IS THERE A REPRESENTATIVE POLISH UNEMPLOYED FEMALE?- MICROECONOMETRIC ANALYSIS

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Abstract: The aim of this paper is to investigate characteristics of unemployed females in Poland. Social Diagnosis 2011 data is used to analyze socio-economic determinants of unemployment and nonparticipation.

Keywords: unemployment, reservation wage, nonparticipation, female labor supply

INTRODUCTION

Unemployment occurred on the Polish labor market with the system transition in 1989. Soon researchers and policy makers observed that it affects more women than men. Women are more exposed on unemployment risk and suffer longer unemployment duration [Malarska 2007]. This is not only Polish-specific phenomenon, similar patterns can be observed in almost all European countries, unemployment gender gap varies across countries, but it's common feature that unemployment problem is largely problem of female unemployment [Azmat et al. 2004]. There is lack of consensus when it comes to macro-determinants causing unemployment, in most cases results are either not robust or inconclusive [Sturn 2011]. This disagreement on the role of particular labor market institutions implies problem of labor market policies design. Therefore it might be reasonable to restate the question and consider, who these policies are addressed for. The aim of this paper is to obtain the individual characteristics that enlarge female chances of unemployment. Important difference between unemployment and nonparticipation (inactivity) is stressed.

By unemployment I understand excess labor supply. In other words, there exist people participating (entering) labor market, who provide labor supply, but

on the demand side there is no one willing to pay for it [Boeri 2007]. Unemployment is very diverse (heterogeneous) phenomenon, types of unemployment can be distinguished due to duration time or reason. This definition does not distinguish introduced by Eurostat in 2011 supplementary measures of labor slack.

Figure 1. Female unemployment, annual average (1000 persons)
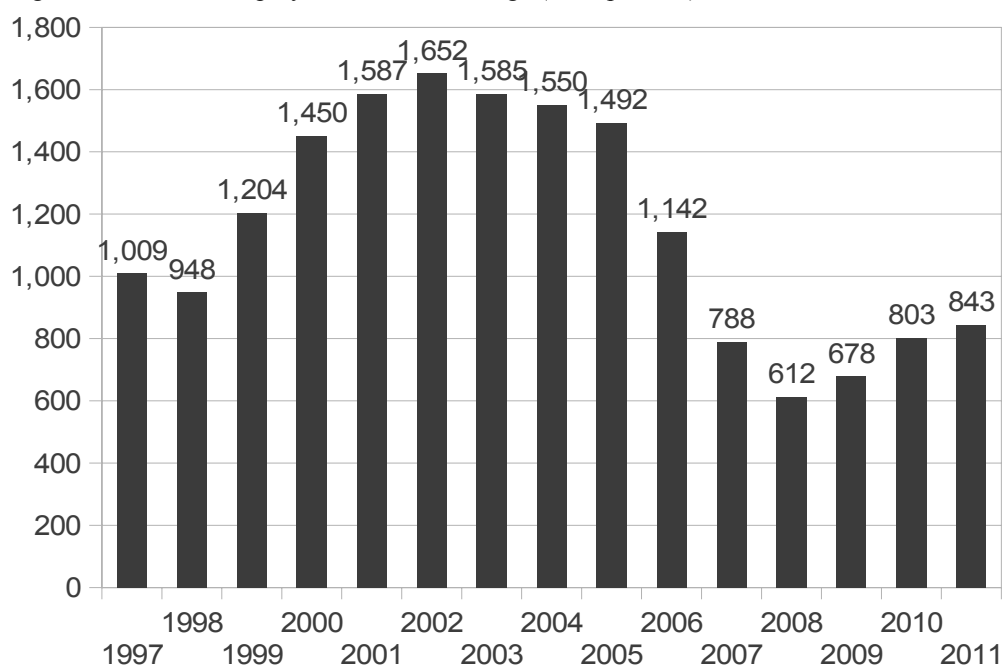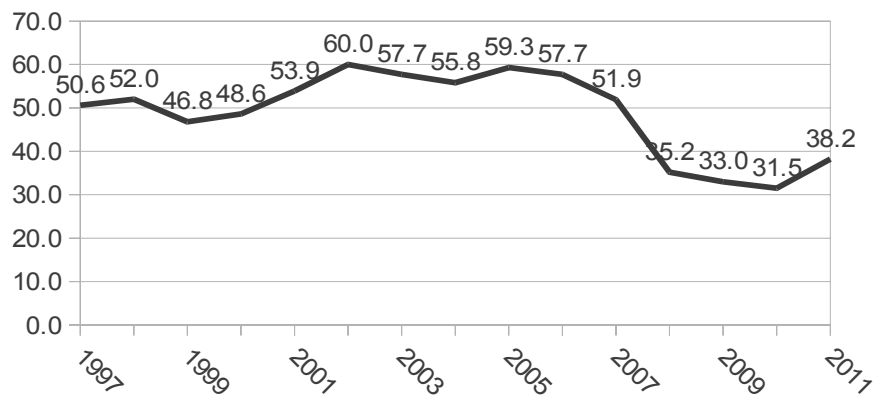

Source: LFS Eurostat

Female unemployment is countercyclical. Long term-unemployment has rather persistent level and has stable value in comparison to absolute level of unemployment.

Table 1. Percentage of active population in Poland aged 15-74 years

Indicator\Time	2005	2006	2007	2008	2009	2010	2011
Unemployed part-time workers				2,0	2,1	2,3	2,4
Pearsons seeking work but not immediately available	1,5	1,0	1,0	0,9	0,8	0,8	0,8
Pearsons available to work but not seeking	4,9	6,5	6,1	4,8	4,7	4,5	4,4

Source: Eurostat.

Figure 2. Long-term unemployment (12 months or more) as a percentage of the total
unemployment. Females aged 15-64.

Source: LFS, Eurostat

DATA IN THE SAMPLE

In the empirical part of this paper I use Social Diagnosis 2011 dataset
[Council for Social Monitoring. Social Diagnosis 2000-2011: integrated database
www.diagnoza.com [exact date of downloading: 25 Jun 2012]].

The sample used for the study are picked from the dataset so that it consists
of females aged 18-64.

Three key variables are generated:

- inactive- created on the basis of self-assignment of nonparticipation the labor
  market
  by this definition 40,69% of individuals (5072 observations) is classified as
  inactive which is approximately equal to the fraction of female
  nonparticipation in the polish population on given age interval. If the sample
  is trimmed to the individuals aged 18-60, fraction of inactive individuals is
  35,88%
- unemployed- consists of nonworking females who are actively searching for a
  job and are able to start it within 2 weeks[1]
  By this definition 8% of the sample is classified as unemployed (8,8% in the
  trimmed sample), while Eurostat reports unemployment for women aged 25-
  74: 8,8% (or 10,5% for age 15-74)
- active- sums up females working and unemployed

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[1]   Definitions given in this paper is consistent with ILO definition.

Table 2. Inactive and unemployed females by age

Age	inactive	unemployed	Sample (Total)
18-24	1403	206	2026
25-34	516	325	2362
35-44	383	186	2226
45-54	625	194	2748
55-64	2144	94	3099
Total	5071	1005	12461

Source: own calculations

The largest amount of inactive females are those in age group 55-64. This happens due to multiple reasons. Main of them is that formal retirement age is 60 years, but large amount of females aged 55-59 also drops out from the labor force due to disabilities and earlier acquired pension rights. Unemployment is a problem mainly to a group aged 25-34 years.

Table 3. Education levels of women on the sample

Education level (k4)	inactive	unemployed	underemployed	Total
Primary and gymnasium	858	151	97	1437
vicational	1792	319	211	3572
high school	1790	349	251	4356
university	583	184	185	3037
Total	5023	1003	744	12402

Source: own calculations

Analysis of employment supports intuition that the best situation have women with university degree, although the statistis might be misleading, because individuals who continue their education are counted either as out of the labor force or underemployed if they work part-time to have funding.

Table 4. Reasons of underemployment in the sample

Reasons	Number
Unable to find full-time job	199
Unwilling to work full-time	180
Unable due to child-care	91
Unable due to parent-care	16
Has other job	15
Other	238
Total	739

Source: own calculations

Underemployment is usually seen as a solution for women to continue education or to be able to take care of their children, but the data do not support this belief fully. Large fraction of women (27%) are underemployed because they are unable to find a full time job.

Women in the sample attended schools for 12,55 years on avarage. Inactive females have on avarage 11,55 years of schooling, while unemployed- 12,07. Among females with a college degree (licencjat, magister or higher) only 17,47% are inactive and 5,11% are unemployed. 24,9% women in 2011 could not find a job when finnished their education. 19,5% of inactive women has disability.

Mean self-reported income of females in the sample is 1227.14 PLN and expected by them to be 1756.93 PLN on avarage in 2 years. For unemployed individuals it's 323,05 PLN and 1264.48 PLN respectively. For inactive it's 704.68 PLN and 1105.26 PLN.

Further some characteristics of nonworking women are shown.

Females currently unemployed (n=198) who worked in period 2007-2011 and lost their jobs due to:
- own decision in order to find better paid job – 19,2% (38 of 198)
- their contract expiration – 53,0% (105 of 198)
- external reasons – 22,2% (44 of 198)

Females currently inactive (n=114) who worked in period 2007-2011 and lost their jobs due to:
- own decision in order to find better paid job – 28,9% (33 of 114)
- their contract expiration – 26,3% (30 of 114)
- external reasons – 23,7% (27 of 114)
  52,5% women who changed a job also changed their occupation.

Nonworking (main self-reported reasons):
- 26,9% (1056 of 3932) are retired
- 25,5% (1083 of 3933) upgraded their qualifications (education)
- 16,6% (557 of 3914) - health problems and disabilities
- 15,6% (616 of 3926) took care of the household (housewives)
- 15% (591 of 3930) could not find a job
- 14,9%(588 of 3935) took care of the children
- only 2,9% (111 of 3910) did not want to work

Surveyed nonworking women would start working:
- 17,6% (671 out of 3811) - if the job was part-time
- 12,9% (493 of 3811) – if the working hours were flexible
- 10,8% (413 of 3811) – if teleworking was possible

- 6% (227 of 3811) – if they were able to provide sufficient care to their children or parents
- 5,8% (207 of 3589) if they were still entitled to subsidies or benefits currently received

RESULTS

Initially model explaining labor market entry was estimated. Logit model was used. Dependant variable y is labor market participation. The model provodes characteristics increasing probability of labor market participation of female individuals. Estimates are shown in Table 5.

Table 5. Estimates of logit model with active as dependant variable, n= 12374, pseudo R^2 =0.1131

active	Coef.	Std. Err.	z	P>|z|	dy/dx	Std. Err.
age2	-.0001899	.0000218	-8.72	0.000	-.0000453	.00001
nr_children	-.180858	.0255118	-7.09	0.000	-.0431428	.00609
years_schooling	.1753764	.0076485	22.93	0.000	.0418352	.00181
disability	-1.033739	.0653394	-15.82	0.000	-.2527661	.01539
partner	.8969785	.0441507	20.32	0.000	.2146343	.01039
city200	.1761734	.0564997	3.12	0.002	.0414411	.01308
_cons	-1.76148	.1077186	-16.35	0.000		

Source: own calculations

Hosmer-Lemeshow goodness-of-fit test shows that the model does not fit the data well. Therefore model is not well calibrated. The variables are statistically significant, so they have influence on the researched phenomenon, but don't gove full answer- no theory can be inferred on the basis of this result. There does not exist a representative pattern describing females nonparticipating the labor market. The model can be treated as first approximation of the problem.

In the next step probability of unemploymeny was estimated on a subsample of individuals active on the labor market. The logit model with employment versus unemployment as dependant variable answers the question, which features influence probability of being out of employmeny by women participating the labor market. Estimates are shown in Table 6.

Table 6. Estimates of logit model with unemployed as dependant variable, n = 7366,
pseudo R^2 = 0.1038

unemployed	Coef.	Std. Err.	z	P>|z|	dx/dy	Std. Err.
age	-.0578523	.0040652	-14.23	0.000	-.0054805	.00037
years_schooling	-.2109763	.0144259	-14.62	0.000	-.0199862	.00129
partner	-.4174328	.0783511	-5.33	0.000	-.0417942	.00829
nr_children	.2089585	.0515084	4.06	0.000	.019795	.00486
village	-.173855	.0767628	-2.26	0.024	-.0163576	.00717
city200	-.8618179	.1309393	-6.58	0.000	-.0665256	.00796
_cons	3.450599	.256477	13.45	0.000		

Source: own calculations

Higher age and more years of schooling reduce probability of being unemployed. Also having a partner, living in a city larger than 200.000 citizens or in a village gives higher chances of having a job. As oposite to binary variables in the model, living in a small city and not having a partner coincides with higher probability of unemployment. Having children also increases chances of unemployment if woman is active on the labor market.

Hosmer-Lemeshow goodness-of-fit test shows that the model fits the data (number of observations = 7366 number of covariate patterns = 2825, Pearson χ^2(2818) = 2704.19). Model correctly classifies 86.45% of cases in the sample.

The main model of this paper is estimated on a subsample of nonworking females. It aims to distinguish unemployed and inactive individuals using socio-demographic characteristics. Estimates shown in Table 7 below describe which variables significantly increase probability that nonworking female is looking for employment.

Age has positive influence on probability of looking for employment, adjusted by negative coefficient of age squared value. It implies that young women enter labor market later than at the age of 18, due to schooling or having small children. But given result is against common belief that older women drop out from the labor market because they are not able to find a job. This result is interesting and certainly needs further research. Additionally having children (only 4,9% of individuals has 3 or more children, 10,6% has 2 children) has positively correlates with labor market activity. Also the highest non-labor personal income women have the less incentives they have to search for the job. On the other hand if they expect (or desire) higher income in 2 years, the more eager they are to search. What discourages females from labor market activity when they don't have a position is disability and living in the big city (200.000 citizens and more).

Table 7. Estimates of logit model with unemployed as dependant variable, n = 4315,
pseudo R^2 = 0.2130

unemployed	Coef.	Std. Err.	z	P>|z|	dy/dx	Std. Err.
age	.4549543	.0252421	18.02	0.000	.0385066	.00209
age^2	-.0061244	.000333	-18.39	0.000	-.0005184	.00003
nr_children	.1939923	.0619374	3.13	0.002	.0164192	.00514
pers_income	-.0006474	.0001009	-6.42	0.000	-.0000548	.00001
pers_income2	.000203	.0000419	4.85	0.000	.0000172	.00000
city200	-.5006302	.1580903	-3.17	0.002	-.0365812	.00995
disability	-.9128102	.1637679	-5.57	0.000	-.0617641	.00905
_cons	-8.461063	.4447923	-19.02	0.000		

Source: own calculations

Hosmer-Lemeshow goodness-of-fit test shows that the model fits the data (number of observations = 4315 number of covariate patterns = 3061, Pearson χ^2(3053) = 2666.52). Model correctly classifies 72.65% of cases in the sample.

Table 8. Correctness of classification provided by logit model with unemployed
as dependant variable n = 4315

Classified + if	predicted Pr(D) >= .17
True D defined as	unemployed != 0
Sensitivity Pr(+| D)	79.25%
Specificity Pr(-|~D)	71.34%
Positive predictive value Pr(D| +)	35.56%
Negative predictive value Pr(~D| -)	94.51%
False + rate for true ~D Pr(+|~D)	28.66%
False - rate for true D Pr(-| D)	20.75%
False + rate for classified + Pr(~D| +)	64.44%
False - rate for classified - Pr(D| -)	5.49%
Correctly classified	72.65%

Source: own calculations

CONCLUSIONS

To show the difference in socio-demographic characteristics of women unemployed and nonparticipating in the labor market were estimated. Although the age (or age squared) is an important variable in statistically significant in estimated models, no structural break can be observed between individuals who entered (or were supposed to enter) before and after system (and in consequence labor market) transition which took place in 1989. Influence of having children can be interpreted either as inconclusive or causing double effect. In the sample women with children have lower probability of labor market participation and increased chances of unemployment. But in subsample of nonworking females, children increase chances of being unemployed rather than inactive. Inconclusive is the influence of having a partner. Low current income and higher future income keeps women in the labor force. Also additional years of schooling have positive influence of female willingness to participate the labor market.

Although some common features can be highlighted, differences in estimates of models shown in this paper does not support a hypothesis of an existence of one universal, representative unemployed female. That might imply that different policies should be addressed to different groups of women and the topic needs further research.

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