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CONNECTIONS BETWEEN DEMOGRAPHIC CHANGES OF PEOPLE 45-64 YEARS OLD AND THEIR EMPLOYMENT IN V4 COUNTRIES

*ZWIĄZEK MIĘDZY ZMIANAMI DEMOGRAFICZNYMI OSÓB W WIEKU 45-64
LATA A ICH ZATRUDNIENIEM W KRAJACH GRUPY WYSZEHRADZKIEJ (V4)*

Key words: population, demographic changes, employment, Visegrad Group

Słowa kluczowe: ludność, zmiany demograficzne, zatrudnienie, Grupa Wyszehradzka

Abstract. The aim of this research was to prove that in ageing society the increasing number of the seniors has significant role in employment. The study included Visegrad 4 countries (Czech Republic, Hungary, Poland and Slovakia). The determination and correlation coefficients and the trend equations show the different but significant connection between the employment of senior workers and their increasing number in society. If the state does not take any proactive measure to invest into the value of the human capital of older workers, the ageing, sick, unemployment citizens will cause a serious social and financing problem in the near future.

Introduction

Ageing of the population is a worldwide tendency. The projection for 2060 shows that the ratio of persons aged 65 and over will become much higher (from 18 to 30%) in EU-27 [The 2012 Ageing... 2011]. It means that the countries affected by this kind of projection have to be prepared for the forthcoming challenge; otherwise they will be facing dramatic social and financial issues in the near future.

The challenge is reflected in the employment rate of older workers, because unless they are involved in the labour market, the economy of the EU will lose a considerable value and have increasing social expenses year by year at the same time: early age pension and health care. In 1967, Thomas Holmes and Richard Rahe prepared a research involving 5,000 patients, in which they tried to prove that stressful events may cause illnesses. 43 life events were examined and the result showed that retirement is the 10th most stressful factor for any sickness [Holmes, Rahe 1967]. This means that early pensions result in more expenditure above the transfer. According to the qualitative [Marosné Kuna 2011] research prepared in 2008 and 2009 by series of deep interviews with the organizations which took part in the employment projects targeting the age group between 45¹ and 64, it turned out that next to the increasing ratio of older worker, the health status and the knowledge available are the most important factors in case of a possible employment.

In this paper we wanted to prove the affect of demographic changes to the society, focusing Visegrad 4 countries by statistical methods, to draw attention to a proactive attitude in order to avoid dramatic consequences of the ageing society. Due to our research plan, we will analyze the other factors too (mentioned by employers), as first step we are looking into the demographic changes.

¹ As per www.ec.europa.eu/employment_social/social_situation/docs/com221_en.pdf, 29 September 2008, 15.28 (p. 8) the EU defines mature workers as those between the ages of 50-64. According to Adler [2005], the economic activity of the 45-49 age group is relatively high, but for those over the age of 50 it is only 43%. Therefore by considering those over the age of 45 as an endangered generation, we may perhaps be able to prevent their becoming unemployed in 5 years or more.

The background as the hotbed of challenge – demographic changes and the relevant employment rates

We have chosen these countries as the historical background of Visegrad 4 countries are very similar in connection with their political and economic common past. The differences shown by GDP and unemployment (there was no unemployment before the transition) rates comes from the different policy, measures introduced by the governments during the approx. 20 years period between 1990 and 2010: GDP per capital in PPS (EUR 27 = 100%) in 2011 in Czech Republic 80%, in Hungary 66%, in Poland 64%, in Slovakia 73%. The average unemployment rate in 2011 in Czech Republic 6.7%, Hungary 10.9%, Poland 9.6%, Slovakia 13.6% [Eurostat, *Main Tables, National...* 2013, Eurostat, *Main Tables, Employment...* 2013]. Comparing the mentioned countries this way, we had the opportunity to show the effect of a different attitude, way of life and the possible outcome of the essential services, such as education, which point out the further area for analysis.

In the Czech Republic the ratio of population aged 45-64 increased by 3%, in Poland and Slovakia by 13% between 2003 and 2011, while in Hungary it decreased by 3%. Due to the tendency in the EU, the ratio of older workers should increase, but in Hungary this number decreased. In countries where the population in question increased, the employment rate should increase as well, but in the Czech Republic there is no change. In Hungary, besides the decreasing ratio of this generation the employment rate did not change.

In the Czech Republic pension age is increasing to 70 years by 2041. The ratio of older people is increasing, employment rate remained unchanged. The average employment rate of older workers in EU-27 was 47.4% in 2011, in the Czech Republic, there it was 47.6% [*Statistics explained...* 2013]. Nevertheless it should be higher because this number has not increased within the last 3 years. The reason might be the lack of preparation for the demographic changes. The government of CR is trying to solve this problem and it accepted the Europe 2020 Strategy and one of its national goals is to increase the employment rate of older workers up to 55% before the year 2020 [www.ec.europa.eu/europe 2020... 2013]. The pension age is increasing because of crisis of pension system – the number of retired people is increasing and the productive part of population is not able to earn for the retirement pensions. People have to work longer and longer. In 2012 the Czech government made a pension reform and now it is waiting for its results.

The contradictions in Hungary spectacular: decreasing ratio of older people and unchanged employment. This means that the health status of people in Hungary should be also analyzed to get clear picture. The subject of this paper is to investigate the connection between the demographic changes and the employment, so we did not go into details in health respect just looked into the standardized death rate per 100,000 inhabitants caused by malignant tumor which is the highest in Hungary in the EU [Eurostat, *Health...* 2013]. So they may not visit the doctor in time because they are afraid of losing their job. They may even work in the black economy with serious symptoms. When receiving health care, the long-term illnesses with serious consequences have already developed. This may be the reason why the ratio of the age group 45-64 is decreasing. It also should be mentioned that the pension age is increasing from 62 years now, to 65 years by 2020 and the early age and disability pension have now stricter rule. The problem could be in health knowledge of the population and also in cultural-economic heritage which results the escape from the labour market to be in saver situation.

In Poland from January 2013 retirement age is being gradually extended and eventually will reach 67 for both women and men. Every year it will be extended of 3 months until it will reach 67. For men it will be valid from 2020, for women from 2040. Polish government was explaining that change by necessity of securing national finance and money to pay pensions for future generations. In Poland there are several professional groups with very high social privileges, such as early retirement age. Among those groups are miners, policeman, priests. For them, due to recent changes retirement age was also extended, but still is lower than for other professions. Another phenomenon that takes place in Poland is that entitlement to pension benefits is being granted much earlier than actual retirement age. The process is being gradually limited but still exists [*Rewolucja w emeryturach...* 2013].

The real challenge for Polish government is to introduce these changes as soon as possible without escalating serious tensions within society. Even though all the actions are taken in order to extend the retirement age there is still a challenge to create work place, which currently are not enough, so that elderly people can work. The ratio of older people and employment rate are increasing. Many people in productive age are leaving the country and searching for the job abroad. Currently there are more than 2 millions of emigrants working abroad (mainly in GB, Ireland, Norway, Germany). So people from the older generation have more possibility to get existing jobs.

In Slovakia pension age is 62 years now, there is no decision on the increasing, but it is an issue. The ratio of older people is increasing, the employment rate is increasing. The reason might be that there are many work positions which do not demand higher qualification (the number of university educated people among the older population is not so high). Another reason is that the older workers are in general willing to work for the smaller amount of money in comparison with the younger ones. They are aware of the problematic position of older workforce on work market so they tend not to be so choosy.

In the next part, we carried on the analysis with the determination and correlation coefficients and the trend equations which show the connection between the employment of senior workers and their increasing number in society.

Connection between demographic changes and employment of older workers

Method of determination (R^2) and correlation (r) coefficient was chosen because correlation coefficient refers to a measure of the strength of association the connection between two variables (if the two variables increase or decrease together, they have a positive correlation, if, increases in one variable are associated with decreases in the other, they have a negative correlation). The determination coefficient measures the proportion of variation in one variable (Y), that is explained by another variable (X), expressed as a percentage ($y = b_1 \cdot x + b_0$). The increasing number of the older population should result their increasing employment rate. Otherwise the social expenditure bomb may be expected to explode. By the mentioned method the referred relationship can be clearly shown. We have discovered that the increasing number of people aged 45-64 in more than 90% determine this age group's employment data in Slovakia, Poland, so the correlation coefficients are very high in these countries. Determination coefficients are 60% in Hungary ($y = 0.519x + 30.153$; $R^2 = 0.6005$) and 54% in Czech Republic ($y = 0.969x - 889.65$; $R^2 = 0.543$).

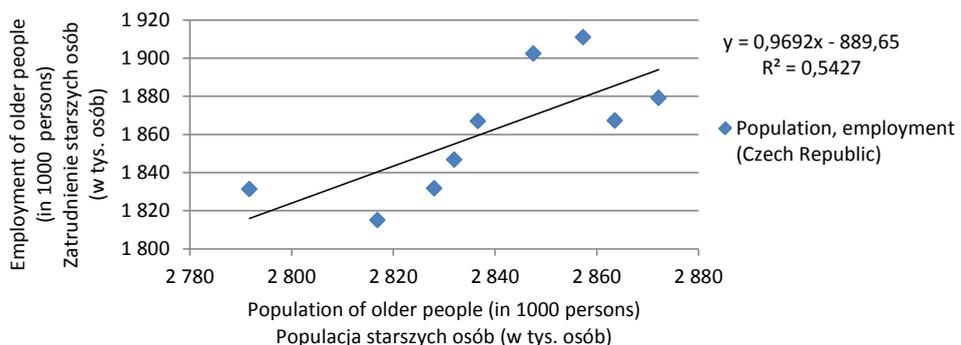


Figure 1. Connection between employment of senior workers (45-64 years old) and their increasing number in society, Czech Republic, 2003-2012

Rysunek 1. Związek między zatrudnieniem starszych pracowników (45-64 lata) a ich wzrastającą liczbą w społeczeństwie, Czechy, 2003-2012

Source: own study based on Eurostat data

Źródło: opracowanie własne na podstawie Eurostat

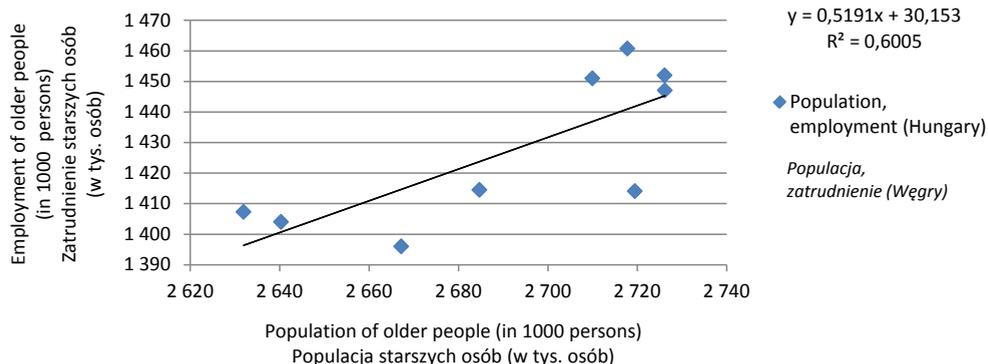


Figure 2. Connection between employment of senior workers (45-64 years old) and their increasing number in society, Hungary, 2003-2012

Rysunek 2. Związek między zatrudnieniem starszych pracowników (45-64 lata) a ich wzrastającą liczbą w społeczeństwie, Węgry, 2003-2012

Source: own study based on Eurostat data

Źródło: opracowanie własne na podstawie Eurostat

Going into details of the trend equations, country by country, it can be stated that in Czech Republic (Fig. 1) if the number of older workers is increasing by 1000 persons the annual employment is increasing (by 969 persons) as well: $b_1 = 0.969$.

The correlation coefficient is $r = 0.74$, so the correlation is high between the employment and the increasing number of the older worker. The determination coefficient is $R^2 = 54\%$, the increasing number of the age group in question 54% determine the employment of 45-64 year old people. This means, that other factors may have more influence to the employment rate of older worker. Employment rate of older workers is more influenced by legislation and especially by economic crisis. The Czech companies reduce the number of employers and the older workers are often first to go, because they are slower and less flexible than younger workers. But the companies do not see their loyalty and experiences. And it should be changed.

In case of Hungary (Fig. 2) if the number of older worker is increasing by 1000 persons the annual employment is increasing, but only by 519 persons: $b_1 = 0.519$. In Hungary the number of older workers is decreasing. The correlation coefficient is $r = 0.77$, so the correlation is high between the employment and the increasing number of the older worker. The determination coefficient is $R^2 = 60\%$, the increasing number of the age group in question 60% determine the employment of 45-64 year old people. This means that in Hungary seniors coming back to the labor market from the inactivity (maybe who are not healthy enough is also forced for working), at the same time the decreasing number of this age group is frightening. The way of life should be examined to know more on it and make the necessary steps against bad habits.

In case Poland (Fig. 3) if the number of older worker is increasing by 1000 persons the annual employment is increasing (by 1056 persons): $b_1 = 1.056$. The correlation coefficient is $r = 0.98$, so the correlation is high between the employment and the increasing number of the older worker. The determination coefficient is $R^2 = 95\%$, the increasing number of the age group in question 95% determine the employment of 45-64 year old people. Many young people expect a lot of money for their job and enterprises prefer to hire older people for smaller wage. Their experience counts as well. Also, during sick leave longer than 14 days for the employee over 50 Social Insurance Institution pays for that so the employer does the savings. Polish government has already started many programs in order to enhance professional activity among people over 50 years old. At the same time it has to be mentioned that even though their number is increasing they tend to be marginalized.

In Slovakia (Fig. 4) if the number of older worker is increasing by 1000 persons the annual employment is increasing (by 1335 persons): $b_1 = 1.335$. The correlation coefficient is $r = 0.97$,

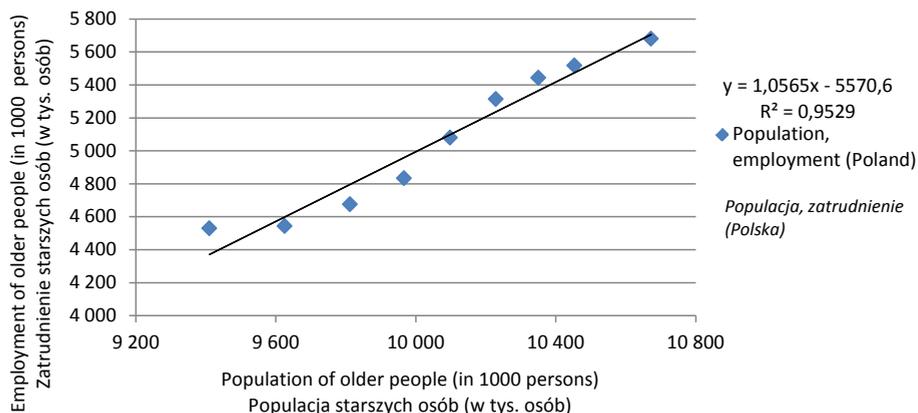


Figure 3. Connection between employment of senior workers (45-64 years old) and their increasing number in society, Poland, 2003-2012

Rysunek 3. Związek między zatrudnieniem starszych pracowników (45-64 lata) a ich wzrastającą liczbą w społeczeństwie, Polska, 2003-2012

Source: own study based on Eurostat data

Źródło: opracowanie własne na podstawie Eurostat

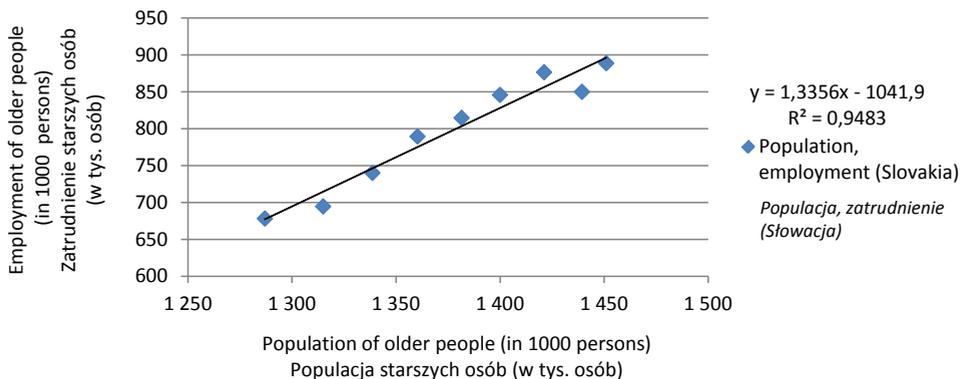


Figure 4. Connection between employment of senior workers (45-64 years old) and their increasing number in society, Slovakia, 2003-2012

Rysunek 4. Związek między zatrudnieniem starszych pracowników (45-64 lata) a ich wzrastającą liczbą w społeczeństwie, Słowacja, 2003-2012

Source: own study based on Eurostat data

Źródło: opracowanie własne na podstawie Eurostat

so the correlation is high between the employment and the increasing number of the older worker. The determination coefficients is $R^2 = 95\%$, the increasing number of the age group in question 95% determine the employment of 45-64 year old people. The reason might be that there is possibility for the older people (62+) to be employed despite the fact that they are officially retired. The result is that the wage they are getting is usually lower since they are receiving contributory pension as well (this applies outside Civil Service and public administration).

The determination and correlation coefficients (Tab. 1) and the trend equations show the connection between the employment of senior workers, their increasing number in society. If society does not take any proactive measure to invest into the value of the human capital of older workers, the ageing, sick, unemployed citizens will cause a serious social and financial problem in the near future. As it is indicated in the table 1 the correlation coefficients high especially in Poland and

Slovakia. It means that there is close connection between demographic changes and employment of older workers. In Czech Republic and Hungary there is connection but not as close as it is in the mentioned two countries. That is why the determination coefficients are also high in Poland and Slovakia, but not considerable in Czech Republic and Hungary.

Comparing the V4 countries in Czech Republic there is the highest employment rate (but the other V4 countries may catch up it soon, because their numbers are mostly increasing while the Czech numbers are rather constant [Eger et al. 2012]. In Hungary there is

some kind of opposite tendency, which now is under forced changes by almost only legal means. More factors, such as health and professional knowledge, should be analyzed in order to get clear picture on the issue [Marosné Kuna, Czeglédi 2013].

The explanation of the similar correlation and determination coefficients of Poland and Slovakia is different: in Slovakia there are many positions for not too qualified people, in Poland many people working abroad, so older workers have more possibility to access to the existing jobs. In both countries elderly satisfied with lower salary, which is not accepted by the young generation.

In all of the V4 countries ageism occurred as a relatively new type of discrimination, even in labour market and the day to day life [*Obywatelu powstań...* 2013]. Education has special role in fighting against it. Generations should communicate and cooperate in order to improve the economic and social situation of a country or region. The expending Third Age Universities in EU support this idea.

Table 1. Summary table of Visegrad 4 countries' determination and correlation coefficients regarding the connection between demographic changes and employment

Tabela 1. Zestawienie współczynników determinacji i korelacji odzwierciedlających związek między zmianami demograficznymi osób starszych a zatrudnieniem w krajach Grupy Wyszehradzkiej (V4)

Country/Kraj	r	R ²	Rate of employed 45-64 people in 2011/ Wskaźnik zatrudnienia osób w wieku 45-65 lata w 2011 r.	GDP per capital in PPS (EU-27 = 100%) in 2011/ PKB na osobę w PPS (UE-27 = 100%) w 2011 r.
	%			
Czech Republic/Czechy	74	54	65	80
Hungary/Węgry	77	60	53	66
Poland/Polska	98	95	53	64
Slovakia/Słowacja	97	95	61	73

Source: own study

Źródło: opracowanie własne

Conclusions

1. Ageing of the population is a worldwide tendency. In the Czech Republic the ratio of population aged 45-64 increased by 3%, in Poland and Slovakia by 13%, while in Hungary it decreased by 3% between 2003 and 2011.
2. Coefficients of correlation regarding the connection between demographic changes and employment of older workers are very high in Poland and Slovakia and high in Czech Republic and Hungary.
3. The highest employment rate of older people is in the Czech Republic (65%) and in Slovakia (61%), by the other V4 countries may catch up it soon, because of their growing tendency in number of the older population.

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Streszczenie

Celem badań było wykazanie, że w starzejącym się społeczeństwie wzrastająca liczba seniorów odgrywa znaczącą rolę w zatrudnieniu. Badaniami objęto 4 kraje należące do Grupy Wyszehradzkiej (V4), tj. Polskę, Węgry, Czechy i Słowację. Obliczone współczynniki korelacji i determinacji oraz równania trendu wskazują na różne w poszczególnych krajach, ale istotne zależności pomiędzy zatrudnieniem starszych pracowników a ich rosnącą liczbą w społeczeństwie. Jeśli kraje nie zainwestują w rozwój kapitału ludzkiego wśród osób starszych, to starzejące się społeczeństwo, osoby chore i bezrobotne mogą stać się przyczyną poważnych problemów społecznych i finansowych w najbliższej przyszłości.

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