SOME APPROACHES TO GENDER PROBLEM EXAMINATION IN REPUBLIC OF MOLDOVA[1]

Elvira NAVAL
Scientific Lecturer, PhD in Informatics,
Associated professor
Institute of Mathematics and Computer Sciences
„Vladimir Andrunachievici", Republic of Moldova
elvira.navalmail@gmail.com
elvira.navalmail@math.md
Tatiana COLESNICOVA
Leading scientific researcher,
PhD in Economics,
Associated professor
National Institute for Economic Research,
Republic of Moldova
ctania@gmail.com

Abstract

In this article four approaches to gender problem examination in Republic of Moldova were proposed and discussed. First of them is referred to Gross Domestic Product maximization in respect with women and men labor force used. Second approach deals with Mincer`s "Human capital earnings function" approach to evaluation of the budget employees from one research institute. Stat data about wages payments for all categories of employees were used. Third approach represents an attempt to apply Markov chain for gender problem solving. Diagonal transition matrix was constructed. Problem of eigenvalues finding was solved and national economy stability problem was discussed. And the last approach considers gender inequality based on the selected data from the questionnaire on

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gender problems. Five indicators, namely: the perception of existence of inequality in the workplace, gender, age, the level of education and the sector of economic activity were selected. Regression function was defined, estimated and analysed.

Key words: *Production function, optimization, man and woman budget employees, regression estimation, earnings evaluation, Markov chain, transition matrix, eigenvalues and eigenvectors, economic stability, gender questionnaire, labour demand and supply.*

JEL Classification: *C12, C61, C68, D91, D91, J16, J7.*

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1. Introduction

1.1. Mathematical modeling for the problem of women involving in the process of production on the same scale as men, ensuring sustainable economic growth in the Republic of Moldova was examined. Optimization model, based on production function dependent of two factors of production: capital and labor, the last being divided into women and men labor force was applied. Labor force was restricted both by number of employed and those unemployed respectively.

2.2. Women and men earning evaluation using state data about wages in some budget institutions have been realized. Two "human capital earnings function" – one for women and other for men – depending on years of learning, work experience, and few dummy variables were examined.

2.3. Markov chain theory for solving problem of middle term forecasting of women and men employment in production were applied. Markov chain and transition matrix were constructed based on salary data base for years 2008-2018. Three stage iterative algorithms based on initial data for eigenvalues finding were realized. The biggest eigenvalue determines to intermediate production expenditure. Constructed transition matrix was used for forecasting.

2.4. Questionnaire elaborated in the frame of the research on gender equality issues, placed online in free access. An impressive number of people of different gender, age, level of education and economic sector activity from different countries were involved in completing this questionnaire. Based on the responses presented on 28 positions, five indicators were selected and they

received binary values: one and zero. Regression analysis over results of a questionnaire was applied.

2. Degree of scientific approach and it reflections in the specialized literature

2.1. Problem of caring out of production function apparatus and their coefficients evaluation is largely studied both abroad and in our country [1-6]. The problems of women implication in the production, women and men implication in the labor force market, women discrimination in the labor market, analyzing gender problem in the Moldovan`s Short and Middle Enterprises are reflected in national scientific research and published in scientific journal recognized in the country and in the material of the national and international conferences. [7-11].

2.2. There are many publications, which related earnings to investment in education or training [13-24]. In his chapter: Education, Experience, and the Distribution of Earnings and Employment: An Overview [19], J. Mincer for the first time studied the effect of labor market experience or on the-job training on the determination and distribution of earnings. In [15] was noted that in the earnings equation investment in human capital can be separated into: schooling, on-the-job training and other human capital.

2.3. The problem of Markov chain apparatus application for forecasting and economic stability examination is largely studied at the international level [26-28,31-32], and too little at the national level [29]. While in the Republic of Moldova, Markov chain applying to the identification of the gender problem at the labor market employed is considered for the first time

2.4. The problem of applying the apparatus of regression functions with respect to the women and men implication in production processes and estimating its coefficients is widely researched both in the work of foreign economists: [1], [3], [4-7], as well as in the works of the economists from the Republic of Moldova. The issues of women's involvement in the production process, the participation of women and men in the labor market, discrimination of women in the field of employment, analysis of gender problems in Moldovan Small and Middle Enterprises are reflected in autochthonous scientific researches [8-14].

3. Data sources and methods utilized

3.1. Data presented by National Bureau of Statistics, Republic of Moldova [7], Statistic Bank, compartments: Social and Economic Statistics were used for enounced problem solution. Multiple Regression Analyses was used for production function coefficients estimation. And formulated nonlinear optimization problem has been solved using method of the Lagrange multipliers and Solver environment from Excel.

3.2. Mathematical modeling of the behavioral equation for women and men based on the Mincer`s "human capital earnings function" is presented. The coefficients of the behavioral functions have been estimated using regression toolkits. Data about women and men earnings, years of studying, work experiences and titles were collected from stat information from the one research institute. Hypotheses put forward are referred to those lies in regression coefficients estimation ground.

3.3. Data base elaborated by the author grounded at the data about women and men remuneration from one research institute was utilized. These dates were selected from the personnel states for the years 2008-2018. To forecast salary payments for women and men were utilized dates about work remuneration stating with year 2008 by twos. The method of structural changes based on the Markov chains was appealed. This iterative method was realized in Excel.

3.4. Questionnaire on gender equality at employment has been evolved in the internet open access and consist twenty tow questions only four from which were selected for the purpose of this paper. The data of the elaborated questionnaire were adapted to the binary data structure (0, 1) by combining insignificant indicators, the values of which surpassed two variants of response. In the proposed research: ordinary least squares method; multiple linear regression method; ANOVA method, Data Analysis/Regression application in Microsoft Excel were applied.

4. Statement of the problem and the obtained results

4.1. Suppose that Production function is of Cobb-Douglas type, namely as in formula 1:

$$F(K, L, L_2) = a * K^{\alpha} \cdot L_1^{\beta} \cdot L_2^{\gamma} \quad (1)$$

Here: L_1 is the labor force performed by the men, L_2 is the labor force performed by the women.

Coefficients a, α, β, γ express technical progress, capital contribution to the GDP formation, contribution of the women and men labor force to the GDP formation respectively. Using statistical data sample for capital and labor performed by both sexes throw sufficient large time period, examined coefficients a, α, β, γwere calculated by the help of regression analyses tool. With a view to doing this, production function will be presented in logarithms as follows:

$$ln\, F = ln\, a + \alpha \cdot ln\, K + \beta \cdot ln\, L_1 + \gamma \cdot ln\, L_2 \quad (2)$$

$$a = 1{,}1173; \alpha = 0{,}10618; \beta = 0{,}82755; \gamma = 0{,}07928$$

As production function is determined given evaluated parametersa, α, β, γ, we can pass to optimization problem formulation:

$$\max_{L_i} F(K, L_1, L_2) = 1{,}1173 * K^{0{,}10618} * L_f^{0{,}82755} * L_m^{0{,}07928} \quad (3)$$

$$L_f \le \overline{L_f},\ L_m = \overline{L_m},\ L_f + L_m \le \overline{L},\ K \le \overline{K} \quad (4)$$

It is clear that both women and men labor force are examined, as well as reserve from unemployed workers. At the same time capital volume don`t surpass pre-established level grounded by future investments.

$$\overline{L_f} = 24672845; \overline{L_m} = 32461523; L_f + L_m \le 57134369; K \le 228006718$$

Will be considered total labor force and women and men labor force separately – LnFtotal and LnFseparat.

lnFtotal = 0,5615 + 0,0907*lnK +0,9066*LnL
σ (0,9725) (0,0392) 0,0749)
t [0,5762] [23,1331] [1,3327]
R^2=0,9891; R^2_{adj}=0,9878; F =772,5

Table 1. Calculations results

Years	LnGDP	Lnfixed funds	Ln women	Lnmen	Ln GDPcalc.	LnGDP-Ln GDPcalc.
1995	15,68	16,90	14,12	14,25	15,73	-0,05
1996	15,87	18,41	14,28	14,41	16,03	-0,16
1997	16,00	18,50	14,37	14,50	16,13	-0,12
1998	16,03	18,49	14,39	14,52	16,14	-0,11

Years	LnGDP	Lnfixed funds	Ln women	Lnmen	Ln GDPcalc.	LnGDP-Ln GDPcalc.
1999	16,33	18,40	14,37	14,50	16,11	0,21
2000	16,59	18,33	14,69	14,81	16,39	0,20
2001	16,76	18,37	14,97	15,10	16,65	0,11
2002	16,93	18,43	15,21	15,34	16,88	0,05
2003	17,13	18,44	15,50	15,63	17,14	-0,01
2004	17,28	18,49	15,69	15,74	17,31	-0,03
2005	17,44	18,54	15,86	15,90	17,47	-0,02
2006	17,62	18,65	16,00	16,13	17,62	0,00
2007	17,79	18,74	16,16	16,28	17,77	0,02
2008	17,96	18,86	16,37	16,52	17,98	-0,02
2009	17,92	18,94	16,41	16,58	18,02	-0,10
2010	18,09	19,01	16,50	16,64	18,11	-0,02
2011	18,23	19,11	16,60	16,75	18,21	0,02
2012	18,30	19,16	16,73	16,88	18,33	-0,04
2013	18,43	19,24	16,81	16,95	18,41	0,01
2014	18,53	19,21	16,88	17,03	18,47	0,06

Source: author`s calculations

lnFseparat = 1,1173 + 0,10618*lnK +0,82755*LnLf+0,07928*LnLm
σ (1,0189) (0,0778) (0,8333) (0,8331)
t [1,0965] [1,3648] [0,9931] [0,09515]
R^2=0,9892; R^2_{adj}=0,9872; F =772,5

4.2. The impact of education and work experience on the income of budget employees will be examined. Education is considered as an investment in the stock of human skills or the formation of human "capital". Education can influence earnings rates, labor force participation, and the amounts of time worked expressed by the frequency and duration of unemployment and part-time employment [20-24].

The empirical analysis deals with annual earnings of males and females, classified by education and age of working for one of the academic institutes. First of all, the structure of scientific categories, were studied in order to obtain rate of females to males for each examined category.

$r_1 = F_i/M_i, r_2 = PSR_F/PSR_M, r_3 = CSR_F/CSR_M, r_4 = SR_F/SR_M,$ $r_1 = 41/55 = 0{,}745; \rightleftarrows r_2 = 1/10 = 0{,}1;$ $r_3 = 4/9 = 0{,}44;$
$r_4 = 15/12 = 1{,}25;$ $r_5 = 12/11 = 1{,}09; r_6 = 7/4 = 1{,}75$

$r_5 = ING_F/ING_M$ $r_6 = OTH_F/OTH_M$

So, in the examined research institute there are women less than men at about 25%, only one woman is principal scientific researcher, 44% are coordinate scientific researcher, but 125% of women hold scientific researcher position; 109% of women hold engineer position and 175% of women hold other functions. In such circumstances we do not conclude nothing referred to gender inequality because it institution is one very specific strictly connected to mental activity that mean sinking in it always and everywhere, while women at the same time must be researcher, housekeeper, child-rearing, and family keeper, and simply pretty woman. Fewer women succeed in doing this entire obligation. Solutions of these problems lay in other domain such as state implication in social policy.

In [11] there rate of return to schooling was determined as $r = \frac{ln\, w_2 - ln\, w_1}{\Delta h}$, where Δh is difference in skill and $w_2$and w_1 are the wage rate at higher and lower skill levels. Let w_2 is the wage of a worker with $s_2$years of schooling and $w_1$is the wage of a worker with s_1 then a simple human capital model can be $ln\, w_2 - ln\, w_1 = r(s_2 - s_1)$, r where is the rate of return to schooling. Suppose that$r = r_0 + \Delta r_0$ where r_0 is the market rate. Then, $ln\, w_2 - ln\, w_1 = r_0(s_2 - s_1) + \Delta r(s_2 - s_1)$. So, the elasticity of wealth with respect to the wage rate is$\Delta r/r \prec 1$.

Now, having data about earning from the stat institute data, and using previous formulas, can be obtained rate of return to schooling for women$ln\, w_2^F = 7{,}90 \quad ln\, w_1^F = 6{,}23 \quad \Delta h = 12$and then $r^F = 0{,}1393$or in percent's $r^F = 13{,}93\%$. $ln\, w_2^M = 7{,}90 \quad ln\, w_1^M = 5{,}73 \quad \Delta h = 12$and then $r^M = 0{,}18$or in percents 18,10%.

In that follow, the Mincer`s human capital earnings function will be applied for women and men and their coefficients will be estimated. As Mincer states, the logarithm of gross earnings in year t can be expressed as a linear function of year of schooling and quadratic function of years of labor market experience. This may be the main functional form in analyses of

earnings: Let E_i^M is men`s earnings and $E_i^F$ is women`s earnings, $S_i^M, \rightleftarrows T_i^M, \rightleftarrows S_i^F, \rightleftarrows T_i^F$ are years of schooling and years of potential post school labor market experience (age minus years of schooling minus six) for men and women accordingly, then formulas for men`s and women`s earnings are:

$$LnE_i^M = b_o^M + b_1^M \cdot S_i^M + b_2^M \cdot T_i^M + b_3^M \cdot (T_i^M)^2 + U_i^M \quad (1)$$

$$LnE_i^F = b_o^F + b_1^F \cdot S_i^M + b_2^F \cdot T_i^F + b_3^F \cdot (T_i^F)^2 + U_i^F, \quad (2)$$

here $E_i^M, \rightleftarrows E_i^F; \rightleftarrows\rightleftarrows S_i^M, S_i^F; \rightleftarrows T_i^M \rightleftarrows, T_i^F$ are earnings, years of schooling and years of potential post school labor market experience (age minus years of schooling minus six), b_i^F, b_i^M are the regression coefficients and it is assumed that U_i^M, U_i^f are a normally distributed homoscedastic residuals.

The empirical analysis deals with annual earnings of males and females, classified by education and age of working for one of the academic institutes.

1-st

	A	B	C	D	E	F	2018
a) *A*	*17,0623*					*0,0000*	*17,0623*
B		*20,2715*				*0,0000*	*20,2715*
C			18,3300			1,7280	20,0580
D				23,0550		0,0099	23,0649
E					6,5957	0,0000	6,5957
F						11,1447	12,9474
2016	18,8019	21,0452	18,3300	23,0550	7,6231	11,1447	100,00

Doing calculations needed following statistics for male and female:

1. *Earnings for person i in yearj*
2. *Years of schooling*
3. *Years of post school labor market*

There are some dummy variables:

4. *D1 refers to PhD title*
5. *D2 refers to doctor with habilitation title*
6. *D3 refers to administrative function*

Dummy variables D1, D2, D3 reflect additional payments for title and for administrative obligation.

lnMearn.=5,9345+0,1293*Sch +0, 0868*WorkExp-0,0014* WorkExp^2

σ (0,3263) 0,0467) (0,0064) (-0,00025)

t	[18,1837]	6,6206]	[0,4475]	[-0,2700]

R^2=0,806853; R^2_{adj}=0,65101; F =18,6543

lnFearnings = 6,2795+0,0667**Sch***+0,82755* *WorkExp-***

σ	(0,1406)	(0,0113)	(0,0079)	
t	[44,66]	[5,8948]		[0,2356]

-0,00024* WorkExp^2+0,1987*D1+0,2692*D2

σ	(0,00013)	(0,0692)	(0,8333)	(0,1314)
t	[0,1729]	[2,8701]	0,9931]	[2,0478]

R^2=0,946297; R^2_{adj}=0,895477; F =30,84

4.3. Annual salary volume for women and men during six years, beginning with year 2008 and ending with 2018 by two years, was examined and are extracting from the data base of examined research institute, and formed, both for women and men, square matrix of order six. In this matrix lines sum is equal to one and colon sum exceed much one unit. Let`s suppose that every examined year is referred to the moment state in which examined system is been. As known from the specialty literature [26-28], in some Markov chain, transition matrix is as such nature that all elements of it is less than one and column sum is strictly equal to one. So, principal goal is referred to transform our six order matrix to transition one, which will be used father for remuneration payments forecasting in accordance with gender affiliation.

In that follows, procedure of the transition matrix construction will be effectuated. For this purpose iterative algorithm in three stages will be used. Let`s start with first stage. First stage is constituted from six sub stages a) – e) on salary payments groups for men. At first, lines minimum will be placed at every constructed line. At the same time on the 2018 year column, line sum of the respective line is placed. And on the 2016 year line initial values are placed. At the b) sub stage, 2016 year values are compared with 2014 year value, as consequence, minimum from two compared values will be selected for respective position. Then, values of year 2012 are compared with the values of year 2010, following procedure described earlier. And at the last sub stage e) values from the year 2010 are compared with the values of year 2008, positioned on the respective line (2008 year line) minimal values between those two examined lines. Here, first stage is finished, and second stage is beginning, being constructed from only one sub stage.

Calculation results (women).

b)

	A	***B***	***C***	***D***	***E***	***F***	***2016***
A	18,5184					0,2835	18,8019
B		19,1620				1,8832	21,0452
C			18,3300			0,0000	18,3300
D				20,5905		2,4645	23,0550
E					7,6231	0,0000	7,6231
F						11,1447	11,1447
2014	18,5184	19,1620	21,4404	20,5905	8,9984	11,2902	100,00

c)

	A	B	C	D	E	F	***2014***
A	18,2924					0,2260	18,51843
B		19,1620				0,0000	19,16201
C			19,5620			1,8785	21,44044
D				19,2236		1,3669	20,59051
E					8,9984	0,0000	8,998393
F						11,0616	11,29021
2012	18,2924	20,6297	19,5620	19,2236	11,2307	11,0616	100,00

d)

	A	***B***	***C***	***D***	***E***	***F***	***2012***
A	18,2924					0,0000	18,29242
B		18,8297				1,8000	20,62971
C			18,3903			1,1717	19,56196
D				18,9210		0,3026	19,22361
E					11,2307	0,0000	11,23067
F						11,0434	11,06164
2010	20,7169	18,8297	18,3903	18,9210	12,0986	11,0434	100,00

e)

	A	***B***	***C***	***D***	***E***	***F***	***2010***
A	20,7169					0,0000	20,71695
B		13,3138				5,5159	18,82971

C			16,8986			1,4916	18,39029
D				18,9210		0,0000	18,92104
E					9,9904	2,1083	12,09863
F						8,4221	11,04338
2008	30,3452	13,3138	16,8986	21,0299	9,9904	8,4221	100,00

The second stage is reduced to summing all column values obtained on the previous sub stages of the first stage. In such a mode the new matrix which followed will be obtained.

2-nd stage

	A	***B***	***C***	***D***	***E***	***F***	
A	92,88252					0,509528	93,39205
B		90,73902				9,199089	99,93811
C			91,51089			6,269838	97,78073
D				100,7112		4,143849	104,855
E					44,4383	2,108262	46,54656
F						52,81661	52,81661

At the third stage every line element is divided on the sum of all line elements, in such a manner standardized to one matrix has been obtained.

Table 2. Standardized matrix: author`s calculations

3-d stage

	A	***B***	***C***	***D***	***E***	***F***
A	0,99454421	0	0	0	0	0,005456
B	0	0,9079521	0	0	0	0,092048
C	0	0	0,935879	0	0	0,064121
D	0	0	0	0,96048	0	0,03952
E	0	0	0	0	0,954706	0,045294
F	0	0	0	0	0	1

Table 3. Transition matrix: author`s calculations

	A	B	C	D	E	F
A	0,994544	0	0	0	0	0
B	0	0,907952	0	0	0	0

	A	B	C	D	E	F
C	0	0	0,935879	0	0	0
D	0	0	0	0,96048	0	0
E	0	0	0	0	0,954706	0
F	0,005456	0,092048	0,064121	0,03952	0,045294	1

So we have the matrix, all elements of which are less than one, representing five states of the some Markov chain with only one absorbing stage, the stage corresponding to the six lines. To obtain transition matrix, standardize matrix must be transpose and obtained matrix will satisfied all peculiarities of transition matrix: column sum be equal to one and all elements be less than one. It is known assertions as regards to transition matrix eigenvalues. Maximal eigenvalue $\lambda$of some diagonal matrix satisfies restriction$0 < \lambda < 1$. If some element of initial matrix is bringing up, then corresponding maximal eigenvalue is bringing up, and it decreases if some matrix element decreases. Maximal eigenvalue in our case is equal to one characterizing saturation state.

Table 4. Forecasting structure, year 2020 (women): author`s calculations

	2018	**2020**	**delta**
A	0,170623	0,169692	0,000931
B	0,202715	0,184055	0,018659
C	0,20058	0,187719	0,012861
D	0,230649	0,221534	0,009115
E	0,065957	0,06297	0,002987
F	0,129474	0,174028	-0,04455

Forecasts are calculated in accordance with the formula - $Sal_{2020} = P \times Sal_{2018}$. Here, ***P***is diagonal transition matrix, obtained applying iterative method of structural modifications. Forecasting results show that salary remuneration for women in 2020 year will decrease not meaningfully, namely: administration remuneration will remain the same, principal scientific researches payments will decrease about 1,8%; identically at about 1,28% will decrease scientific coordinate researches salaries; at the same

time, scientific researchers remuneration remain near to the same level; exception shows salaries payments for other categories, which increases about 4,4 %. Before starting with calculations for men, let set out analyses of the ratios between women and men salaries over examined categories. Real situation as regarding to women and men remuneration in accordance to examined categories is pictured in Table 6. In pursuance of the salary polices throw two years, one can ascertain that remuneration structure for the first category, decrease from 1,06 to 0,84, the same situation is certified for the principal scientific researcher category, it decreases from 0,78 to 0,62; instead, coordinative scientific researchers advanced from 0,77 to 0,93, excepting year 210; as regarding to remuneration of scientific researchers then it is not uniform touching maximal level of 1,45 and minimal level of 1,05, the last may be explain by fusion of the engineers to scientific researches; and the engineers remuneration fluctuates one better than those of the scientific researchers from 1,99 to 0,81, this is explained by increasing number of engaged in the years 2014-2012 from graduates. This is explained by the fact that these categories fusion from one category to other very slowly. What about ratio between women and men remuneration that it is in the detriment of women referred to more advanced categories but to women`s advantage at the weakly played categories. This phenomenon can be explained throw specific nature of the research domain which strongly depends on scientific degree and research results obtained. Nevertheless, to affirm surely gender discrimination existence in wages, this disparity can be motivated by women social obligation: family, child care and education. When women are held both by the family and by the society, she is amounted to the same scale as the men.

Because the same procedure will be applied to the men calculations, only forecasting results will be showed.

Table 4. Forecasting structure, year 2020 (men): author`s calculations

2018	**2020**	
Y2018	**P*Y2018**	**delta**
0,204042	0,205115	0,001072
0,327756	0,349857	0,022101
0,215171	0,229472	0,014302
0,158789	0,167322	0,008532

2018	**2020**	
Y2018	**P*Y2018**	**delta**
0,039888	0,043255	0,003367
0,054353	0,004979	-0,04937

Problem formulation and obtained results referred to the behavioral function constructing for gender problem evaluation of the women and men implications in the labor market of the Republic of Moldova.

Before formulating the problem of estimating the coefficients of the regression function for the dependent variable *the existence of inequality at the workplace* (ineq_labour) in relation to *age* (age), *education level* (educ_level), *gender* (gender), *economic sector* (sector) a short presentation of the gender questionnaire will be made.

It must be mentioned that about seven countries from the world have participated in this questionnaire.

Different scenarios were elaborated: by total: for Republic of Moldova, all countries, other countries and only for women and men for Republic of Moldova and other countries. In continuation behavioral function`s coefficients estimations for last from proposed scenarios will be presented. Further, in the Table 1, some example of the initial data presentation of the 4 independent variables for women and men encoded in the binary system are shown.

Table 1. Example of the initial data for women and men

Order number	WOMEN				MEN			
	ineq_labour	age	educ_level	sector	ineq_labour	age	educ_level	sector
1	1	1	1	1	1	1	1	0
2	1	1	1	1	1	0	1	0
3	1	0	1	1	1	1	1	0
4	1	0	0	1	0	1	1	0
5	0	0	1	0	1	1	1	0

Source: Elaborated by authors based on questionnaire data

Estimations of coefficients of the behavioral function (Figure 1) for women dependent on the same three factors as for men, i.e.: age, education level and sector of activity show us the influence of each factor on the issue

of inequality at work, as perceived by women. About 33% is due to age, 53.1% is the influence of the education level and about 31.3% is the impact of the sector of the activity.

Student statistics are between 0.05 - the significance level (for the sector) and the significance level of 0.005 for the remaining variables. Standard deviations are moderate. The selected behavioral function shows a high degree of compliance to statistical data.

Let`s show the calculation results for women and men in the framework of the selected data for Republic of Moldova (Figure1 and Figure2). In the following two tables calculations for this scenario have presented.

Men

ineq_labour = 0.2796*age +0.5973*educ_level+0.1834*sector

σ	(0.2047)	(0.1665)	(0.1796)
t	[1.3659]	[3.5871]	[1.0218]

R^2 =0.6725; R^2_{adj} =0,6063; F =17,109

Figure 1. Regression equation for male sample, 28 respondents from RM

Source: Elaborated by authors based on questionnaire data

Estimations of the coefficients of the behavioral function (Figure 1) for men that is dependent on three factors: age, education level and sector of activity show us the influence of each factor on the issue of men's perceived inequality at work.

Approximately 28% are due to age, almost 18% are the influence of the education level and approximately 59,7% is the impact of the activity sector. Student statistics are between the significance level 0.05 – one - in

front of education and the significance level 0.005 – two in front of two other coefficients, and standard deviations are sufficiently large.

Women

ineq_labour = 0.2756*age +0.2692*educ_level+0.4647*sector

σ	(0.0839)	(0.0818)	(0.064)
t	[3. 2837]	[3.2899]	[6.0791]

R^2=0.7753; R^2_{adj}=0,7591; F =102,3879

Figure 2. Regression equation for female sample, 92 respondents from RM

Source: Elaborated by authors based on questionnaire data

Estimations of the coefficients of the behavioral function (Figure 2) for women that is dependent on three factors: age, education level and sector of activity show us the influence of each factor on the issue of men's perceived inequality at work. Approximately 26,02% are due to age, almost 46,47% are the influence of the education level and approximately 31,1% is the impact of the activity sector. Student statistics are at the 0,05 level of the significance, and the standard deviations are sufficiently large.

***age women/men*=0.2756/0,20472=0.9856**
***educ_level women/men*=0.2691/0. 5973=0.4507**
***sector women/men*=0.4647/0.1834=2.5335**
synthetic indicator=(age women/men+educ_level women/men+sector women/men)/3=1,3232

Figure 3. Ratios based on estimated female and male coefficients of the proposed behavioral functions, 92 respondent sample for Republic of Moldova

Source: Elaborated by authors based on questionnaire data

These coefficients show that women involved in the economic activity, are approximately the same age with men, but women's level of education is the twice smaller than that of the men, and, what is very strange, women involved in the private and mixed (private and state) sectors activity is at 2,5 times more than men. In the, Figure10**,** the synthetic indicator

showing the weighted average between women and men is calculated according to the three indicators examined earlier and demonstrates that women involved in the economic activity are approximately at 1,3232 times than those of the men. It must be mentioned that this indicator for 202 respondents sample is equal to 0,8678and for 141 samples equal to 1,063.Therefore, we can conclude that in the Republic of Moldova in consequence of questionnaire results, women implication in the economic activity, especially in state sector, is better than those for total sample including all respondents., and the second reason owing to more women, involved in this process than men, and the third reason ii due to the fact that those men examined in this study have higher level of education the corresponding women.

5. Conclusions

5.1. Using Cobb-Douglas production function, optimization problem, restricted by capital and labor force, separated in women and men labor supply, was formulated and solved. Labor force dividing into women and men labor force; allow evaluating it contribution to Gross Domestic Product formation. Using statistic data production function coefficients were estimated. These coefficients values confirm known fact that Republic of Moldova is weak industrialized country, the main factor of production been labor force, especially women labor force. It must ascertain that a woman contribution to Gross Domestic Product forming is, in a large measure, is quantitative, while men are involved in more skilled work.

As conclusion, first of all, it must be necessary to increase quote of qualified women labor throw high technology implication in production with simultaneously women training in order to obtain new skill and calcification.

5.2. Effectuated calculus has demonstrated that women earnings are more uniform distributed between categories of the employees then that of the men earnings. Also women earnings are more depended on the scientific title. Because there are more doctors with habilitation between men, earning of the men are little great, but this is not consequence of gender inequality. It is reported to women mode of life (ability to work full time, dedicating oneself to scientific research, child rearing etc.). It must be mentioned that only one woman occupies position of the chief of department, but director of the institute and scientific secretary are women. Very little women obtain

local and foreign grants. But women are more responsible and more exacting in executing project and grant tasks.

5.3. Some iterative method of structural changes over evolution of the engaged salaries both women and men in the years 2018-2008 was studied. Using iterative procedure, diagonal transition matrix has been succeeded to construct. This matrix has such peculiarity that column sums are equal to one, and such matrix corresponds to one Markov chain with only one saturation state. Diagonal elements presented proper values of the transition matrix, reflecting intermediary consumption of the respective brunches. Forecasting for year 2020 (for women and men), in examined categories have been realized. Salary payments foreseeing for year 2020 suggested structural modification (for women), in special for all categories of the scientific researches and engineers to advantages of other categories less remunerated. At the same time salary payments foreseeing for men for year 2020 shows moderated increase for all categories of workers excepting other salary categories, number of which are in decrease, justified through crossing in other categories of scientific researchers. In such a manner, men demonstrate allege insistence for increased personal scientific level.

5.4. Research, based on the questionnaire respondent's answer, were done. First of all, in the extended sample for Republic of Moldova, women respondents are at approximately 1,5 times more than men, and second almost all women are involved in economic activity in state sector, while men at most are involved in economic activity in private and mix sectors, women involved in economic activity are far greater than those of the men. But, women are more strongly intentioned in its wishes to win in competition with men applying for a new job when they participate in various competitions for valuable functions and positions. In turn, women have to attend interviews and contests on the same footing as men. Finally, it must be mentioned that effectuated study is very useful in elaborating policy of the women employment, and can be successfully used in gender analyses.

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