respectively, in the total population. A more accurate image of the actual situation could be obtained if only the active population was being referred to, in our case the population aged between 15–64.

Table 2

Calculation of I^{1}_{PDE} (1995, 2000)

Indicators	Years			
	1995	1995*	2000	2000*
Representation of women among senior civil officials (%)	22.8	22.8	28.3	28.3
Representation of men among senior civil officials (%)	77.2	77.2	71.7	71.7
The weight of females in the population total	0.510	0.502	0.511	0.503
The weight of males in the population total	0.490	0.498	0.489	0.497
$I^{(1)}_{PDE}$ (%)	34.841	35.1	40.198	40.474
$I^{(1)}_{PDE\text{-}normalised}$	0.696	0.702	0.804	0.809

Sursa: The Statistics Annuary of Romania, Bucharest , 2002

* Only the population aged 15 to 64 years was taken into consideration

Although $I^{(1)}_{PDE}$ had an oscillating evolution between 1995-2000, one can notice an improvement of female representation among the senior staff of public administration and in economic and social units (from 22.8% in 1995 to 24.2%, to in 1998 and 28.3% in 2000 respectively), which lead to the increase of the index from 34.84% in 1995 to 40.474% in 2000. If only the population aged 15-64 is taken into consideration, an improvement of the rates of this indicator both in 1995 and 2000 can be noted. (See Table 2)

b) The indicator expressing the distribution by sex among the specialists with intellectual and scientific occupations ($I^{(2)}_{PDE}$). This indicator signifies the participation in decision making at a lower hierarchical level.

For example, in the year 2000:

– R''_f is the rate of representation of the female subpopulation among the specialists having intelectual and scientific preoccupations. (50.3%)

– R''_m is the rate of representation of the male subpopulation among the specialists having intelectual and scientific preoccupations (49.7%).

Making the replacements in formula (8) one obtains:

$$I^{(1)}{}_{PDE} = \left[f_f \cdot \left(R^*_f\right)^{1-\delta} + f_m \cdot \left(R^*_m\right)^{1-\delta}\right]^{\frac{1}{1-\delta}} \Leftrightarrow I^{(1)}{}_{PDE} = \frac{1}{f_f \cdot \frac{1}{R^*_f} + f_m \cdot \frac{1}{R^*_m}} \quad (12)$$

$I^{(2)}{}_{PDE} = [0.489 \times 49.7^{(-1)} + 0.511 \times 50.3^{(-1)})]^{-1} = 50\%$

By applying formula (9) one obtains the normalized index of the participation at a hierarchically lower level of decision-making.

$$I^{(2)}{}_{PDE\text{-normalised}} = \frac{I^{(2)}{}_{PDE} - 0}{50\% - 0} = 1$$

Table 3

Calculation $I^{(2)}{}_{PDE}$ (1995, 2000)

Indicators	Years			
	1995	1995*	2000	2000*
Female representation among specialists …(%)	46.2	46.2	50.3	50.3
Male representation among specialists…(%)	53.8	53.8	49.7	49.7
The weight of women in the total population	0.510	0.502	0.511	0.503
The weight of men in the total population	0.490	0.498	0.489	0.497
$I^{(2)}{}_{PDE}$ (%)	49.639	49.691	49.992	49.992
$I^{(2)}{}_{PDE\text{-normalised}}$	0.992	0.994	1	1

Source: The Statistics Annuary of Romania 2001, Bucharest, 2002

* Only the population aged 15-64 years was taken into consideration.

In the calculation of this indicator one notices a higher weight of women's participation, even exceeding the number of men in the year 2000. By the calculation method, this will have varying influences on the participation index. One notices that the same increase in the weight of female participation does not bring about considerable changes in the value of the index.

The aggregated index of the participation in the economic decision is obtained by calculating the arithmetic average of the index at a superior hierarchic level and the participation index at an inferior hierarchical level:

$$I_{PDE} = \frac{I^{(1)}_{PDE} + I^{(2)}_{PDE}}{2} = \frac{0.804 + 1}{2} = 0.902 \quad (13)$$

Comparing the data in the next table we will notice an improvement of women's participation in the economic decision-making process owing to the increase of women's representation among senior officials in public administration and social and economic units. ($I^{(1)}_{PDE}$).:

Table 4

Calculation of I_{PDE} (1995, 2000)

Indicators	Years			
	1995	1995*	2000	2000*
$I^{(1)}_{PDE\text{-normalised}}$	0.696	0.702	0.804	0.809
$I^{(2)}_{PDE\text{-normalised}}$	0.992	0.994	1	1
$I_{PDE\ (average\ of\ the\ two\ indicators)}$	0.845	0.848	0.902	0.905

B. The labor income indicator (I_{VM})

In order to express incomes, the Gross Domestic Product per capita ($PIB_{T/I}$) was considered in relation with the purchase power parity (PPC). The calculated indicator must take into consideration the incomes made both by the female and by the male subpopulations on per capita average.

As at present, there are no official statistics on the GDP per capita (at purchase power parity) for both women and men, this indicator being calculated for the whole population of a whole country, one needs to resort to a mathematical artifice.

The GDP will be distributed proportionally for the two population categories, by taking into consideration the *shares of labor income*

$$PIB_T = PIB_f + PIB_m \quad (14)$$

where : – PIB_T the GDP per country,

– PIB_f, PIB_m - the GDP per country achieved by the female and male subpopulation, respectively.

Through division by PIB_T the relation (14) becomes:

$$1 = \frac{PIB_f}{PIB_T} + \frac{PIB_m}{PIB_T} \Leftrightarrow \quad (15)$$

$$1 = V_f + V_m$$

$$V_f = \frac{PIB_f}{PIB_T}$$

where: (16)

$$V_m = \frac{PIB_m}{PIB_T}$$

represent the shares in labor incomes corresponding to the female and male subpopulations, respectively. In estimating the share in labor income, one starts from the formula of the total wages, which is the multiplication of the average wages (S) and the number of the active population (P_a).

$$S_t = S \cdot P_a \tag{17}$$

Having in view the active female and male subpopulations, the analytical formula for the calculation of the total wages is:

$$S \cdot P_a = S_f \cdot P_{fa} + S_m \cdot P_{ma} \tag{18}$$

in which: – S_f, S_m – the average wages of the female and male subpopulations, respectively, earned from non-agricultural activities;

– P_{fa}, P_{ma} – the number of the active female and male subpopulations, respectively.

In the relation (18) through division by with the product $S \cdot P$ the relation obtained shall be:

$$\frac{S_f \cdot P_{fa}}{S \cdot P_a} + \frac{S_m \cdot P_{ma}}{S \cdot P_a} = 1 \Leftrightarrow \tag{19}$$

$$V'_f + V'_m = 1$$

where:

$V'_f = \frac{S_f \cdot P_{fa}}{S \cdot P_a}$ estimator for v_f; $V'_m = \frac{S_m \cdot P_{ma}}{S \cdot P_a}$ estimator for v_m

In view of the fact that the value of the average wages earned by the female and male subpopulations, respectively, from non-agricultural activities, is obtained by polling, the relation (19) shall be more accessible if it is used as follows:

$$V'_f = \frac{S_f \cdot P_{fa}}{S_f \cdot P_{fa} + S_m \cdot P_{ma}} \tag{20}$$

which by reduction to the product $S_m P$ becomes:

$$V'_f = \frac{\frac{S_f}{S_m} \cdot p_{fa}}{\frac{S_f}{S_m} \cdot p_{fa} + p_{ma}} \qquad (21)$$

where: – p_{fa}, p_{ma} – the weight of the active female and make subpopulations, respectively, in the total active population ($p_{fa} = \frac{P_{fa}}{P_a}$, $p_{ma} = \frac{P_{ma}}{P_a}$);

– $\frac{S_f}{S_m}$ - the relation between the average female wages and the average male wages obtained from non-agricultural activities.

In the case of the example taken, for the year 2000 the data are:

$$S_f/S_m = 0.823$$
$$p_f = 0.483$$

Consequently the relation (21) will become:

$$V_f = (0.823 \cdot 0.483)/[(0.823 \cdot 0.483) + 0.517] = 0.435$$

Calculating these rates for the years 1995-1998 the following table results:

Table 5

Calculation of I_{VM} in the period 1995-2000*

Indicators	Years					
	1995	1996	1997	1998	1999	2000
S_f/S_m	0.792	0.808	0.745	0.785	0.819	0.823
The weight of females in the total active employeed population	0.463	0.47	0.465	0.472	0.483	0.483
The weight of males in the total active employeed population	0.537	0.53	0.535	0.528	0.517	0.517
Vf	0.406	0.417	0.393	0.412	0.433	0.435
$PIB_{f/l}$	4854	5399	4946	4969	4617	4706
$PIB_{m/l}$	7385	7839	7959	7389	6302	6398
I_{VM}	**0.144**	**0.157**	**0.150**	**0.146**	**0.131**	**0.133**

*Sursa: National Report on Human Development - România 2000

Having in view the fact that one starts from $PIB_{T/l}$ at PPC, one needs to calculate the GDP for the whole population (PIB_T - see relation (14)):

$$PIB_T = PIB_{T/l} \cdot P_T = 5533.4 \text{ x } 22.4 \text{ mil.} = 124142. \text{ mil.USD PPC}$$

where P_T-represents the total population.

PIB_T is distributed by the sexes by resorting to the shares in labour incomes earned by the two subpopulations, PIB_f şi PIB_m, respectively, starting from relation (16):

$$V_f = \frac{PIB_f}{PIB_T} \Rightarrow PIB_f = V_f \cdot PIB_T \Rightarrow$$

$$PIB_f = 0.435 * 124143 = 53961 \text{ mil.USD}$$

From relation (14) one obtains: $PIB_m = PIB_T - PIB_f = 70182\text{mil.USD}$

In order to calculate the indicator of labour incomes, one has to take into account the GDP per capita for women ($PIB_{f/l}$) and men $PIB_{m/l}$) in relation with PPC (Purchase Power Parity)

$$PIB_{f/l} = \frac{PIB_f}{P_f} = = \frac{53961\text{milUSD}}{11.46\text{mil}} = 4706\text{USD/loc}$$

$$PIB_{m/l} = \frac{PIB_m}{P_m} = \frac{70182\text{milUSD}}{10.96\text{mil}} = 6398\text{ USD/loc}$$

where: P_f, P_m represent the total female and male subpopulations respectively.

The measurement unit is USD/per capita for the two indicators. Normalisation is achieved according to relation (9), as follows:

$$I_{f/l\text{ -normalised}} = \frac{PIB_{f/l} - val.\min}{val.\max. - val.\min} = \frac{4706 - 100}{40000 - 100} = 0.115$$

$$I_{m/l\text{ -normalised}} = \frac{PIB_{m/l} - val.\min}{val.\max. - val.\min} = \frac{6398 - 100}{40000 - 100} = 0.157$$

where : $-I_{f/l\text{ normalised}}$ – represents the indicator of women's labour incomes, and $-I_{m/l\text{ normalised}}$ – represents the indicator of men's labour incomes.

The calculation of the labour income equally distributed is made according to the relation (8):

$$I_{VM} = \left[f_f . R_f^{1-\delta} + f_m . R_m^{1-\delta}\right]^{\frac{1}{1-\delta}} \Leftrightarrow I_{VM} = \frac{1}{f_f \cdot \frac{1}{R_f} + f_m \cdot \frac{1}{R_m}}$$

where: $R_f = I_{f/l\text{-}normalizat}$

$R_m = I_{m/l\text{-}normalizat}$

For the year 1988 the formula is:

$$I_{VM} = \frac{1}{0.511\frac{1}{0.115} + 0.489\frac{1}{0.157}} = 0.133\%$$

One notices a reduction of the index of income shares, which is justified by the downward trend of the national GDP per capita (see Table 5).

C. The synthetic index of women's participation in the political, economic and social life (IPF)

The index is calculated as arithmetic average of the three indicators, which are the participation in parliamentary/political decision-making, the participation in economic decision-making and the labor income indicator respectively.

$$IPF = \frac{I_{PDP} + I_{PDE} + I_{VM}}{3} \qquad (22)$$

In our case for the year 2000 the result is:

$$IPF = \frac{0.197 + 0.863 + 0.088}{3} = 0.382$$

The annual evolution of this indicator reveals a considerable increase in the year 1996 followed by a decrease in the years 1997 and 1998.

Table 6

Calculation of the IPF (1995, 2000)

Indicators	Years			
	1995	1995*	2000	2000*
I_{PDP}	0.151	0.149	0.344	0.340
I_{PDE}	0.845	0.848	0.902	0.905
I_{VM}	0.144	0.144	0.133	0.133
IPF	**0.380**	**0.380**	**0.460**	**0.459**

*Indicators calculated in relation to the population specific to the field

This indicator, according to its authors, is liable to emendations. It has to reflect the inequities existing between the female and male subpopulations of a country in the circumstances of the need for standardization and for ensuring international comparability.

The calculation methodology is focused on the inequalities between the sexes. One deals with a distribution of the population in two big groups: *male subpopulation and female subpopulation.*

A personal approach consists in structuring on hierarchical levels of the population considered in the calculation of the indicators of participation in the political and economic decision-making, respectively. In the case of the participation in the political field a single hierarchical indicator is considered, whereas for the participation in the economic life both the superior and inferior hierarchical levels, having the same weight, are specified.

Taking into account a population structured on two hierarchical levels, the indicator will be a weighted arithmetic average of the following type:

$$I_k = \frac{I^{(1)}{}_k \cdot \nu^{(1)} + I_k^{(2)} \cdot \nu^{(2)}}{\nu^{(1)} + \nu^{(2)}} \qquad (23)$$

in which: $I^{(1)}{}_k$, $I_k^{(2)}$ represent the index of the total k field, and on hierarchical levels respectively;

– $\nu^{(1)}, \nu^{(2)}$ represent the importance assigned to hierarchical level, 1 and 2, respectively.

In the first case, if we also consider, besides the participation in the higher levels of the political life (in Parliament) and the activities at a hierarchically inferior level (in the government, central institutions, local councils, party branches in the territory, the actual party-membership figures, including the participation in election) then relation (23) becomes:

$$I_{PDP} = \frac{I^{(1)}{}_{PDP} \cdot \nu^{(1)} + I^{(2)}{}_{PDP} \cdot \nu^{(2)}}{\nu^{(1)} + \nu^{(2)}}$$

in which:

– $I^{(1)}{}_{PDP}$ represents the participation in the political life at the upper hierarchical level;

– $I^{(2)}{}_{PDP}$ represents the participation in the political life at the lower hierarchical level;

– $\nu^{(1)}, \nu^{(2)}$ the weight assigned to the superior level (1), and the inferior one (2), respectively.

In this form the indicator is more difficult to determine yet it offers more accurate data on the real political life of a particular country.

In calculating the indicator that illustrates the participation in the economic life $I_{PDE\ two}$ different hierarchical levels are taken into consideration (see relation (13)), but their importance is equal, as follows: $\nu^{(1)} = \nu^{(2)}$

If one considers different weights for hierarchical levels, the relations (13) and (23) become:

$$I_{PDE} = \frac{I^{(1)}{}_{PDE} \cdot \nu^{(1)} + I^{(2)}{}_{PDE} \cdot \nu^{(2)}}{\nu^{(1)} + \nu^{(2)}}$$

where:

- $I^{(1)}{}_{PDE}$ represents the participation in the economic life at a hierarchically superior level;
- $I^{(2)}{}_{PDE}$ represents the participation in the economic life at a hierarchically inferior level;
- $\nu^{(1)}, \nu^{(2)}$ the weight of the superior level (1), and of the inferior one (2), respectively.

4. Conclusions

In real life there are still great disparities between women and men, even though the Constitution guarantees the same rights for women as for men. As noticed, we cannot talk of equity when referring to female and male representation in the process of participation in and acquiring decision-making powers in the political, economic and social life. There is a specialization by sexes in various fields of activity of the national economy. Women are best represented in education, the health and social assistance system, as well as in financial, banking and insurance institutions. As far as rewards are concerned, women receive lower salaries, even in the fields where they form the majority.

In the political life, the female population is poorly represented (4% between 1998–2000). Participation in politic decision-making, has always been, and will probably remain for a long period, a men's field despite the existence of the universal voting system, and of expression and association rights guaranteed by the Constitution. This is due to mentalities, inflexible education, the lack of political tradition among women and for the whole population as a matter of fact.

The establishment of gender policies specific to every political, economic, social and cultural field and their implementation requires careful qualitative and quantitative analysis of human development, per total population and both sexes. An important role is played by women's participation in the political, economic and social life. This indicator, by the way it is calculated at present, only reflects the way in which women and men exert the right to participation in and to acquiring decision-making capacity in the economic, political and social fields. In other words, it expresses the way in which men and women take advantage of the opportunities provided by circumstances. Even though it is only a quantitative expression, this indicator allows the substantiation of qualitative conclusions regarding the level of human development.

This indicator must be correlated with the information provided by two other indicators: the human development index and the gender-related development index which, when put together complete the mass of information on human development.

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