

# ***Labour Markets After Global Financial Crisis***

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## **Chapter 5**

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### **Factors of Professional Elicitation of Over 50 Year-old Unemployed in Poland\***

#### **Introduction**

The end of the first decade of the XXI century is currently seen mostly from the perspective of global financial crisis that resulted in serious economic downturn in real sphere. The financial markets instability, public finance problems, GDP stagnation and, in the end,

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\* The chapter is an improved version of a paper presented and discussed during International Conference on Applied Business and Economics ICABE 2012 at the University of Cyprus from 11<sup>th</sup> to 13<sup>th</sup> October, 2012 in Nicosia in Cyprus.

recession seriously increased the problem of unemployment in many European countries. However, today when one looks at European labour markets from a longer perspective, one can see that the Union faces much more fundamental problems than the current economic disturbances. The process of population ageing raises economic challenges that will probably affect European growth, the future international position of the European Union and, in the end, it will affect the living standard of all European citizens.

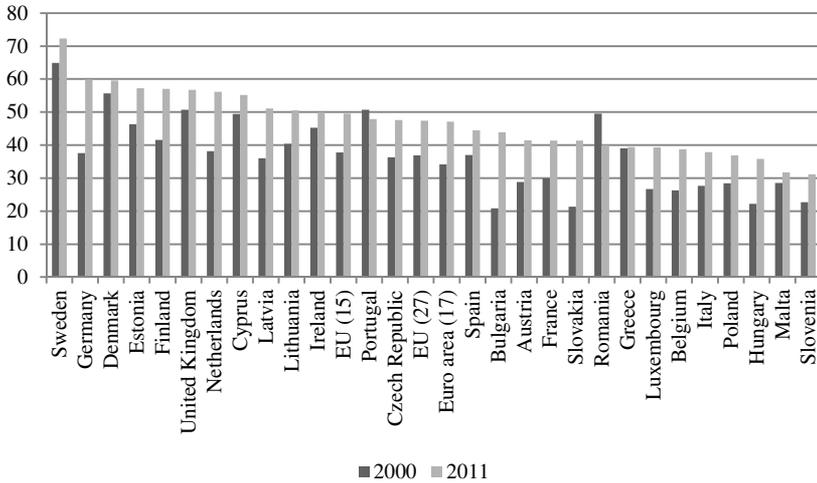
The process of ageing population, with all its negative consequences, is going to be an especially important problem for the Polish economy. The financial and organizational burden of growing number of older dependents, in the reality of one of the lowest level of labour markets participation in European Union, is especially threatening for the Polish growth perspectives and the fiscal sustainability of the country. The policy makers must form strategies that could improve the demographic situation and lower the dependency ratios (the ratio of inactive population as a percentage of employed population). The problem of low labour market participation, especially in the segment of population above 50 years old, is already a serious burden for the Polish development. The above mentioned ageing process is going to make it even worse. As a result, the aim of this chapter is to find the factors that influence professional elicitation of unemployed people over 50 years old in Poland. This knowledge is the starting point for forming labour market policies that can be helpful in facing current and medium-term problems but also, it is essential for thinking about long term strategies.

The chapter consists of three parts and is organized as follows. In the first part, the data concerning the current demographic situation

of Europe and its long term projections is presented. This subchapter also touches upon the issue of macroeconomic financial consequences of the ageing process in Europe. In the second part of the chapter, some best practices of the Netherlands and Finland are presented. In the last subchapter the empirical logit analysis for Poland is conducted.

### **The Ageing Process of European Societies – Its Influence on the Labour Markets and Fiscal Consequences**

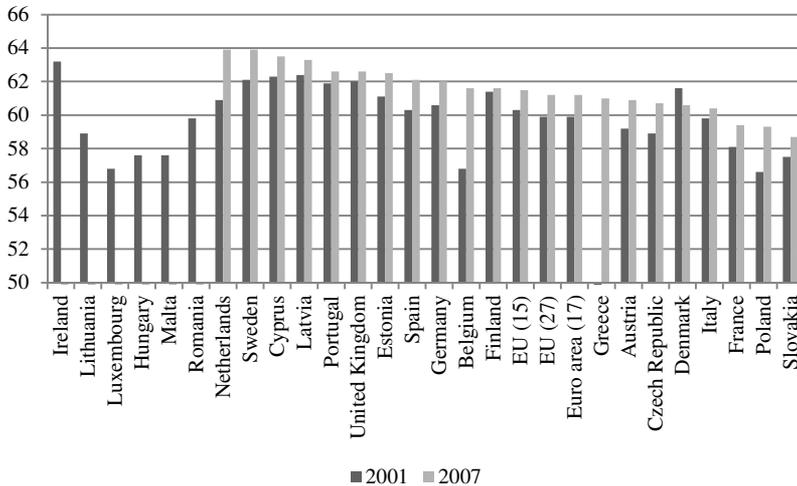
As it was mentioned in the introduction, Poland currently has one of the lowest level of employment, especially in the group of population above 50 (see Figure 1) and one of the youngest population of pensioners in Europe (see Figure 2). This situation is the result of demographic processes and deliberate policy which has been implemented since the beginning of transformation process. For more than twenty years, policy makers considered the retirement system and the policy of encouraging early retirement of people above 50 as an effective, what is more – very simple solution for high unemployment, and at the same time the best way for easing social tensions of economy transformation. This policy approach has been changed only recently. Poland has lately started the process of serious reforms of its retirement system, with special emphasis on eliminating the possibilities of early retirement on the one hand, and on the other the reform of equalization of retirement age of female and male and increasing the retirement age up to 67.

**Figure 1.** Employment rate of workers aged 55 to 64

The employment rate is calculated by dividing the number of persons aged 55 to 64 in employment by the total population of the same age group.

Source: Eurostat, Labour market statistics (2012).

In next four of five decades, the European and especially Polish economy will be seriously affected by demographic changes resulting from the ageing process of developed societies. Life Expectancy at birth in all European Union countries will exceeds 80 years and in case of most of countries it will reach 85 years in 2060, for Poland it will be about 83 years. This means that in 2060 the average projection life expectancy of European citizen in the age of 65 will reach about 25 years (European Commission 2012, p. 49, 51). At the same

**Figure 2.** Average exit age from the labour force

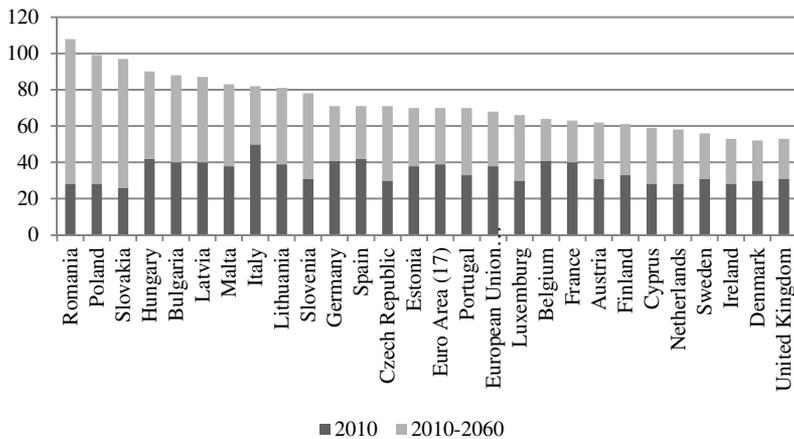
The indicator gives the average age at which active persons definitely withdraw from the labour market. It is based on a probability model considering the relative changes of activity rates from one year to another at a specific age. The activity rate represents the labour force (employed and unemployed population) as a percentage of the total population for a given age. The indicator is based on the EU Labour Force Survey. The survey covers the entire population living in private households. The year 2007 was the last year with data available for Poland

Source: Eurostat, Labour market statistics (2012).

time, in case of most countries of the European Union in 1960 the fatality rates are predicted below the natural replacement level of 2.1. In Poland, it is predicted below the level 1.6 as the second lowest one in the European Union (European Commission 2012, p. 46). This

fundamental demographic factors will seriously affect the labour market conditions and will result in the higher budgetary and fiscal burdens in all European economics. The effective economic old-age dependency ratio is an indicator that helps to assess the impact of ageing processes on budgetary constraints, especially resulting from its pension component. The ratio is calculated as the ratio between the inactive elderly aged 65, plus and total employment (people at the age of 15-64). As it can be seen in the Figure 3, Poland is among the group of countries where the projected ratio is going to be more than 90% (European Commission 2012, pp. 30-31).

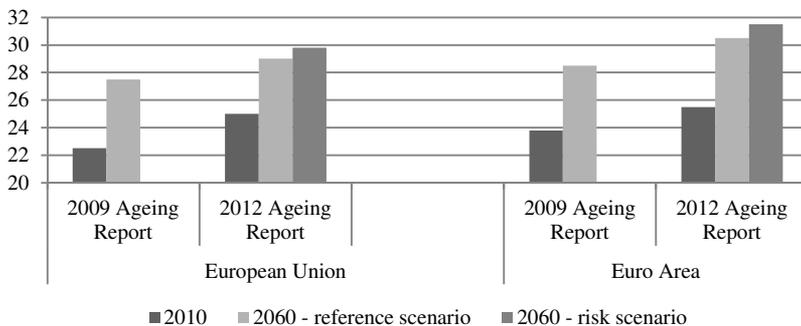
**Figure 3.** Effective economic old-age dependency ratio



Source: European Commission (2012, p. 31).

This situation will increase the financial burden of European societies resulting from the age related expenditure. Figure 4 presents the projections of strictly-age related expenditure for the year 2060 which was prepared by the Economic Policy Committee Working Group on Ageing Population. In case of risk scenario the strictly-aged-related spending would increase to more 30% of GDP for the European Union and 31% of GDP in the Euro Area (European Commission 2012, p. 43). That projection is made for the year 2060. It can be considered as quite a long perspective which gives the governments long time for creating preventive policies. However, the process of declining working population starts just after the year 2012 (Mutual Learning Program 2010a, p. 2), which means that soon, especially after recovery from the current recession, the European economy can face labour and skills shortages.

**Figure 4.** Strictly-age-related expenditure in European Union and Euro area as % of GDP in 2010 and 2060 projection



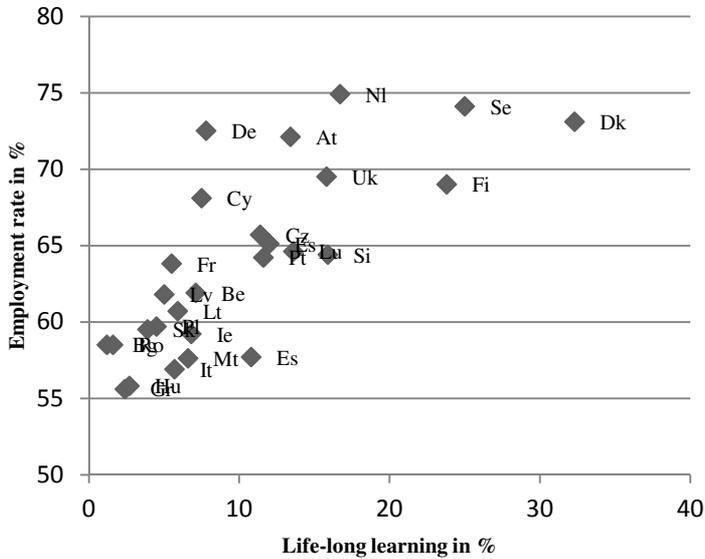
Source: European Commission (2012, p. 43).

This situation forces policy makers in all European countries, but especially in such countries as Poland, with low effectiveness of labour markets in the sphere of employment of elderly employees and very bad demographic projections, to look for fundamental reforms of labour markets, and whole economies. The need for a reform already led the creators of Lisbon strategy to stress the importance of active ageing policies a decade ago. The goals of increasing participation rates in 55-64 group in the workforce has been set (zob. Balcerzak et al. 2008, pp. 77-87). This was also repeated in the Europe 2020 strategy (see: Balcerzak 2011, pp. 31-41). However, after a decade of Lisbon strategy implementation over half of the EU countries were not able to reach the target of a 50% employment rate among older workers (Mutual Learning Program 2010a, p. 2). This creates a great need for research on the effective policies and best practices of countries that already today have been evaluated at employing elderly people. At the same time there is a great need for research on the Polish labour markets, especially the determinants of employment of people above 50. In the next paragraph, the review of best practices in that sphere in the Netherlands and Finland is made.

### **Policies Supporting Elicitation of Unemployed – Best Practices of the Netherlands and Finland**

As it could be seen from Figures 1 and 2, among the most successful countries in the field of elicitation of unemployed over 50 are Scandinavian countries and the Netherlands. These countries have

**Figure 3.** Employment rate and long-life learning in European Union in the year 2011



Source: Eurostat, Labour market statistics (2012).

developed complex programs which aim at supporting the activities of ageing employees at the labour market. In many aspects, this programs differ and are suited to the specific institutional conditions of a country. However, it can be said that there is one fundamental common feature for all of them. In that group of countries concentration on education, improvements of human capital quality and long life learning is dominant. As it can be seen in Figure 3, one can see a positive relation between long-life learning and employment level in the European Union countries. It is also obvious that in the reality of highly competitive knowledge based economy, which can be de-

scribed by growing speed of technology changes, the role of education and long-life learning is going to be essential for improving, or even keeping the effectiveness of labour markets (see more Balcerzak 2009, pp. 54-71). In the next few paragraphs, some specific features of programs implemented in the Netherlands and Finland will be discussed.

### *The Netherlands*

The Dutch reforms supporting professional elicitation of unemployed over 50, which have been introduced for more than ten years, make especially interesting case study in the context of the Polish labour market. In the last two decades of XX century, as a result of labour market policies which were aimed at solving the problem of youth unemployment, the Netherlands has obtained a relatively low labour market participation rates, especially in the group of people over 50. The recent years have brought serious improvement in that field (Mutual Learning Program 2010b).

The starting point for improving employment rates was limiting the possibilities of early exit by phasing out early retirement schemes. Additionally, stricter control of unemployment benefits was implemented and also new programs of reintegration into the labour market of people on occupational disability benefits were introduced. These reforms have led to quite a quick increase in labour market participation by older workers. At the same time, serious changes on the demand side of the market were introduced. First of all, some incentives for employers hiring older workers were made. National insurance deductions and also personal tax deductions for

the individuals who continued to work have been implemented. Among other additional incentives for hiring older workers, one can point at subsidies for employers recruiting workers over the age of 50 in the shape of a reduction in social security contributions for three years. Additionally, there was the possibility to obtain an annual reduction in social security contributions for employers who keep employees over the age of 62 (Mutual Learning Program 2010b).

With regard to the problem of improving quality of human capital over 50, serious problems are caused by institutional solutions and financial responsibility in that field. Currently, it is often stated that without government support employers and employees are not able to invest enough in lifelong learning. The employers are often reluctant to finance more broadly based training, as they sometimes may not be able to protect their investment due to leaving trained employees. Private investment in case of employees, especially the low skilled ones, is often not possible, as individuals can lack the resources to invest in such training (Mutual Learning Program 2010a, p. 8). As a result, many researchers find that low skilled workers and older workers are significantly less likely to benefit from necessary vocational training and the permanent development of skills. In order to face that problem, the Dutch governments took a holistic approach to the investment in lifelong learning. They have stimulated investment in that field through the establishment of Sectoral Training Funds. The funds are financed by employers' contributions as a share of the payroll. However, it was only possible thanks to the fact that in the Netherlands the government and the social partners reached an agreement on the usage of the funds. They have agreed that the funds should be focused mainly on more broadly based em-

ployability training of elderly employees (Mutual Learning Program 2010a, 2010b).

### *Finland*

The Finnish reforms that aim at supporting professional elicitation of unemployed over 50 should be also very interesting for the Polish policy makers, as Finland's society is ageing much more rapidly than other highly developed EU countries, and this problem cannot be easily mitigated by increasing immigration (see more Mutual Learning Programme 2010d). Additionally, in the beginning of the nineties during serious economic depression in Finland, as in Poland, early retirement opportunities were introduced in order to mitigate social tensions and increase work opportunities for younger generations. However, with growing cost of early retirement benefits and decreasing demographic trends in the years 1998-2002 the "Finnish National Programme for Ageing Workers 1998-2002", with the main aim of promoting employment of people over 45 years old, was introduced. This reform, aiming at increasing employment levels in the group of people over 45, was one of the first in the European Union (Mutual Learning Programme 2010e).

The whole programme was founded on the two pillars: the promotion of practical learning and the development of the links between health, education and working life and, which was important, the basic concept of the program was concentrated on the three inter-linked concepts of work ability (human resources and working conditions), employability (influenced by employment policy, exit policy, social and health services, prevention of age discrimination) and

employment. The reform was also taking a holistic approach towards its stakeholders as it was target not only to workers over the age of 45, but also to all parties that can directly or indirectly influence the status of people over 45 such as: managers and supervisors at workplaces, labour market organisations, staff at employment offices, teaching staff, staff of occupational health services and labour protection. This holistic approach was considered as necessary, as the Finnish reformers understood that labour market measures such as subsidised jobs, training or counselling alone could not probably be effective and that broad economic policy measures would be also necessary. Additionally, health measures and training measures related to basic professional skills or general education could be also necessary to maintain the work ability of older employees (Mutual Learning Programme 2010e, pp. 3-4).

After successful negotiations with labour market organizations, the Finnish government introduced the following reforms and measures aimed at encouraging older employees to remain active in the labour market (see more: Mutual Learning Programme 2010e):

- Reduction of the incentives to early retirement by lowering the level of unemployment pensions by a maximum of 4 per cent was made. However, at the same time, retiring on an unemployment pension was made easier in some special cases.
- Modifications of the funding of unemployment and disability pensions were introduced. The cost liability of employers for pensions was increased, which made the maintenance of the employment relationships of ageing employees, or the employment of ageing employees, more cost-effective.

- The age limits for early retirement were changed. The limit for individual early retirement was raised from 58 years to 60 years, but at the same time the age limit for part-time pension was lowered from 58 years to 56 years, with the aid of a law of a fixed duration. However, this last regulation was in force only until the end of 2002. the aim of the part-time pensions was to decrease the number of people retiring early.
- a law of a fixed duration prescribing that the pension of the 55-year old person taking a temporary job with a low pay will not go down, was made permanent.
- The labour administration promoted the employment of the ageing employees in the normal labour market. Training and rehabilitation were considered as the main measures of this action.
- New programmes to promote well-being at work were launched. They mainly covered physical and psychological well-being, health, the organization of work and maintenance of professional skills. The results of the programmes – the development of working capacity was monitored, with the aid of a new working capacity barometer.
- There was an agreement between the labour market organizations and employment pension institutions that the right of the employed to participate in an early rehabilitation assessment should be significantly developed.

In the face of so many changes, policymakers and some economists usually try to point out the ones that are crucial for the success of the reform. The evaluation of the Finnish program proves that it is very difficult to point out which changes and results are due to the reform and which are due to other factors, such as the favorable

changes in the economic and labour demand situations. However, it must be stressed that in the last decade the situation of the country has improved significantly. Additionally to tangible improvements in the form of better statistics and structure of labour market, the Finnish reforms have succeeded in increasing the age-related awareness and activities of the officials and the administrative apparatus (see more: Arnkil, Nieminen 2000).

### **The Empirical Research for Poland: Theoretical Basis of Logit Models**

Logit models belong to a group of qualitative models, especially those in which the variable explained  $Y$  is a qualitative variable. Dependent variable  $Y$  in the logit model take the values:  $Y = 1$ , the person took employment,  $Y = 0$ , the person did not take employment.

Logit model takes the form (Gruszczyński 2010):

$$y_i^* = \ln \frac{p_i}{1 - p_i} = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki} + u_i$$

where:

$\beta_j$  – structural parameter of the model,

$u_i$  – random component,

$\ln \frac{p_i}{1 - p_i}$  – logit,

$y_i^*$  – unobserved variable,

$x_{ji}$  – values of explanatory variables.

$p_i$  – probability of dependent variable  $y_i$ , calculated on the basis of density function of logistic distribution:

$$p_i = \frac{\exp(x_i' \beta)}{1 + \exp(x_i' \beta)} = \frac{1}{1 + \exp(-x_i' \beta)} = \frac{1}{1 + e^{-y_i}} =$$

$$= \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki})}}$$

Unobserved variable  $y_i^*$  is called a latent variable. What is observed is a dummy variable of the form:

$$y_i = \begin{cases} 1; & y_i^* > 0 \\ 0; & y_i^* \leq 0 \end{cases}$$

Logit is the logarithm of the odds ratio of the variable  $y_i$  taking or not by value of 1. If the chances are equal ( $p_i = 0,5$ ) the logit is equal to zero. For  $p_i < 0,5$  logit is negative, and for  $p_i > 0,5$  is positive. Logit transformation of the likelihood allows you to override the value  $p_i$  by the number of interval  $(-\infty, +\infty)$ . If we denote (Gruszczynski, 2010):

$$\frac{p_i}{1 - p_i} = \exp(x_i' \beta) = \exp(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki}) = \Omega(x_i)$$

then:

$$\frac{\Omega(x_i^m, X_{mi} + 1)}{\Omega(x_i^m, X_{mi})} = \exp(\beta_m)$$

where:  $x_i^m$  is a vector  $x_i$  without variable  $X_{mi}$ . From the formula, it shows that the increase in the value of  $X_{ji}$  by one unit ceteris paribus causes  $\exp(\beta_m)$ -times changing of odds ratio. In the case when  $\exp(\beta_m) > 1$ , we have an increase, and when  $\exp(\beta_m) < 1$ , we have a decrease of odds ratio. Marginal effects in logit model are not fixed and depend on explanatory variables:

$$\frac{\partial p_i}{\partial X_{ji}} = \beta_j \frac{\exp(x_i' \beta)}{[1 + \exp(x_i' \beta)]^2} = \beta_j p_i (1 - p_i)$$

The interpretation of the obtained structural parameters of the model is similar to the interpretation of the parameters of the linear model. It is understood as the probability increment  $Y = 1$  associated with a unit increment of  $X_j$ . For a positive  $\beta_j$  an increase of  $X_j$  is associated with increased chances that  $Y = 1$ , while the decline  $X_j$  is accompanied by a decreased chance that  $Y = 1$ . For negative  $\beta_j$  an increase of  $X_j$  is associated with decreased chances that  $Y = 1$ , while a decline of  $X_j$  is accompanied by an increased chance that  $Y = 1$ . Marginal effects are given for the mean values of all explanatory variables.

The significance of the whole model is verified using the likelihood ratio test that is of the form:

$$H_0 : \beta_1 = \beta_2 = \dots = \beta_k = 0$$

$$H_1 : \exists_{1 \leq j \leq k} \beta_j \neq 0$$

The null hypothesis says that all the parameters of the variables are equal to 0, which means that only a model with a constant is real. The test statistic takes the form:

$$LR = 2(\ln L_p - \ln L_{ww}) ,$$

where:  $L$  is a likelihood function:  $L_p$  for full model,  $L_{ww}$  for model with a constant only.

The quality of the model dummy variable can be evaluated on the basis of the so-called pseudo-R<sup>2</sup>. The factor takes the value from the range[0,1], and the higher values are to provide a better fit of the model. In the survey, a McFadden pseudo-R<sup>2</sup> is given. It is based on a comparison of the full model and reduced model only for the intercept. Calculated using the formula:

$$McFaddenR^2 = 1 - \frac{\ln L_p}{\ln L_{ww}} ,$$

where  $\ln L_p$  is the logarithm of the full model likelihood function and  $\ln L_{ww}$  likelihood function is the quotient of a model in which

there is only the intercept. In practice, the values of McFadden  $R^2$  are small, closer to 0 than to 1.

Another way to check the quality of the model is to present the results of the predictions of a model. The forecast is based on the estimated probability  $\hat{p}_i$  of stratification, which is the function of  $F(x'_i\beta)$ . Usually, one assumes that if  $F(x'_i\beta) \geq 0,5$ , then the forecast is  $\hat{y}_i$  equal to 1. If  $F(x'_i\beta) < 0,5$ , then the forecast is equal to 0. On this basis, one can generate an array of relevance:

Actual	Predicted		Sum
	$\hat{Y} = 0$	$\hat{Y} = 1$	
$Y = 0$	$n_1$	$n_2$	$N_{p0}$
$Y = 1$	$n_3$	$n_4$	$N_{p1}$
Sum	$N_{f0}$	$N_{f1}$	$N$

Thus, the percentage accuracy of forecasts is calculated as follows (Kufel 2011):

general: 
$$Traf\ Pr\ og = \frac{n_1 + n_4}{N} \cdot 100$$

for  $Y=1$ : 
$$Traf\ Pr\ og_1 = \frac{n_4}{N_{p1}} \cdot 100$$

for  $Y=0$ :

$$\text{Traf Pr og}_0 = \frac{n_1}{N_{p0}} \cdot 100$$

Moreover, the relevance model variables can be represented by odds ratios using the formula:

$$IRS = \frac{n_4 \cdot n_1}{n_2 \cdot n_3}$$

*The data used to estimate logit models*

The source of data to estimate the probability model to employment by the unemployed over 50 age data were derived from the Syrius system functioning in the district labor offices. In particular, these data come from the districts of Radom City, Radom, Toruń City, Wąbrzeźno, Biłgoraj, Giżycko, Tychy.

**Table 1.** Collection of explanatory variables

partycypacja_Sz	participation in trainings
partycypacja_Staz	participation in internships
partycypacja_PI	participation in intervention works
partycypacja_PSU	participation in socially useful works
partycypacja_RP	participation in public works
<i>partycypacja_DG</i>	receiving grants for business
staz_do5lat	work experience less than 5 years
staz_od5do10lat	work experience from 5to 10 years
staz_od10do20lat	work experience from 10to 20 years

Table 1 Continued

<i>staz_od20do30lat</i>	work experience from 20 to 30 years
<i>staz_od30lat</i>	work experience over 30 years
<i>prawo_do_zasilku</i>	entitled to unemployment benefits
<i>okres_bezr_do1m</i>	period of unemployment up to 1 month
<i>okres_bezr_od1do3m</i>	period of unemployment from 1 to 3 months
<i>okres_bezr_od3do6m</i>	period of unemployment from 3 to 6 months
<i>okres_bezr_od6do12m</i>	period of unemployment from 6 to 12 months
<i>okres_bezr_od12do24m</i>	period of unemployment from 12 to 24 months
<i>okres_bezr_od24m</i>	period of unemployment over 24 months
<i>plec</i>	sex
<i>wyksz_BW</i>	lack of education
<i>wyksz_PO</i>	primary education
<i>wyksz_GM</i>	lower secondary education
<i>wyksz_ZZ</i>	basic vocational education
<i>wyksz_LZ</i>	professional education (completed high school, vocational)
<i>wyksz_PP</i>	post-secondary education
<i>wyksz_SZ</i>	vocational secondary education
<i>wyksz_SO</i>	general secondary education
<i>wyksz_WY</i>	higher education
<i>angielski_0</i>	lack of English proficiency
<i>angielski_1</i>	poor knowledge of English
<i>angielski_2</i>	fluent in English
<i>zawod_0</i>	no occupation
<i>zawod_1</i>	public officials, senior officials and managers
<i>zawod_2</i>	specialists
<i>zawod_3</i>	technicians and associated professionals
<i>zawod_4</i>	office workers
<i>zawod_5</i>	service workers and shop
<i>zawod_6</i>	farmers, gardeners, foresters and fishermen
<i>zawod_7</i>	craft and related trades workers
<i>zawod_8</i>	operators and assemblers of machinery and equipment
<i>zawod_9</i>	workers in simple works
<i>LR01</i>	registration number 0 or 1
<i>LR23</i>	registration number 2 or 3
<i>LR45</i>	registration number 4 or 5
<i>LR6</i>	registration number more than 6

Table 1 Continued

sc_ZO_ME	marital status: married
sc_KA_PA	marital status: single
sc_RA_RY	marital status: divorced
sc_SM_SK	marital status: in separation
sc_WY_WO	marital status: free
sc_WA_WB	marital status: widow/widower

*The results of the model estimation*

Table 2. The estimated logit model

variable	coefficient	Standard deviation	z	p-value	Marginal effect	Odds ratio
const	-7.7603	5.8737	-1.3210	0.184		
partycypacja_Sz	0.5909	0.1413	4.1810	0.000 ***	0.1224	1.8056
partycypacja_PI	0.6958	0.1788	3.8910	0.001 ***	0.1471	2.0052
partycypacja_PSU	-0.9653	0.2308	-4.1820	0.000 ***	-0.1339	0.3809
staz_do5lat	-1.4028	0.0833	-16.8400	0.000 ***	-0.1992	0.2459
staz_od5do10lat	-0.8392	0.0969	-8.6610	0.000 ***	-0.1240	0.4320
staz_od10do20lat	-0.8353	0.0688	-12.1400	0.000 ***	-0.1314	0.4337
staz_od20do30lat	-0.2574	0.0536	-4.8060	0.000 ***	-0.0461	0.7731
prawo_do_zasilku	0.8888	0.0500	17.7700	0.000 ***	0.1771	2.4323
okres_bezr_do1m	-1.2697	0.0801	-15.8500	0.000 ***	-0.1769	0.2809
okres_bezr_od1do3m	-0.3987	0.0714	-5.5850	0.000 ***	-0.0668	0.6712

Table 2 Continued

variable	coefficient	Standard deviation	z	p-value	Marginal effect	Odds ratio
okres_bezr_od3do6m	-0.4372	0.0676	-6.4650	0.000 0 ***	-0.0731	0.6459
okres_bezr_od6do12m	-0.3135	0.0567	-5.5330	0.000 0 ***	-0.0550	0.7309
plec	0.2111	0.0455	4.6420	0.000 0 ***	0.0379	1.2351
wyksz_LZ	0.1889	0.0739	2.5550	0.010 6 **	0.0358	1.2080
wyksz_SZ	0.1539	0.0643	2.3930	0.016 7 **	0.0289	1.1663
wyksz_WY	0.4569	0.1088	4.2010	0.000 0 ***	0.0919	1.5792
angielski_0	-0.5013	0.1236	-4.0570	0.000 0 ***	-0.1019	0.6057
zawod_1	0.2911	0.1656	1.7580	0.078 8 *	0.0568	1.3379
zawod_5	0.1392	0.0608	2.2880	0.022 1 **	0.0260	1.1493
zawod_7	0.2336	0.0508	4.5970	0.000 0 ***	0.0435	1.2631
zawod_8	0.2374	0.0711	3.3360	0.000 8 ***	0.0453	1.2679
LR01	-3.2482	1.1187	-2.9040	0.003 7 ***	-0.6678	0.0388
LR23	-2.5427	1.1189	-2.2720	0.023 1 **	-0.2990	0.0787
LR45	-1.9592	1.1366	-1.7240	0.084 7 *	-0.1989	0.1410
stan_cyw_KA_PA	-0.3720	0.1300	-2.8620	0.004 2 ***	-0.0616	0.6894
stan_cyw_ZO_ME	0.4460	0.0494	9.0290	0.000 0 ***	0.0777	1.5621
Wiek	0.4627	0.2101	2.2020	0.027 7 **	0.0842	1.5884
Wiek^2	-0.0050	0.0019	-2.6150	0.008 9 ***	-0.0009	0.9950

Significant levels: \*\*\*  $\alpha = 0.01$ , \*\*  $\alpha = 0.05$ , \*  $\alpha = 0.10$ .

Source: own estimation.

**Table 3.** Forecast accuracy

Actual	Predicted		Sum	Percentage of hits
	$\hat{Y} = 0$	$\hat{Y} = 1$		
$Y = 0$	9737	801	10538	<b>92,4%</b>
$Y = 1$	2991	1148	4139	<b>27,7%</b>
Sum	12728	1949	14677	<b>74,2%</b>

Source: own estimation.

Variables which were not statistically significant were eliminated from the model using a posteriori method. This procedure involves comparing the  $p$ -value with the accepted level of significance. If  $p$  was greater than  $\alpha$ , the variable was eliminated from the model and a re-estimation was made. The value adopted at the level of 10%.

#### *Interpretation of the model*

In case of the analysis of logit models, the greatest information value can be attributed to the effects of marginal odds ratios. Marginal effects (calculated for the mean values of explanatory variables) are interpreted as the effect of the covariate on the probability of success (adopting a value of 1 by the explanatory variable). Odds ratios are interpreted as the percentage impact of a unit change in the value of the covariate on the odds ratio calculated as the ratio of the probability of success and the probability of failure (Gruszczyński 2010).

The estimated logit model identified the factors and the direction and strength of their influence on the employment chances of the unemployed. Among the variables representing participation in active labor market programs the following variables were important: participation in training, intervention works, and socially useful work. Participation in training increases the likelihood of taking up employment with 12.24 percentage percent, an increase in the probability of employment will also take part in the work of the intervention – by 14.71 percentage points. Participation in socially useful work will affect employment.

All variables representing seniority adversely affect the probability of employment. Having a work experience of less than 5 years results in a decrease of the probability of employment by 19.92 percentage points. The smallest decline in the probability of employment will have a seniority of 20 to 30 years - by 4.61 percentage points.

The increase in the probability of taking up employment by the unemployed is also influenced by having the right to an allowance – by 17.71 percentage points. These people have more than 143% greater chances of employment compared with people who do not have the right to unemployment benefit. The duration of remaining unemployed has negative impact on the probability of employment . The biggest drop will occur among the remaining unemployed for one month – by 17.69 percentage points, the smallest one among the remaining unemployed from 6 to 12 months.

Another factor that significantly affects the probability of activation of the unemployed over 50 year old is the sex of unemployed person – an increase of 3.79 percentage points. Men have a 23.51%

greater chance of finding a job than women. Among the variables representing the level of education the following proved to be important: having higher education, secondary vocational and legitimizing with the completion of high school career. A very serious obstacle in finding employment among unemployed over 50 age is the low knowledge of English. The lack of English proficiency – will decrease the probability of employment by 10.19 percentage points. Analyzing the employment opportunities for unemployed professionals shows that that having a profession which falls under the first, fifth, seventh and eighth large group of professionals will increase the probability of employment.

Another factor negatively influencing the professional activation of the unemployed is the same number of registrations in the county employment office, but the more registers the effect is smaller. People who have a Marital status – unmarried are less likely to become employed – their chances are 31.06% lower in comparison with others. Possession of that marital status at the age of the above 50 years old decreases the probability of employment by 6.16 percentage points. The opposite effect has to have the status married – it increases the employment probability similarities by 7.77 percentage points. These people have a 56.21% greater chance of employment in comparison to those of other unmarried status. Negative evaluation parameter for the variable  $Wiek^2$  ( $Age^2$ ) means that the probability of employment for people aged 50 plus decreased non linearly as the years of life.

## **Conclusions**

The case studies of Finland and the Netherlands, which are rated among the most successful countries in the field of elicitation of unemployed over 50, show that the successful labour market reform cannot be fragmentary, but must take a holistic approach towards the labour market. They must be concentrated on the supply and demand side of the market and generally take into consideration all the stakeholders. The example of these countries also prove that among the most important factors that can help to improve the employment chances of elderly people there are investment in long life learning with the incentives for employers to use the labour force in the group over 50. This conclusions are also supported by the econometric research for Poland.

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