

**Extended working lives and late-career destabilisation: A longitudinal study of Finnish
register data**

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Abstract

This article analyses whether the trend of extending working lives has coincided with a destabilisation of late careers in Finland. On one hand, reforms that eliminate alternative exit pathways typically have been aimed at simplifying the transition from work to retirement. On the other hand, the need to work longer might entail a risk of increasing transitions between work and non-employment, as well as between jobs. *Destabilisation* is defined as the process of increasing complexity within individual life-course patterns over time. Using register-based Finnish Linked Employer-Employee Data, complexity within individual sequences of annual labour-market statuses between ages 51 and 65 is calculated for the Finnish population born between 1937 and 1948 ($N=238,099$). Distinction is made between sequences that only include transitions between employment and non-employment and sequences that include transitions between different jobs as well. Results show that the average late-career complexity has decreased when only transitions between work, unemployment, and pension types are considered, especially among women and the higher-educated. Less change is observed among the lower-educated. When transitions between jobs are included, the results show a slight late-career destabilisation among men and lower-educated, but a decrease in complexity among women and higher-educated. The findings suggest that late-career complexity was increasingly determined by transitions between jobs rather than between spells of employment and non-employment. However, lower-educated older workers continued to be at greater risk of early exit, while at the same time experiencing destabilising employment careers.

Keywords: extended working lives; career destabilisation; social inequalities; linked employer-employee register data; sequence analysis; Finland

Introduction

Most industrialised countries with ageing populations have recognised the need to extend peoples' working lives to keep their welfare states sustainable in the future (D'Addio, Keese & Whitehouse, 2010; OECD, 2014). In the past two decades, many of these countries have reversed policies that explicitly or implicitly encouraged early retirement of older workers and have adjusted their pension systems and labour markets to incentivise longer careers. The closing off of so-called early exit pathways, in particular, has reduced avenues for withdrawing from the labour market before the statutory retirement age (Ebbinghaus & Hofäcker, 2013). Together with the effects of better health, education and working conditions among younger cohorts of older workers, such reforms have contributed to increases in employment rates and delays in effective labour-market exits in many countries (Hofäcker & Radl, 2016).

On one hand, the extension of working lives should lead to greater continuity in late careers. Through reforms of exit pathways in particular, a greater share of older workers should be making fewer transitions, between employment and disability pensions or extended unemployment benefits, and continuing to work until a predefined statutory retirement age. On the other hand, exit pathways also have served as a safety net for older workers whose skills have become outdated or whose deteriorating health disables them (Blossfeld, Buchholz & Hofäcker, 2006). The removal of this safety net could mean that older workers who previously would have withdrawn from the labour market prematurely and permanently are now forced to continue working, even if this means working in more insecure jobs and being at risk of experiencing regular spells of inactivity due to sickness or unemployment (Anxo, Ericson & Jolivet, 2012).

The risk of late-career destabilisation can be expected to be stratified across gender and socioeconomic status (Calvo, Madero-Cabib & Staudinger, 2017). Not only has the risk of (involuntary) early exit been unequally distributed according to gender, education, occupational

status and income (Edge, Cooper & Coffey, 2017; Radl, 2013; Solem *et al.*, 2016), but the possibilities for re-employment and job mobility in late careers also typically display gender differences and a strong social gradient (Chan & Stevens, 1999; Raymo *et al.*, 2011; Sanzenbacher, Sass & Gillis, 2017; Schuring *et al.*, 2013; Tatsiramos, 2010).

This study investigates whether late-career patterns have destabilised in recent decades, using Finland as a case study. Late-career patterns are defined as sequences of main activity states during the period between ages 51 and 65. With the use of sequence analysis, destabilisation is measured as an increase in the complexity within individual status patterns, also known as differentiation (Aisenbrey & Fasang, 2010; Brückner & Mayer, 2005). In this study, a distinction is made between patterns of prime activity statuses only and patterns including changes in jobs. This allows for estimating the effects of both changes in access to exit pathways as well as developments in job mobility on late-career complexity. Changes in sequence complexity are analysed by gender and education levels to estimate the extent to which there have been social inequalities in late career (de-)stabilisation.

Extended working lives and late-career destabilisation

Recent studies have promoted the idea of looking at careers not by focusing on ‘snapshots’ of single job transitions, but by viewing careers or parts of careers as sequences of jobs and various labour-market statuses (Calvo, Madero-Cabib & Staudinger, 2017; Van Winkle & Fasang, 2017). This approach allows for looking at careers as life-course stages in their entirety and identifying patterns in the timing, order and duration of employment and non-employment spells. When careers destabilise, these patterns become more complex due to an increase in the number of states and transitions during an individual’s life course, as well as more unpredictable due to greater variation in the lengths of spells spent in different states. Brückner & Mayer (2005) have termed this process

of increasing complexity the differentiation of the life course. The term *destabilisation* is used in this article because a greater complexity within careers also entails less continuity, as well as greater instability and unpredictability. For instance, a career consisting of one secure lifelong job can be considered more stable and predictable than a career consisting of various short-term contracts and intermittent spells of unemployment. Various recent studies have used indicators of sequence complexity to analyse differentiation and destabilisation of early and mid-careers (Biemann, Fasang & Grunow, 2011; Van Winkle & Fasang, 2017; Widmer & Ritschard, 2009), as well as late careers up to retirement (Calvo, Madero-Cabib & Staudinger, 2017; Fasang, 2012; Riekhoff, 2016).

From a policy-making perspective, policies to extend working lives are, at least ideally, about reducing complexity in late careers, i.e., they aim at de-differentiation. In theory, closing off exit pathways reduces the complexity within late careers by eliminating a state, e.g., disability-pension receipt, between a career-job and collecting old-age pension. Complexity also is reduced due to the continuity of the employment state, especially if other active labour market and active ageing policies are in place to reinforce job retention, encourage hiring and facilitate job mobility of older workers (OECD, 2006).

However, in reality, the extension of working lives may have different effects on late-career complexity. First, it is possible that by closing off one pathway, another pathway will take its place (Ebbinghaus, 2006). If no substitute is available, it is also possible that older workers simply will remain inactive until becoming eligible for an old-age pension. This changes the type of states within the sequences, but has no effect on the complexity of late-career patterns as such. Second, if policies to support their employment are not in place, older workers are still at risk of losing their career jobs. With no exit pathways in place to provide a permanent exit, they might return to the labour market in a new job after a short period of unemployment or receiving disability benefits. This would increase the number of transitions in their late careers and lead to an increase in instability. Moving in and out of jobs and collecting benefits until reaching the statutory retirement

age is a type of retirement pattern that has been termed ‘muddling through’ (Fasang, 2010; Moen & Roehling, 2005).

Destabilisation of employment in late careers

Career patterns might destabilise not only because of an increase in transitions between employment and non-employment, but also because of increases in shifts between jobs. There has been a popular notion that employment has destabilised in Europe and in the U.S., even though recent studies have shown that careers have been more stable over time than generally assumed. In her review focusing on U.S. literature, Hollister (2011) found studies that linked deindustrialisation, globalisation, technological change, the shareholder revolution and changing HR strategies to decreased employment stability, but that empirical results have been mixed in their support of the destabilisation hypothesis. Biemann, Fasang and Grunow (2011), focusing on early careers in Germany, found no evidence that industry-specific economic globalisation affected career complexity and found no clear upward trend in complexity over time. Van Winkle and Fasang (2017) also found little change in complexity across cohorts in European countries.

Nevertheless, whereas these studies mainly focused on early- or mid-careers, the dynamics behind late-career destabilisation potentially are different for at least two reasons. First, older workers might be more affected by global economic and policy changes than their younger counterparts. Older workers commonly have had a lower likelihood of changing jobs due to tenure and seniority rules that provide better job security and earnings (Blossfeld, Buchholz & Hofäcker, 2006). However, in times of globalisation and economic stagnation, this security blanket increasingly has become more vulnerable, while retirement risks have been becoming more individualised in many countries (Vickerstaff & Cox, 2005). At the same time, with early-exit options less available, older workers are more likely to change jobs when anticipating later

retirement (Sanzenbacher, Sass & Gillis, 2017) or company downsizing (Jolkkonen *et al.*, 2017). In this particular stage of the life course, they are also more likely to move to a less-demanding or part-time job if their health deteriorates or if they decide to devote more time to their family or activities other than work (Cahill, Giandrea & Quinn, 2013).

Second, older workers' skills are more likely to be outdated in times of deindustrialisation and fast technological change, and employers see fewer returns from training older workers when their expected retirement is only a few years away (Blossfeld, Buchholz & Hofäcker, 2006). When exit pathways are no longer available for employers to shed their older workforce, the likelihood of displacement and unemployment increases. In cases of involuntary job loss, older workers are less likely to find new employment (Chan & Stevens, 1999; Tatsiramos, 2010). As a result, the risks of long-term unemployment or 'muddling through' become more common than with younger workers.

Differences by gender and level of education

Complexity and destabilisation in late-career patterns are likely to be stratified across gender and social class. Various studies have found greater complexity in women's careers at any stage of their life courses (Calvo, Madero-Cabib & Staudinger, 2017; Van Winkle & Fasang, 2017; Widmer & Ritschard, 2009). Additionally, studies have shown that there are vast gender differences in retirement. Early and involuntary retirement has been found to be more common among women in Europe (Radl, 2013). Therefore, closing off exit pathways may affect women's late careers more dramatically than men's trajectories. At the same time, the factors that enable or block extended working lives are different for women than for men, with women often in more precarious positions (Edge, Cooper & Coffey, 2017). Women often have been more vulnerable in their late careers because of lower pension accruals and social-benefit entitlements due to employment in lower-paying jobs, part-time work and longer career breaks (Madero-Cabib, 2015). Moreover, in cases of

displacement, U.S. studies have found higher probabilities of retiring early among older women than men and lower probabilities for re-employment (Chan & Stevens, 1999; Raymo *et al.*, 2011). Therefore, it is expected that women's late careers, overall, will show greater complexity, as well as a greater degree of destabilisation over time.

Educational attainment plays an important role in determining the dynamics of late careers (Calvo, Madero-Cabib & Staudinger, 2017). Low-skilled workers are generally likely to exit the labour market early, usually 'involuntarily', through disability or unemployment pathways (Radl, 2013; Solem *et al.*, 2016). Moreover, in cases of job loss, low-skilled workers have been found to be less likely to be re-employed (Schuring *et al.*, 2013). Therefore, due to less-stable employment and a higher likelihood of entering exit pathways, late careers are expected to be more complex for lower-skilled workers. Nevertheless, their late careers are expected to destabilise at a slower rate over time because they will continue to be a group that exits early due to the obstacles they face in finding new employment.

Higher-educated older workers, on the other hand, are usually more likely to work longer and less likely to use exit pathways (Radl, 2013). This should contribute to lower complexity in their late careers (Calvo, Madero-Cabib & Staudinger, 2017). In addition, when options for early exit are removed, the benefits of switching jobs, such as better earnings or working conditions, become higher (Sanzenbacher, Sass & Gillis, 2017). This could contribute to higher late-career complexity. Therefore, it is expected that, whereas overall late-career complexity is lower for higher-educated workers due to their more limited use of exit pathways, their better possibilities for changing jobs will lead to a higher rate of destabilisation among higher-educated older workers' employment careers.

National policy and economic context: the extension of working lives in Finland

Whereas several studies found few increases in career complexity across cohorts, two factors have been identified as having a substantial impact on complexity. First, using comparative data on 14 European countries, Van Winkle and Fasang (2017) found that national institutions and policies matter, finding greater differences between countries than across birth cohorts. Also, Fasang's (2012) earlier comparative study showed that retirement patterns were less stable in the British liberal welfare state than in the German conservative-corporatist welfare state. Second, Biemann, Fasang and Grunow (2011) concluded that in Germany, economic conditions at each specific point in time had a substantial impact on career complexity within each cohort. Therefore, changes in late-career complexity should be seen in the context of national institutions and policies, as well as the economic conditions of that period. To draw comparisons with other countries, it is, therefore, necessary to provide the context for career destabilisation in Finland in the 1990s and 2000s.

Finland provides an outstanding case study for the purposes of this article, as a country that reformed its early-exit pathways in the wake of a severe economic crisis and managed to delay older workers' effective retirement. The history of early exit in Finland is different from those of continental European countries. By the end of the 1980s, even though the Finnish economy was doing well, early exit was promoted to facilitate structural changes in favour of competitive export-oriented sectors (Hytti, 2004). In the early 1990s, however, Finland was hit by a severe economic crisis that sent unemployment and early exit soaring, creating immediate pressure on the fiscal sustainability of the pension system. Although overall employment rates started to improve by 1995, employment rates among older workers lagged during the early recovery period. It was only when reforms were introduced in the pension system and exit pathways that older workers' employment figures began to improve more substantially (Ilmakunnas & Takala, 2005; Kyyrä, 2015).

The dominant early-exit pathway until 2005 was the so-called ‘unemployment tunnel’. Until 1997, those who became unemployed at age 53 were eligible for an extended unemployment allowance at the age of 55 when the maximum duration of earnings-related unemployment benefits ended. Subsequently, an unemployment pension would become available at the age of 60, which converted to an old-age pension at the age of 65. In 1997, the lower age threshold for the extended allowance was raised to 57 for those who became unemployed after 55. In 2005, the unemployment pension was abolished, while the extended allowance was still available, albeit only from age 59.

Disability pensions have been a second major exit pathway. There were two types of disability pensions. The first can be called the ordinary disability pension, which has been available to all with permanent reduced health after a year of receiving sickness benefits between the ages of 18 and 65 (62 starting from 2006). The second was a ‘relaxed’ disability pension (or individual early retirement pension [IER]), which has been available starting at age 58 for those with long careers and less-severe health problems. In 2000, its eligibility age was raised to 60, after which the IER was abolished in 2005 for those born after 1943. At the same time, medical-screening criteria for ordinary disability pensions were partially loosened.

The year 2005 also marked an extensive reform period for the Finnish old-age pension system. Until then, early retirement with permanently reduced pension benefits had been possible at age 58 in the public sector and 60 in the private sector. This age threshold was lifted to 62 for both sectors. Moreover, the fixed statutory retirement age of 65 was replaced with a flexible retirement age ranging from 63 to 68. Retirement at the earliest possible age is not penalised, but later retirement is rewarded with a higher pension-accrual rate.

Studies have shown that these reforms between 1997 and 2005 have contributed to extending working lives in Finland. Employment rates for the age group 55-64 steadily increased from their lowest point of 33.5 percent in 1994 to 61.4 percent in 2016. In recent years, women’s

employment rates surpassed men's (63.0 and 59.8 percent in 2016, respectively). Kyyrä (2015) found that closing competing exit pathways raised the average age at which workers enter retirement by 3.9 months. However, he also found gender and socioeconomic differences in its effects. Reforms of disability mainly affected educated women in the public sector, while reforms of the unemployment tunnel affected lower-educated men in the manufacturing sector the most. A study by Tuominen (2013) showed that the proportion of workers retiring before age 62 decreased after 2005, but that the percentage retiring at exactly 63 increased considerably since the reforms. Various studies have shown that those who work until age 63 or later are a mixed group and work longer for different reasons (Järnefelt, 2010; Riekhoff & Järnefelt, 2017; Tuominen, 2013). This group includes both higher-educated women with relatively lower incomes working in the public sector, as well as higher-educated men with higher incomes working in the private sector.

These institutional and economic shifts in Finland between the mid-1990s and mid-2010s are expected to affect complexity in several ways. The economic crisis of the 1990s likely contributed to increased complexity, especially due to transitions through unemployment and unemployment pensions. The crisis, however, reduced transitions between jobs, especially for those in declining sectors and with lower education. Subsequently, the economic recovery and reforms in exit pathways are likely to reduce transitions through non-employment and increase transitions between jobs. This effect is expected to be stronger for higher-educated workers. Finally, due to the high labour-market participation rate among women, gender differences in late-career complexity in the Finnish context are expected to be smaller than were hypothesised based on findings from other countries (Riekhoff & Järnefelt, 2017). Moreover, in light of a rise in educational attainment, especially among women, it is possible that there will be interaction effects between gender and education in the destabilisation of careers across cohorts.

Data and methods

This study used Finnish Linked Employer-Employee Data (FLEED) from Statistics Finland.

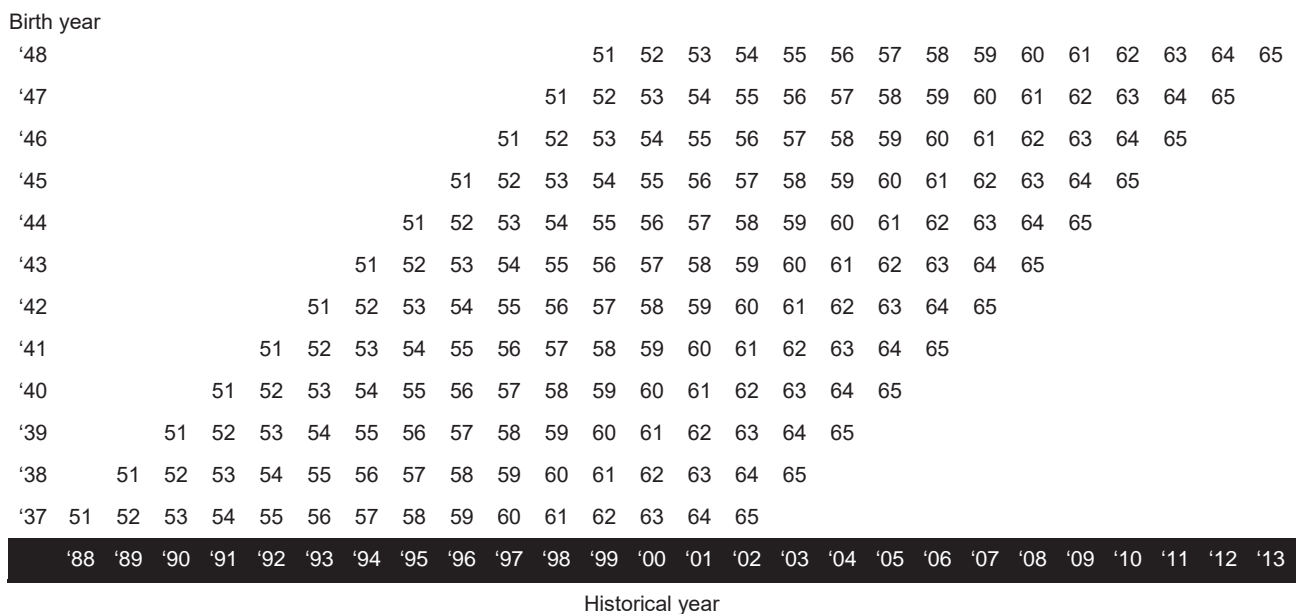
FLEED is a longitudinal dataset that spans from 1988 until the most recently available year (at the time of this study, 2013) and covers a representative sample of one-third of the Finnish working population through age 70. The data are collected from various registers on an annual basis and include a broad set of labour market and sociodemographic variables at an individual level, as well as variables at the enterprise level. Individuals can be linked by company identifiers, as well as by their spouse identifiers, making it a uniquely rich source of data.

The study population consisted of those born between 1937 and 1948. This yielded a large total sample of $N = 238,099$. The aim was to follow this group during their late careers. ‘Late career’ is defined as the life-course stage ranging from the year of turning 51 until the year of turning 65. The age of 50 is the starting point because in much of the policy literature, workers start to be considered ‘old’ at that age (OECD, 2006). The age of 65 is set as the end date in accordance with the same policy literature, as it has been the traditional statutory retirement age for men in most industrialised countries. Admittedly, under the current Finnish flexible-pension system, 68 is the upper retirement age. Until the reforms of 2005, however, 65 was the fixed statutory retirement age. After the reforms, there was an increase in pension take-up at the earliest possible age of 63, while very few extended their working lives until 68 (Tuominen, 2013). A follow-up period of 15 years is an adequate period for capturing the complexity within careers, while at the same time, it allowed for analysing changes in complexity across 12 consecutive birth cohorts.

Figure 1 shows how this translates into coverage of ages, periods and cohorts. In short, the oldest cohort was born in 1937, turned 51 in 1988 and 65 in 2002. The youngest cohort was born in 1948, turned 51 in 1999 and 65 in 2013. Due to the longitudinal approach of this study, the Age-Period-Cohort problem is at work. Age does not pose a direct problem because the main

dependent variable is a calculated measure for the same age bracket for all (Van Winkle & Fasang, 2017). However, this is problematic for identifying period effects due to each measure encompassing 15 follow-up years, as well as the large overlap in periods due to having cohorts that were born in consecutive years. This makes it nearly impossible to incorporate the effects of the economic situation and specific reforms, the latter of which were introduced both simultaneously and in phases, applying to certain cohort years while creating opt-outs for others. As a result, when this study analyses change over time, it focuses on change across cohorts. Nevertheless, based on the unidirectional nature of the reforms toward closing off exit pathways and the steady extension of working lives that can be observed in the data and in other studies, it is cautiously assumed that the reforms and economic situation affect career complexity trend-wise across cohorts.

Figure 1: Lexis diagram of late career patterns from ages 51 to 65 of study cohorts in historical time



For each individual, the main activity on the last day of each year was registered. These were used to construct individual sequences, each of which consists of 15 states of five possible main activity statuses. Options for main activity were ‘employment’, ‘unemployment’, ‘unemployment pension’, ‘pension’ and ‘inactivity’. Less-frequent statuses of ‘student’ and

‘military conscription’ were grouped with ‘inactivity’. ‘Pensions’ include both basic and earnings-related pensions, and require being fully non-employed. Unfortunately, the distinction between old-age and disability pensions could not be made through this dataset. There was also no option to distinguish between full-time employment, part-time employment and part-time retirement.

Whereas part-time employment is a rather rare phenomenon among older Finnish workers, the drawing of a partial pension in combination with a reduction in working hours has been relatively common. In the case of the latter, the main activity is nevertheless registered as ‘employment’.

Additionally, alternative sequences were constructed that include changing jobs. Different jobs in individual sequences were coded with consecutive numbers. Each employed person started in ‘Job 1’ from the beginning of each follow-up period. If the enterprise code of a job changed, the state changed to ‘Job 2’. The next job would be ‘Job 3’, etc. Therefore, in these sequences, there was a maximum of 15 different job statuses in addition to the four non-employment main-activity states.

Changes in jobs were identified by the codes of the enterprise and establishment of the individual’s employer at the end of each year. If the enterprise and establishment code changed from one year to another while the person was employed in both years, it was assumed that the person had changed employers. This ‘double check’ was performed because if only looking at enterprise codes, i.e., the legal entity the person works for, there was a risk that this code changed not due to a change in jobs, but because, for example, the company merged with another company. Therefore, it was assumed that there was no change in jobs if the enterprise code changed, but the establishment, i.e., the physical location the person works at, remained the same (Ilmakunnas & Ilmakunnas, 2014; Jolkkonen *et al.*, 2017; Korkeamäki & Kyyrä, 2014).

In 32.6 percent of the cases, one or more years were missing information on establishment codes while the individual was employed. Spells of these ‘missing statuses’ were imputed as if they were spells of employment with a distinct employer. Analysis on a restricted

sample excluding these cases indicated that those with longer employment spells and fewer transitions into non-employment states were underrepresented compared to the overall population (not reported). This caused career complexity to be higher when excluding job changes from the sequences, but lower when including job changes and affected especially higher-educated, as they were more likely to be employed longer and thus be excluded from the restricted sample. Therefore, all analyses were performed using the total population with imputed values for missing employer information.

Moreover, between 2004 and 2005, a change in the coding of employers and establishments in the public sector took place in FLEED. Therefore, in constructing the sequences, it was assumed that anyone employed in the public sector in 2004 *and* in 2005 did not change jobs, even if their enterprise and establishment codes changed. In theory, this may lead to an underestimation of job changes among the younger cohorts. However, underestimation is likely to be small, as employment in the public sector in Finland has been rather stable and in the cases where job changes might have taken place between 2004 and 2005, they occurred with the same employer.

Sequence analysis was applied to construct sequences and analyse their complexity. Sequences can be defined as ordered lists of states (Abbott, 1995: 94). Sequence analysis is a method within the algorithmic statistical tradition. It allows for detecting patterns in data and identifying the processes that produce them, without making prior assumptions about the processes that generate the data (Aisenbrey & Fasang, 2010: 425). The concept of trajectory complexity was operationalised by Elzinga's turbulence indicator (Elzinga, 2010; Elzinga & Liefbroer, 2007). Turbulence for any sequence x is calculated as

$$T(x) = \log_2\left(\varphi(x) \frac{s_{t,max}^2(x) + 1}{s_t^2(x) + 1}\right)$$

in which $\varphi(x)$ is the number of distinct sub-sequences, s_t^2 is the variance in state duration and $s_{t,max}^2$ is the maximum value that this variation can take, given the length of the sequence, which is calculated by

$$s_{t,max}^2 = (n - 1)(1 - \bar{t})^2$$

with \bar{t} being the mean consecutive time spent in the distinct states (Elzinga, 2010; Gabadinho *et al.*, 2010: 85). One of the elements of the turbulence indicator is that it measures complexity within sequences by not only considering the variety of states, but also the time spent in those states and the variation in their durations. Sequence turbulence increases when longer spells are spent in different states, while the more time is spent in one particular state, the less turbulent the sequence becomes (Elzinga & Liefbroer 2007: 233).

With each sequence consisting of 15 consecutive annual statuses, the minimum value the turbulence indicator can take is 1.00 and the maximum is 15.00. Value 1.00 indicates that all 15 years were spent in the same state, e.g. someone has been employed (in the same job) for the entire period. Value 15.00 indicates that each year was spent in a difference state, e.g., someone has been changing jobs on a yearly basis. If someone spends 14 years in one state (e.g., employment) followed by one year in a different state (e.g., retirement), turbulence is 2.00. Shifts between those states increase turbulence with relatively small degrees. For instance, two consecutive years in retirement increase turbulence to 2.47, three consecutive years in retirement results in a turbulence of 3.03.

Turbulence increases at a faster rate when sequences become less predictable. Therefore, the timing of states matter. If someone is employed for 14 out of 15 years, but one other state (e.g., unemployment) occurs at age 58 instead of 65, turbulence is 7.77 instead of 2.00. When the number of states within a sequence increases, average turbulence tends to be higher. Someone who works until 64 and retires at 65 has a turbulence indicator of 2.00, but if additionally changing

from job 1 to job 2 at age 57, turbulence increases to 4.50. If that person also experienced a year of unemployment between changing those jobs, turbulence increases to 5.45. Finally, the length of each of the spells matters. Someone who experienced three spells of equal length in different states (e.g., employment in two jobs before retiring at the age of 61) has a relatively high turbulence level of 8.04.

One limitation within the use of annual data is that the sequences of main-activity statuses and jobs only capture states at the end of each year, but cannot account for possible variations within each year. Therefore, the levels of sequence complexity are expected to underestimate the real levels of instability, especially by not registering shorter spells of unemployment. This applies especially to the sequences consisting of main-activity statuses only. The sequences including job changes might provide a better estimation of complexity, as spells of employment with different employers might have been interrupted by periods of unemployment. Furthermore, real complexity might be underestimated because of the lack of separate statuses for part-time and disability pensions. However, the only possibility to draw a part-time pension was to continue working with the same employer, so in those cases, there is a large degree of continuity in this state. Since disability pensions are governed by the same authorities and similar rules as old-age pensions, the transition from one to the other can be considered a formality without substantially affecting the individual's income or labour-market position.

As it was hypothesised that the exit pathways and reforms thereof affected the level of destabilisation, exiting through these pathways was reconstructed with the sequence data, using sequence analysis and clustering. A simple Hamming measure was employed to calculate the distance between sequences. The Hamming measure is suitable for the analysis of retirement patterns, as it is particularly sensitive to the timing of the states (Studer & Ritschard, 2016). Optimal Matching and Dynamic Hamming Distances were tested as alternative dissimilarity measures,

resulting in the same optimal number of clusters of similar type, but with somewhat different distributions and lower clustering quality scores as measured by Average Silhouette Width (ASW). The Ward method was used for clustering sequences (Studer, 2013).

The changes in complexity were analysed by gender and education, with the latter being an indicator of socioeconomic status. Education was measured by highest level of attainment and divided into three categories: lower (only primary, no formal qualification), intermediate (upper secondary or basic vocational) and higher (tertiary) education. Descriptive statistics for each of the independent variables are presented in the Annex.

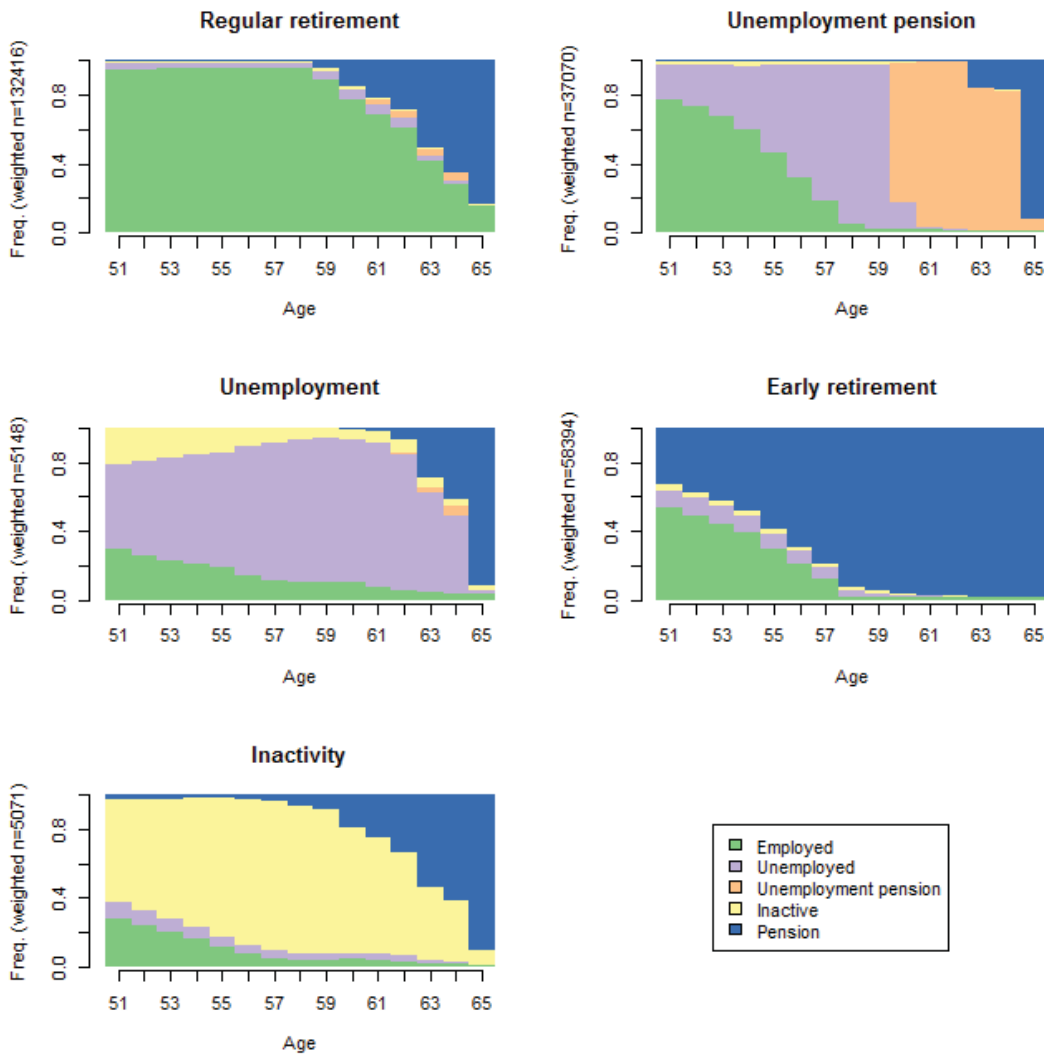
In addition to the two main dependent variables, sequence turbulence excluding job changes and sequence turbulence including job changes, the differences between the two variables are calculated and analysed as well. The rationale behind this is to analyse to what extent late-career complexity was determined by changes between employment and non-employment and to what extent by changes between jobs. These results might help explain the degree to which the closing off of exit pathways is accompanied by increased job mobility. It should be noted that this calculated difference does not equal an exact quantification of exit pathways vs. job mobility, as the turbulence indicator is sensitive not only to the number of transitions, but also to the length of spells. Especially when there are few transitions, the spell length increases its weight. Nevertheless, in combination with the other two turbulence indicators, the findings might provide a good indicator of the type of changes in complexity.

Findings

Late-career patterns and working-life extension in Finland

Figure 3 shows the most typical late-career patterns for all cohorts, based on results of the sequence and cluster analysis. A five-cluster solution proved to be optimal, with an ASW of 0.53, indicating a reliable structure (Studer, 2013). Moreover, the cluster solution adequately reflects the reality of Finnish retirement in the period studied. The largest cluster is labelled 'Regular retirement' (55.6%) and includes those who worked until age 59 or later. Although retirement at 59 or 60 is still relatively early, it reflects exit mainly through the old-age pension system, including early retirement options at ages 58 and 60 before the 2005 reforms. The second-largest cluster, 'Early retirement' (24.5%), in which workers predominantly retired before the age of 58, includes those who withdrew before any of the old-age pensions were available, most likely on disability pensions. The third-largest cluster consists of those who retired on an unemployment pension following a longer period of unemployment benefit receipt ('Unemployment pension': 15.6%). Finally, there are two smaller clusters: 'Unemployment' (2.2%) includes those who experienced unemployment, but did not retire on an unemployment pension, and 'Inactivity' (2.1%) consists of those who remained largely outside the labour market.

Figure 2: Five-cluster solution of late career patterns in Finland



The extension of Finnish working lives has been well-documented in previous research (Ilmakunnas & Takala, 2005; Järnefelt, 2010; Kyrrä, 2015; Tuominen, 2013). Although it is not the aim of this study to repeat such analyses, it is worth describing how late-career patterns have changed over the past two decades based on FLEED data. The table in the Annex shows how the incidence of the identified patterns has changed across cohorts. Whereas among the 1937 cohort, 34.9 percent was in ‘Early retirement’, its percentage had decreased to 19.2 for the 1948 cohort. ‘Regular retirement’, in contrast, increased from 42.9 percent to 63.6 percent during the same period. The take-up of ‘Unemployment pension’ still increased between the 1937 and 1941

cohorts, but after that, the reforms phasing out unemployment pensions become visible in the data. Among the 1948 cohort, only 12.3 percent exited the labour market through unemployment pensions.

In Table 1, the results of a multinomial logistic regression model show how the likelihood of belonging to each of these clusters has changed between cohorts, using categories of three consecutive birth years. Especially in the cases of ‘Early retirement’ and ‘Unemployment pension’, this likelihood has decreased substantially between the 1937-1939 and 1946-1948 cohort categories. There was a smaller decrease in the probability of ‘Inactivity’ over time. ‘Unemployment’ was somewhat less common among those born in 1943-1945, but no statistically significant differences could be discerned between the other cohorts. This might indicate that the incidence of ‘Unemployment’ is affected by the business cycle rather than the closing of exit pathways. The results also show that the differences between men and women were relatively small, although women were about twice as likely to enter the ‘Inactivity’ cluster. There were fairly large differences in education. Lower-educated workers were less likely than middle-educated to enter the ‘Regular retirement’ cluster and ran a greater risk of entering ‘Early retirement’, ‘Unemployment pension’, ‘Unemployment’ and ‘Inactivity’. Higher-educated were more likely to enter ‘Regular retirement’ and less likely to end up in any of the other clusters.

Table 1: Multinomial logistic regression for the likelihood of belonging to each of the late career clusters

		ER	UP	U	I
Birth year (Ref. = 1937-1939)	1940-1942	0.663**	0.878**	1.016	0.779**
	1943-1945	0.532**	0.550**	0.824**	0.776**
	1946-1948	0.462**	0.483**	0.976	0.795**
Woman		0.810**	0.977	1.137**	2.117**
Education level (Ref. = Middle)	Lower	1.577**	1.479**	1.551**	1.479**
	Higher	0.313**	0.272**	0.377**	0.910*
Nagelkerke R ²	0.086				
N	238,099				

Note: ‘Regular retirement’ is reference group, ER = ‘Early retirement’, UP = ‘Unemployment pension’, U = ‘Unemployment’, I = ‘Inactivity’. Indicated are odds ratios. * p<0.05, ** p <0.01.

(De-)stabilisation?

Figure 3 shows the differences and changes in turbulence by the late-career patterns that were identified, indicating how the exit pathways in the Finnish context were related to late-career complexity. At least two things stand out. First, the variation in turbulence between the late-career patterns was substantial, both when excluding, as well as including, job changes (Figures 3a and 3b). The complexity within the ‘Unemployment’ and ‘Unemployment pension’ clusters was highest and rising across cohorts. Complexity within the ‘Early retirement’ cluster was relatively low and stable across cohorts. The ‘Regular retirement’ and ‘Inactivity’ clusters were situated in between the other clusters, although among the youngest cohorts, complexity within the ‘Regular retirement’ cluster had dropped to the levels of ‘Early retirement’.

Second, there were only substantial and increasing differences within the ‘Regular retirement’ cluster between the turbulence averages excluding and including job changes (Figure 3c). The increasing differences appears to be mainly due to the decline in complexity with job changes excluded. In the other clusters, differences were small and relatively stable across cohorts. In the cases of ‘Unemployment’ and ‘Unemployment pension’, high turbulence was probably due to the influence of regular intervals of unemployment, rather than frequent changes in jobs. In the cases of ‘Inactivity’ and ‘Early retirement’ a single period of employment is often combined with long spells of inactivity and retirement, respectively. The negative values for the average turbulence difference in the ‘Early retirement’ cluster were due to the sensitivity of the turbulence indicator to cases with fewer transitions and longer spells. For instance, a sequence with only two equally long spells of employment and pension has higher turbulence than a sequence with two short job spells and a long spell of pension.

Figure 3a: Average turbulence by birth year and late career pattern, excluding job changes

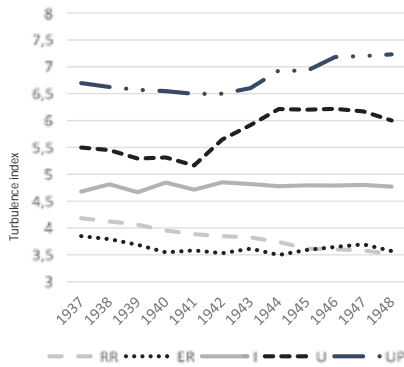


Figure 3b: Average turbulence by birth year and late career pattern, including job changes

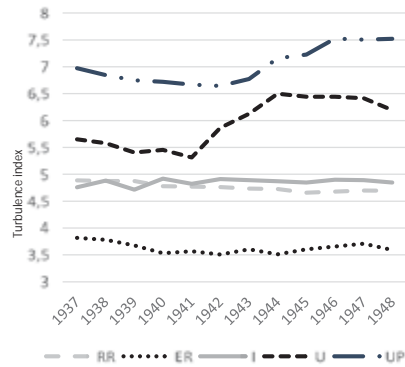
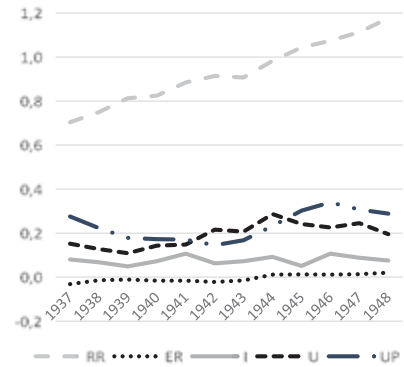


Figure 3c: Difference between turbulence including and excluding job changes by birth year and late career pattern



Figures 4a and 4b present the turbulence averages per cohort and for men and women separately. Observing complexity excluding job changes (Figure 4a), women’s career complexity was somewhat higher than men’s. There was de-differentiation among both men and women. Turbulence declined with a steady downward trend until the 1944 cohort, after which it stabilised at least momentarily. Average turbulence was, unsurprisingly, higher when including job changes (Figure 4b). Among men, turbulence remained almost stable until the 1943 cohort, after which late careers started to destabilise to a small degree. Among women, turbulence decreased until the 1945 cohort, after which career complexity remained at a fairly constant level. However, overall changes were minor. Figure 4c shows that between the 1937 and 1948 cohorts, the difference between the turbulence indicators, including and excluding job changes, has increased for both men and women, following a steady upward trend. This indicates that changes between jobs increasingly made a greater impact on late-career complexity in relation to changes between employment and non-employment, although somewhat more for men than for women. Again, this appears to be due more to decreases in transition in and out of non-employment rather than increases in transitions between jobs.

Figure 4a: Average turbulence by birth year and gender, excluding job changes

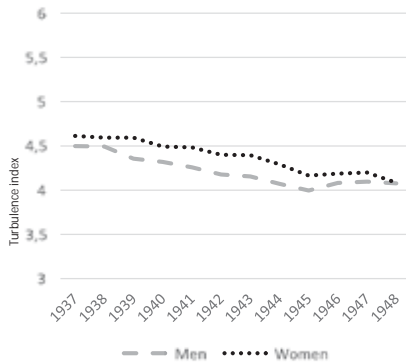


Figure 4b: Average turbulence by birth year and gender, including job changes

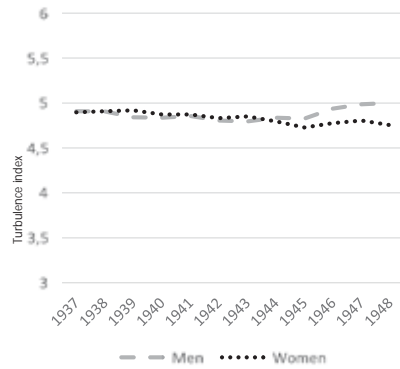
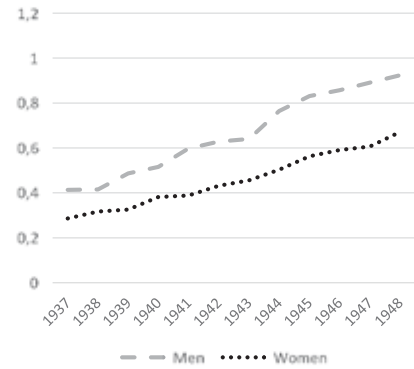


Figure 4c: Difference between turbulence including and excluding job changes by birth year and gender



Figures 5a and 5b indicate the socioeconomic differences in late-career

destabilisation by levels of education. Figure 5a shows that, with job changes excluded, late-career complexity was lowest among higher-educated and higher among the lower- and intermediate-educated. Late-career patterns de-differentiated for all education levels, although the career complexity of lower-educated workers remained at a more constant level across cohorts. With the inclusion of job changes, complexity decreased among the higher-educated, remained stable among the middle-educated and somewhat increased among the lower-educated (Figure 5b). Figure 5c indicates differences between average turbulence, including and excluding job changes. It shows that levels of career complexity among higher-educated continuously depended more on job changes than among lower- and middle-educated.

Figure 5a: Average turbulence by birth year and education, excluding job changes

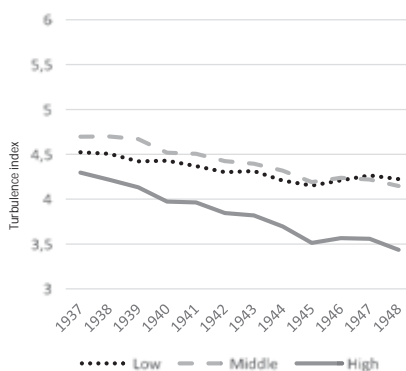


Figure 5b: Average turbulence by birth year and education, including job changes

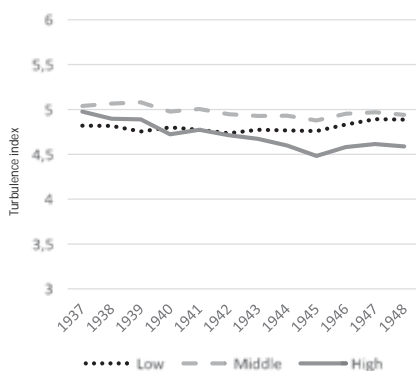
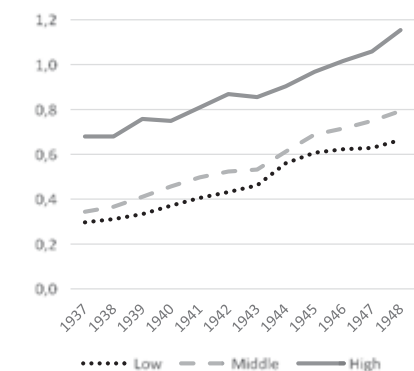


Figure 5c: Difference between turbulence including and excluding job changes by birth year and education



Regression models

Additionally, a series of regression models was applied to estimate the extent of late-career (de-) stabilisation across cohorts and the contribution of gender and education to changes in levels of complexity. In these models, the intercept represents the level of turbulence among middle-educated men in the 1937 cohort. Although Figures 3-5 showed that (de-)differentiation did not necessarily follow a straight linear trend, birth year (1937 = 0 to 1948 = 11) was used as a continuous variable and estimates the slope of (de-)stabilisation over time. Gender and education levels were included as dummy variables to account for gender and socioeconomic differences in complexity.

Interactions of gender and education with birth years were used to estimate the effects of gender and education on the slope of the differentiation process. Additionally, the models were run separately for men and women to test for the possibility of interaction effects between gender and education.

Table 2 shows the results of the regression analysis for turbulence without job changes. All four models confirm the visual findings from Figure 3a that turbulence decreased by birth year, i.e., there was de-differentiation. The basic Model 1 shows that women overall had more turbulent late careers than men, a result confirmed in Model 2 and by the differences between the intercepts of Models 3 and 4. Model 1 also confirms that those with lower education ($b = -0.078, p < 0.01$) and higher education ($b = -0.596, p < 0.01$) experienced lower overall levels of turbulence.

The interaction term of the gender dummy and birth year in Model 2 shows that women's late careers tended to de-differentiate at a faster rate ($b = -0.011, p < 0.01$) and converged to the complexity levels of men. The interaction terms of education and birth year in Model 2 confirm the visual findings from Figure 3 that careers of higher-educated de-differentiated at a faster pace ($b = -0.025, p < 0.01$), while those of lower-educated remained relatively more stable ($b = 0.023, p < 0.01$). Model 3, however, shows that among men there were no statistically significant differences in de-differentiation between lower- and middle-educated, whereas higher-educated

careers de-differentiated at higher rate ($b = -0.037, p < 0.01$). Among women, on the other hand, the differences between in de-differentiation between lower- and middle-educated were larger, while those between middle- and higher-educated were smaller (Model 4). Career patterns of lower-educated women remained especially stable across cohorts ($b = 0.038, p < 0.01$).

Table 2: OLS regression for the turbulence indicator excluding job changes

	Model 1	Model 2	Model 3 (men)	Model 4 (women)
Intercept	4.689** (0.012)	4.606** (0.018)	4.546** (0.022)	4.854** (0.020)
Birth year	-0.045** (0.001)	-0.047** (0.002)	-0.038** (0.003)	-0.067** (0.003)
Woman (Ref. = man)	0.128** (0.009)	0.198** (0.018)	-	-
Lower education	-0.078** (0.010)	-0.214** (0.019)	-0.113** (0.028)	-0.301** (0.026)
Intermediate education (Ref.)	-	-	-	-
Higher education	-0.596** (0.014)	-0.435** (0.031)	-0.378** (0.043)	-0.480** (0.046)
Woman * Birth year	-	-0.011** (0.003)	-	-
Lower education * Birth year	-	0.023** (0.003)	0.006 (0.004)	0.038** (0.004)
Higher education * Birth year	-	-0.025** (0.004)	-0.037** (0.006)	-0.014* (0.006)
Adjusted R ²	0.014	0.015	0.013	0.014

Indicated are unstandardised regression coefficients, standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$.

The results for the regression analysis of turbulence with job changes are presented in Table 3. The association between birth year and turbulence is negative and significant in Model 1 ($b = -0.005, p < 0.001$), indicating a de-differentiation of late-career patterns, but becomes statistically insignificant in Model 2. The latter is likely due to the inclusion of education and birth-year interaction terms, suggesting that the decrease in complexity across cohorts was largely taking place among women and higher-educated. Women experienced lower overall career complexity ($b = -0.074, p < 0.01$), but including the interaction terms in Model 2 shows that initially women's career complexity was higher ($b = 0.091, p < 0.01$) while decreasing at a faster rate across cohorts ($b = -0.027, p < 0.01$). This finding is confirmed by Model 4. The coefficient for 'birth year' in Model 3

confirms a small late-career destabilisation effect among men ($b = 0.009, p < 0.001$), at least among those with lower and intermediate education.

Table 3: OLS regression for the turbulence indicator including job changes

	Model 1	Model 2	Model 3 (men)	Model 4 (women)
Intercept	5.042** (0.012)	4.988** (0.018)	4.943** (0.023)	5.116** (0.020)
Birth year	-0.005** (0.001)	0.004 (0.003)	0.009** (0.003)	-0.028** (0.003)
Woman (Ref. = man)	-0.074** (0.009)	0.091** (0.019)	-	-
Lower education	-0.169** (0.010)	-0.267** (0.020)	-0.203** (0.030)	-0.322** (0.027)
Intermediate education (Ref.)	-	-	-	-
Higher education	-0.302** (0.015)	-0.129** (0.033)	-0.035 (0.045)	-0.229** (0.047)
Woman * birth year	-	-0.027** (0.003)	-	-
Lower education * Birth year	-	0.017** (0.003)	0.007 (0.004)	0.025** (0.004)
Higher education * Birth year	-	-0.027** (0.004)	-0.033** (0.006)	-0.020** (0.006)
Adjusted R ²	0.002	0.003	0.002	0.004

Indicated are unstandardised regression coefficients, standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$.

Models 1 and 2 in Table 3 show that those with higher and lower education experienced lower turbulence than those with intermediate education. Introducing the interaction terms in Model 2 indicates that among lower-educated career complexity increased ($b = 0.017, p < 0.05$) while among higher-educated career complexity decreased ($b = -0.027, p < 0.01$) across cohorts. Model 3 shows that among men there were no statistically significant differences between middle- and lower-educated in their late career destabilisation, while higher-educated men experienced de-differentiation instead ($b = -0.033, p < 0.01$). Among women, de-differentiation occurred among all levels of education, but change across cohorts was smallest among the lower-educated ($b = 0.025, p < 0.01$) and greatest among higher-educated ($b = -0.020, p < 0.01$).

The results for the regression analysis of the difference between the turbulence indicators with and without changes between jobs are presented in Table 4. All models confirm that

there was a positive trend across cohorts, indicating that late-career complexity was increasingly the result of changes between jobs, rather than between spells of employment and non-employment. Overall, Model 1 shows that changes between employment and non-employment had a greater impact on late-career complexity among women ($b = -0.202, p < 0.01$). This is confirmed in Model 2 and by the lower intercept for women in Model 4 than for men in Model 3. Those with lower education were relatively more likely to experience higher turbulence due to transitions between employment and non-employment ($b = -0.091, p < 0.01$), as opposed to those with higher education where transitions between jobs had a greater impact ($b = 0.294, p < 0.01$).

Table 4: OLS regression for the differences in turbulence including and excluding job changes

	Model 1	Model 2	Model 3 (men)	Model 4 (women)
Intercept	0.453** (0.007)	0.382** (0.010)	0.397** (0.014)	0.263** (0.010)
Birth year	0.040** (0.001)	0.051** (0.001)	0.047** (0.002)	0.039** (0.001)
Woman (Ref. = man)	-0.202** (0.005)	-0.107** (0.010)	-	-
Lower education	-0.091** (0.006)	-0.053** (0.011)	-0.090** (0.018)	-0.020 (0.014)
Intermediate education (Ref.)	-	-	-	-
Higher education	0.294** (0.008)	0.305** (0.018)	0.343** (0.027)	0.251** (0.024)
Woman * birth year	-	-0.016** (0.001)	-	-
Lower education * Birth year	-	-0.006** (0.002)	0.001 (0.003)	-0.013** (0.002)
Higher education * Birth year	-	-0.002** (0.002)	0.004 (0.004)	-0.007* (0.003)
Adjusted R ²	0.030	0.031	0.028	0.018

Indicated are unstandardised regression coefficients, standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$.

The interaction of gender with birth year in Model 2 suggests that among women, the increase in the difference between the turbulence indicators across cohorts was smaller ($b = -0.016, p < 0.01$). There were also slightly lower increases in differences among those with lower education ($b = -0.006, p < 0.01$) and higher education ($b = -0.002, p < 0.01$). When separating the results by gender (Models 3 and 4), the differences by level of education were smaller for women ($b = -0.020, p > 0.1$ for lower-educated and $b = 0.251, p < 0.01$ for higher-educated) than for men ($b = -0.090, p$

< 0.01 for lower-educated and $b = 0.343$, $p < 0.01$ for higher-educated). Among men, there were no statistically significant differences between education levels in the slope of change. Among women, the upward slope of change in turbulence differences was less steep for both lower- ($b = -0.013$, $p < 0.01$) and higher-educated ($b = -0.007$, $p < 0.05$). The results indicate that women's late career complexity continued to be determined to a greater extent by transitions between employment and non-employment, with smaller differences between levels of education.

Discussion

This study analysed whether the extension of working lives in Finland has coincided with a destabilisation of late careers. Finland made a good study case, as it was successful in increasing the labour-market participation of older workers and deferring the average effective retirement age. This can be largely seen as an outcome of closing off exit pathways and introducing an actuarially neutral pension system between 1997 and 2017. In addition, the economic recovery that took place after the severe economic crisis of the early 1990s boosted older workers' employment rates. Moreover, younger cohorts have benefited from better health, education and working conditions (Ilmakunnas & Takala, 2005). Results showed that someone born in 1946-1948 had a much higher likelihood of retiring later than someone born in 1937-1939. However, in line with previous studies, socioeconomic differences were found as well: the lower-educated ran a higher risk of early exit, especially through disability and unemployment pensions (Järnefelt, 2010).

The outcomes of extended working lives in relation to late-career destabilisation were mixed. In line with previous studies, changes in career complexity across cohorts were not large for the study population as a whole (Biemann, Fasang & Grunow, 2011; Hollister, 2011; Riekhoff, 2016; Van Winkle & Fasang, 2017). One important contribution of this study, however, was showing that changes in late-career pattern complexity depended largely on whether either only

main labour market statuses or also transitions between employers were taken into account. When measuring the complexity within sequences based on labour-market status alone, a decrease over time, i.e. de-differentiation, could be observed. This decrease in average turbulence probably can be largely attributed to the closing-off of exit pathways and was mainly observed among those in the 'Regular retirement' cluster. Across cohorts, older workers became less likely to enter the 'unemployment tunnel' from career job to old-age pension, which, on average, had the highest turbulence levels.

When including changes between jobs, also a slight trend of de-differentiation was found. However, when separating trends in complexity by gender and levels of education, decreases in complexity were only found among women and the higher-educated, while complexity among men and lower-educated showed an upward trend. Career complexity among the large group of middle-educated remained largely stable. Still, given that the complexity of patterns decreased when excluding job changes, the effects of the increases in job mobility were having destabilising effects on late careers.

Based on previous studies reporting that women in their late careers experience more vulnerable labour-market positions (Calvo, Madero-Cabib & Staudinger, 2017; Fasang, 2010; Madero-Cabib, 2015; Radl, 2013), it was expected that women's late careers have been more complex than men's and destabilising at a faster rate across cohorts as a result of the decline in options to retire early. In the Finnish context, women initially experienced higher late-career complexity, both when excluding and including changes between jobs. This might be partly due to women being less likely to exit through 'Early retirement'. Inclusive welfare-state institutions have promoted Finnish women's high labour-market participation over their life courses, and their high labour-market attachment in late careers has contributed to women retiring relatively late (Riekhoff & Järnefelt, 2017). It is likely that gender differences are smaller in Finland than in liberal welfare states, where women's employment rates are equally high while late careers are more vulnerable,

but larger than in continental welfare states where women are more likely to reside outside the labour market or exit the labour market earlier (Calvo, Madero-Cabib & Staudinger, 2017; Fasang, 2012).

Contrary to expectations, women's late careers did not destabilise more than men's. Across cohorts, women's late careers de-differentiated at a faster pace when excluding job changes, resulting in convergence with men's late-career complexity levels. When including job changes, men's late careers destabilised to a small extent, whereas women's late-career complexity decreased. This indicates that women's transitions between employment and non-employment decreased, but that they were to a lesser extent than men gaining mobility in the labour market. Lower job mobility among women might be due to the types of jobs women typically hold in Finland. Occupations are strongly segregated by gender, with women dominating employment in public social, health and education sector (Riekhoff & Järnefelt, 2017). These jobs usually are stable and retirement options in the public sector have been relatively more generous, thereby providing little incentives to change jobs in the late career. In the private sector, the incentives to change jobs might have been higher, especially while the option of exit through the unemployment pension was phased out.

There were substantial socioeconomic differences, as measured by levels of educational attainment, in late-career complexity and destabilisation. The lower-educated continuously suffered greater risk of early exit. This could explain why late-career complexity, when excluding job changes, remained relatively stable among this group. The results suggest, on one hand, that closing off exit pathways had the least effect on the lower-educated in reducing their take-up of those exit pathways. On the other hand, given their higher probability of becoming unemployed and the high complexity and destabilisation within the 'Unemployment pension' and 'Unemployment' clusters, the lower-educated have been at a growing risk of having to depend on 'muddling through' strategies before reaching the statutory retirement age (Fasang, 2010; Moen &

Roehling, 2005). This is reflected in the higher rate of late-career destabilisation among the lower-educated when including job changes in the turbulence indicator. The findings suggest that lower-educated women were especially vulnerable in this regard.

Among the higher-educated, a different trend was visible. Overall, late-career complexity was substantially lower, when including only transitions between main-activity statuses. Moreover, across cohorts, the higher-educated experienced a faster rate of de-differentiation of late-career patterns. This indicates a decrease in the already low levels of take-up of various types of benefits and pensions. At the same time, when including job changes in the turbulence indicator, their careers also de-differentiated, compared to stability among middle-educated and destabilisation among lower-educated. Nevertheless, given that higher-educated older workers were much less likely to exit early or become unemployed, the difference between the turbulence indicators with and without job transitions was highest among the socioeconomic groups, and increasing. Among higher-educated, there were more likely to be ‘voluntary’ changes of jobs due to increasing levels of job mobility (Sanzenbacher, Sass & Gillis, 2017). Therefore, higher-educated older workers, especially men, appeared to have benefited from the uplift in the economic situation after the mid-1990s and seem to have coped relatively well with reforms that extended their working lives.

There were some limitations to this study. The case of Finland can be considered context-specific, and research on more countries is needed to determine whether similar trends of late-career (de-)stabilisation can be found elsewhere and what the role of national institutional contexts is. The relatively high rates of female labour-market participation make Finland stand out particularly from other European countries. Nevertheless, the trend toward extending working lives, among both men and women, resembles developments in many other European countries. It is not unlikely that the socioeconomic differences in late-career destabilisation follow similar patterns elsewhere. Future research could be done with more specific socioeconomic factors other than

educational levels. It is possible, for example, that occupation or sector of employment (e.g., a declining manufacturing sector vs. an expanding public sector) has a more direct impact than level of education (Hytti, 2004). More research is also needed on the specific impact of reforms on late-career destabilisation. With the current research design, estimating the specific causal effects of various reforms was a challenging task because of the interwovenness of period and cohort effects and the number of overlapping and incremental reforms that took place during the period under investigation.

This study confirmed that it is difficult to claim unambiguously that complex and destabilising careers are inherently either good or bad (Biemann, Fasang & Grunow, 2011). Low complexity might indicate good job security and predictability in the transition to retirement, while at the same time, it could mean low job mobility. High complexity might be accompanied by job insecurity and unpredictable retirement, but at the same time, it can indicate high mobility in the labour market. Differences in these outcomes are likely to exist across countries. In liberal welfare states, due to frequent job changes and ‘muddling through’ strategies, late-career complexity typically has been higher than in continental European countries (Fasang, 2012). It remains unclear whether recent reforms in various parts of Europe, including closing off exit pathways and liberalising labour market regulation, have pushed older workers out of non-employment and at the same time into higher job mobility. More cross-country comparative research is needed on the extent of voluntariness and costs or benefits of job changes, e.g., by analysing whether job changes are accompanied by improvements in earnings or working conditions.

One of the main contributions of this study was that it combined findings that exclude and include job transitions as part of late-career patterns, making it possible to estimate to what extent changes in complexity were due to transitions between employment and non-employment or transitions between jobs. The study implies that reforms to extend working lives can pay off when jobs are available and that older workers have the skills to compete for those positions. Still, even in

a country like Finland, with a relatively generous, but activating, social security and pension system, and even during times of economic upturn, not everyone is necessarily able to benefit. Lower-educated and women particularly appeared to be vulnerable in this respect. This should be a primary concern for policy-makers.

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Annex: Descriptive statistics for independent variables per birth year and for total study population

	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	Total population
N	16,099	17,063	17,546	14,912	20,923	14,294	17,809	18,459	23,201	25,750	25,938	26,112	238,099
% Women	52.9	52.5	52.6	53.2	52.5	51.8	51.5	51.6	51.4	51.7	51.8	51.4	52.0
Late career pattern													
% Regular retirement	42.9	42.6	45.1	49.7	51.1	54.8	56.9	59.9	62.1	62.2	62.4	63.6	55.6
% Early retirement	34.9	33.7	30.9	26.1	24.8	23.8	23.2	22.5	21.8	21.1	20.4	19.2	24.5
% Unemployment pension	18.2	19.8	19.7	19.9	20.0	17.5	15.9	13.5	11.8	12.2	12.6	12.3	15.6
% Unemployment	1.8	1.7	2.2	2.3	2.3	2.0	1.8	1.8	2.3	2.3	2.4	2.7	2.2
% Inactivity	2.2	2.0	2.1	2.0	1.8	1.9	2.1	2.3	2.0	2.0	2.3	2.3	2.1
Education													
% Lower	59.3	57.2	55.0	52.1	49.1	46.2	44.9	42.8	40.9	39.7	38.9	36.7	45.7
% Intermediate	31.7	33.6	35.1	36.9	39.5	40.6	41.3	43.6	45.6	46.7	47.9	50.0	42.0
% Higher	9.0	9.3	10.0	11.0	11.4	13.2	13.8	13.6	13.6	13.5	13.3	13.3	12.3