Case study: The Impact of Retirement on Subjective Well-Being in Austria: An Analysis of National EU-SILC Data

Research Paper

FACTAGE – WP 2.2

Johannes Klotz, Tobias Göllner, Kathrin Gärtner

Statistics Austria, Vienna

August 2018

Correspondence to: johannes.klotz@statistik.gv.at

Abstract

In the discussion about fair retirement policies, not only aspects of health, mortality and actuarial fairness have to be considered, but also aspects of subjective well-being in late working life and retirement. To explore well-being changes through retirement we compared life satisfaction changes between the year of retirement with years of non-transitions of the same individuals. We used the longitudinal component of the national Austrian EU-SILC data and analyzed life satisfaction changes from one year to the next of 338 individuals who entered EU-SILC between 2004 and 2009, retired between 50 and 70 and did not show any major health changes in the year of retirement.

Descriptive analyses show that there are no significant differences in life satisfaction changes between retirement and other two-year comparisons. A multivariate analysis of the well-being changes through retirement shows that job satisfaction seems to be the only relevant predictor for change in life satisfaction: people with high job satisfaction tend to experience well-being losses more often during retirement than people with low job satisfaction. In contrast, traditional social stratification variables such as sex, age and educational level have very little explanatory power.

The change in life satisfaction during and after retirement is a very individual experience, depending on many unobserved individual characteristics and personal attitudes. EU-SILC variables are not selective enough to predict well-being changes and draw valid conclusions. Further research is needed and should be based on qualitative studies and longer panels.

Introduction

The past years have seen reforms of pension systems in many European countries, essentially driven by the fiscal challenges brought about by demographic ageing (Carone et al. 2016). This has come along with an intensified discussion of fairness of pension systems, not just between, but also within generations. A key argument in that respect is that the positive correlation between life expectancy and socio-economic position violates actuarial fairness when uniform pension formulas are applied (Knell forthcoming).

However, for a discussion about fairness of pension systems a broad factual basis is needed, concerning not only financial contributions and expected benefits of different groups in society, but also about quality of life before and after retirement. Following a more conventional view, which considers work to be burdensome and annoying, fairness considerations follow the underlying assumption that the earlier one is able to retire, the better for the individual. However, work does not only provide individuals with the material resources to meet their needs and fulfill their material wishes, but has a social and psychological function as well (Jahoda 1982). A workplace provides a social environment which serves as a source for social support as well as a source of recognition and general joy to do something fulfilling. From this perspective (early) retirement can also be understood as an event that has disadvantages, at least for some individuals.

To shed more light on personal well-being and subjective consequences of retirement we look at the short-term impact of this life event on life satisfaction. Therefore we analyzed well-being changes of respondents of the Austrian EU-SILC survey (Community Statistics of Income and Living Conditions) who were interviewed before and after taking retirement. This is the first study for Austria which addresses this question using longitudinal official statistics survey data.

Materials and methods
The analyzed population

For the following analysis we used the longitudinal component of the Austrian national data of EU-SILC, a survey which is mainly designed for comparative European monitoring of household income and poverty. In Austria an integrated cross-sectional and longitudinal design of EU-SILC with a rotating four-year panel has been used since 2004, meaning that respondents (households and persons) are scheduled to be interviewed in four consecutive calendar years and then withdrawn from the sample. Thus, a respondent first interviewed in 2004 was scheduled to be re-interviewed in 2005, 2006 and 2007, ideally at an interval of 12 months each.

A particularity of the national Austrian EU-SILC data is that it contains also annual questions on well-being, which are not part of the European EU-SILC target variables transmitted to Eurostat.[1] Several satisfaction ratings are assessed every year, covering, inter alia, life satisfaction and job satisfaction. The longitudinal design of the survey makes it possible to compare respondents' ratings over time. Between 2012 and 2013 the rating scale was changed from a labeled six-point scale to an unlabeled eleven-point scale, so ratings are not

---

[1] In 2013, the European ad-hoc module of EU-SILC contained comparable questions, but only in a cross-sectional perspective.

directly comparable before and after. We therefore focus on respondents who had their last survey interview before 2013.

The goal of our study is to measure, as best as possible, causal effects of retirement on changes in well-being. A simple cross-sectional comparison of respondents in retirement with respondents not (yet) retired is not the best choice, for this ignores the timing of retirement as well as unobserved heterogeneity between the two groups. A more sophisticated approach would be to exploit the longitudinal design of the survey and compare the change in well-being for those who retire between two survey waves with a non-retiring control group of similar socio-demographic makeup. However, even such an analysis is subject to unobserved structural differences between the two groups as well as individual variation. Time of retirement is not a random event, but can in some extent be chosen and influenced and is therefore subject to different factors itself. The most promising approach lies in exploiting the whole four-year longitudinal component of the EU-SILC survey, comparing well-being changes during the transition to retirement with well-being changes of the same people in other periods. Such an approach minimizes variance and is based on a comparably weak assumption, namely that individual standards of satisfaction remain unchanged over a four-year period in later life, as long as health status remains essentially unchanged. Its high validity comes with a price, namely a rather small sample size.

From the original data we extracted respondents who were actually interviewed in four consecutive years, who retired between two points of data collection and who were between 50 and 70 years old before they retired. So the starting years of our observations are 2004 to 2009, and the final years are 2007 to 2012.

For each survey year, the 'basic activity status' (EU-SILC target variable RB210) of each respondent is available, with four valid categories: 'At work' (W), 'Unemployed' (U), 'In retirement or early retirement or has given up business' (R), and 'Other inactive person' (I). We restricted our sample to respondents who were at work in the first survey year and in retirement in the last (fourth) survey year and who showed an unambiguous transition from work to retirement during the four years, meaning one of the following sequences: (1) Work, transition to retirement and then three consecutive years of being retired (W-R-R-R); (2) Two consecutive years at work and then two consecutive years being retired (W-W-R-R); (3) Three consecutive years of work, then retirement and then being retired in the last year (W-W-W-R). In total, 359 selected survey respondents fit our criteria and displayed one of these patterns.

Thus, we exclude from our analysis people who were unemployed[2] (or other inactive) between work and retirement, as well as people with sequences containing temporary retirement like W-R-W-R. For such groups of people there is no clear-cut transition from work to retirement, so it is unclear which points in time would be relevant for measurement of life satisfaction.

We further restricted our sample to respondents who showed no or only a minor change in self-reported health between the last working year and the first year in retirement, meaning that EU-SILC target variable PH010 changed at most one point on its five-point categorical scale during the W-R transition. The reasoning is that in the age group of interest,

---

[2] Note that we apply measurements in discrete time, comparing annual outcomes at the time of survey. Thus, a respondent who was actually short-term unemployed before retirement may be included in our analysis.
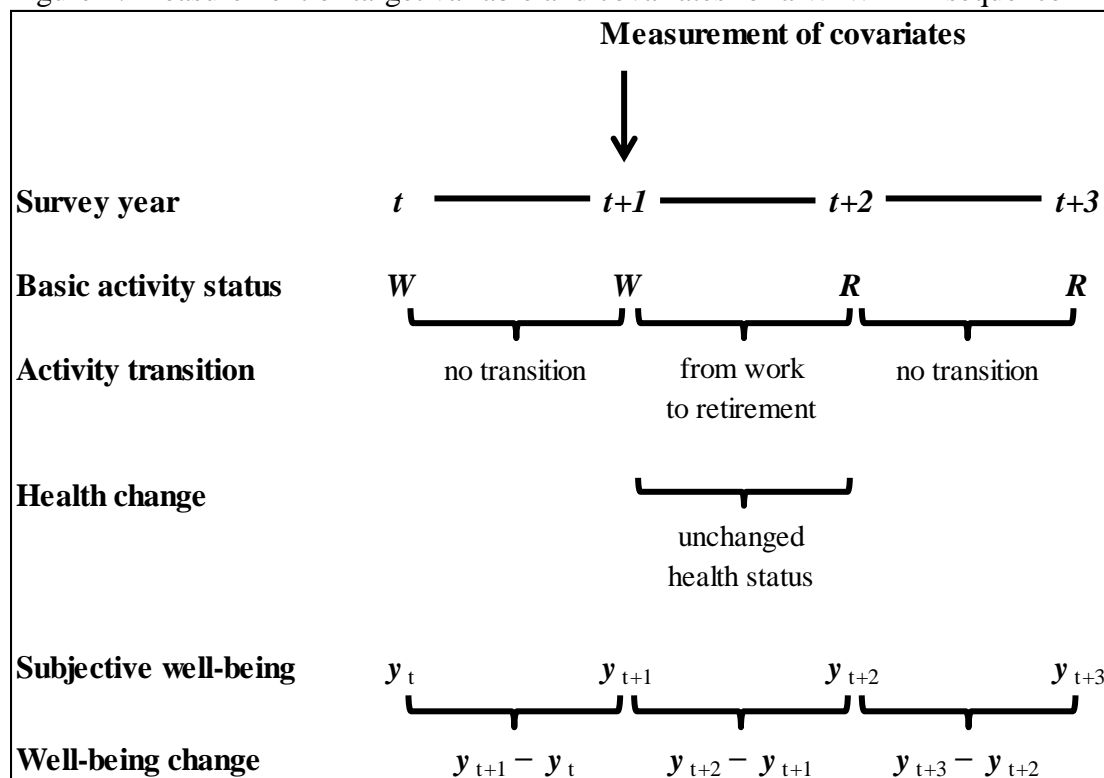
deteriorating health (for instance, because of cancers or heart attacks) often forces people to take early retirement. In this group, the causation between retirement and life satisfaction is probably not is the way we are interested in (see also Horner 2012 and Kesavayuth et al. 2016 on retirement as a choice). This further reduced our sample by 21 respondents, to 338.

Life satisfaction variable

The Austrian national EU-SILC questionnaire asks respondents annually to rate their job satisfaction and life satisfaction. The variables used to measure satisfaction ('All things considered how satisfied are you with your job/life?') are measured on a labeled 6 point scale. Possible answers are 'Very satisfied', 'Satisfied', 'Somewhat satisfied', 'Somewhat dissatisfied', 'Dissatisfied', and 'Very dissatisfied'.

In our sample, item nonresponse rates for the satisfaction variables are around 15 percent. The major reason for item nonresponse is proxy interviews (when another household member answers the personal questionnaire for the target person). In a few instances, item nonresponse arises also from refusals to answer the question. Given the highly subjective nature of the items, missing values were not imputed (in a sense, refusal to answer the question may be understood as a satisfaction statement in its own right).

Figure 1: Measurement of target variable and covariates for a W-W-R-R sequence

Source: Statistics Austria, own figure.

Our target variable is the change in life satisfaction, defined as life satisfaction in survey year t minus life satisfaction in survey year t-1. Even though there is some discussion about the psychometric nature of responses to such items (Eid and Larsen 2008: part II), it was decided to treat answers on this scale as metric, as it is typically done in economic and psychological well-being research. Figure 1 illustrates measurement of target variable and covariates for a W-W-R-R sequence. For some analyses we summarized our target variable into -1 (life satisfaction loss), 0 (no change in life satisfaction) and 1 (life satisfaction gain).

Statistical methods

We present simple descriptive statistics of our target variable depending on whether a respondent retired (W-R transition) or his or her main activity status remained unchanged between the two survey years in question (W-W and R-R).

Then we look more closely on the W-R transition and how it is associated with the change in life satisfaction between social groups, applying a multivariate linear regression model. As predictor variables we use age (single years), sex, job satisfaction, occupational class, educational level, and calendar year (metric) (see also Kesavayuth et al. 2016 and the references given therein). The baseline for covariate measurement is the last survey before retirement. Table 1 gives the marginal frequency distributions of the analyzed subsample (n=338). Note that health is implicitly controlled for by definition of the sample.

Although several survey weights are available in the EU-SILC data, none of them can be directly applied to our analysis which uses individual sequences pooled over different survey waves. Moreover, our sample is very small and defined, and major calibration variables in weighting such as sex and age are included as covariates in our regression model anyway. So we decided to use unweighted data.

Table 1: Descriptive statistics of the sample (n=338)

	n	Percent
Sequence of transition to retirement		
W-W-W-R	121	35.8
W-W-R-R	91	26.9
W-R-R-R	126	37.3
Sex		
Male	186	55.0
Female	152	45.0
Age		
50	1	0.3
51	2	0.6
52	4	1.2
53	6	1.8
54	29	8.6
55	37	10.9
56	33	9.8
57	32	9.5
58	43	12.7
59	91	26.9
60	21	6.2
61	16	4.7
62	8	2.4
63	5	1.5
64	6	1.8
65	4	1.2
Highest educational level completed		
Compulsory schooling	63	18.6
Lower secondary education	198	58.6
Higher secondary education	49	14.5
Tertiary education	28	8.3
Occupational class		
Blue Collar	73	21.6
White collar, non managerial/supervisory	87	25.7
White collar, managerial/supervisory	109	32.2
Self-employed	57	16.9
missing	12	3.6
Calendar year		
2004	17	5.0
2005	43	12.7
2006	55	16.3
2007	61	18.0
2008	52	15.4
2009	51	15.1
2010	37	10.9
2011	22	6.5
Job satisfaction		
Very satisfied	109	32.2
Satisfied	109	32.2
Somewhat satisfied	56	16.6
Somewhat dissatisfied	11	3.3
Dissatisfied	7	2.1
Very dissatisfied	2	0.6
missing	44	13.0

Source: Statistics Austria, national EU-SILC data, own calculations.
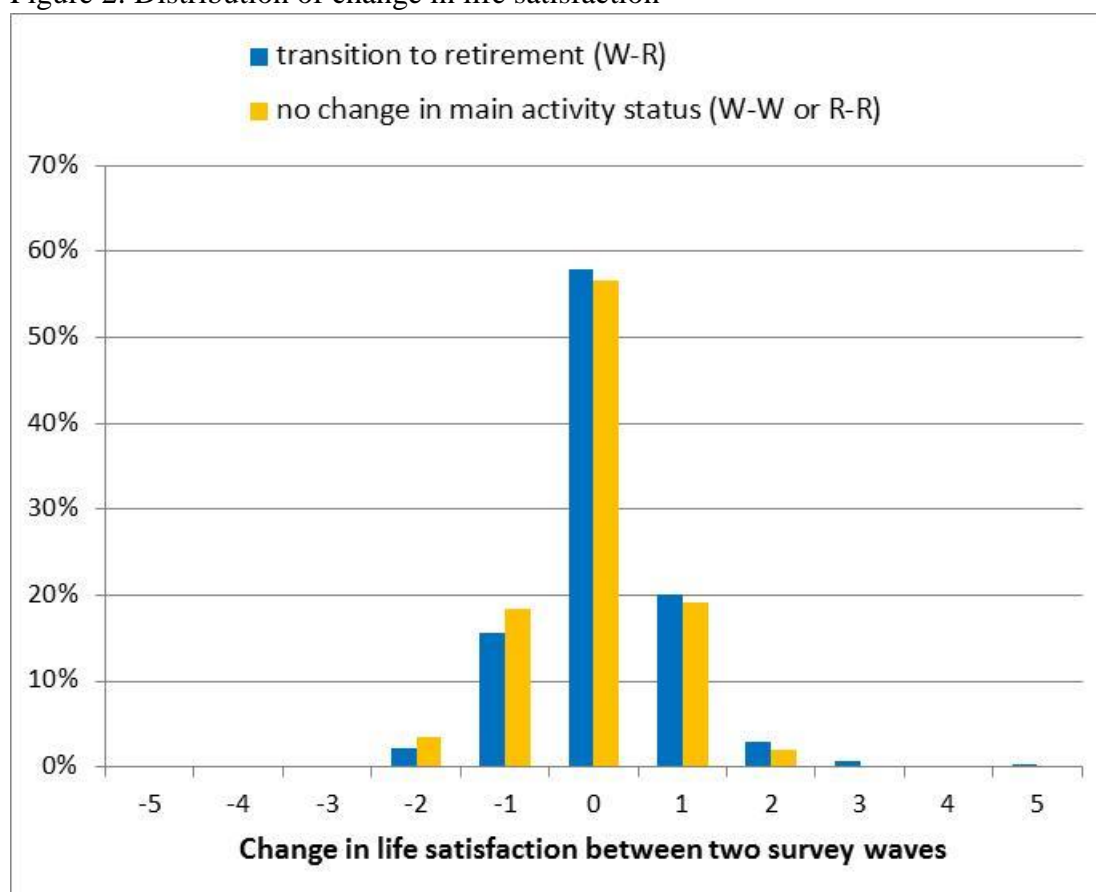NB: Covariates are measured at the last survey before retirement. No respondent retired after age 65.

Results

How does well-being change with retirement?

The first question we wanted to answer was: does the event of retirement lead to remarkable well-being changes, which are higher or different from the 'normal' changes we observe between two years (in our case two years working or being retired)? To this end, we compared changes in retirement transitions with changes between two consecutive years without retirement in between. Figure 2 shows that unchanged life satisfaction is the most common finding, not only between non-transitional years, but also when individuals went from work to retirement.

Great changes in well-being between two consecutive years are very rare. In 94 percent of all observed transitions, life satisfaction stayed the same or changed by one point. Changes in life satisfaction with more than two point occurred only in 4 cases, which is just over 1 percent of the analyzed sample. However, the most important finding is that there is no remarkable difference between the transition to retirement and the transitions where no change in status occurred. The chance to experience unchanged well-being even seems to be a little bit higher when entering retirement than in other years. The small differences seen in Figure 2 are not statistically significant, as revealed by a chi-square test ($p = 0.300$). Thus there is no evidence in our dataset for a general 'retirement shock', neither in a positive nor in a negative direction. This is consistent with findings from other studies, although there is some discussion on the short-term vs. long-term nature of this stability (Horner 2012).

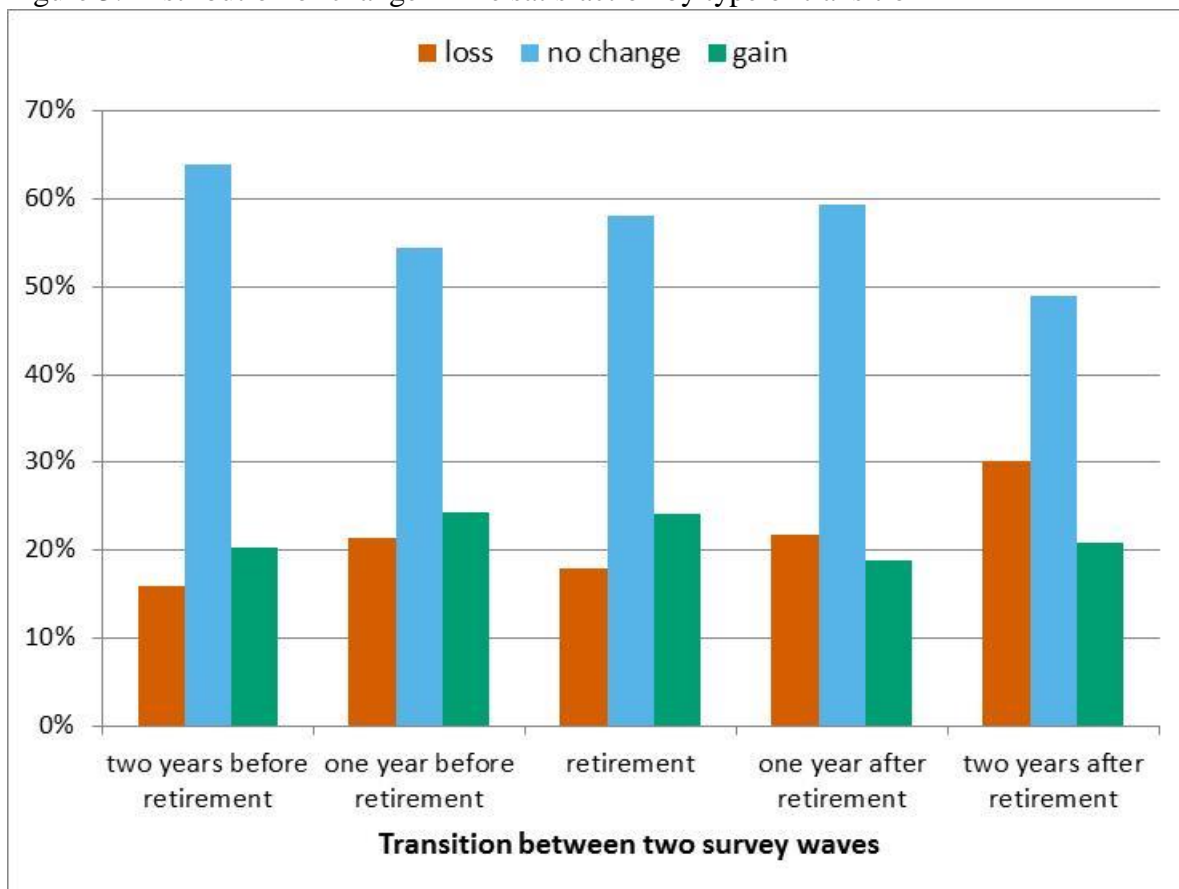Figure 2: Distribution of change in life satisfaction

Source: Statistics Austria, national EU-SILC data, own calculations.
NB: A positive value means that life satisfaction was rated better in the later than in the former survey year.

Since we do not know when precisely a respondent was retired between the two consecutive survey waves, and because a 'retirement-shock' could also happen with a time lag, we decided to have a closer look at the different types of transitions that can be observed for an individual between two survey waves: two years before retirement (**W-W-**W-R), one year before retirement (W-**W-W-**R and **W-W-**R-R), retirement-transition (W-W-**W-R**, W-**W-R-**R and **W-R-**R-R), one year after retirement (W-W-**R-R** and W-**R-R-**R), and two years after retirement (W-R-**R-R**). This also gives us the opportunity to disaggregate the 'no change in main activity status' category into no change before retirement and no change after retirement. In light of the small sample size we grouped all well-being gains and all well-being losses and ended up with three potential outcomes: life satisfaction loss, no change in life satisfaction, and life satisfaction gain.

Figure 3: Distribution of change in life satisfaction by type of transition

Source: Statistics Austria, national EU-SILC data, own calculations.

As we can see in Figure 3, patterns of life satisfaction changes are distributed quite similarly for each type of transition. The only tendency one might spot is that beginning with one year after retirement, the proportion of people with life satisfaction losses goes up a little bit. Well-being losses are more frequent than well-being gains in the years after retirement while it is the other way round in the years before retirement. One could draw the conclusion that there is a tendency to experience life increasingly less enjoyable after one year of retirement, what would conform the stage model of adaption proposed by Atchley (1976). Also some ageing effect is possible. However, a chi-square test indicates that altogether the distributions in Figure 3 are not statistically different (p = 0.224).

Which factors have an impact on well-being change during retirement?

Finally, we regressed summarized life satisfaction change (-1/0/1) during the retirement transition (W-R) on the explanatory variables given in Table 1. We applied a multivariate linear regression model and estimated parameters by standard OLS estimation.[3] We checked the robustness of our model class by alternatively estimating an ordinal logistic regression model, which did not alter our major findings. Because of easier parameter interpretation, we present the OLS model below.

Sex, highest educational level and occupational class were included as categorical regressors with dummy coding. Age was included as a metric variate, both linear and quadratic (see also Horner 2012). Job satisfaction was treated as a pseudo-metric regressor (1 meaning 'very satisfied' and 6 meaning 'very dissatisfied'). To check for a possible time trend we also included calendar year in the model.

We used only cases with non-missing values in all variables (available-case-method; n=260). Estimated regression parameters are given in Table 2.

Table 2: Estimated multivariate OLS regression parameters

	Estimate	S.E.
Sex		
Male	0.016	0.118
Female (reference category)	.	
Age - 50	0.023	0.088
(Age - 50) × (Age - 50)	-0.000	0.006
Highest educational level completed		
Compulsory schooling	0.478	0.247 '
Lower secondary education	0.436	0.217 *
Higher secondary education	0.316	0.226
Tertiary education (reference category)	.	
Occupational class		
Blue Collar	0.216	0.173
White collar, non managerial/supervisory	-0.006	0.174
White collar, managerial/supervisory	0.200	0.168
Self-employed (reference category)	.	
Calendar year - 2004	-0.010	0.027
Job satisfaction	0.200	0.052 ***
Intercept	-0.931	0.437 *

' $p<.10$ * $p<.05$ ** $p<.01$ *** $p<.001$

Source: Statistics Austria, national EU-SILC data, own calculations.
NB: The intercept parameter depends on the coding of the other parameters, so its p-value has no meaning.

---

[3] The statistical software used was IBM SPSS Statistics 20.

In contrast to our initial assumptions, neither sex, nor age or occupational class has a significant impact on life satisfaction change during retirement (remember that our analysis refers to change in life satisfaction, not its absolute level). Also calendar year is insignificant, implying that there was no general trend in life satisfaction change around retirement between 2004 and 2011. Some effect is observable for educational level, in a sense that for the lower educated life satisfaction evolves relatively better around retirement than for the tertiary educated. We do find a highly significant effect for job satisfaction, though. The less satisfied one is with one's job (high values mean dissatisfaction), the better the change in well-being is (see also Atchley 1982).

Discussion

Our analysis reveals that changes in well-being around retirement are distributed similarly to the years before and after. A majority of respondents rated their life satisfaction in the first year of retirement equal to the last year of employment. No evidence of a 'retirement shock' is found, neither in a positive nor in a negative direction. Since our sample compares ratings of the same elderly people over a relatively short period and given that we excluded respondents with considerable changes in health status, we believe the internal validity of our results to be high. Nevertheless, the sample is rather small and given the data and methods applied, one may question the external validity of our findings in several respects.

First, our analysis refers to a somewhat selective population among all those who get retired. We excluded people retiring very early (before 50) or very late (after 70) as well as people with unemployment, inactivity or temporary retirement experiences from our target population. Moreover, we excluded respondents who could not be interviewed in four consecutive survey years (e.g., because of refusal to be re-interviewed) or with proxy interviews. Thus, our results may be somewhat biased, although it is not clear in which direction. Moreover, it may be that the degree of bias depends on socio-economic variables. For instance, excluding people with unemployment experiences matters more for the low educated than the high educated, and excluding people with inactivity experiences matters more for females than males. Thus it may be the case that differences in life satisfaction change between population groups are over- or underestimated in our analysis, due to different degrees of selectivity.

One may question the assumption of a singular, clear-cut transition from work to retirement. But social security data show that such a transition is still the case for a the majority of Austrian workers (Federal Ministry of Labor, Social Affairs and Consumer Protection 2014). More importantly, our analysis is based on the assumption that the change in life satisfaction between the last survey when working and the first survey when in retirement actually covers the impact of retirement on life satisfaction. This is somewhat simplified, because a) our approach ignores the actual timing of retirement in the 12 months between the two surveys and b) annual comparisons may not sufficiently account for changes in well-being, which may occur over a longer time period and manifest themselves as lagged effects. Atchley (1976) proposes that individuals adapt themselves to retirement in a stage model, where an initial 'honeymoon stage' is followed by a steep reduction in well-being, which is then followed by a stable phase. A similar result is given by Horner (2012). Also, since the time of retirement is for most people rather predictable, not only changes in life satisfaction after, but also before retirement may occur over time, caused by anticipation effects (negative lags).

We included calendar year as a continuous predictor in our regression model, to see whether the average change in life satisfaction around retirement has changed over time. The Austrian pension system is dominated by the public pay-as-you-go, defined-benefit scheme, which was reformed substantially in 2004. Mayrhuber (2006) showed that, given constant employment histories, the 2004 pension reform lowered net replacement rates for most population groups, although the amount of reduction was not that great, and for some groups like women with children pensions were even higher under the new law. A comparison of actual net replacement rates (data obtained from the Austrian Federal Ministry of Labour, Social Affairs, Health and Consumer Protection) shows no essential difference in net replacement rates for people who retired in 1998 compared to those who retired in 2013. It seems that recent retiree cohorts have on average worked longer and thus mathematically compensated for the lower accrual rate under the new law.

Among the classical socio-economic breakdowns, only highest educational level completed showed some impact on life satisfaction change, in a sense that the tertiary educated fared relatively worse than the lower educational groups. A possible explanation is that the higher educated define themselves more by their job. It may also be an income effect, since the higher educated usually receive higher-than-average incomes, implying that their relative income loss after retirement is greater, at least in the public pension scheme (Whiteford and Whitehouse 2006: p. 87).

The only highly significant predictor we found was job satisfaction, which here can be interpreted as work satisfaction before retirement. For people dissatisfied with their job relatively large well-being gains after retirement are estimated, meaning that ceteris paribus this population group has an incentive to retire as early as possible. In contrast, if work life was satisfying, well-being gains after retirement are not as frequent or big. Variation in job satisfaction is thus responsible for some variation in life satisfaction change, and if one wants to strive for longer working lives, one should make sure that older employees work in good working conditions which lead to high job satisfaction. However, its population-level impact should not be over-estimated, because job satisfaction is distributed very unevenly, with a great majority of respondents reporting to be at least somewhat satisfied. Barslund et al. (forthcoming) show that this is the case not only for Austria, but for a number of European countries.

It remains the fact that around 25 percent of our sample respondents indicate well-being gains, and other 20 percent well-being losses during retirement, which are not caused by changes in health status and can hardly be explained by traditional socio-economic factors. Obviously, the impact of retirement on well-being is a very individual experience, which is hardly attributable to traditional structural breakdowns such as sex, age, and occupational class. Manifold dimensions of life matter for one's rating of work vs. retirement, and individual work and life experiences may play a role as well as and personality characteristics and attitudes of friends and family. To quote from Atchley (1982): 'One man's children may want to him to retire, another's may not'. The importance of personality was confirmed particularly for women by Kesavayuth et al. (2016). Wolf (2012) discussed psychological aspects of the 'retirement shock' and found no effect for sex, educational level and occupational group, some effect for income (higher income increases the probability of a retirement shock), and substantial influence of personality characteristics (to give an

example, respondents with a high score on neuroticism experienced a retirement shock more often).

To conclude, we assume that the perception of retirement is very distinct between individual workers, and that easily measurable features such as sex, age and occupational class cannot explain a great deal of that variation. Political proposals like 'white collar workers should retire later' may be justified from an actuarial perspective (Knell 2016), but cannot be justified on well-being grounds. Job satisfaction and probably other life experiences during the years prior to retirement, the procedure of retirement itself (e.g., voluntary or involuntary; Atchley 1982), as well as the personal and social situation after retirement, are more important. Other variables which may have an impact could be the respondent's relationship with his or her partner,[4] if the respondent has family or friends as a social backup in times of need, has hobbies, and values income over leisure. These factors may well contribute to the experience of leaving the active workforce and influence well-being.

Implications for further research

Further research should thus focus on significant predictors of life satisfaction change during retirement reaching beyond traditional socio-economic breakdowns. To get a first idea which factors could be relevant and get a deeper understanding of well-being in the later working life and throughout retirement, qualitative studies should be used. These could help to fill gaps in the understanding of this probably highly individual process.

Also, the limitations of our analysis caused by the short time axis should be overcome. As retirement may be experienced differently after 5 years than in the first year after retirement, EU-SILC with its four year panel might not be a suitable tool to adequately capture the changes that come with retirement in a longer perspective. A survey focusing on retirement itself with a longer follow-up of at least five years and more variables describing the personal situation of respondents (derived from a qualitative pre study as described above) would therefore be desirable. An idea is to explore to what extent the Survey of Health, Ageing and Retirement in Europe (SHARE) can fit this in the case of Austria.

Acknowledgements

References

Atchley, R. C. (1976): *The sociology of retirement*. John Wiley & Sons.

Atchley, R. C. (1982): Retirement: Leaving the world of work. *The Annals of the American Academy of Political and Social Science*, 464(1), 120-131.

---

[4] We estimated an alternative model where we also included as predictor whether one lives with a partner in the same household. The estimated parameter was not significant. The major weakness about this is however that we can only measure the existence of a partnership, not its quality.

Barslund, M., Bauknecht, J., & Cebulla, A. (forthcoming): Working conditions and retirement: How important are HR policies in prolonging working life.

Carone, G., Eckefeldt, P., Giamboni, L., Laine, V. & Pamies Sumner, S. (2016): Pension reforms in the EU since the early 2000's. Achievements and challenges ahead. Luxembourg: Publications Office of the European Union.

Eid, M. & Larsen R. J. (Eds.) (2008): *The Science of Subjective Well-Being*. The Guilford Press.

Federal Ministry of Labor, Social Affairs and Consumer Protection (2014): *Quartalsbericht* 3/2014.

Horner, E. M. (2014): Subjective well-being and retirement: analysis and policy recommendations. *Journal of Happiness Studies*, 15, 125-144.

Jahoda, M. (1982): *Employment and Unemployment: A Social-Psychological Analysis*. Cambridge University Press.

Knell, M. (forthcoming): *Fair pension systems and differential mortality*. In: FACTAGE project research report D4.2.

Kesavayuth, D., Rosenman, R. E., & Zikos, V. (2016): Retirement, personality and well-being. *Economic Inquiry*, 54(2), 733-750.

Mayrhuber, C. (2006): Pensionshöhe und Einkommensersatzraten nach Einführung des Allgemeinen Pensionsgesetzes. *WIFO Monatsbericht*, 11, 805-816.

Whiteford, P., & Whitehouse, E. (2006): Pension challenges and pension reforms in OECD countries. Oxford review of economic policy, 22(1), 78-94.

Wolf, S. (2012): *Psychologische Aspekte des Pensionsschocks* (Master's thesis, University of Vienna).