

Gender-differences in retirement from entrepreneurship: the influence of pension policies across Europe

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Abstract

Purpose – The interest in older entrepreneurs increases due to population aging. Previous research showed clear gender-differences among older entrepreneurs. This study investigates whether such gender-differences also exist in the retirement transition from entrepreneurship. It explores the influence of pension regulations for entrepreneurs on these gender-differences.

Design/methodology/approach – Longitudinal micro-level data from the Survey of Health, Aging and Retirement in Europe is analyzed in multichannel sequence analyses and cluster analyses. Developments from age 50 to 69 are compared in the dimensions of entrepreneurship, employment and old-age pensions.

Findings – Entrepreneurs retire in three different transition patterns: (1) entrepreneurs becoming pensioners at 60, (2) entrepreneurs becoming pensioners at 65 and (3) individuals combining entrepreneurship with employment until they become pensioners at 65. Female entrepreneurs follow the same transition patterns as their male counterparts but retire earlier. Pension regulations for entrepreneurs modify the extent of the gender-differences within a country. Mandatory pension schemes with identical state pension ages for men and women reduce gender-differences, whereas mandatory schemes with gender-differences in the state pension age increase them. Schemes without mandatory coverage range in between the other two.

Originality/value – This article expands our knowledge on gender-differences among older entrepreneurs. These gender-differences also extend to how entrepreneurs transition into retirement. Pension regulations for entrepreneurs influence the extent of the gender-differences. Therefore, pension regulations for entrepreneurs constitute tools for promoting or hindering gender equality.

Keywords Country-differences, Gender, Later working life, Life-course, Retirement

Paper type Research paper

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1. Introduction

Older entrepreneurs are receiving increasing attention in aging societies. Population aging increases the number of older individuals, and therewith also of older entrepreneurs (Maalaoui *et al.*, 2013; Seco Matos *et al.*, 2018). The growing group of healthy older individuals values entrepreneurship as a means for self-fulfillment and as a work opportunity in later life (Gimmon *et al.*, 2018; Von Bonsdorff *et al.*, 2019). Policymakers further encourage senior entrepreneurship, hoping that it increases workforce participation rates and extends working careers (Stypinska, 2018). Thus, entrepreneurship in later life is currently portrayed as a panacea, being recommended against the challenges that individuals and governments experience. The aspect of entrepreneurship that makes it particularly attractive for older individuals and governments is the shape of its retirement transition. The retirement transition describes the process over time of how individuals leave the workforce and enter retirement (Von Bonsdorff *et al.*, 2019). Entrepreneurs experience this transition later than employees, and they show higher agency in shaping it to their liking (Hochguertel, 2015; Polvinen *et al.*, 2024). This circumstance reveals them as an unusual case, that requires a separate consideration in scientific discourses.

Previous research revealed gender-differences among older entrepreneurs. Entrepreneurship in old age is less common among women (Komp-Leukkunen, 2023). Among older entrepreneurs, women are more often unincorporated or in smaller companies, have less income, and a stronger appreciation for self-fulfillment over economic income (Komp-Leukkunen, 2023; Lindström *et al.*, 2022; Logan, 2014). Life-course research showed that the retirement transitions of male and female employees differ (Madero-Cabib *et al.*, 2023). The life-course perspective explores how human lives progress over time (Komp-Leukkunen, 2020). It did not yet explore gender-differences in the retirement transition from entrepreneurship in greater detail (Biron and St-Jean, 2019; Ratten, 2019). However, it does suggest that such gender-differences should exist. After all, male and female entrepreneurs have different starting points into the retirement transition, due to the differences in their financial and work situations and preferences (Komp-Leukkunen, 2023; Lindström *et al.*, 2022; Logan, 2014). Additionally, pension policies can shape these gender-differences, if they have a different pensionable age for male and female entrepreneurs (Neergaard and Thrane, 2011; Orser, 2022). This is the first article to explore whether gender-differences among entrepreneurs also extend to their retirement transitions. In doing so, it shows whether entrepreneurship in old age is rightly considered a panacea, or whether it rather is a gendered solution to social challenges.

This study aims to explore gender-differences in retirement from entrepreneurship across Europe. It does this by answering two research questions. (1) Which gender-differences exist in the retirement transition from entrepreneurship? The answer to this question highlights in how far discussions about the retirement transition from entrepreneurship need to be held in a gender-sensitive way. Thereby, it resets our scientific approach to this phenomenon. And (2) how do the gender-differences vary with pension regulations for entrepreneurs? The answer to this question reveals possible unintended side-effects of pension policies. Such policies are the preferred tool of policymakers for steering retirement transitions. Thus, the answer can help especially policymakers in improving their efforts to steer the retirement transition from entrepreneurship.

To answer the research questions, longitudinal data from across Europe is analyzed. Sequence and cluster analyses are carried out to determine what retirement transitions exist among entrepreneurs. Then, these transitions are compared between men and women, and across countries with different pension regulations for entrepreneurs. These comparisons reveal how gender-differences play out in this context, and in how far pension regulations interfere with them.

The following pages explore the retirement transition of entrepreneurs. Next, gender-differences in this transition are discussed. Afterward, the influence of pension regulations on these gender-differences is examined. Then, the analysis and findings are outlined. A discussion and conclusions follow.

2. The retirement transition from entrepreneurship

The retirement transition from entrepreneurship is complex. The life-course perspective suggests that it is a process over time that can contain several asynchronous events: the end of paid work, the end of the business and the beginning of receiving an old age pension (Komp-Leukkunen, 2023; Polvinen *et al.*, 2024). While employees often experience the events surrounding retirement around the same time, entrepreneurs do not necessarily do so (Polvinen *et al.*, 2024). When considering retirement, older entrepreneurs balance their own needs against the needs of their businesses. For example, they consider their own financial situation and possible effects on their customers (Chevalier *et al.*, 2018; Von Bonsdorff *et al.*, 2019). Where applicable, they also consider their businesses, the future of their employees and the succession in family businesses (Morris *et al.*, 2020). As a result, their retirement transition clearly spans a period of time, including multiple events.

Although the retirement transition from entrepreneurship is exceptionally multifaceted, three themes commonly weave through it: the end of employment, which may or may not coincide with the end of entrepreneurship and possibly the beginning of receiving an old age pension (Komp-Leukkunen, 2023; Polvinen *et al.*, 2024). Engagement in entrepreneurship ends during the retirement transition (Von Bonsdorff *et al.*, 2019). However, this end does not have to be a one-off event concluding a continuous process (Schulze Buschoff, 2019). Instead, individuals may fluctuate in and out of entrepreneurship at the end of their working careers. Schulze Buschoff (2019) even goes so far as to suggest that these fluctuations will become increasingly common in the future. Some entrepreneurs also work as employees in the later part of their working careers. They may either do so before switching to entrepreneurship, or they may work in employment and entrepreneurship simultaneously (Kenny and Rossiter, 2018; Schulze Buschoff, 2019). During the retirement process, the activity as an employee also comes to an end. Finally, some entrepreneurs start to receive an old-age pension during their retirement transition (Nolan and Barrett, 2019). The start of receiving these pension benefits is a clear-cut one-off event. It starts a period of receiving old-age pensions that lasts for the rest of a person's life (Polvinen *et al.*, 2024).

The main insight from previous research on the retirement transition from entrepreneurship is that diversity persists. For example, Wahrendorf *et al.* (2018) document that in England, some entrepreneurs retire before the age of 60, whereas others keep on working until the last years of their lives. Komp-Leukkunen (2023) shows that the diversity can be boiled down to a limited number of main types for Finnish entrepreneurs: those that retire with a pension, those that keep working although they receive a pension, those that are non-employed before receiving a pension and those that combine entrepreneurship and employment before receiving a pension. Polvinen *et al.* (2024) point out that among Finnish entrepreneurs born in 1949, the retirement transitions of retiring with a pension and that of working while receiving a pension are particularly common. Further research corroborates these findings. For example, Dingemans and Möhring (2019) stress that some entrepreneurs retire upon receiving an old age pension. Schulze Buschoff (2019) and Kenny and Rossiter (2018) underline that others combine entrepreneurship and employment before retiring. Thus, the diversity in the retirement transition from entrepreneurship in modern Western societies can be captured in these four retirement patterns.

3. Gender-differences in the retirement transition from entrepreneurship

The life-course perspective stresses that the lives of men and women progress very differently (Madero-Cabib *et al.*, 2023). This gender-difference also extends to entrepreneurship. Generally speaking, men are more likely than women to be

entrepreneurs (Faria *et al.*, 2021). This gender-difference is most pronounced among individuals aged 55 and older (Axelrad and Tur-Sinai, 2021). Gender-differences in the retirement transition from entrepreneurship are less researched. Nevertheless, previous research suggests that they exist. There are three main reasons why such gender-differences might come about.

First, female entrepreneurs are more likely to be the homemakers within households, and the main caregivers to kin, such as parents and grandchildren. This gender-difference often results from gendered norms, especially in more conservative societies (Aydin *et al.*, 2019; Bari *et al.*, 2021). Homemaking and caregiving tie up some of the female entrepreneurs' time. When the tension between the time demands of family and work becomes too big, these women might decide to prioritize their families and leave the workforce. They might feel pulled into early retirement (Stoiko and Strough, 2019).

H1. Female entrepreneurs retire earlier than their male counterparts.

Second, men are overrepresented among company owners, whereas women are overrepresented among solo entrepreneurs (Faria *et al.*, 2021). An important reason why women select themselves into solo self-employment is that this form of entrepreneurship gives them more flexibility to combine work and family obligations (Aydin *et al.*, 2019; Bari *et al.*, 2021). However, the choice of the form of entrepreneurship has far-reaching consequences. When the solo self-employed see their strength decline in old age, they cannot hand their job tasks over to anybody else. They need step back from their work (Komp-Leukkunen, 2023). Siivonen *et al.* (2022) add that also the master narrative of older female entrepreneurs rejects the ideas of being a proper entrepreneur and of being attached to business activities. Thereby, it may lead them to accept a period of non-employment in later life more willingly. Komp-Leukkunen (2023) confirms that in Finland, female entrepreneurs are more likely to be non-employed before receiving an old-age pension. This gender-difference might also hold true in other countries.

H2. Female entrepreneurs are more likely to retire after a period of non-employment.

In contrast, when company owners see their strength decline, they can modify their work by handing job tasks over to employees (Komp-Leukkunen, 2023). Because men are overrepresented among business owners, especially they have the option of prolonging their working careers through this mechanism. Polvinen *et al.* (2024) show that among Finnish entrepreneurs born 1949, men's stronger workforce attachment makes them more likely to work while receiving pensions. This behavior might also hold true among other cohorts and in other countries.

H3. Male entrepreneurs are more likely to work while receiving an old age pension.

Third, governments might assign different pensionable ages to female and male entrepreneurs. The state pension age signals social expectations concerning the retirement age, which may or may not contain a gender-difference. Where entrepreneurs participate in pension schemes, the availability of pension benefits at a certain age can pull them into retirement – which may or may not be at gender-specific ages (Höppner, 2021; Polvinen *et al.*, 2024). Moreover, retirement regulations without a mandatory character can force especially women to retire later. Where a mandatory character of pension insurance participation is missing, entrepreneurs accumulate fewer pension rights. They have to rely more heavily on their private savings. This situation is more critical among women, who often have lower incomes due to their choice of low-earning forms of entrepreneurship and to career interruptions after having children (Bari *et al.*, 2021; Polvinen *et al.*, 2024). For them, retirement at an early age might become financially not viable.

4. Pension regulations for entrepreneurs

The life-course perspective stresses that country-characteristics, such as policies, influence how lives progress (Madero-Cabib *et al.*, 2023). Neergaard and Thrane (2011) and Orser (2022) document that this observation also holds true for entrepreneurship and the gender-dimension in it. When it comes to the retirement transition from entrepreneurship, then the prime policy influence stems from pension regulations. These regulations determine at what age public pensions become accessible, thereby steering how long individuals may feel financially pressured to participate in the workforce (Fachinger, 2019; Fachinger and Frankus, 2017). Where the regulations impose different pensionable ages on men and women, they may also impose different timings on the retirement transitions of men and women (Madero-Cabib *et al.*, 2023).

Entrepreneurs have more lenient pension regulations than employees. Most European governments obligate employees to participate in state pension schemes. In some countries, even the participation in occupational or private pension schemes is mandatory for them (Organisation for Economic Co-operation and Development [OECD], 2019, 2021). In contrast, entrepreneurs are often exempt from solidaristic pension schemes. The participation in state pension schemes is voluntary for them in many European countries (Höppner, 2021; OECD, 2019). Moreover, they are often excluded from occupational pensions because they are their own employers (Fachinger and Frankus, 2017). As a result, pension regulations have less influence on their retirement transitions. Where the self-employed do not participate in pension schemes, these schemes cannot pull them into retirement with the promise of pension benefits (Höppner, 2021). Yet, the state pension age might still have a signaling function for the self-employed, highlighting at what age a retirement from paid work is socially expected.

Table 1 allows us to gain a more detailed impression of possible gendered effects of retirement regulations for entrepreneurs. This table presents relevant pension regulations for entrepreneurs across the countries analyzed in this study. It highlights that the countries follow three different approaches when it comes to pension regulations for entrepreneurs. A first group had identical full pension ages for men and women from 2005 to 2019, and a mandatory pension insurance for entrepreneurs. Thirteen countries fall into this group, including Luxembourg, the Netherlands, Spain and Sweden. A second group had identical retirement ages for men and women, but no mandatory pension insurance coverage. Two countries belong to this group: Denmark and Germany. The third group had mandatory pension insurance for entrepreneurs, and it had different retirement ages for men and women for at least some of the time between 2005 and 2019. Fourteen countries belong to this group, including Croatia, Greece and Switzerland.

According to the life-course perspective, especially mandatory pension insurances should steer gender-differences in the retirement transition from entrepreneurship (Calvo *et al.*, 2018; Madero-Cabib *et al.*, 2023). Where such insurances impose the same full pension age on men and women, they should reduce gender-differences in the retirement transition. Yet, where such insurances set different full pension ages for men and women, they should exacerbate the gender-differences. In contrast, voluntary pension insurances should exert less of an influence because they apply to fewer individuals.

- H4. Countries with mandatory pension insurance and gender-neutral full pension age have the smallest, and countries with mandatory pension insurance and gendered full pension age have the biggest gender-difference in the retirement transition from entrepreneurship.

5. Materials and methods

5.1 Analytic strategy

The data were analyzed using multichannel sequence analyses, cluster analyses and chi square tests. Multichannel sequence analyses explore developments in a person's life over

Pension insurance (around 2019)	Country	Full public pension age 2005		Full public pension age 2020	
		Men	Women	Men	Women
<i>No gender-difference in retirement age, mandatory coverage</i>					
(Quasi)mandatory contributions similar to employees	Cyprus	65	65	65	65
	Luxembourg	65	65	65	65
(Quasi)mandatory contributions similar to employees; some flat-rate	Hungary	62	62	65	65
(Quasi)mandatory contribution with reduced contribution rate	Belgium	63	63	65	65
	France	60	60	62	62
	Portugal	65	65	67	67
	Sweden	65	65	65	65
(Quasi)mandatory contribution with reduced contribution rate and Mandatory regular contributions above income threshold	Latvia	62	62	64	64
Mandatory contributions above income threshold	Finland	65	65	64	64
	Slovakia	62	62	64	64
Mandatory contributions to basic pension only	Ireland	65	65	66	66
	Netherlands	65	65	66	66
Mandatory flat-rate contributions	Spain	65	65	66	66
<i>No gender-difference in retirement age, no mandatory coverage</i>					
No mandatory pension contribution	Denmark	65	65	66	66
	Germany	65	65	66	66
<i>Gender-difference in retirement age, mandatory coverage</i>					
(Quasi)mandatory contributions similar to employees	Bulgaria	63	58	64	62
	Croatia	60	55	65	63
	Czech Republic	62	60	64	64
	Estonia	63	60	64	64
	Greece	65	60	62	62
	Malta	61	60	63	63
(Quasi)mandatory contributions similar to employees; some flat-rate	Lithuania	63	60	64	63
(Quasi)mandatory contribution with reduced contribution rate	Slovenia	63	61	65	65
	Israel	65	60	67	62
	Italy	65	60	67	67
	Switzerland	65	64	65	64
(Quasi)mandatory contribution with reduced contribution rate and Mandatory regular contributions above income threshold	Austria	65	60	65	60
Mandatory flat-rate contributions	Poland	65	60	65	60
Mandatory contributions above income threshold and some exempt	Romania	62	57	65	61

Table 1.
Pension regulations for entrepreneurs across Europe

Source(s): Anusic *et al.* (2003), Bejakovic (2019), OECD (2017, 2019, 2021), Palmer (2007), Preda and Grigoras (2011), Mutual Information System on Social Protection (2022), Author's own work

time, in this case from the age of 50–69. These developments are observed in different dimensions, tracing how several activities play out at the same time. Multichannel sequence analyses are commonly used to analyze the retirement transition (Madero-Cabib and Fasang, 2016; Polvinen *et al.*, 2024), also among entrepreneurs (Komp-Leukkunen, 2023). Here, the activities of being an employee, being an entrepreneur and receiving an old-age pension were observed. The multichannel sequence analysis explored when these activities occurred, how long they lasted and whether they coincided. Dynamic hamming distances were used for the

analysis to ensure greater objectivity in the substitution costs (Liao *et al.*, 2022). The subsequent cluster analysis using Ward's method condensed the information obtained in the sequence analysis. It identified clusters of individuals with similar retirement transitions, thereby highlighting typical transition patterns (Wu and Qiu, 2021). Acknowledging the gender-differences this study focusses on, the analyses were carried out for men and women separately. As a last step, crosstables were generated and chi-square tests were carried out. These tables described the clusters in more detail, and the tests determined whether significant differences between men and women existed. The analyses were carried out with *R*, using the packages TraMiner, cluster and WeightedCluster.

5.2 Data

Data stem from waves 3 and 7 of the Survey of Health, Aging and Retirement in Europe (SHARE). SHARE is a panel study that contains information on the working history, health, family situation and activities of individuals aged 50 or older. Waves 3 (collected in 2009) and 7 (collected in 2017) contain retrospective life-history interviews, which capture the respondents' entire lives. These interviews were carried out using a life history calendars to ensure an accurate recollection (Börsch-Supan *et al.*, 2013). From within this dataset, information on the life-courses between ages 50 and 69 was analyzed. Previous life-course research identified these ages as the limits for the retirement transition because they contain early and the majority of delayed retirement (Komp-Leukkunen, 2019; Madero-Cabib and Fasang, 2016; Madero-Cabib *et al.*, 2023; Stansfeld *et al.*, 2018). Waves 3 and 7 of SHARE together contain information on the entire life-courses from 50 to 69 for 65,334 individuals. From them, those individuals were chosen that had been entrepreneurs during at least one year between the ages of 50 and 69. This low threshold ensured that the analysis captured all retirement transition patterns involving entrepreneurship. In total, 5,089 individuals fell within this group. In the next step, all those individuals were selected that had no missing values among the variables analyzed. All but 103 individuals fulfilled this criterion. The missing values that occurred were related to the timing and kind of activities that individuals engaged in between 50 and 69. An analysis of the associations between missing and observed data suggests that values were missing completely at random. Because the number of individuals with missing values was low (2%) and the value were missing at random, deleting them was possible. The remaining sample contained information on 4,986 individuals. [Supplementary Table A1](#) shows the number of respondents per country and gender.

5.3 Variables

The analysis used variables capturing the respondents' gender ("male"/"female"), country of residence ("Austria"/"Belgium"/"Bulgaria"/"Croatia"/"Cyprus"/"Czech Republic"/"Denmark"/"Estonia"/"Finland"/"France"/"Germany"/"Greece"/"Hungary"/"Ireland"/"Israel"/"Italy"/"Latvia"/"Lithuania"/"Luxembourg"/"Malta"/"Netherlands"/"Poland"/"Portugal"/"Romania"/"Slovakia"/"Slovenia"/"Spain"/"Sweden"/"Switzerland") and the country-specific pension regulations for entrepreneurs ("No gender-difference in retirement age, mandatory coverage"/"No gender-difference in retirement age, no mandatory coverage"/"Gender-difference in retirement age, mandatory coverage"). [Supplementary Table A1](#) provides an overview of these variables. It shows that men made up roughly two thirds of the sample, whereas women accounted for only one third. The share of women was lowest in countries with no gender-difference in the retirement age and no mandatory pension coverage for entrepreneurs. In contrast, it was highest in countries with mandatory pension insurance coverage for entrepreneurs and a gender-difference in the retirement age.

Additionally, the analysis used variables that reflect the respondents' activities, providing annual information for the ages 50 to 69. These variables described whether the respondents

were employed (“yes”/“no”), entrepreneurship (“yes”/“no”) and received an old-age pension (“yes”/“no”). The activities considered are in line with previous research on retirement from entrepreneurship (Komp-Leukkunen, 2023; Polvinen *et al.*, 2024; Von Bonsdorff *et al.*, 2019). Table 2 shows how big a share of their time male and female respondents spent on these activities. It reveals that men spent almost two thirds of their time in entrepreneurship, whereas women spent only slightly over half of their time on this activity. These proportions were roughly stable across the different pension regulations for entrepreneurs. However, differences across countries were visible when it came to the share of time that the individuals spent in employment. In all countries with mandatory old-age pensions for entrepreneurs, male entrepreneurs spent just shy of 10% and female entrepreneurs spent around 7% of their time being employed. However, in the countries without a mandatory old-age pension for entrepreneurs, these individuals spent an additional ten percentage points on employment.

	In entrepreneurship		In employment		Receive old-age pension	
	Male	Female	Male	Female	Male	Female
<i>No gender-difference in retirement age, mandatory coverage</i>						
Cyprus	74.7	56.1	5.3	8.3	25.5	22.0
Luxembourg	65.8	60.2	1.2	5.2	34.6	36.3
Hungary	61.0	44.3	8.9	8.2	48.7	60.0
Belgium	63.3	54.1	12.0	2.5	31.1	30.6
France	55.4	50.5	6.4	5.3	43.1	41.4
Portugal	69.5	73.5	7.4	3.9	31.3	31.3
Sweden	66.2	56.3	22.4	29.1	27.3	24.5
Latvia	90.0	25.0	15.0	45.0	0.0	40.0
Finland	68.7	59.3	6.0	10.1	29.5	39.5
Slovakia	64.3	3.5	1.4	0.0	27.1	32.5
Ireland	73.6	56.0	7.1	21.0	13.3	2.0
Netherlands	70.2	54.0	7.0	3.8	22.9	19.0
Spain	70.3	63.5	6.2	4.3	29.7	25.8
<i>Total</i>	<i>65.9</i>	<i>57.3</i>	<i>9.9</i>	<i>7.8</i>	<i>31.3</i>	<i>31.1</i>
<i>No gender-difference in retirement age, no mandatory coverage</i>						
Denmark	65.1	54.6	21.5	17.3	23.5	25.5
Germany	65.6	60.5	17.1	16.7	29.0	27.5
<i>Total</i>	<i>65.3</i>	<i>57.5</i>	<i>19.4</i>	<i>17.0</i>	<i>26.1</i>	<i>26.5</i>
<i>Gender-difference in retirement age, mandatory coverage</i>						
Austria	60.7	50.1	8.2	4.5	42.7	52.6
Bulgaria	80.5	43.1	6.0	7.5	23.5	38.1
Croatia	53.4	52.1	7.7	4.6	39.4	43.9
Czech Republic	53.5	47.5	30.1	18.8	42.5	60.1
Estonia	63.9	50.5	21.1	24.2	37.3	53.6
Greece	72.7	70.4	1.6	1.0	27.2	26.1
Israel	76.3	65.0	14.5	10.4	16.5	39.6
Italy	65.8	53.2	6.4	4.7	41.0	46.4
Lithuania	50.5	60.8	22.5	5.0	33.5	47.5
Malta	65.3	65.0	13.1	0.0	34.5	23.3
Poland	58.4	47.9	4.6	1.4	33.2	45.7
Romania	55.0	60.0	15.0	0.0	31.4	34.2
Slovenia	52.5	40.6	6.4	0.9	46.4	66.2
Switzerland	70.7	63.4	18.6	15.4	23.6	28.3
<i>Total</i>	<i>65.8</i>	<i>55.0</i>	<i>9.3</i>	<i>6.5</i>	<i>33.6</i>	<i>43.3</i>

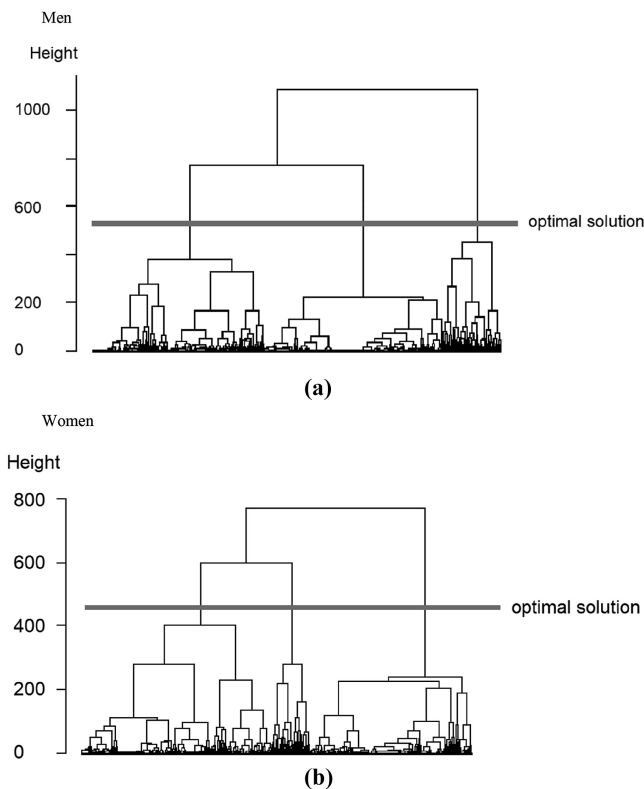
Table 2. Frequency of activities (in per cent), by gender, country and pension regulations for entrepreneurs

Source(s): Author's own work

Finally, gender-differences in the time spent receiving an old-age pension occurred only in countries with a gender-difference in the retirement age for entrepreneurs. In these countries, men received an old-age pension for about one third of their time, while women received it for more than two fifth of their time. In the other countries, entrepreneurs received an old-age pension for one third of their time when the pension insurance was mandatory, and for one quarter of their time when it was not mandatory.

6. Findings

The cluster analyses provided a first impression of the retirement transition patterns. These analyses generated dendrograms, which are tree diagrams indicating how diverse the retirement transitions are. The top of a dendrogram displays a situation in which all individuals are grouped together, whereas the bottom of such a diagram displays a situation in which all individuals are treated separately. The horizontal lines in between the top and the bottom indicate how similar individuals are: the closer a horizontal line is to the bottom, the more the transition patterns of the individuals resemble one another. The optimal solution is denoted by the area of the dendrogram where the vertical distance between two subsequent horizontal lines is the biggest. [Figure 1](#) shows the dendrograms for men and women. Both dendrograms clearly indicate that a solution with three clusters was the optimal solution for men and for women. When considering the meaning of the clusters obtained, then this



Source(s): Auhtor's own work

Figure 1.
Dendrograms for the
cluster analyses among
men and women

solution also seemed most suitable for men and women. [Supplementary Table A2](#) shows the quality parameters for the solutions. These parameters indicated several suitable solutions, which is a typical outcome for cluster analyses (Studer, 2013). For men, they suggested solutions with two, three or six clusters. For women, they suggested solutions with three, four, five or six clusters. Considering the findings of the dendrograms, the content-wise considerations, and the quality parameters together, the solution with three clusters was selected for men and women.

The content of the clusters can be read from the sequence index plots. These plots illustrate the development for each individual on a horizontal line in the plot, and they show the development over time from the left (representing the age of 50) to the right (representing the age of 69). [Figure 2](#) displays the sequence index plots for men. The first cluster among men showed a retirement pattern where entrepreneurs stopped working at 60 and started receiving an old-age pension at the same time. The second cluster consisted of individuals with a similar pattern, only that the transition now occurred at 65. The third cluster differed fundamentally. Here, individuals combined entrepreneurship and employment without any clear end to these activities, although they started receiving an old-age pension at 65. [Figure 3](#) displays the sequence index plots for women, revealing that exactly the same clusters exist among them.

The statistical analyses provided a more detailed impression of the clusters. Overall, 44% of the sample retired from entrepreneurship at 60, 43% did so at 65, and only 13% combined employment and entrepreneurship while receiving an old-age pension from 65 onwards. Gender-differences prevailed in this distribution: The share of women who retired at 60 was about seven percentage points higher, whereas that of women who retired at 65 was two percentage points lower. The share of individuals who combined employment with entrepreneurship was five percentage points lower among women.

[Table 3](#) shows the percentages by gender, country and type of pension regulation for entrepreneurs. Because the number of cases was comparatively low in some countries, only the results per type of pension regulation were interpreted. When comparing the countries by their type of pension regulation, differences became obvious. Those countries where pension insurance coverage is mandatory for entrepreneurs and where gender-differences in the retirement age exist had by far the highest share of individuals who retired at 60, and the

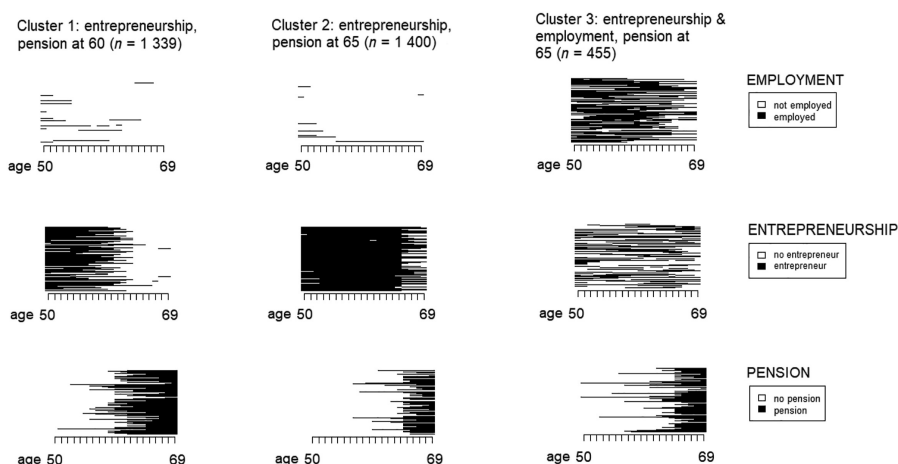
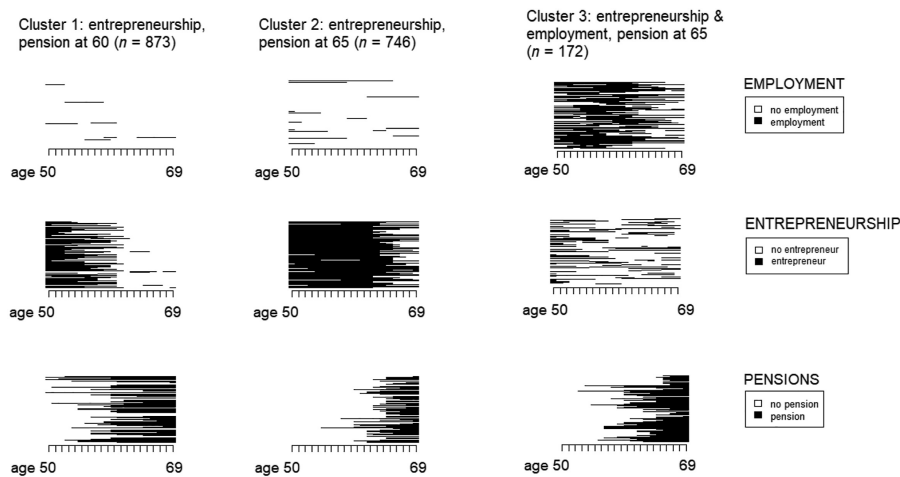


Figure 2.
Sequence index plots
for men, by cluster

Source(s): Auhtor's own work



Source(s): Auhtor's own work

Figure 3.
Sequence index plots
for women, by cluster

lowest share of individuals who combined employment and entrepreneurship in later life. This situation was reversed in countries without mandatory pension insurance for entrepreneurs and without gender-differences in the retirement age. In those countries, the share of individuals who retired at 60 was the lowest, and the share of individuals who combined employment and entrepreneurship was the highest. Countries without gender-differences in retirement age and without mandatory pension insurance coverage fell in between the two other groups. The extent of the gender-differences was similar in both groups of countries without gender-differences in the retirement age. However, it differed between these groups and the one with gender-differences: The latter group saw a bigger difference in how many women retired at age 60 as opposed to age 65. The difference was three percentage points higher in this group than in the other two groups. The Chi-square tests showed that the gender-differences were significant for the overall sample and for the groups with mandatory pension insurance coverage. However, they were not significant for the group without mandatory pension insurance coverage. A possible reason is that the latter group had by far the smallest sample size, which lowered its possibilities to produce a significant difference. Therefore, the lack of a significant gender-difference in this group needs to be treated with caution.

7. Discussion

Older entrepreneurs are receiving increasing attention in times of population aging. Previous research showed clear gender-differences among them. This study explores whether the gender-differences also extent to their retirement transitions. Moreover, it investigates how pension regulations for entrepreneurs influence these gender-differences.

The first research question asks which gender-differences exist in the retirement transitions of entrepreneurs. The life-course perspective characterizes the retirement transition as a fundamental life experience, that men and women experience differently (Madero-Cabib and Fasang, 2016; Madero-Cabib *et al.*, 2023). Aydin *et al.* (2019) and Axelrad and Tur-Sinai (2021) show that gender-differences exist among older entrepreneurs. The first research question suggests that these differences also extent to the retirement transition. Findings show that the transition at age 60 is more common among women, whereas the ones

	Entrepreneur to 60	Men Entrepreneur to 65	Entrepreneur and employee	Entrepreneur to 60	Women Entrepreneur to 65	Entrepreneur and employee
<i>No gender-difference in retirement age, mandatory coverage</i>						
Cyprus	40.9	53.0	6.1	37.0	51.9	11.1
Luxembourg	44.0	52.0	4.0	52.2	39.1	8.7
Hungary	77.4	19.4	3.2	78.6	21.4	0.0
Belgium	44.4	39.6	16.0	61.9	36.4	1.7
France	71.2	21.9	6.9	63.0	29.6	7.4
Portugal	33.3	54.8	11.9	27.5	65.0	7.5
Sweden	21.2	47.7	31.1	17.5	51.2	31.3
Latvia	0.0	100.0	0.0	0.0	0.0	100.0
Finland	42.4	47.0	10.6	37.8	54.1	8.1
Slovakia	71.4	28.6	0.0	100.0	0.0	0.0
Ireland	23.7	65.8	10.5	20.0	60.0	20.0
Netherlands	39.4	51.5	9.1	52.8	41.6	5.6
Spain	30.1	60.7	9.2	35.8	59.4	4.8
<i>Average***</i>	<i>40.8</i>	<i>45.8</i>	<i>13.3</i>	<i>45.5</i>	<i>45.7</i>	<i>8.8</i>
<i>No gender-difference in retirement age, no mandatory coverage</i>						
Denmark	28.8	45.4	25.8	38.4	39.4	22.2
Germany	26.7	48.9	24.4	27.4	52.6	20.0
<i>Average</i>	<i>27.8</i>	<i>47.1</i>	<i>25.1</i>	<i>33.0</i>	<i>45.9</i>	<i>21.1</i>
<i>Gender-difference in retirement age, mandatory coverage</i>						
Austria	62.2	28.0	9.8	70.6	22.9	6.5
Bulgaria	40.0	50.0	10.0	50.0	37.5	12.5
Croatia	62.5	28.1	9.4	78.6	21.4	0.0
Czech Republic	47.8	18.8	33.4	51.0	24.5	24.5
Estonia	38.5	30.8	30.7	33.3	28.2	38.5
Greece	40.1	57.3	2.6	29.1	70.9	0.0
Israel	16.3	58.2	25.5	39.0	51.2	9.8
Italy	52.8	40.2	7.0	62.9	31.8	5.3
Lithuania	30.0	30.0	40.0	50.0	50.0	0.0
Malta	57.5	27.5	15.0	50.0	50.0	0.0
Poland	66.2	28.4	5.4	73.3	25.1	1.6
Romania	57.1	28.6	14.3	66.7	33.3	0.0
Slovenia	83.6	11.5	4.9	88.2	11.8	0.0
Switzerland	17.4	55.1	27.5	23.1	61.2	15.7
<i>Average***</i>	<i>46.5</i>	<i>41.2</i>	<i>12.3</i>	<i>54.5</i>	<i>37.7</i>	<i>7.8</i>
<i>Total***</i>	<i>41.9</i>	<i>43.8</i>	<i>14.3</i>	<i>48.7</i>	<i>41.7</i>	<i>9.6</i>
Note(s):	* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$					
Source(s):	Author's own work					

Table 3.
Cluster frequencies (%)
by gender, country,
and pension regulation,
with chi-square tests

at age 65 is more common among men. These findings are in line with [Hypothesis 1](#), which suggests that female entrepreneurs retire earlier than their male counterparts. Therefore, [Hypothesis 1](#) can be maintained. This insight expands our body of scientific knowledge, which did not yet contain information on gender-differences in the retirement transition from entrepreneurship across Europe. This study establishes that gender-differences in entrepreneurship permeate even the retirement transition. Therefore, future research on gender-differences in entrepreneurship should adopt a broad scope that also encompasses entrepreneurial exits.

[Hypothesis 2](#) adds that female entrepreneurs are more likely to retire after a period of non-employment. Moreover, [Hypothesis 3](#) proposes that male entrepreneurs are more likely to

work while receiving an old age pension. Findings show that the same three transition patterns exist among men and women: entrepreneurship until 60, followed by receiving an old-age pension; entrepreneurship until 65, followed by receiving an old-age pension and combining employment and entrepreneurship throughout later working life, while receiving an old-age pension from 65 onwards. They did not identify the retirement transitions mentioned in the second and third hypotheses. Therefore, these hypotheses need to be rejected. This insight underlines the importance of explicitly dedicating studies to gender-differences in the retirement transition from entrepreneurship. This is the first study to explicitly focus on this topic. The hypotheses had been derived from studies that focus on related topics only (Komp-Leukkunen, 2023; Polvinen *et al.*, 2024). The reject of the hypotheses shows that such a reliance on related topics is insufficient. To gain a more encompassing and accurate picture, future research needs to build up a research field on gender-differences in the retirement transition from entrepreneurship.

The second research question inquires how gender-differences vary with pension regulations for entrepreneurs. This question draws on insight from the life-course perspective that country-characteristics, such as pension regulations, shape the retirement transition (Madero-Cabib *et al.*, 2023). The pension regulations for entrepreneurs may impose a different full pension age on men and women, thereby facilitating gender-differences in their retirement transition (OECD, 2019). Therefore, these gender-differences should vary with the country-specific pension regulations for entrepreneurs. Hypothesis 4 proposes that countries with mandatory pension insurance and gender-neutral full pension age have the smallest, and countries with mandatory pension insurance and gendered full pension age have the biggest gender-difference in the retirement transition from entrepreneurship. Findings are in line with this hypothesis. Therefore, the hypothesis can be maintained. This insight lays another corner stone for our knowledge on gender-differences in the retirement transition from entrepreneurship. It demonstrates that some of these gender-differences are caused by pension regulations for entrepreneurs – thereby giving us a glimpse into the root causes of the gender-differences. In doing so, this insight also expands our knowledge on the relevance of pension regulations for entrepreneurs. Previous research suggested that pension regulations are less influential for entrepreneurs (Fachinger and Frankus, 2017; Höppner, 2021). Findings underline that even though they may be less influential, they nevertheless exert an influence. They do shape the retirement transition from entrepreneurship and the gender-differences in it. Therefore, pension regulations should be included in studies on how welfare states shape gender-differences among entrepreneurs.

The findings have scientific implications. First and foremost, this study starts the research field on gender-differences in the retirement transition from entrepreneurship. It is the first study on this topic, establishing that gender-differences exist in that women retire earlier than men. Yet, men and women experience the same transition patterns. The comparatively low number of transition patterns identified suggests that entrepreneurship necessitates typical retirement transitions, making the retirement transitions themselves a property of entrepreneurship. The gender-differences lie not so much in which retirement transitions men and women experience, but in how often they select themselves into each type of transition. Pension regulations for entrepreneurs steer which retirement transition men and women choose. Future research can take the findings from this study as the starting point and build on them. Particularly promising topics for follow-up studies are how the incomes of male and female entrepreneurs develop during the retirement transition, and how they renegotiate the distribution of household tasks during this period. Additionally, an in-depth exploration of additional drivers for gender-differences in this transition would be worthwhile. This study also contributes to life-course research. Previous research in this transition stressed the heterogeneity of the retirement transition from entrepreneurship (Komp-Leukkunen, 2023; Polvinen *et al.*, 2024; Wahrendorf *et al.*, 2018). This study captures

the heterogeneity in three main transition patterns, which simplifies the on-going discussions in life-course research. Finally, this study contributes to discussions on the relevance of pension regulations for entrepreneurs. Even though the influence of pension these regulations on entrepreneurs had been downplayed in the past (Fachinger and Frankus, 2017; Höppner, 2021), they prove influential. Therefore, future research on the effects of pension regulations should consider effects on employees as well as entrepreneurs.

Findings also have societal implications. They provide guidance to policymakers who seek to encourage entrepreneurship to extend working lives (Stypinska, 2018). This study shows that male entrepreneurs retire later than female ones. Consequently, policies encouraging entrepreneurship bring about longer working lives especially to men. Political changes are needed if policymakers also want to extend women's working lives through entrepreneurship. First, they need to couple their entrepreneurship policies with pension reforms that align women's and men's state pension ages, where this has not yet happened. As long as female entrepreneurs still have a lower state pension age than men, they encounter a financial and normative incentive to cut their working lives short. Policymakers need to do away with this incentive. Second, policymakers need to couple entrepreneurship policies with increased support for caregiving to kin. Also among entrepreneurs, it is mainly women who look after frail family members, such as their parents and in-laws. Such caregiving can tie up the female entrepreneurs' time and pull them into early retirement (Aydin *et al.*, 2019; Bari *et al.*, 2021). Policymakers need to better support this informal caregiving to help female entrepreneurs remain in paid work while providing care to kin.

8. Limitations and implications for future research

This study has some limitations. First, the case numbers in some countries are too low to provide reliable estimates of population characteristics. This situation occurred primarily in Eastern European countries. To address this challenge, this study interpreted the distributions only at the levels of the total sample and the country groups. This approach ensured sufficiently high case numbers that allow for meaningful interpretations of the analyses carried out. Further research is needed to obtain such information also at the country-level in Eastern European countries. Researchers may want to use extant country-specific datasets or collect their own data for this purpose. Second, this study could not explain without a doubt why men are overrepresented in the retirement transition combining entrepreneurship and employment. The contribution of the present study is that it documented this retirement transition and quantified gender-differences in it. Previous research provides some hints as to the reasons for the gender-differences. Further research is needed to test the explanations that previous research provides. For this purpose, qualitative analyses that look into individual cases of older entrepreneurs experiencing this transition pattern would be particularly valuable. Third, this study does not provide information on countries outside Europe. The dataset used contains information on European countries only. Countries differ in their retirement transitions and gender-specific life-courses. Consequently, it is likely that countries from outside Europe possess gender-differences in retirement patterns from entrepreneurship that were not described in this study. Therefore, researchers should refrain from generalizing from this study's findings to countries that were not covered by the study. Instead, it would be desirable if a follow-up study were to repeat the analysis in additional countries. This step would render a more complete geographical overview.

9. Conclusion

This is the first study to focus on gender-differences in the retirement transition from entrepreneurship across Europe. It shows that male and female entrepreneurs experience

the same transition patterns. The difference is that women more often select themselves into retirement transitions that take place at an earlier age. Pension regulations for entrepreneurs steer which transitions patterns male and female entrepreneurs choose, and how big the gender-differences in this transition are. Future research should further explore gender-differences in this transition, e.g. regarding the development of the income and the range of drivers for the gender-differences. These findings indicate that policymakers can use pension regulations to steer the retirement transition from entrepreneurship. However, to gain a stronger influence on women's retirement transitions, they need to combine their entrepreneurship support with pension reforms and increased support for informal caregivers.

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	Number of respondents			Percentage of respondents		
	Male	Female	Total	Male	Female	Total
<i>No gender-difference in retirement age, mandatory coverage</i>						
Cyprus	66	27	93	71.0	29.0	100
Luxembourg	25	23	48	52.1	47.9	100
Hungary	31	14	45	68.9	31.1	100
Belgium	207	118	325	63.7	36.3	100
France	219	135	354	61.9	38.1	100
Portugal	42	40	82	51.2	48.8	100
Sweden	222	80	302	73.5	26.5	100
Latvia	1	1	2	50.0	50.0	100
Finland	66	37	103	64.1	35.9	100
Slovakia	7	2	9	77.8	22.2	100
Ireland	38	5	43	88.4	11.6	100
Netherlands	66	36	102	64.7	35.3	100
Spain	326	165	491	66.4	33.6	100
<i>Total</i>	<i>1,316</i>	<i>683</i>	<i>1999</i>	<i>65.8</i>	<i>34.2</i>	<i>100</i>
<i>No gender-difference in retirement age, no mandatory coverage</i>						
Denmark	198	99	297	66.6	33.3	100
Germany	180	95	275	65.5	34.5	100
<i>Total</i>	<i>378</i>	<i>194</i>	<i>572</i>	<i>66.1</i>	<i>33.9</i>	<i>100</i>
<i>Gender-difference in retirement age, mandatory coverage</i>						
Austria	143	170	313	45.7	54.3	100
Bulgaria	10	8	18	55.6	44.4	100
Croatia	32	14	46	69.6	30.4	100
Czech Republic	69	53	122	56.6	43.4	100
Estonia	52	39	91	57.1	42.9	100
Greece	309	127	436	70.9	29.1	100
Israel	98	41	139	70.5	29.5	100
Italy	343	132	475	72.2	27.8	100
Lithuania	10	6	16	62.5	37.5	100
Malta	40	6	46	87.0	13.0	100
Poland	148	187	335	44.2	55.8	100
Romania	7	6	13	53.8	46.2	100
Slovenia	61	17	78	78.2	21.8	100
Switzerland	178	108	286	62.2	37.8	100
<i>Total</i>	<i>1,500</i>	<i>914</i>	<i>2,414</i>	<i>62.1</i>	<i>37.9</i>	<i>100</i>
Source(s): Author's own work						

Supplementary Table A1.
Number and percentage of respondents, by gender, country and pension regulations for entrepreneurs

	Number of clusters					
	Two	Three	Four	Five	Six	
<i>Analysis of men</i>						
Point Biserial Correlation	0.68	0.51	0.53	0.54	0.52	
Average Silhouette Width	0.55	0.37	0.37	0.38	0.33	
Calinski-Harabasz index using squared distances	1784.77	1872.50	1605.52	1458.47	1420.27	
Hubert's Somer's D	0.85	0.65	0.68	0.69	0.74	
Hubert's C	0.10	0.15	0.13	0.12	0.10	
<i>Analysis of women</i>						
Point Biserial Correlation	0.33	0.52	0.52	0.53	0.50	
Average Silhouette Width	0.33	0.37	0.37	0.37	0.34	
Calinski-Harabasz index using squared distances	797.06	876.44	820.74	728.50	693.17	
Hubert's Somer's D	0.41	0.63	0.69	0.71	0.70	
Hubert's C	0.30	0.16	0.13	0.12	0.12	
Source(s): Author's own work						Supplementary Table A2. Quality parameters for the solutions, by numbers of clusters and gender

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