



ORIGINAL ARTICLE


Citation: Bielawska, K. (2019). Economic activity of Polish pensioners in the light of quantitative research. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 14(1), 149–165. doi: 10.24136/eq.2019.007

Contact: kamila.bielawska@ug.edu.pl; University of Gdansk, Faculty of Management, Armii Krajowej 101, 81-824 Sopot, Poland

Received: 13.12.2018; Revised: 9.02.2019; Accepted: 17.02.2019; Published online: 1.03.2019

Kamila Bielawska

University of Gdansk, Poland

 orcid.org/0000-0003-1558-0194

Economic activity of Polish pensioners in the light of quantitative research

JEL Classification: *D1; H55; J22*

Keywords: *retirement; economic activity; regular work; occasional work*

Abstract

Research background: Despite the economic development, accompanied by various structural reforms (including pension reform of 1999), the effective retirement age in Poland is relatively low. Participants of the social insurance scheme tend to apply for the old-age pension as soon as possible (when they reach the statutory retirement age).

Purpose of the article: The main aim of the paper is to evaluate the determinants of the economic activity of seniors in Poland taking the old-age pension from Social Insurance Institution (ZUS) as a regular or occasional work, in comparison to those who are not performing any paid activity.

Methods: We use the data from the survey carried out in 2018 on the representative sample of Polish seniors aged 65+ for whose households the old-age pension from ZUS (1336 pensioners who retired between 1980's up to 2018) is the main source of income. Multinomial logistic regression was performed to study how gender, retirement timing, education level and period of retirement as well as reasons for retirement influenced the likelihood to continue regular or occasional work.

Findings & Value added: Multinomial logistic regression for women confirms that higher education increases chances for continuing regular work on the retirement comparing to those having secondary education. Retirement due to the reaching the pensionable age made women more likely to continue work on regular basis, while those who retired due to the bankruptcy of the employer were less likely to be employed during retirement. Retirement due to the preservation of pension privileges increased chances to continue work on the occasional basis among women and men. For men who reported employment — related factors as retirement drivers, the chances of performing occasional work were high and of highly statistical significant. This research delivers knowledge on drivers of regular or occasional paid activity combined with receiving old-age pension from social insurance system in Poland.

Introduction

Economic activity of older workers and its determinants has been important issue in the scientific research (Duval, 2003; Hamblin, 2013) and in public policies (OECD, 1995; European Commission, 2012, Eurofund, 2016, OECD, 2018). The main reason for this extensive interest is the process of population ageing and its consequences for the economy as well as for public pension schemes. During the last twenty years, a lot of public policies aimed at prolonging working lives of workers 50+ by labour market reforms (promoting employment) and pension reforms (increasing pensionable age, phasing-out early retirement, introducing flexible forms of retirement). These changes had contributed to the increase in effective retirement age in OECD counties from 63/61 to 65/63 for men and women respectively but they still stand below the levels of 1970's (OECD 2018).

Poland is an example of the country, which experienced economic transition from centrally planned to market orientated economy, having relatively good economic stance but still low participation rates of older workers in labour market. Registered economic activity of persons receiving the old-age pension from social insurance in Poland is very low (12%), which might suggest that transition from work to retirement is rather permanent than flexible, which is more likely to happen in highly developed countries. The main objective of our research is to evaluate determinants of the economic activity of seniors who claimed for an old-age pension form Social Insurance Institution (ZUS) as a regular or occasional work in comparison to those who are not performing any paid activity.

We use microdata from the survey carried out in 2018 on the representative sample of seniors aged 65+ for whose households' the old-age pension from ZUS (1336 pensioners who retired between 1980's up to 2018) is the main source of income. Multinomial logistic regression was performed to study how gender, retirement timing, education level, period of retirement as well as reasons for retirement influenced the likelihood to continue regular or occasional work during retirement.

The article is divided into a few sections. We start with the review of the literature on flexible attitude to retirement and its drivers, as well as we briefly describe the Polish situation concerning the changes on the labour market and in the public pension scheme. Next, we present the methodology and hypothesis, which are followed by the description of the results and discussion. The last section of the paper concludes.

Literature review and the Polish context of the research

Retirement in the meaning of abrupt, complete and permanent withdrawal from the labour market is diminishing. Employment patterns of older workers in developed countries evidence raising flexibility in transition from full-time job into complete withdrawal from the labour market. This issue has been raised in the literature from the decades (see the review of early research in this field by Quinn *et al.*, 1990). As Cahill *et al.* (2018) emphasize: “the depth and breadth of interdisciplinary research, in particular, has resulted in examinations of labor force withdrawal patterns in the contexts of psychology (e.g., cognitive and emotional well-being), sociology (e.g., manager–employee relationships), and economics (e.g., financial incentives to retirement).” (Alcover *et al.*, 2014; Beehr & Bennett, 2015; Coile, 2015).

Gradual withdrawal from the labour market might give an opportunity to the worker to accommodate to the changing lifestyle, keep the social relations with co-workers, mentor younger workers within the company and also provide an additional source of income for retirement (Turner *et al.*, 2018). Gradual transition from full-time work to no employment is often accompanied by full or partial pension withdrawal. It is the consequence of relatively low pensionable ages and early retirement in the public pension schemes in the OECD countries accompanied by increasing life expectancy (also life expectancy in a good health). This “reserves” of working capacity are visible in the positive difference between the effective age of labour market exit and effective retirement age (Bielawska, 2017).

Retirement shall be perceived as a multi-dimensional decision process rather than a single event. The complexity of retirement decision has been widely discussed in the literature (Atchley & Barush, 2004, pp. 235–270). Often, to distinguish between retirement drivers, the *push-pull* model is used (Barness-Farell, 2003, Negrini *et al.*, 2013). The factors which *push* worker into retirement may be connected with economic situation such as liquidation of the workplace deriving from the bankruptcy of the employer, increasing unemployment, decrease in wages) or individual features, i.e. poor health, or lack of competencies, inconvenient atmosphere in the workplace. *Pull* factors may comprise the preferences for leisure, care-giving needs of the family members, convenient financial conditions offered by the employer. The drivers of retirement may vary in different socio-economic conditions.

In this research, we concentrate on the economic activity of pensioners in Poland, a country which has undergone an economic transition from centrally planned to market-oriented economy. For better understanding of the Polish context, we briefly describe the major changes in the situation on

the labour market and within the public pension system. The first period of transition was characterized by high structural unemployment. Ad hoc reformed social security system had been used to amortize the situation on the labour market by easy access to early retirement and invalidity pensions. Social security programmes for persons from companies undergoing restructuring, similar to early retirement schemes, were also widely used to ease social tensions in the 1990s (Ruzik-Sierdzinska, 2018, p. 46). Since mid-nineties of twentieth century, a broad reform of social security system has been introduced, including old-age pension scheme. The Polish pension system consists of a few subsystems, of which the biggest covers non-agricultural workers, contractors and self-employed. This part of the system is operated by Social Insurance Institution (ZUS). The reform of the Polish pension system in 1999 had a structural character, as it switched from defined benefit scheme into NDC scheme (with transition period).

The retirement age was 60 for women and 65 for men, and a broad range of early retirement was supposed to be eliminated after 2005, but finally it was postponed to the end of 2008 (app. 25% of the members of the scheme were entitled to early retirement basing on the profession or length of service). The retirement age for men and women in Poland had been increasing from year 2013, reaching the levels of 61 years and 3 months for women and 66 years and 3 months for men until September 2017, and then it was brought back to the 2012 levels (60/65 for women and men, respectively). It caused increased old-age pension payments. As government argued, 40% of new pensioners were not economically active and, therefore, the decrease in retirement age gave them the access to secure source of income.

In this context it is worth to mention that the recent study on unemployment of the workers aged 50+ in Poland proves that being close to the point at which they are eligible to receive pension benefits, individuals 'wait' to fulfil these eligibility criteria instead of making an effort to maintain and facilitate their competencies on the labour market (Gałęcka-Burdziak & Góra, 2017). Deficiencies in life-long learning and work-related training were also found as reasons of low participation rates among older workers in Poland (Ruzik-Sierdzińska, 2018, p. 46). Other authors (Kotowska & Wóycicka, 2008) highlight the need to resign from paid work due to the care-giving needs of dependents as the important reason for the exit from the labour market of women. Employers in Poland do not seem to be properly prepared for employment of older workers. The lack of flexibility of the workplace was described by Zientara (2014).

Research methodology

The article is based on the data collected during own quantitative research in the form of individual (face-to-face) interviews performed on the random, representative sample of seniors aged 65+ for whom the old-age pension from the public pension scheme is the main source of income (n=1,500). In this research we extracted the sample of 1,336 respondents receiving the old-age pension from the main social insurance scheme (managed by Social Insurance Institution — ZUS). Interviews were carried out in 2018.

The questionnaire contained a wide range of questions concerning the pre-retirement and post-retirement financial situation, sources of income, satisfaction with the consumption levels, individual replacement rates, timing and drivers of retirement decision and ex post evaluation of this decision as well as socio-demographic features of the respondents such as the level of education, profession, household composition and its changes and area of residence.

Data analysis was aimed at examining the factors related to continuation of paid work during retirement. One of the main motivation of formulating such a research question was connected to the comparison of the official data from ZUS on social insurance coverage of retired people with the answers of respondents. According to ZUS, in 2017 approximately 12% of retirees were covered by compulsory social or health care insurance¹. In our research, the percentage of retirees declaring performing a regular paid work is slightly higher, which is a consequence of more work engagement in the previous decades (Table 1). What is more interesting, much more retirees reported that they were performing occasional work during retirement (21% of women and 30% of men). Only few respondents reported running their own business during retirement, therefore the number of positive answers was too low to include them into the analysis.

As to the author's best knowledge, there is no quantitative analysis of performing paid work by Polish retirees with the distinction on regular and occasional jobs, therefore the dependent variable was defined in three categories: not performing any paid work during retirement, performing occasional work and regular work (part-time or full-time).

The set of primary composition of independent variables was based on the results of research in this field presented in literature review. Certain

¹ Regulations on social insurance scheme in Poland require the coverage by the compulsory social insurance and health care insurance retirees performing paid activity in form of employment contract as well as commission contract. Only those running their own business are covered only by health care insurance.

variables had to be excluded at this primary stage of model design because of their low answers' count (less than 30). These include: respondent's willingness to retire at the same time as their spouse (or at other time), retiring to hand over the homestead, the level of retirement benefit and the acceptable decline in respondent's pension in relation to their last salary. The structure of the examined sample was analyzed in order to identify the variables that might be relevant for further considerations.

Next, using the stepwise modelling, a final set of independent variables was determined. At this point, the variables which did not contribute to the model were excluded. These are among others: number of people in the respondent's household, main source of income during 12 months prior to the retirement, place of residence or replacement rate. The final multinomial logistic regression model was checked in terms multicollinearity of which results were found satisfactory ($VIF < 2$) (Table 3).

To verify if the differences between the percentages of total women and men continuing work and percentages of smaller subsamples determined by other variables were significant, an N-1 chi-squared test was used. The characteristics of the sample is shown in the Table 1.

Of the 1,336 persons surveyed, 42.5% continued work after they had started to take up an old-age pension (39.3% of women and 45.4% of men). Occasional jobs were a more common type of employment on retirement — 20,6% of women and 30.3% of men reported this form. Regular work, either full time or part time, was performed by 18.7% of women and 15.1% of men.

A structure analysis of continuing work on retirement reveals differences among certain subsamples. There are similarities of tendencies between women and men (moment of retirement and education), while some variables are widely different (year of retirement).

Among women and men who retired earlier than the statutory age, the share of continuing work in occasional jobs is significantly lower than in the general sample. Adversely, men and women who retired later than at the statutory age were characterized by a significantly higher percentage of continuing work in occasional jobs. Continuing work on contract (regular jobs) was more common among women who retired earlier. Additionally, continuing work on contract was significantly less common among women who retired exactly at statutory age. It is also worth to notice that most of the examined women retired earlier than the statutory age (50.8%), while fewer men decided to do that (36.0%).

In the area of education level, there are clear similarities among women and men. There is a general tendency of increasing share of continuing work (occasional and regular jobs) as the level of education increases. The

highest percentages of regular work appeared among persons with tertiary education, while the highest percentages of occasional jobs occurred among the post-secondary graduates. The lowest share of women continuing employment in occasional jobs and in contract jobs appears among those with primary and basic vocational education, respectively.

The highest percentage of retired women on regular jobs appeared in the period 1980–1993, while the lowest in the following years 1994–1998. The respondents who retired between 1980–1993 have faced the first wave of transition from centrally planned to market oriented economy accompanied by bankruptcy of state own companies, struggling with high unemployment and shrinking real value of social benefits. Early retirement at that time was often the only way to secure the permanent source of income for the household. On the other hand, early retirees could perform paid work without restrictions on the pension level with earnings up to 70% of the average wage in the economy. The share of men continuing any type of paid work is significantly different than in the general sample only in the period 1994–1998 (it was the highest). This is the most outstanding difference between men and women in the sample.

Retirement planning, which was described in the questionnaire as having retirement savings, seem to play a significant role only in terms of occasional jobs. There is significantly higher percentage of retirees in occasional jobs among those who tried to secure the extra money before retirement.

Continuing work in occasional jobs seems to be more common among women and men who retired because of certain reason. In general, we have distinguished the retirement reasons into four categories: (1) systemic factors which combine legal features of pension scheme (pensionable age, early retirement possibilities) with economic situation (bankruptcy of the employer); (2) employment-related factors, such as losing position, pressure of employer to retiree, work overload or time pressure, (3) family related factors and (4) individual situation, i.e. poor health. As the selection of the variables is based on their statistical significance and all the retirement reasons included to category 3 and 4 do not support continuing paid activity so they were excluded from further consideration. The most significant reasons of continuing paid work connected with systemic and employment-related factors. Retirement drivers from group (3) and (4) did not improve the model.

Preliminary analysis of the structure of the sample and the dependent variables combined with the review of previous research and a deficit of this research concerning the different forms of paid work, has led to formulating the following hypotheses:

(H1): *Early retirement increases chances to combine pension withdrawal with employment on occasional as well as on regular basis for women and men.*

(H2): *Tertiary level of education increases the likelihood of continuing paid activity by women and men in comparison to those with secondary level of education, while primary or basic vocational education decreases the likelihood of being employed during retirement.*

(H3): *Respondents retiring in the period 2008–2018 are more likely to continue paid work in any form.*

(H4): *The retirement planning (meant as having financial resources for retirement) decreases the likelihood of continuing the paid work at the retirement (on occasional as well as regular basis) in comparison to those who did not save for retirement.*

(H5): *Retirement decision drivers are significant factors for continuing the paid work during retirement, that is:*

(H5.1): *Systemic factors as retirement decision drivers increase the likelihood of being employed on occasional or regular basis,*

(H5.2): *Employment-related factors decrease the chances of continuing paid work at retirement.*

Basing on the chosen set of variables, a logistic regression model was estimated. The goal of it was to identify significant features of women and men who decided to continue work in any form in comparison to those who did not performed any paid work during retirement. Taking into account the size of the sample and the structure of obtained answers a multinomial logistic regression was chosen as the most suitable decision model. The three levels of dependent variable were set to: not continuing work (reference value), continuing work in occasional jobs and continuing work on regular contract (either part time or full time). Relevant differences in employment and retirement factors between men and women resulted in estimation of two separate models, based on the same set of independent variables. It was assumed that the final model should have sufficient accuracy ratio and pseudo-R² and contain a set of at least a few significant variables (see: Table 4).

Taking into account that the modelling was performed on real microdata obtained results of pseudo-R²s and the accuracy ratio are satisfactory and thus justify the interpretation of the model. All measures are in favor of the model estimated for women subsample, the differences, however, are not relevant. The models based on data of women and men allowed to predict correctly 68.4% and 67.1% of answers, respectively (see: Table 4).

Results

The results of the multinomial logistic regression modelling are presented in Table 2.

Modelling allowed for partially positive verification of hypothesis (H1). Women retiring earlier were less likely to continue work in occasional jobs and more likely to continue on the regular basis (OR=2.14) than those who retired at statutory age. Besides, women who retired after the statutory retirement age were more likely to continue paid work in both forms. In the case of men, the high odds ratio for occasional works (2.99) characterized the ones who retired after the statutory retirement age in comparison to those retiring at statutory age. These men were also more likely to continue on regular jobs, although this odds ratio is less significantly different from zero.

Hypothesis (H2) was positively verified for women, confirming that the higher level of education significantly increases chances to continue work especially on regular basis and low level of education reduces chances of employment in comparison to women with secondary education. The results for men are not statistically significant (as presented in the Table 2), but they would be so, if the regression omitted the variables describing retirement drivers.

Interestingly, the logistic regression of the period of retirement did not supported the hypothesis concerning the influence of the period of retirement (H3). The likelihood of performing both occasional and regular jobs in the recent years was lower for women and men in comparison to people retiring during 1999–2008. One of the potential explanation is the fact that since the year 2009 the possibilities of early retirement have been phased out for most of the workers covered by social insurance scheme. On the other hand, the replacement rates are decreasing, representing the growing share of NDC formula in old-pension calculations. Modelling proved that women retiring between 1980 and 1993 had two times higher chances to perform regular paid work at the retirement than the women retiring in years 1999–2008. The men who retired between 1994–1998 had three times

higher chances to perform regular work during retirement than those retiring in the reference period (1999–2008).

The respondents who declared having retirement savings prior to the retirement had lower chances to continue paid work during retirement both women and men, what supports hypothesis (H4).

Taking into consideration the retirement reasons, the performed logit regression supports the hypothesis about the higher likelihood of being economically active, when the reason of retirement is connected to systemic factors (H5.1) for women and partially for men. Higher chances are visible in women's case, when reporting the achievement of retirement age or fear of losing retirement privileges as retirement drivers more than doubles the chances of performing occasional paid work and almost double the likelihood of being in the regular employment (OR=1.85). Men have more chances to perform occasional work when retirement was connected to the willingness to preserve retirement privileges. When it comes to (H5.2) hypothesis, it was positively verified for men and to a lower extent for women in terms of continuing occasional work. The men who reported convenient financial conditions as the reason for retirement had almost four times higher chances to work on an occasional basis. Both men and women had higher chances to continue occasional work when they retired due to the loss of the position. High odds ratio (3.93) at high statistical significance of being in occasional jobs also characterize men who retired due to extensive workload. It might suggest that employers are not sufficiently prone to consider the physical barriers of workers at their basic workplace. It also might serve as an argument for searching for a solution in partial pension with partial employment (Bielawska, 2017).

Discussion

The outcomes of this research in general support the results on socio-economic status (SES), i.e. education and wealth, for workforce participation performed on different set of microdata presented by Oleksiyenko and Życzyńska-Ciołek (2018). Our research adds to the aforementioned analysis by extension of dependent variable into different categories of work activity during retirement (regular or occasional). Also the set of independent variables allows for more in-depth analysis of the connections between retirement drivers and the likelihood of continuing paid work.

Interestingly, this research confirms that systemic factors of retirement, i.e. reaching pensionable age or the willingness to utilize early retirement are such strong retirement drivers that they offset the influence of other

factors. This is confirmed in the result of Share Project concerning work and pension for Poland (Chłoń-Domińczak, 2017).

Conclusions

The workforce participation of older workers (combined with partial pension or not) is an important and up-to-date issue in public politics in developed countries worldwide. Therefore, it is important to make an extensive research in this field and to deliver knowledge, which could be implemented within the polices responding to the ageing populations.

As it comes from the research in developed countries, retirement is a complex process which involves more often gradual exit from the labour market by older workers. It is often combined with taking full or partial pension. Intensive research in this field so far, do not deliver unquestionable results. Countries like Poland will be facing the change in the retirement process, which will evolve from systemic and employment-related factors. The decreasing replacement rates of old-age pension from the public pension scheme will underline the issue of the work activity and its role in providing sufficient income.

This research also emphasizes the role of education as a factor of continuing employment on regular or occasional basis as well as executing pension rights above pensionable age. On the other hand, it implies that too much physical overload push people into retirement (men) and makes them more likely performing occasional work.

The main policy implications resulting from this research concentrate on the improvement of the flexibility of employment of older workers, which are needed through legal solutions as well as by making progress in implementation of age-related HR policies within the companies. Research outcomes also suggest, that keeping older workers in employment and allowing for the better accommodation of the workplace and workload to their preferences, increase the likelihood of keeping them longer on the labour market. The role of life-long learning to cope with the changing competencies required from workers is also important.

Phasing-out of early-retirement combined with relatively low retirement ages in Polish pension scheme should be linked to the programmes of partial withdrawal from the labour market what would be beneficial for all stakeholders: workers, employees and the state, being responsible for the adequacy and sustainability of the pensions. Taking into account that the level of the state pension will be more and more dependent on the contributions paid into the system (NDC formula) and more differentiated by men

and women, because of lower retirement age for women, future empirical research might concentrate on the following cohorts of new retirees and their attitudes to continue work. The ex-post evaluation of the retirement decisions would also be interesting in terms of the public campaigns to promote active ageing.

References

- Alcover, C., Topa, G., Parry, E., Fraccaroli, F., & Depolo, M. (Eds.) (2014). *Bridge employment: a research handbook*. New York: Routledge.
- Atchley, R. C., & Barusch, A. S. (2004). *Social forces and ageing. An introduction to social gerontology*. Belmont: Wadsworth.
- Beehr, T. A., & Bennett, M. M. (2015). Working after retirement: features of bridge employment and research directions. *Work, Aging and Retirement*, 1. doi: 10.1093/workar/wau007.
- Bielawska, K. (2017). Partial pensions as a form of flexible retirement in the EU countries. *Financial Science*, 2(31). doi: 10.15611/nof.2017.2.01.
- Cahill, K. E., Giandrea, M. D., & Quinn, J. F. (2006). Retirement patterns from career employment. *Gerontologist*, 46. doi: 10.1093/geront/46.4.514.
- Chan, S., & Stevens, A. H. (2001). Job loss and employment patterns of older workers. *Journal of Labor Economics*, 19(2).
- Chłoń-Domińczak, A. (2017). Poles above Age 50: work and retirement. In M. Myck & M. Oczkowska (Eds.). *Generation 50+ in Poland in the view of Europe: activity, health and quality of life. Outcomes of the SHARE*. Warsaw: Center for Economic Analysis.
- Coile, C. C. (2015). Economic determinants of workers' retirement decisions. *Journal of Economic Surveys*, 29. doi:10.1111/joes.12115.
- Disney, R., Ratcliffe, A., & Smith, S. (2015). Booms, busts and retirement timing. *Economica*, 82. doi:10.1111/ecca/12133.
- Duval, R. (2003). *The retirement effects of old-age pension and early retirement schemes in OECD countries*. Paris: OECD.
- European Commission (2012). White paper "An agenda for adequate, safe and sustainable pensions". COM(2012) 55 final: Brussels.
- Hamblin, K. A. (2013). *Active ageing in the European Union. Policy convergence and divergence*. New York: Palgrave Macmillan.
- Kantarci, T., & van Soest, A. (2008). Gradual retirement: preferences and limitations. *De Economist*, 156. doi:10.1007/s10645-008-9086-1.
- Kim, S., & Feldman, D. C. (2000). Working in retirement: the antecedents of bridge employment and its consequences for quality of life in retirement. *Academy of Management Journal*, 43. doi:10.5465/1556345.
- Maestas, N. (2010). Back to work: expectations and realizations of work after retirement. *Journal of Human Resources*, 45. doi:10.1353/jhr.2010.0011.
- OECD (1995). *The transition from work to retirement. Social Policy Studies. No. 16*. Paris.

- OECD (2018). Average effective age of retirement (indicator). Retrieved from <http://www.oecd.org/els/emp/average-effective-age-of-retirement.htm> (18.11.2018).
- OECD (2018). Good jobs for all in a changing world of work: the OECD Jobs Strategy. Retrieved from <http://www.oecd.org/employment/jobs-strategy/good-jobs-for-all-in-a-changing-world-of-work-9789264308817-en.htm> (15.12.2018)
- Oleksiyyenko, O., & Życzyńska-Ciołek, D. (2018). Structural determinants of work-force participation after retirement in Poland. *Population Ageing*, 11. doi: 10.1007/s12062-017-9213-3.
- Quinn, J. F., Burkhauser, R. B., & Myers, D. A. (1990). Passing the torch: the influence of economic incentives on work and retirement Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.
- Ruzik-Sierdzińska, A. (2018). An attempt to identify factors influencing retirement decisions in Poland. *Folia Oeconomica. Acta Universitatis Lodzianensis*, 4(336). doi:10.18778/0208-6018.336.03.

Acknowledgments

This research was financed by National Science Centre, Poland within the project “Retirement risk in the light of the forecasted changes of the demand for consumption goods and services of seniors in Poland” (UMO-2016/23/B/HS5/03768).

Annex

Table 1. Structure of the examined sample by chosen variables

| | Women | | | | Men | | | |
|--|------------|--------------|--------------|--|------------|--------------|--------------|--|
| | n | Odd jobs | Contract | | n | Odd jobs | Contract | |
| Total | 626 | 20,6% | 18,7% | | 710 | 30,3% | 15,1% | |
| Moment of retirement | 591 | | | | 672 | | | |
| Retired earlier | 300 | 12.3% ** | 25.7% * | | 242 | 20.2% ** | 20.7% * | |
| Retired at statutory age | 168 | 23.2% | 10.7% * | | 255 | 28.2% | 12.2% | |
| Retired later | 123 | 33.3% ** | 16.3% | | 175 | 44.6% *** | 12.6% | |
| Education | 626 | | | | 710 | | | |
| Primary | 34 | 5.9% * | 5.9% † | | 15 | 13.3% | 13.3% | |
| Basic professional | 56 | 14.3% | 3.6% ** | | 121 | 32.2% | 9.1% † | |
| Secondary | 249 | 24.1% | 14.1% | | 237 | 36.3% † | 11.8% | |
| Post-secondary | 65 | 32.3% * | 13.8% ** | | 80 | 43.8% * | 11.3% | |
| Higher | 222 | 17.1% | 31.1% * | | 257 | 20.6% ** | 22.2% ** | |
| Year of retirement | 591 | | | | 672 | | | |
| 1980-1993 | 83 | 19.3% | 34.9% ** | | 29 | 20.7% | 24.1% | |
| 1994-1998 | 77 | 22.1% | 10.4% * | | 50 | 34.0% | 28.0% * | |
| 1999-2008 | 303 | 20.8% | 20.1% † | | 245 | 33.1% | 15.5% | |
| 2009-2018 | 128 | 16.4% | 13.3% | | 348 | 27.3% | 12.6% | |
| Planning retirement | 626 | | | | 710 | | | |
| Didn't try to secure extra money before retirement | 383 | 14.6% * | 18.3% | | 352 | 24.4% * | 13.6% | |
| Tried to secure extra money before retirement | 243 | 30.0% ** | 19.3% | | 358 | 36.0% † | 16.5% | |
| Retirement reason | -- | | | | -- | | | |
| (1) Systemic factors | -- | | | | -- | | | |
| Achieving the retirement age | 286 | 28.7% ** | 19.6% | | 472 | 34.1% | 11.2% † | |
| Fear of losing retirement privileges | 70 | 45.7% *** | 15.7% | | 148 | 56.1% *** | 8.8% * | |
| Liquidation of the workplace | 44 | 11.4% | 6.8% * | | 25 | 32.0% | 8.0% | |

Table 1. Continued

| | Women | | | Men | | |
|---|-------|-----------|----------|-----|-----------|----------|
| | n | Odd jobs | Contract | n | Odd jobs | Contract |
| Retirement reason | -- | | | -- | | |
| (2) Employment-related factors | -- | | | -- | | |
| I was fired | 47 | 21.3% | 23.4% | 70 | 40.0% † | 15.7% |
| I was offered convenient financial conditions | 49 | 26.5% | 28.6% † | 53 | 45.3% * | 22.6% |
| Employer's pressure to retire | 61 | 18.0% | 13.1% | 61 | 41.0% † | 18.0% |
| Lack of job satisfaction | 42 | 35.7% * | 21.4% | 63 | 34.9% | 6.3% † |
| To give a chance to younger workers | 63 | 50.8% *** | 11.1% | 124 | 52.4% *** | 5.6% ** |
| Too much time pressure at work | 49 | 51.0% *** | 18.4% | 138 | 61.6% *** | 7.2% * |
| Too much physical workload | 44 | 43.2% *** | 20.5% | 110 | 68.2% *** | 4.5% ** |

Notes: Table presents number of respondents responding positively to each question and corresponding percentages of these subsamples who also continued work in occasional and contract jobs. Statistical significance of difference between total average and each subsample's average: † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2. Multinomial logistic regression with: timing of retirement, education, year of retirement, retirement planning, and group (1) and (2) of retirement reasons as predictors of continuing work in occasional or contract jobs after retirement

| Variable | Women | | Men | |
|--------------------------------|----------|----------|----------|----------|
| | Occ jobs | Reg jobs | Occ jobs | Reg jobs |
| | OR | OR | OR | OR |
| Timing of retirement | | | | |
| Early retirement | 0.55 † | 2.14 * | 0.77 | 1.26 |
| Retirement at statutory age | -- | -- | -- | -- |
| Retirement after statutory age | 1.68 † | 1.91 † | 2.99 *** | 1.69 † |
| Education | | | | |
| Primary | 0.24 † | 0.25 † | 0.57 | 0.53 |
| Basic vocational | 0.24 ** | 0.21 * | 1.21 | 0.65 |
| Secondary | -- | -- | -- | -- |
| Post-secondary non-tertiary | 1.46 | 1.14 | 0.86 | 1.13 |
| Tertiary | 1.03 | 3.07 *** | 0.82 | 1.36 |

Table 2. Continued

| Variable | Women | | Men | |
|--|----------|----------|----------|----------|
| | Occ jobs | Reg jobs | Occ jobs | Reg jobs |
| | OR | OR | OR | OR |
| Period of retirement | | | | |
| 1980-1993 | 1.08 | 2.28 * | 1.34 | 1.18 |
| 1994-1998 | 1.02 | 0.60 | 1.37 | 3.15 ** |
| 1999-2008 | -- | -- | -- | -- |
| 2009-2018 | 0.50 * | 0.58 | 0.52 ** | 0.69 |
| Planning retirement | | | | |
| Didn't try to secure extra money before retirement | -- | -- | -- | -- |
| Tried to secure extra money before retirement | 0.54 * | 0.99 | 0.79 | 0.60 * |
| Retirement reason^a | | | | |
| Achieving the retirement age | 2.35 ** | 1.85 * | 1.29 | 0.57 * |
| Fear of losing retirement privileges | 2.41 * | 1.17 | 2.19 ** | 0.99 |
| Liquidation of the workplace | 0.69 | 0.27 * | 1.90 | 0.38 |
| I was fired | 2.08 † | 1.49 | 2.62 ** | 0.98 |
| I was offered convenient financial conditions | 1.51 | 1.71 | 3.91 *** | 2.51 * |
| Employer's pressure to retire | 0.96 | 0.68 | 2.62 ** | 0.94 |
| Lack of job satisfaction | 1.74 | 1.75 | 0.90 | 0.38 † |
| To give a chance to younger workers | 2.13 * | 0.83 | 1.07 | 0.52 |
| Too much time pressure at work | 1.89 | 1.52 | 1.90 * | 1.04 |
| Too much physical workload | 1.86 | 2.46 † | 3.93 *** | 0.65 |
| Intercept | 0.54 | 0.09 *** | 0.30 * | 0.76 |

Notes: ^a = multiple choice questions (thus no reference variables). The table reports odds ratios (OR). All variables were entered into the model simultaneously. p-values: †p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.

Table 3. Variance Inflation Factor values of variables used in the models

| Variable | VIF | |
|---|-------|-------|
| | Women | Men |
| Retired earlier | 1.837 | 1.513 |
| Retired after statutory age | 1.500 | 1.416 |
| Primary | 1.118 | 1.097 |
| Basic vocational | 1.197 | 1.328 |
| Post-secondary non-tertiary | 1.171 | 1.338 |
| Tertiary | 1.343 | 1.514 |
| 1980-1993 | 1.159 | 1.176 |
| 1994-1998 | 1.145 | 1.148 |
| 2009-2018 | 1.429 | 1.382 |
| Tried to secure extra money before retirement | 1.132 | 1.184 |
| Achieving the retirement age | 1.209 | 1.211 |
| Fear of losing retirement privileges | 1.185 | 1.249 |
| Liquidation of the workplace | 1.086 | 1.044 |
| I got fired | 1.056 | 1.156 |
| I was offered convenient financial conditions | 1.068 | 1.165 |
| Employer's pressure to retire | 1.092 | 1.057 |
| Lack of job satisfaction | 1.052 | 1.057 |
| To give a chance to younger workers | 1.234 | 1.307 |
| Too much time pressure at work | 1.390 | 1.737 |
| Too much physical workload | 1.236 | 1.574 |

Table 4. Measures of logistic regression model's quality

| | Cox & Snell's pseudo-R ² | Nagelkerke's pseudo-R ² | McFadden's pseudo-R ² | Accuracy Ratio (correct predictions) |
|--------------|-------------------------------------|------------------------------------|----------------------------------|--------------------------------------|
| Model: women | 0.282 | 0.333 | 0.176 | 0.684 |
| Model: men | 0.276 | 0.322 | 0.166 | 0.671 |