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SELF-EMPLOYMENT IN LATER LIFE

submitted in partial satisfaction of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in Sociology

by

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DEDICATION

To

my parents

for your sacrifice to give me the opportunities you never had

and

my husband and our three children

for your unconditional love.

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VITA

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ABSTRACT OF THE DISSERTATION

Self-Employment in Later Life

By

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Doctor of Philosophy in Sociology

University of California, Irvine, 2020

Professor Nina Bandelj, Chair

This dissertation examines social factors shaping participation in entrepreneurial activities and self-employment in later life, and the health consequences of engaging in this form of work. Population aging and longer life expectancy are prompting worldwide responses to address issues facing older adults. In particular, structural changes in the labor market with increasing employment precarity and the retrenchment of welfare benefits stand at a crossroad with growing older populations and efforts to ensure their well-being in later life. Meanwhile, increased rate of self-employment among older adults in the US and numerous European countries reflect considerations of self-employment as an alternative work option in later life. Yet, many self-employment and entrepreneurial studies still treat younger adults as the face of the entrepreneur. In response, I focus on determinants and consequences of self-employment of older adults and move the analysis beyond individual-level characteristics. In three empirical chapters, I examine (1) how an economic crisis as a shared social phenomenon influences entrepreneurial activities and compare between younger and older adults in the US, using the Global Entrepreneurship Monitor Adult Population Survey (GEM APS), (2) how greater pension spending promotes later life self-employment across European countries, using the European Union Statistics on Income and Living Conditions (EU-SILC) 2014 cross-sectional data, and (3) how self-employment in

later life, a form of continued engagement in economic activities, affects health outcomes of individuals, using the EU-SILC longitudinal data spanning four years from 2011 to 2014. By highlighting the role of social factors in self-employment participation and its health consequences, I engage with an economic embeddedness perspective (Polanyi 1957) that grounds self-employment activities in shared experiences and social locations, policies and practices, and social roles. Findings suggest that, unlike popular assumptions of older adults as risk averse, the 2008 economic crisis did not curtail older adults' entrepreneurial activities any more than it affected younger adults' activities. Further, countries with a larger pension spending promote self-employment among older adults by increasing their odds of being self-employed, but these policies affect lower income earners more than higher income earners. Finally, self-employment not only has the potential to serve as a bridge employment but also mitigates health declines associated with aging. Findings weave together literatures in economics, management, psychology, and gerontology and make broader contributions to our understanding of self-employment and aging premised on a sociological perspective.

CHAPTER 1

Introduction: Population Aging and Subsequent Changes for Older Adults

With aging populations, the well-being of older adults has come to the attention of scholars and policymakers. Worldwide, older adult[1] population is projected to more than double from 7.6 percent in 2010 to 15.8 percent in 2050 (OECD 2020a). Among OECD countries in the same period, the expected growth is from 14.7 percent to 25.4 percent (OECD 2020a). In OECD countries, older adults will make up over a quarter of the population by 2050.

Demographic changes, longer life expectancies, and changes in the labor market are reshaping work expectations among older adults in advanced countries. In the US, working into old age was the norm until the turn of the 19th century (Atchley 1982; Haber 1978). During the Industrial Revolution, an era marked with workplace efficiency and automation, employers introduced mandatory retirement and old age pension to replace older workers with younger workers (Haber 1978). After the Great Depression, national Social Security was introduced to address later life poverty that resulted, in part, from mandatory retirement without pension. Since then, retirement paths tended to be straightforward where older workers make a permanent exit from the labor market at pensionable age (Atchley 1982). In recent decades, however, more complex processes of multiple employment transitions before full retirement or back and forth movement between employment and retirement emerged in both the US and international contexts (Beehr and Bennett 2014; Cahill, Giandrea, and Quinn 2013, 2015, 2016; Dingemans

[1] The World Bank and OECD both define elderly population as adults 65 years and over.

and Henkens 2014; Dingemans, Henkens, and Van Solinge 2016; Fasbender et al. 2015; Mutchler et al. 1997; Pleau and Shauman 2012; Raymo et al. 2010; Tang and Burr 2015).

Unlike the turn of the 19th century when there was pressure to have older workers exit from the work force (Atchley 1982; Haber 1978), the end of the 20th century saw growing pressure to extend work lives. This tension comes two-pronged with older adults who, too young to yet retire or have financial need to work longer, want to prolong their work lives beyond the normative pensionable age (Coppola and Wilke 2014; Ebbinghaus and Radl 2015; Hamilton 2000; Lee and Smith 2009; Szinovacz, Martin, and Davey 2014). The other consists of policymakers from advanced countries with national pension programs that are raising pensionable age to address sustainability concerns in welfare benefits (Coppola and Wilke 2014; OECD 2006, 2019). However, limited employment opportunities as a result of globalization, further work automation, and pension risks shifting from employers to employees (Kalleberg 2009) alongside workplace ageism and age-based discrimination (Berger 2006; Chou and Choi 2011; Ebbinghaus and Radl 2015; Gee, Pavalko, and Long 2007; Jyrkinen and McKie 2012; Neumark 2009; Roscigno et al. 2007; von Schrader and Nazarov 2016; Walker et al. 2007) offer little space for older workers in paid and salaried work. Meanwhile, the number of older adults in self-employment grew (Biehl, Gurley-Calvez, and Hill 2014; Blanchflower 2000; Zissimopoulos and Karoly 2007, 2009) as older workers and policymakers consider self-employment as a cure-all for current dilemmas facing older populations (Lewis and Walker 2011). But to what extent do older adults actually see self-employment as a viable, alternative option to extend their work lives, and what are the consequences of later life self-employment?

This dissertation investigates self-employment and entrepreneurial activities of older adults through a sociological perspective. I consider how social factors shape individuals and

affect their self-employment participation and outcomes. By dialoguing with bodies of entrepreneurship and self-employment literatures from economics, management studies, psychology, and gerontology, the project highlights the multifaceted and interdisciplinary nature of the inquiry while bringing the conversation back to sociology.

The designation of older adult requires a brief discussion. Old age does not have a consistent age cut-off and varies from study to study. The OECD and World Bank define adults who are 65 and over as the elderly. Studies focused on health consider adults in their 50's and over as older adults (Boen and Yang 2016; Cornwell, Laumann, and Schumm 2010; Hao 2008; Ray and Heppe 1986; Warr, Butcher, and Robertson 2004) while others include adults in their 60's and over (Anaby et al. 2011; Baker et al. 2005; Chapman et al. 2016; Kahn and Pearlin 2006; Reynolds, Farrow, and Blank 2012). Studies concerning work, employment, and the labor market across disciplines treat adults 50 and over as older adults (Curl, Sharpe, and Noone 2014; Dingemans and Henkens 2014; Dingemans et al. 2016; Flood and Moen 2015; Karoly and Zissimopoulos 2004; Moen and Flood 2013; Pagán-rodríguez 2012; Riumallo-Herl et al. 2014; Syse et al. 2014; Walker et al. 2007; Wong and Almeida 2013). Consideration of adults aged 50 and over as older adults makes analytical sense as long as the typical working age ranges from 18 to 64. Similar to existing research, I treat older adults as those who are 50 years and over and younger adults as those under 50 years. I further divide the older adult group into two where adults between 50 and 64 years are the younger of the old and adults 65 and over are older of the old. This reflects an important demarcation in age because 65 is the average pensionable age across advanced countries.

In the US, despite an overall decrease in self-employment rate from 12.1 percent in 1994 to 10.1 percent in 2015, rates among older workers were higher than among younger workers for

both unincorporated and incorporated self-employment, and rates for both forms were the highest among adults 65 years and older, followed by adults 55 to 64 years in 2015 (Hipple and Hammond 2016). During 2003 to 2009, adults 55 and older accounted for almost a third of the self-employed (Biehl et al. 2014). Table 1 shows the percent of established business owners and new business owners by two age groups from the Global Entrepreneurship Monitor Adult Population Survey (GEM APS) from 2003 to 2015 in the US. In that period, the total ownership rate went up from 8 percent to 14.14 percent among older adults. New businesses are those that are less than 42 months and established businesses are those that have been in operation for more than 42 months. Table 2 shows the percent of self-employed adults by age group and country using cross-level 2009 to 2014 European Union Survey on Income and Living Condition (EU-SILC) data.

Studies suggest delayed retirement as a contributing factor to increased self-employment among older workers. For instance, workers aged 50 to 75 in the US increasingly delay their retirement through bridge jobs – paid and nonpaid work that older adults take on after leaving paid employment or their career jobs – by engaging in volunteering or types of economic work including part-time and self-employment in the encore life stages (Beehr and Bennett 2014; Moen and Flood 2013; Raymo et al. 2010; Tomlinson and Colgan 2014). For some, self-employment has become an important component of transition into retirement (Quinn and Kozy 1996; Zissimopoulos and Karoly 2007, 2009). Similar trends exist in other OECD countries with evidence that suggests self-employment is a more common form of employment among older adults than younger adults (Blanchflower 2000).

Despite this trend, we know less about self-employment among older adults than younger adults, particularly those over 50 years (Ahn 2010; Allen and Curington 2014; Arrighetti et al.

2016; Loscocco et al. 1991; McManus 2000; Segal, Borgia, and Schoenfeld 2005; Tubergen 2005). Earlier research tended to focus on younger adults and individual-level determinants of self-employment, mainly considering individual human, social, and economic capital. Studies that did consider age largely included it as a control variable (Allen and Curington 2014; Tsai, Chang, and Peng 2016) rather than a primary focus of interest.

Self-employment among older adults deems a closer examination because older adults have motivating factors that are more salient for this group than the motives of their younger counterparts. Push or pull factors include early exit from career or paid work, health decline, opportunities to take advantage of accumulated capital, and cultural reframing of later life as an encore stage rather than one of decline (Johnson and Mutchler 2014; Moulton and Scott 2016; Walker and Webster 2007; Zissimopoulos and Karoly 2007, 2009). At the same time, older adults make up an important population segment as life expectancies increase and population projections estimate this group to account for a larger portion of worldwide populations (Kochhar and Oates 2014). In response, growing bodies of research in entrepreneurship and gerontology began pursuing more nuanced empirical studies to offer better ideas about motivations for older life self-employment. Still, less is known about the types of self-employment that older adults engage in, why that may be so, and its consequences beyond issues of later life economic vulnerability and poverty.

In contrast, gender differences in self-employment is more explored. Studies consistently find a gender gap in almost all advanced countries among self-employed younger adults, with notable exceptions in Chile and Mexico where women had higher self-employment rates than men in the late 2010's (OECD 2017). Despite this persisting trend, the gap between the rates appears to be closing especially among OECD countries (OECD 2017). Regression results in this

dissertation consistently show that older women, similar to younger women, have lower odds of engaging in entrepreneurial activities compared to men, corroborating with well-established gender patterns in self-employment.

Three empirical studies in the following chapters explore different facets of later life self-employment. The first two consider how social forces such as the shared experience of an economic recession, structural changes in the labor market, cultural expectations of aging, and institutions as policies and practices shape self-employment. The third study examines the health consequence of this form of work. The studies use primarily two datasets: The Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS) and the European Union Statistics on Income and Living Conditions (EU-SILC). The GEM APS, an annual questionnaire that began in 1999, surveys at least 2,000 nationally representative adults in each participating country, which to date includes over 100 countries. The APS is unique compared to other datasets pertaining to self-employment and entrepreneurship because it collects information on the different phases of entrepreneurial activities, including intentions to start a business, the startup phase, owning a new business, and owning an established business. In contrast to its detailed information on a myriad of entrepreneurial activities, however, demographic information is mainly limited to gender, age, education, household income, and main occupation.

The EU-SILC from Eurostat, on the other hand, contains a richer set of demographic information and offers cross-sectional data and longitudinal data at the individual-level on indicators of income, poverty, social well-being, and basic living conditions for persons 16 years and over. The dataset also contains limited household level information. Data collection, which began in 2003 with six of the European Union Member States[2] and Norway, occurs annually for

[2] EU member countries that participated include Belgium, Denmark, Greece, Ireland, Luxembourg, and Austria.

the cross-sectional data. Longitudinal data span four years where respondents participate for four years with a four-year rotational wave that replaces a quarter of the sample each year. To date, the survey collects data from the 27 EU-Member States[3] along with Norway, Iceland, and Switzerland.

One of the challenges in self-employment and entrepreneurship studies is the lack of consistency on what we consider as self-employment and entrepreneurship. Some studies adopt self-employment as a proxy for entrepreneurship (Caliendo, Fossen, and Kritikos 2009; Gumus and Regan 2015; Halicioglu and Yolac 2015). Others use self-employment and entrepreneurship interchangeably (Blanchflower and Oswald 1998; Dawson and Henley 2013; Lewis and Walker 2011; Weller et al. 2016; Zissimopoulos, Karoly, and Qian 2009). Self-employment may also consist of different forms, such as incorporated or not incorporated, which have different tax implications (Hipple 2010; Hipple and Hammond 2016; Holtz-Eakin, Joulfaian, and Rosen 1994). Some designate entrepreneurship as the creative process of producing new products, ideas, and ways of working and entrepreneurs as innovators rather than as a type of employment and worker (Carland et al. 1984; Henrekson 2005; Norton and Moore 2002) taking Schumpeter's cue (2008). This dissertation uses self-employment and entrepreneurship interchangeably as forms of employment based on the definitions provided by the datasets this research utilizes. The GEM defines entrepreneurship as "[a]ny attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business." The EU-SILC defines self-employed as,

[3] EU membership number changed from 28 to 27 as of February of 2020 with an exit of the UK.

> "Persons who work in their own business, professional practice or farm for the purpose of earning a profit. Members of producers' co-operatives should be considered as self-employed if in the cooperative, each member takes part on an equal footing with other members in determining the organisation of production, sales and /or other work of the establishment, the investments and the distribution of the proceeds of the establishment amongst their members."

The EU-SILC further divides self-employment into two categories based on whether it involves solo work or is a larger operation with employees. Self-employed with employees are "persons who work in their own business, professional practice or farm for the purpose of earning a profit, and who employ at least one other person. If people working in the business, professional practice or farm, are not paid then he/she should be considered as self-employed without staff." Self-employed without employees are "persons who work in their own business, professional practice or farm for the purpose of earning a profit, and who do not employ any other person. Nevertheless, he may engage members of his/her own family or apprenticed without payment. In this category one can find farmers working alone or using the assistance of members of family." Examples of self-employed adults without employees, as provided by the EU-SILC, are those who receive monetary payments for taking care of children who are not of their own. Another example consists of freelance workers. These examples illuminate how self-employment looks qualitatively different.

Chapter 2, the first empirical chapter, focuses on economic uncertainty and aging in the US by examining how an economic recession patterns self-employment activities among older adults. The primary question asks how do uncertainties stemming from an economic crisis affect older adults' entrepreneurial activities? Popular beliefs assume that older adults exhibit more

aversion to uncertainty and risk than younger adults. Psychology and economics studies using life cycle risk aversion theory (Bakshi and Chen 1994; Bodie, Merton, and Samuelson 1992; Jianakoplos and Bernasek 2006; Josef et al. 2016; Sahm 2012; Schurer 2015; Yao, Sharpe, and Wang 2011), prospect theory, and related risk aversion theories (Mather et al. 2012; Tymula et al. 2013) take a rational choice and agency approach to bolster the assumption with some empirical evidence that support the claim. Indeed, compared to younger adults, older adults engage in a smaller share of entrepreneurship. Yet adults 50 and over make up a steadily growing group of entrepreneurs in the US, and this chapter finds that the 2008 financial crisis has not curtailed entrepreneurial activities among older adults. Rather than focusing on risk aversion theories that center on individual traits as the driving force of entrepreneurial decisions, sociological perspectives on older adults' entrepreneurship consider disruptions in the structural conditions of the labor market as a result of the economic crisis and cultural expectations of successful aging. From this perspective, I argue that older adults' entrepreneurial behaviors stem from structural and cultural roots, not simply one of individual aversion toward risk. Analyses of the 2005 to 2013 individual-level GEM APS US data compare entrepreneurial activities between younger adults and older adults. Findings show that an economic downturn does not thwart older adults' entrepreneurial activities any more than it affects younger adults' activities. In general, older adults' odds of having intentions to start a business and actually owning a business were higher after the crisis than before the crisis, thereby challenging conventional understanding of age-related risk aversion.

Despite the locus of this research on variability among older adults, discussions of race are entirely missing. Although limited relevant data hamper a complete analysis, empirical studies among younger adults across racial and immigrant groups in the US do find differences

in the rate and quality of self-employment. While this research precludes older adults, we know that older racial minority and immigrant groups experience different later life outcomes from older, white adults (Miyawaki 2015; Penner, Perun, and Steuerle 2002) as a result of accumulated disadvantages. In this perspective, accumulated disadvantages are amplified in older age. Extending self-employment inquiries to older adults from minority and immigrant groups, therefore, would open opportunities to explore issues of well-being and poverty that elucidate inequality and stratification.

The second empirical case in Chapter 3 weighs in on the debate between whether welfare spending hinders or promotes self-employment among older adults. Using the 2014 cross-sectional EUSILC data across 30 European countries, the chapter takes an embeddedness perspective and engages with institutional theory. By situating individual characteristics in national contexts and considering how practices and policies complexly interact with individual-level characteristics and employment outcomes, the chapter invokes Polanyi's (1957) concept of embeddedness where policy, labor markets, and social actors come together in inseparable ways. While one side of the welfare argument contends that a large welfare spending has a crowding out effect that makes self-employment less favorable for workers, and an opposing argument explains that a large welfare spending encourages entrepreneurship by offering resources and incentives for older adults to venture into new economic pursuits, this chapter highlights also the importance of social location and that these factors are not static pieces. Cross-comparative analyses consist of high income and low income countries with diverging pathways to welfare regimes and policies. Analyses using hierarchical generalized linear modeling (HGLM) generally find a positive association between public pension spending and self-employment

among older adults, and they reveal more complex relationships as pension spending and individual-level characteristics interact.

The last empirical case in Chapter 4 investigates the link between self-employment and self-perceived health among older adults across 27 European countries using the 2014 EU-SILC longitudinal dataset spanning from 2011 to 2014. The chapter explores active aging theory and related theories that claim older adults experience health benefits and live healthier lives when they continue to engage in social and economic roles that integrate them in society rather than withdrawing from those roles and activities. I analyze how self-rated health changes over time among older adults in different employment statuses, especially focusing on the self-employed. Existing studies find that participation in productive activities, that is economic and noneconomic activities that provide benefit to the individual and beyond, mitigates the potential negative reach of aging. However, the bulk of this work examines the effect of volunteer work on health outcomes (Burr, Tavares, and Mutchler 2011; Hao 2008; McDonnall 2011; Russell et al. 2018; Thoits and Hewitt 2001). Studies that do examine employment and economic roles tend not to discern the difference between paid work and self-employment (Aday, Kehoe, and Kehoe 2016; Baker et al. 2005) even though the motivations and circumstances for engaging in the latter form of employment invariably differ from the former. Example differences include the need for greater work flexibility or opportunity to tap into greater income potential. This chapter finds that while older adults generally report diminishing health over time, the rate of change differs by employment status. Those who cannot work due to disability experience the largest health decline while employed and self-employed older adults experience smaller declines over the four-year period. Findings partly support theory of productive aging that participating in market activities help adults maintain good health.

The final chapter summarizes the findings of the three empirical chapters, broadly highlights research contributions, discusses limitations of the study, and identifies opportunities for future research.

Table 1. Percent of business owners by type of ownership and age group from 2003 to 2015 in the US

	Established Owner		New Owner		Established and New Owner Combined	
Year	Younger[4]	Older[5]	Younger	Older	Younger	Older
2003	4.9	6.17	5.63	1.83	10.53	8
2004	4.54	7.33	5.56	2.26	10.1	9.59
2005	4.63	6.14	5.81	2.56	10.44	8.7
2006	5.42	6.88	4.22	1.79	9.64	8.67
2007	4.5	5.7	3.92	1.39	8.42	7.09
2008	7.75	9.2	5.45	2.22	13.2	11.42
2009	5.08	7.06	2.99	1.71	8.07	8.77
2010	6.04	9.24	3.16	1.21	9.2	10.45
2011	7.41	11.48	4.58	2.58	11.99	14.06
2012	6.71	10.2	4.51	2.81	11.22	13.01
2013	5.85	9.85	4.2	1.92	10.05	11.77
2014	4.99	11.08	4.86	3.76	9.85	14.84
2015	5.59	11.04	4.68	3.1	10.27	14.14

[4] Younger adults refer to those under 50 years of age.

[5] Older adults refer to those 50 years and older.

Table 2. Percent of self-employed adults by country and age group from 2009 to 2014

	2009		2010		2011		2012		2013		2014	
Country	Younger	Older	Younger	Older	Younger	Older	Younger	Older	Younger	Older	Younger	Older
Austria	7.76	4.47	7.91	4.33	7.92	4.73	7.38	4.77	7.72	4.81	7.09	5.3
Belgium	6.86	4.17	6.63	3.95	6.29	4.11	6.22	3.82	6.19	4.02	6.48	4.26
Bulgaria	5.29	3.21	5.52	3.8	5.66	3.33	5.76	3.32	5.79	3.48	6.17	3.48
Switzerland	6.38	8.97	5.67	8.19	5.55	7.83	5.73	7.35	5.29	7.35	5.38	7.1
Cyprus	6.73	8.55	6.1	8.16	5.51	6.93	5.16	6.49	4.81	5.32	5.44	5.46
Czech Republic	8.17	4.34	8.49	4.56	8.52	4.87	8.71	4.78	8.95	5.15	9.05	5.1
Denmark	5.88	6.09	5.7	6.14	5.76	5.73	5.27	5.38	4.96	5.77	4.61	5.76
Estonia	4.12	3.29	3.9	2.96	4.51	3.38	4.51	3.28	4.33	3.65	5.3	3.97
Greece	18.59	12.25	17.4	11.73	18.47	10.45	18.8	10.39	15.55	9.21	15.03	9.4
Spain	8.66	6.55	8.48	6.31	7.8	5.72	7.52	5.69	8.01	6.31	8.25	6.74
Finland	13.56	13.91	13.04	13.75	12.42	13.68	12.33	12.85	11.95	13.12	12.42	13.47
France	5.08	3.95	5.47	4.05	5.66	4.09	5.85	4.21	6.23	3.81	6.3	4.04
Hungary	4.71	3.03	4.06	3.27	4.16	3.52	3.81	3.24	3.73	3.52	3.11	2.72
Ireland	6.64	7.28	6.31	6.99	5.96	7.13	5.77	7.02	5.87	7.31	6.06	8.32
Iceland	7.14	10.66	6.7	10.61	6.64	10.56	6.73	10.43	6.49	10.37	5.96	10.27
Italy	13.74	7.45	13.06	7.79	14.82	8.22	14.04	8.25	13.9	8.19	13.63	8.11
Lithuania	6.25	4.12	5.58	4.26	4.7	3.57	4.8	3.85	5.71	4.1	6.28	4.43
Luxembourg	5.44	4.88	5.89	5.25	5.1	4.92	4.83	4.53	4.14	4.44	3.99	3.88
Latvia	3.78	3.38	3.78	2.81	4.42	2.54	4.51	2.7	5.13	2.64	5.23	2.75
Malta	7.32	3.79	7.68	3.53	6.89	3.49	6.66	3.84	6.25	3.75	6.16	3.9
Netherlands	8.82	6.92	9.17	6.78	8.73	6.49	8.85	7.02	7.84	6.68	7.91	7.05
Norway	4.28	6.2	4.4	6.05	4.32	6	4.5	5.66	4.09	5.78	3.96	5.64
Poland	11.96	8.4	12.09	8.28	11.81	7.77	11.51	7.47	11.26	7.33	11.2	7.9
Portugal	8.22	7.11	7.94	6.02	7.52	6.11	6.36	5.44	6.12	4.82	6.48	5.01
Romania	15.92	8.77	17.74	10.68	17.5	10.42	17.5	11.21	17.17	11.55	17.98	10.35
Sweden	2.97	3.22	3.13	3.05	3.04	3.21	5.26	6.09	5.33	6.03	5.37	6.29
Slovenia	5.72	3.72	5.64	3.61	5.62	3.51	5.75	3.34	5.57	3.37	5.84	3.33
Slovakia	6.83	2.81	6.84	3.2	6.8	3.62	6.46	3.64	6.59	3.47	6.6	3.76
UK	7.12	6.77	7.4	6.53	7.31	7.1	7.51	6.61	7.15	6.97	7.54	6.73

CHAPTER 2

The Impact of the Financial Crisis on Entrepreneurship Among Older Adults

The highly complex and interconnected nature of organizations, institutions, and economic actors lent itself to the 2008 crisis (Lounsbury and Hirsche 2010), the longest recession in US history since the Great Depression. Different segments of the population felt divergent effects of the economic downturn (Hout, Levanon, and Cumberworth 2011a; Thébaud and Sharkey 2016). More men experienced unemployment than women because the recession hit industries such as construction and manufacturing harder than others (Hout, Levanon, and Cumberworth 2011b). Within these industries, construction workers, repair workers, and production workers immediately faced layoffs unlike high-status, high-earning professionals and managers who experienced unemployment more gradually. Further, unemployment risks and rates were highest among the least educated and lowest among the highest educated (Hout et al. 2011b). Therefore, unemployment effects of the crisis varied by social location.

For older adults close to retirement age, the macroeconomic shock positioned them in more economically and socially vulnerable situations. Their Social Security and pension savings dwindled from the financial collapse (Hurd and Rohwedder 2010; Shapiro 2010). Evidence suggests that the stock market crash produced pronounced changes in older adults' well-being and health. Adults close to retirement age of 60 to 65 who experienced unemployment during the 2007-2009 recession exhibited significantly reduced cognitive functioning after the economic shock (Riumallo-Herl et al. 2015) and negative mental health (Riumallo-Herl et al. 2014). While individual experience of unemployment contributed to negative health outcomes, these studies

show that individuals experience collective trauma from macro-economic shocks such as a recession. Retirement plans also changed where non-retired older adults near retirement age planned to work beyond the traditional retirement age (Goda, Shoven, and Slavov 2011; McFall 2011).

One way older adults can prolong their work lives, especially after a voluntary or involuntary job loss, such as layoffs, is through bridge jobs (Cahill et al. 2013, 2015). Bridge jobs are work that older adults take on after retiring from their career jobs, and one type of bridge job is self-employment. Globally, the OECD highlighted lengthening working lives as a critical goal across countries with aging populations (OECD 2006, 2019). In the recent decade, the US has seen an increasing number of older adults entering self-employment and starting businesses (Moulton and Scott 2016), underscoring self-employment as an important work option for many older adults. Although self-employment and entrepreneurial work enable older adults to extend their work lives, entrepreneurship is still regarded as a risky employment option. Whether it sets the entrepreneur in a position of opportunity for wealth accumulation or vulnerability with the potential for loss of wealth, uncertainties surround entrepreneurship compared to salaried employment. New businesses, for instance, have low rates of survival with approximately a third of them with employees failing within the first three years and nearly half failing within the first five years (U.S. Bureau of Labor Statistics 2018). With low chances of survival, starting a business bolsters entrepreneurs as risk-takers.

This chapter investigates how an economic crisis affects older adults' entrepreneurial pursuits and how this compares to that of younger adults. It starts with older adults' orientation toward starting a business, tapping into the conventional understanding of the rational actor that older adults are averse to uncertainty. Economics, finance, and psychology studies generally

concur that older adults make more prudent financial decisions than their younger counterparts, especially in conditions of uncertainty. Older adults, therefore, should have negative feelings about starting a business. Moreover, negative feelings should be more pronounced after a macroeconomic shock such as the 2008 financial crisis where increased uncertainty settled in markets. Linking negative feelings to actual entrepreneurial behavior, older adults should also have low inclinations to start a business, and this should be even lower after the crisis than before the crisis.

While individual characteristics matter in shaping the entrepreneur's decisions and outcomes, so do structural and historic-cultural conditions surrounding the entrepreneur. From a sociological perspective, the financial crisis should not necessarily taper older adults' interest in entrepreneurship. The crisis created structural conditions that lent themselves to a major shakeup in the labor market forcing many people out of work, especially older adults. Older adults who experienced job loss during the crisis and not yet ready to retire may turn to starting their own business as a viable work option. Further, cultural discourse of active aging may have a more salient effect on older adults' entrepreneurial pursuits than their individual risk dispositions. In fact, combined with rapid structural changes in the labor market and cultural discourse of active aging, older adults' inclinations to start a business did not necessarily decrease after the crisis when compared to before the crisis.

OLDER ADULTS AND ENTREPRENEURSHIP

Demographic characteristics such as age and gender produce critical variations in the decision to pursue entrepreneurship. In general, risk aversion toward self-employment increases as

individuals age (Ahn 2010), and economics, psychology, and financial studies generally portray older adults as less willing to take risks compared to younger adults concerning financial decisions (Bakshi and Chen 1994; Bodie et al. 1992; Jianakoplos and Bernasek 2006; Josef et al. 2016; Sahm 2012; Schurer 2015; Yao et al. 2011). These studies related to aging and risk typically assume that decisions have equal weight, assume normal economic conditions, and consider circumstances in the absence of macro-level contextual factors. However, individuals make real-life entrepreneurial decisions under larger structural and cultural conditions, and the different conditions affect would-be-entrepreneurs and entrepreneurs in diverging ways depending on their social location.

Age, Dispositions Toward Risk, and Entrepreneurship

A large body of literature in economics, finance, and psychology attributes entrepreneurial risk-taking to a behavior that stems from an individual characteristic or trait (Cramer et al. 2002; Dohmen et al. 2011; Wu and Knott 2006). In general, those with an optimistic or favorable disposition toward risk are described as having a higher risk tolerance and, therefore, more likely to pursue a business startup. Conversely, those with a negative disposition toward risk are described as risk averse and less likely to pursue such endeavors (Ahn 2010; Caliendo et al. 2009; Ekelund et al. 2005; Hvide and Panos 2014; Moulton and Scott 2016; Nieß and Biemann 2014; Van Praag and Cramer 2001; Segal et al. 2005).

Starting with the assumption that certain groups have higher propensity for risk than other groups, a common dimension of comparison between risk-taking propensities often considers gender. Many of the studies arrive at a consensus that individuals associate successful

entrepreneurship with traits such as competitiveness, aggressiveness, task-oriented and risk-taking (Bruni, Gherardi, and Poggio 2004; Gupta et al. 2009; Gupta, Wieland, and Turban 2019; Laguía et al. 2019), traits that are perceived to be more masculine (Laguía et al. 2019). Societal stereotypes also perceive entrepreneurship as a masculine pursuit (Thébaud 2015b), and associate high-growth entrepreneurship as masculine and low-growth as feminine (Gupta et al. 2019). Therefore, women are considered to be less willing start a business than men. When women do start a business, their competence is undermined for pursuing masculine endeavors. Meanwhile, stereotypes and social roles help explain the gender discrepancy in the lower rate of entrepreneurship among women compared to men (Carr and Steele 2010; Tsai et al. 2016). Carr and Steele (2010)'s experimental studies show that women exhibit more risk aversive behavior when exposed to stereotype threat, a situation in which a negative stereotype about a group is confirmed or becomes relevant. For example, women in the experimental condition were asked to complete tasks that measure mathematical and logical abilities, qualities that are more associated with men than women, whereas women in the non-threatening condition were told to solve puzzles. Afterward, participants in the study had multiple chances to choose between lower probabilities of winning a larger amount of money versus higher probabilities of winning a smaller amount of money, the former associated with higher risk and the latter with lower risk. Women in the experimental condition chose less risky options more frequently than women who were not exposed to stereotype threat.

Similarly, older adults are also viewed as risk averse. The life cycle theory posits that risk aversion increases with age (Bakshi and Chen 1994; Bodie et al. 1992; Jianakoplos and Bernasek 2006; Josef et al. 2016; Sahm 2012; Schurer 2015; Yao et al. 2011). Empirical evidence from investment behavior, namely in housing and financial markets, supports the theory and finds a

positive relationship between an investor's risk aversion and age (Bakshi and Chen 1994; Morin and Suarez 1983). Morin and Suarez (1983) explain that a decrease in income potential with aging may contribute to the relatively increased risk aversive investment behavior. Older adults with a smaller net worth exhibit more conservative investment behavior whereas those with more wealth are willing to take more financial risks. The design of retirement plans also contributes to older adults' more financially conservative behavior. Retirement plans tend to favor preserving the principle and discourage rash investing under the assumption that older adults do not have adequate time to recoup large losses. In comparison, younger adults have more time. Therefore, older adults readjust their portfolio to have more conservative market strategies (Bodie et al. 1992). Many financial risk-taking studies use evidence from experimental conditions to examine the relationship between risk and age (Albert and Duffy 2012; Henninger, Madden, and Huettel 2010; Yao et al. 2011), and older adults are found to have higher discount rates than younger adults (Albert and Duffy 2012).

The relationship between age and risk-taking, however, may not be as straightforward as presumed (Mather et al. 2012). For example, older adults are more willing to make riskier financial decisions when retirement status is controlled (Wang and Hanna 1997). Grounded on Kahneman and Tversky's prospect theory (1979), Mather et al. (2012) found that risk aversion differs between older and younger adults depending on the context and certainty of losses and gains. Through four experimental conditions with different gain and loss propositions, older adults were found to be more influenced by sure losses and sure gains than younger adults. For example, older adults are willing to take more risks when given options between a smaller but definite loss versus taking a potentially larger but uncertain loss because a definite loss invokes the tendency to overweigh certainty over uncertainty. In short, older adults take risks to avoid a

sure loss. Tymula et al. (2013) similarly find that between gains and losses, older adults were likely to take less risks than younger adults in conditions with gains, yet more likely to take risks in conditions with losses when factors of certainty or uncertainty are introduced. Mather et al. (2012) also found that emotions play an important role in risk-taking and risk aversion, thereby highlighting a link between affect and risk. Indeed, emotions often influence economic decisions despite the dominance of rational choice arguments (DeSteno et al. 2014; Lerner and Keltner 2001; Lerner, Small, and Loewenstein 2004). Loewenstein and Lerner found that emotions have direct influence on investor behavior by way of affecting how investors judge expected returns (Loewenstein and Lerner 2003). In the case of older adults near or at retirement, losses in the market after a substantial decline, such as a recession, may have more salient effects if those investment funds are linked to their retirement.

Emotions, especially fear about uncertainties (Kollmann, Stöckmann, and Kensbock 2017; Tsai et al. 2016) and perceptions of real or perceived risk (Weber and Milliman 2008), may therefore affect economic decisions. A body of psychology studies defines fear of failure as an individual attitude toward risk or risk aversion (e.g. Ray 1994; Helms 2003; Hessels et al 2011; Sandhu et al. 2011). The emotion of fear is important component of risk because fear may act as a barrier by potentially preventing individuals from taking specific action. In fact, fear is linked to making risk-averse decisions (Lerner and Keltner 2001) while some studies show that fear of failure poses as a barrier to starting a business (Arenius and Minniti 2005; Arrighetti et al. 2016; Verheul et al. 2012). Arrighetti et al. (2016), for instance, show that a financial crisis changes the level of interest in starting a business and the likelihood of starting a business in the future among college students in Italy.

During the 2007-2009 economic downturn with the crumbling financial sector and the housing market crash, the US saw increased unemployment rates (Grusky, Wester, and Wimer 2011; Hout et al. 2011b) and decreased business startup rates (Shane 2011). For older adults whose retirement income from Social Security, private pensions, and savings dwindled during the crisis, the costs associated with starting a business could thwart their entrepreneurial efforts if their investment and savings nests shrank. Furthermore, economic crises create a context of greater uncertainties, and increased uncertainty may have a greater effect on older adults' heightening of risk perception. Therefore, a financial crisis may disproportionately reduce older adults' willingness to start a business than that of younger adults. Further, the effect of the crisis may last longer among older adults than younger adults, thereby making older adults even more less likely to start a business after a crisis.

Hypothesis 1a: Older adults are more risk averse than younger adults in their feelings toward entrepreneurship.

Hypothesis 2a: Older adults' odds of intentions to start a business will be lower after the crisis than before the crisis.

Hypothesis 3a: Older adults' odds of being a new entrepreneur will be lower after the financial crisis than before the crisis.

Age and Structural and Cultural Contexts

The labeling of macro-level economic trends as *crises* encompasses shared perceptions about what crises mean, and those shared meanings could produce real, material consequences (Zoeller

and Bandelj 2019). In wake of the 2008 financial crisis with the collapse of a major finance company and the financial market, housing market crash, and the subprime mortgage market, the Federal Open Market Committee failed to recognize the link in these events because its members had a shared culture created by like-minded decision makers with narrow expertise and perspective of the unfolding events (Fligstein, Brundage, and Schultz 2014). These shared perceptions and culture have the power to shape how individuals make sense of the world, and the shared culture prevented the Federal Reserve from foreseeing the impending financial crisis. During times of crisis, therefore, conventional economic and psychological understandings do not adequately explain economic behavior, especially of older adults (Hayes 2019).

When considering the structural changes in the labor market, self-employment may attract some older adults as a more attractive form of work compared to paid work. Structural changes with increased outsourcing, automation of jobs, and temporary, contract-based employment led to unpredictability, precarity, and job insecurity in the employment market over the years (Kalleberg 2009). Individual tenure at an organization has also decreased while the number of job changes in an individual's work life has increased (Cappelli 2008). Employers' commitment shifted from workers to shareholders in the last quarter of the 20th century (Fligstein and Shin 2004), eroding the employer-employee relationship over the period (Kalleberg 2009). Importantly, unemployment during and following the 2008 financial crisis particularly affected older adults. While unemployment persisted beyond 2009 with only a third of the displaced workers finding full-time employment by 2010 (Farber 2015), older adults had the most difficulty finding another job after experiencing unemployment during the 2007 to 2009 period (Hurd and Rohwedder 2010). Given structural conditions that disfavor older adults, older adults may be more willing to be self-employed or start a business in order to prolong their working

lives. Particularly for older adults with less wealth, they may need to continue working because they have financial responsibilities or do not have adequate retirement funds. Among older adults, then, those with less wealth and those most affected by the changes in the structural conditions of the labor market would likely turn to self-employment and entrepreneurship.

Hayes's (2019) investigation of older adults' investment decisions with their 401k retirement accounts through relational accounting shows that older adults deviate from engaging in expected economic behaviors because retirement and retirement accounts represent a part of the life cycle that has a culturally shared meaning and understanding. Relational accounting involves attaching cultural and symbolic meanings to certain monies and transactions (Wherry 2016). Adults designate college savings accounts, separate retirement money, and protect certain wealth and assets because of cultural meanings attached to them (Hayes 2019). Indeed, older adults work longer, not simply to earn more money but to earn money for specific purposes including paying for children's college education (Handwerker 2011), supporting dependent children living at home (Pienta and Hayward 2002), and saving for retirement. Retirement money that workers set aside is imbued with social meaning, value, and purpose for retirement security (Van Dalen, Henkens, and Hershey 2010; Hayes 2019) unlike other types of brokerage and savings accounts that may be mobilized for wealth accumulation. More so than other monies, retirement accounts are meant to be conserved and protected from loss (Hayes 2019). As a result, investment behavior in retirement accounts during a crisis period that may appear as risk aversive action actually has a sociological grounding. Therefore, the shared understanding of certain events as crises or demarcating certain life stages, such as retirement, with cultural importance has the potential to shape older adults' orientation toward entrepreneurship.

Unlike recent decades in which retirement was institutionalized as a natural part of the life course, older adults in contemporary society live in a cultural milieu with expectations to lead productive lives beyond retirement age by maintaining their work ethic norms. Maestas (2010) examines older adults' transition in and out of retirement and find that some retired individuals plan to "unretire" prior to their actual retirement. Retirees experience more discontent from not being productive or partaking in useful activities than not having their leisurely expectations met. Those who expected to work after retirement but ended up not working worried about both their financial security and productivity levels. Retirees unable to meet their work expectations were also more likely to experience negative changes in their chronic health conditions compared to retirees who went back to work. Other studies also find that older adults who work post-retirement are happier and healthier than those who do not work (Kim and Feldman 2000; Zhan et al. 2009). Overall, healthy older adults try to continue their daily routines and meet cultural expectations of maintaining an active and productive life (Morrow-Howell, Hinterlong, and Sherraden 2001). Therefore, older adults may experience greater structural pressure to pursue entrepreneurial activities in order to prolong their work lives and create employment opportunities tailored to satisfying their individual needs for remaining active and productive in society.

In fact, older adults prefer to work beyond retirement age. Thirty percent of older adults who retired in Italy, for instance, preferred to continue working past their retirement age, and more generally, many older adults retired because of health issues or job loss (Steiber and Kohli 2017), suggesting that a substantial number of older adults exit the labor market prematurely. Many older adults lost their jobs during or after the crises, and job loss led to involuntary retirement for some. Whether retirement is voluntary or involuntary influences the extent to

which individuals feel happiness and satisfaction in retirement (Calvo, Haverstick, and Sass 2009; de Vaus et al. 2007) while involuntary retirement has tangible effects on older adults' health and income (Calvo, Sarkisian, and Tamborini 2013; Sullivan and Von Wachter 2009). Countries across the globe also apply active aging policies by promoting self-employment among older adults (Lewis and Walker 2011; OECD 2006). Consequently, since longer work lives have important implications in the well-being of older adults and their way of maintaining active lives, this may be a more salient reason to pursue entrepreneurship than their risk attitudes or feelings toward starting a business.

Hypothesis 1b: Older adults are less risk averse than younger adults in their feelings toward entrepreneurship.

Hypothesis 2b: Older adults' odds of intentions to start a business will be higher after the crisis than before the crisis.

Hypothesis 3b: Older adults' odds of being a new entrepreneur will be higher after the financial crisis than before the crisis.

Hypothesis 4: Among older adults, those with smaller income, driven by necessity-based entrepreneurship, and those with higher income, driven by the culture of active aging, will have higher odds of starting a business than those with moderate levels of income.

This chapter addresses older adults' entrepreneurial activities in response to an economic crisis by adjudicating two competing theoretical perspectives. Based on theories of life course risk aversion and prospect theory, older adults' risk aversion will increase during a crisis and, therefore, entrepreneurial activities will decrease after an economic crisis compared to before the

crisis. Further, the decrease will be more pronounced among older adults than younger adults. Conversely, based on structural conditions and cultural expectations, older adults' entrepreneurial activities should not be significantly tapered after the crisis compared to before the crisis.

DATA AND METHODS

The analyses use the Adult Population Survey (APS) data from the Global Entrepreneurship Monitor (GEM) from 2005 to 2013. The annual APS data contain individual-level entrepreneurship data among a nationally representative sample of adults since 1998, designed to capture information on adults engaged in entrepreneurship and various stages of starting a business. Over the years, the APS broadened its treatment of entrepreneurship from firm creation to any type of self-employment including the selling of goods, thereby encompassing a larger spectrum of economic activities, as entrepreneurship. As a result, the entrepreneurial activity measures capture an array of self-employment activities. APS data are particularly useful for studying entrepreneurship because they contain information on a range of entrepreneurial activities, including owning an established business, startup activities, startup intentions, and feelings about starting a business. The survey also has an advantage over risk aversion studies that utilize experimental studies because experimental studies typically use hypothetical situations involving small amounts of money or risk. As a result, risk-taking in experimental conditions have limited to no impact on respondents' real lives. The GEM survey data also include a large age range, from 18 to 99, rather than limiting them to only younger adults or only older adults. The large age range allows for comparisons between younger adults (50 years of age) and older adults (50 years and older). Despite these advantages, the APS GEM has limited

socio-demographic data and do not include other pertinent information related to self-employment entry such as immigrant status, marital status, and parental education and employment history.

Measures

Dependent variables: Four questions from the GEM APS are used as dependent variables reflecting the different aspects and phases of entrepreneurship. The dependent variable for the first set of analyses investigates how respondents feel about risk-taking and starting a business. The APS question asks, "would fear of failure prevent you from starting a business?" The response to this question is coded as 1=yes and 0=no. I treat this question as risk averse feelings because risk aversion denotes preventing or avoiding loss, and fear of failure is more closely related to fearing loss as opposed to risk propensity which denotes taking risks to seize or gain opportunities. The second dependent variable captures intentions to start a business. The APS question asks, "are you, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years?" A specific time frame of three years helps to distinguish more serious respondents who have plans to start a business from other respondents who may not have similar intentions. The response to this question is coded as 1=yes and 0=no. The third variable captures actual entrepreneurial behavior with individuals who are new business owners. These individuals manage and own a business that is younger than 42 months. The response is dichotomous with 1 for yes and 0 for no. I additionally include descriptive statistics for established business owners to give a general sense of who are successful business owners. These individuals manage and own a business that is older than 42 months.

I also run a set of analyses exploring the odds that entrepreneurial pursuits stem from opportunity-based motivations or necessity-based motivations. I use the variable that indicates whether participating in early-stage entrepreneurial activities stem from opportunity-based motivations and another variable that indicates whether participation stems from need-based motivations. These variables are labeled as "Involved in Opportunity Early-Stage Entrepreneurial Activity" for the opportunity-based activities and "Involved in Necessity Early-Stage Entrepreneurial Activity" for the necessity-based activities and responses are dichotomous with 1 for yes and 0 for no.

Independent variables: Change in behavior as a result of the recession is the key interest. Before the recession, during the recession, and after the recession are coded as dummy variables with the recession years as the reference group. Survey years range from 2005 to 2013. Three years from 2005 to 2007 capture the pre-recession years. 2008 to 2010 capture the recession years. Three years from 2011 to 2013 capture the post-recession years. Although the recession officially ended in 2009, descriptive data show that the effects of the crisis linger until 2010. Therefore, this study includes 2010 as part of the recession years.

Control variables: The analyses include several control variables including individual-level resources and characteristics that may drive entrepreneurial pursuits. Control variables for individual-level resources include income and education. The APS measures income as a categorical variable with three income levels. 1 is designated as the lowest third of the income level, 2 as the middle third, and 3 as the highest third. It is measured this way because the larger GEM data contain individual-level data from numerous countries. Income as categories allow for

easier cross-national comparisons and analyses. The lowest third of the income level is the reference category in the logistic regression analyses. Education is a categorical variable, which I recoded into three categories where 1=secondary degree or less, 2=at least some college level education, and 3=beyond college education. Secondary degree or less is the reference category in the logistic regression analyses.

Individual-level characteristics consist of gender, age, skills, and social ties. Gender is a dichotomous variable with 1 for women and 0 for men. Analyses are run separately, in two subsamples, for younger adults and older adults. Younger adults are those under 50 years of age, and older adults are 50 years and older. Age in each of the subsample analyses is a continuous variable. In addition, the skills variable captures the respondent's perceived capacity to start a business. It asks respondents to express agreement with the following statement, "you have the knowledge, skills and experience required to start a new business" and the binary responses are coded as 1=yes or 0=no. Prior studies identify self-assessed capacity as a strong predictor variable for startup intentions and behaviors. This variable differs from formal education as the former asks respondents whether they believe they have the knowledge that is related to or helpful for starting a business. Social ties, or personally knowing someone who started a business, is another control variable as social ties play an important role in identifying entrepreneurial opportunities (Granovetter 1985). The APS asks, "you know someone personally who started a business in the past 2 years?" The question captures whether respondents personally know someone who started a business in the recent past.

Analytical Approach

This chapter investigates the influence of the financial crisis on entrepreneurial activities among older adults and younger adults. While the focus is on risk-averse feelings about starting a business and having actual intentions to start a business, the chapter also explores other entrepreneurial outcomes such as the odds of being a new entrepreneur and whether entrepreneurial motivations stem from opportunity or necessity. Because all the outcome variables are dichotomous, I employ logistic regression models. I conduct the regression models separately for younger adults (49 years and younger) and older adults (50 years and older) to discern differences by age groups.

The first hypothesis examines feelings about starting a business and compares risk-averse feelings between older adults and younger adults. A logistic regression model with fear of failure preventing an individual to start a business is the dependent variable for both the sample of younger adults and older adults. Control variables include income level, educational level, gender, having social ties to other entrepreneurs, and having the knowledge and experience to start a business. I test for period effects with dummy variables for before the crisis from 2003 to 2007 and after the crisis from 2011 and 2015.

The next set of logistic regression analyses investigates how the crisis affects actual intentions to start a business within the next three years. Startup intention captures whether older adults plan to start a business within a specified timeframe. I run the models with entrepreneurial intentions as the dependent variable and use the subsamples for younger adults and older adults. Survey years, coded as pre-, post-, and recession periods, are independent variables for discerning crisis effects on the odds of having business intentions.

The third set of logistic regression analyses investigate the influence of the crisis on the ownership of new businesses, paying attention to the effect of education and income, factors that

can affect whether entrepreneurs need to be self-employed out of economic necessity or pursue self-employment to lead active and engaged lives. They examine new business ownership where new businesses are defined as those younger than 42 months. The last set of logistic regression analyses look at the odds of involvement in opportunity-driven business activities and the odds of involvement in necessity-driven business activities, exploring how entrepreneurial motivations change as they relate to the experience of the economic recession.

RESULTS

This chapter investigates how an economic crisis affects entrepreneurial behavior among older adults and compares it to that of younger adults, focusing on how a crisis can shape risk-averse feelings about entrepreneurship and having actual intentions to start a business. Conventional understanding of older adults' economic behavior, grounded in psychology and economic theories of the rational actor, portrays them as more prudent and more risk averse than younger adults. However, this portrayal does not adequately explain why older adults' participation in entrepreneurial activities increased in recent years rather than recoiling, especially after the financial crisis.

Table 3 shows the means and range of the variables for the sample. Adults under 50 years of age has a sample size of 13,718, and adults 50 and over has 15,989. Women account for 49.4 percent of younger adults and 51.9 percent of older adults. Among younger adults, approximately a third (34.5 percent) have a high school degree or less while 42.4 percent have an education level beyond high school and 37.4 percent have a beyond college-level education background. Among older adults, 35.9 percent have a high school degree or less, 40.7 percent have beyond a high school education, and 23.4 percent have beyond a college-level education.

The average age for young adults comprised of 18 years to 49 years is 35.4, and for older adults between the ages of 50 and 99, the average age is 64.1. Among younger adults in the sample, 16.3 percent have startup intentions, 4.5 percent are new business owners, and 6.4 percent are established business owners. Nearly a third of the young adult sample, or 29.9 percent, say that fear prevents them from starting a business while nearly half of the sample, or 49.1 percent, believes that they have the necessary skills to start a business. 30 percent of younger adults know someone who recently started a business. Compared to younger adults, a smaller portion of older adults with only 2.2 percent consider themselves as new business owners whereas a larger portion of 9.1 percent make up established business owners. A fifth of older adults, or 20.6 percent, say that fear of failure prevents them from starting a business, but only 7.1 percent have startup intentions. Compared to nearly a third of younger adults who knows an entrepreneur, less than a fifth (18.2 percent) of older adults knows an entrepreneur, and 44 percent of older adults believe that they have the skills and knowledge to start a business.

Descriptive statistics show older adults' interest in entrepreneurship over the 2005 to 2013 period. Figure 1 shows whether fear prevents the respondent from starting a business. A larger portion of younger adults fear failure compared to older adults consistently across the years. More younger adults have negative feelings about starting a business, and this goes against the idea that older adults are more risk averse. The descriptive figure additionally reveals that the portion of adults who fear failure grew substantially after the 2008 financial crisis and remains higher than pre-crisis years. This shows that the crisis influenced how people feel about starting a business. More respondents fear failure of starting a business after the crisis compared to during or before the crisis and this heightened fear persisted.

Figure 2 shows the percent of respondents who have startup intentions by age group. A smaller proportion of older adults have startup intentions compared to younger adults. Startup intentions hit their lowest points for both age groups between 2008 and 2010, the crises years, and bounce back in 2011. Startup intentions, however, are relatively more volatile with change in the rate from year to year compared to feelings about starting a business where fear of failure has been steadily increasing and generally remains elevated post-recession period compared to the pre-recession period.

Figure 3 shows new business owners by age group. A larger percent of younger adults considers themselves as new business owners compared to older adults. Each year, nearly double the percentage of younger adults consider themselves as new business owners compared to older adults. In 2005, for example, over 6 percent of younger adults were new business owners compared to 2.8 percent of older adults. In 2008, 5.3 percent of younger adults were new owners compared to 2.7 percent of older adults. In 2013, 4.3 percent of younger adults were new business owners compared to 1.9 percent of older adults.

Lastly, Figure 4 shows the percent of established business owners by age group. These are entrepreneurs who have had their business for more than 42 months. Established entrepreneurs offer a general sense of who make successful entrepreneurs with businesses that have survived their nascent years as opposed to those who are only starting a business. In general, a larger proportion of older adults are established business owners compared to younger adults, and the proportion of established business owners moved in an upward trend after the crisis years among older adults while it did not among younger adults. This is in line with recent trends in older adults' increasing participation in entrepreneurship during the past decade. The gap between the percent of younger adults who are established business owners and the percent

of older adults who are established business owners widened after 2009. In 2005, 4.8 percent of younger adults were established business owners compared to 6.4 percent. In 2009, 5.4 percent of younger adults and 7.1 percent of older adults were established business owners. In 2013, the percent of established business owners among younger adults grew to only 5.8 percent whereas it grew to 9.9 percent among older adults. In fact, during the post-crisis years from 2011 to 2013, nearly one out of ten working older adults were established business owners.

The series of Figures 5 and 6 show the percent share of new businesses started by industry type and age group across pre-crisis, during crisis, and post-crisis periods. These graphs span from 2002 to 2015, expanding both the pre-crisis observations and post-crisis observations to five years each compared to three years in the regression analyses. These series of figures offer a quick overview of the types of businesses that younger adults and older adults start based on the industries[6] to which the businesses belong. During the pre-crisis years from 2002 to 2007, younger and older adults started more businesses in the retail, hotels, restaurants, and bar industry and the business services industry. The industry breakdown by share of age groups in Figure 6a, 6b, and 6c show that older adults' share of startup activities increased during the crisis years and after the crisis years compared to pre-crisis years. In particular, older adults' entrepreneurship in agricultural, forestry, hunting, and fishery increased substantially as well as in manufacturing, business services, and personal/consumer services during the crisis years while the shares decrease slightly during the post-crisis years. These shifts may be due to younger adults retracting from entrepreneurship during the crisis years.

[6] 1. Agricultural, forestry, hunting, fishing, 2. Mining, construction, 3. Manufacturing, 4. Utility, transportation, 5. Wholesale trade, 6. Retail, hotels, restaurants, bars, 7. Financial, insurance, real estate services, 8. Business services, 9. Government, health, and education services, 10. Personal, consumer services

APS data from the 2011 to 2015 period include some qualitative responses to the types of businesses that adults start. Consulting is an example of a business in the business services industry. A qualitative response from an adult under the age of 50 describes their business as, "I teach seminars on stages. People come and tell me what to present and I prepare and present them." An example of real estate services is flipping houses. Multi-level marketing sales, such as Mary Kay cosmetics, is categorized under retail sales. A qualitative description of this type of entrepreneurship shows, "I resell products, host parties, and recruit people to start their own business. This is selling products, beauty products, makeup and perfume." Another example of retail business started by a younger adult is, "I own a boutique business. Our customers are people on Facebook so pretty much everyone all over the world. We make a pretty good profit." Among adults who are 50 and older, an example of a business in the finance, insurance, and real estate industry is a design construction business in rural state development. An older adult with a graduate-level degree who belongs in the bottom third income level has a business in the business service industry. This adult does grant writing that is described as "research, non-profit writing grants for the United Way and places like that." An older adult in the sample with a high school degree started a janitorial service business. Examples of businesses that older adults in the top-tier income level start include a travel agency, a non-profit agency, a medical practice, businesses related to construction and property management or businesses offering professional services such as accounting and software services to small businesses.

Fear of Failure: Risk-Aversive Feeling Toward Starting a Business

Considering fear of failure as a risk-aversive feeling toward starting a business, the first logistic regression investigates whether the crisis changes feelings about starting a business. Results for fear of failure with all adults in Table 4 show that respondents were less likely to express that fear of failure prevents them from starting a business before the crisis (2005 to 2007) compared to the crisis years (2008 to 2010). The odds of fearing failure were half as likely. After the crisis, respondents had higher odds of expressing fear of failure and were twice as likely to fear failure compared to the crisis years. Risk averse feelings substantially increased after the crisis, and the notable change in feelings toward risk-taking reflects the extent to which a financial crisis is a shared experience.

Next, analyses of separate logistic regressions on fear of failure for the two age groups in Table 5, which tests Hypothesis 1a and 1b, show a more complicated relationship between age and fear about starting a business. Specifically, income and education work differently between the subsamples. Among younger adults, the odds of fearing failure are higher for those in the middle and upper third of income levels compared to those in the bottom third of the income level. Therefore, having more money increases the odds of fearing failure. Conversely among older adults, the odds of fearing failure decrease with higher income. The difference may be attributed to measuring the effect of income, rather than total wealth or assets, on fear. Compared to older adults, younger adults may not have as much wealth, in terms of investments, dividend and interest income, and home ownership. Therefore, lost income from risk-taking potentially has a larger impact on younger adults' financial state. For older adults who likely have more accumulated wealth than younger adults, wealth may help buffer against risks associated with starting a business, and greater income may serve to further mitigate risks.

Education also works differently between the two subsamples. Higher levels of education increase the odds of fearing failure among younger adults, but education has no statistically significant effect on older adults' risk aversion. In contrast, relevant skills have statistical significance for younger and older adults. The different effects of education on the two age groups compared to similar effects of skills on both age groups suggest that relevant experience, knowledge, and skills associated with starting a business matter more than formal education in addressing fear of failure, or, in other words, building feelings of confidence. Older adults with relevant skills have had opportunities and experience over time to see that those factors may play a larger role in entrepreneurial pursuits than formal schooling whereas younger adults have not yet had enough experience to be able to discern which may matter more, schooling or relevant experience. Further, higher education degrees and professional degrees tend to steer individuals away from taking risks, such as starting a business, and instead direct them toward more predictable or defined career paths. Although these differences between younger and older adults suggest that older adults may have lower odds of risk-aversive feelings toward starting a business, that conclusion cannot be drawn from the separate regression analyses, and an interaction effect between the independent variables and age may offer a clearer relationship. Instead, the regression analyses show that income and education affect younger and older adults differently and potential explanations may be due to differences in wealth and opportunities over time that help discern which factors matter more for feeling negatively or confident about starting a business.

As for the crisis effect, the odds of fearing failure are lower before the crisis and higher after the crisis for both younger adults and older adults. Affective changes before and after the crisis period are statistically significant for both age groups. Before the crisis, the odds of

younger adults fearing failure were 45 percent lower (coef=-0.592, $p < 0.001$) compared to during the crisis and the odds nearly doubled with an increase of approximately 96 percent (coef=0.671, $p < 0.001$) after the crisis. Among older adults, the odds of feeling fear before the crisis was 42 percent lower (coef=-0.546, $p < 0.001$) compared to during the crisis and the odds more than doubled with an increase by 2.36 times (coef=0.808, $p < 0.001$). Although these changes do not indicate whether older adults are more or less risk averse than younger adults in terms of how they feel about risk-taking, the crisis did significantly increase the odds of fearing risk-taking for both age groups during the post-crisis years. Therefore, the crisis did not influence older adults any more than it affected younger adults.

Intentions to Start a Business

Whereas the first set of analyses examined how respondents feel about risk-taking, the next set of analyses investigates having intentions to start a business in the next three years. Intentions are important to examine because they are antecedents to actually starting a business. Logistic regression results on intent in Table 6 show that for both younger and older adults, having a larger income decreases the odds of having startup intentions. In other words, adults in the lowest income category have the highest odds of business intent. Education has no effect on business intent for both age groups. Instead, relevant skills and experience have significantly increase the odds of business intent by nearly 4.4 times for younger adults and 5.6 times for older adults. The sharp contrast between formal education and relevant skills shows that actual work experience and skills related to starting a business improve the odds of having business plans than formal schooling does. This finding has practical implications on how to encourage startup activities among both younger and older adults. Programs aimed at promoting startup ideas and

plans may focus on pathways that lead to developing hands-on skills and work experience. Formal schooling and more advanced degrees generally steer individuals toward other career paths. As for the influence of fear on startup intentions, fearing failure affects younger adults only (coef=-0.220, $p < 0.001$) and has no statistical significance among older adults. This suggests that younger adults may have more affective reactions than older adults when formulating startup plans.

Surprisingly, the crisis did not decrease startup intentions among both younger and older adults. For both age groups, the odds of having startup intentions are higher before and after the crisis period than during the crisis period. Logistic regression results in Table 6 show a rebound in intentions to start a business after the crisis. Younger adults' odds of starting a business was 36.1 percent higher (coef=0.311, $p < 0.001$) before the crisis when compared to during the crisis and 40.2 percent higher (coef=0.357, $p < 0.001$) after the crisis when compared to the crisis period. Older adults' odds of starting a business was 39.8 percent higher (coef=0.242, $p < 0.001$) before the crisis and 50.9 percent higher (coef=0.426, $p < 0.001$) after the crisis when compared to the crisis period. In other words, the odds of having intentions to start a business decreased during the crisis but increased afterwards, reaching similar odds as before the crisis period. Therefore, results do not support Hypothesis 2a that the odds of having entrepreneurial intentions would decrease after the crisis among older adults. Results, instead, support Hypothesis 2b that the odds of intentions would increase following a crisis. This suggests that factors other than risk aversion, such as dramatic structural changes in the labor market, are potentially at play in risk-taking behavior. This is further corroborated by findings that those in the lowest income levels have the highest odds of business intentions and those in the highest income level have the lowest odds of having business intentions where intentions may be formulated in conditions of

financial necessity. Lastly, social ties also matter in having startup intentions. Among younger adults, intentions increase by 2.4 times and among older adults, intentions increase by 2.6 times. The finding shows that social ties not only matter in identifying employment opportunities but developing business opportunities as well and corroborates existing studies that examine how social ties and social networks enable individuals to pursue entrepreneurship.

Being a New Business Owner and Entrepreneurial Motivations

Additional regression analyses investigate who are actual entrepreneurs and why they potentially pursue entrepreneurship. Table 7 shows the logistic regression results on being a new business owner. New businesses include those that have been in operation for less than 42 months. In both age groups, the odds of being a new business owner changed little across the years. In other words, the crisis had a limited effect on actual business ownership. Results support neither Hypothesis 3a nor Hypothesis 3b because older adults' odds of being a new business owner are relatively similar between pre- and post- crisis years compared to the crisis years. As for the effect of income, among younger adults, the odds of being a new business owner are higher by over 30 percent for those in the middle and highest income levels compared to those in the bottom income level. Among older adults, the odds of being a new business owner are 44.6 percent higher (coef=-0.369, $p < 0.001$) for only those who are in the upper income level. In other words, having more money increases the odds of being a new business owner for both younger and older adults. However, income has a limited effect compared to other factors such as knowing other entrepreneurs, which increases the odds of being a new business owner by nearly 4 times for younger adults and by 5 times for older adults, or having relevant knowledge and skills, increasing the odds by nearly 8 times for younger adults and nearly 5 times for older

adults. The large effect size of social ties and relevant skills suggest that respondents can tap into socially-based resources from their ties to other entrepreneurs and appropriate skills acquired from past experience.

Among entrepreneurs, Table 8 shows that younger adults pursue opportunity-based businesses in times of both economic stability and turbulence. The odds of being an opportunity-driven entrepreneur was 1.63 times higher before the crisis and 1.46 times higher after the crisis than compared to the crisis years. Among older adults, the odds of being a business owner in an opportunity-based venture were higher by 1.39 times after the crisis only. This suggests that older adults may have identified more business opportunities during the crisis and post-crisis years than during times of economic stability or that older entrepreneurs with opportunity-based businesses were better able to withstand the effect of the crisis than entrepreneurs with less lucrative businesses. Negative feelings about starting a business lowered younger adults' odds of pursuing opportunity-based entrepreneurial activities by 34 percent whereas it lowered older adults' odds by 19 percent.

Meanwhile, in Table 9, the odds of pursuing necessity-based startups after the crisis increased by nearly 1.5 times for younger adults. For older adults, the odds increased by nearly 1.4 times. This suggests that the crisis pushed many adults to self-employment. A major economic shakeup could potentially produce changes in the labor market that, in turn, lead workers to explore alternative employment options, such as starting a business. Adults in the lowest income levels also have the highest odds of being involved in necessity-based entrepreneurial activities. This further supports the idea that the crisis produces conditions for necessity-based businesses wherein lower income adults are more likely to pursue entrepreneurship out of necessity. For older and younger adults, then, the crisis created an

environment that encourages both opportunity-driven and necessity-driven entrepreneurship. Therefore, Hypothesis 4 is partially supported. In addition, among lower income older adults, the odds of pursuing necessity-driven entrepreneurship are significantly higher than among older adults with higher income. Surprisingly, fear about starting a business only affected older adults, but not younger adults, in which fear increased the odds of being in a necessity-based entrepreneurial activity by 52 percent. In other words, older adults who fear failure had 52 percent higher odds of pursuing necessity-based entrepreneurship than older adults who do not fear failure. Given that those in lower income levels have higher odds of engaging in necessity-based work, and necessity-based entrepreneurial work increased after the recession, it is possible that many older adults pursuing necessity-based work found themselves in financially precarious situations after the crisis and experienced emotional hardship.

CONCLUSION

Contrary to evidence from economics, finance, and psychology studies that typically use experimental conditions and data to test life course risk aversion theories and prospect theory to conclude that older adults are risk-averse, findings of this study show that older adults are not necessarily risk averse, and, therefore, less entrepreneurial than younger adults. Generally, the 2008 economic recession was a shared negative experience as it produced tangible effects on the young and the old. Generally, negative emotions about starting a business was substantially higher after the crisis than before and during the crisis. In fact, the odds of fearing failure doubled after the crisis when compared to during the crisis. Therefore, the collective experience of the crisis negatively affected how workers *feel* about risk-taking.

Income worked differently between younger and older adults. Younger adults with greater income tended to fear failure whereas the relationship was the opposite for older adults. The opposing income effects may be attributed to the different weight that income has how individuals feel about risk-taking and their financial wellbeing. Because younger adults may not have sufficient wealth to buffer against negative economic circumstances, income may have more pronounced effect on shaping how they think about entrepreneurship. Potential income loss from risk-taking may have a more salient effect on their feelings about starting a business. Older adults, in contrast, potentially have more wealth that helps them feel more confident about risk-taking, and a larger income may serve as additional financial resources that mitigate negative feelings about starting a business.

When considering having actual plans to start a business, adults with higher income, for both younger and older, had lowered odds of startup plans while education had no effect. This finding does not necessarily suggest that income has a negative effect on the odds of having business plans. Rather, the counter income effect potentially stems from its limited purview into the respondents' total wealth and assets. Wealth, including dividend and interest payments, inheritance, trust funds, home ownership, and other investment vehicles, tends to have a positive relationship with self-employment as it addresses liquidity constraints in starting a business (Blanchflower and Oswald 1998; Brown et al. 2011; Holtz-Eakin et al. 1994). Data on different types of assets, versus income alone, may better elucidate the mechanisms that encourage self-employment, and whether older adults pursue self-employment from the active aging cultural framework. Therefore, future research using wealth and assets data may better explain this relationship.

Surprisingly, although the recession generally increased the odds of having negative feelings about risk-taking, the macro-level event had both negative and positive effects on entrepreneurial activities. The odds of having startup intentions were just as high after the recession compared to before the recession for older adults and younger adults, and although the crisis increased negative feelings about starting a business, negative feelings generally hampered startup plans for younger adults only, and not for older adults. As for actually becoming a new business owner, the recession did not decrease the odds of new business ownership for both younger and older adults. For both groups, opportunity-based business ownership and necessity-based business ownership were higher during the post-crisis years compared to the crisis years. This suggests that the crisis encouraged both types of business motivations. For some, the crisis created opportunities. For others, especially those with small income, a dramatic change in the labor market and limited employment opportunities during the crisis period may have encouraged displaced workers to identify work opportunities elsewhere through self-employment and entrepreneurship.

Whereas formal education had limited effect on overall entrepreneurial activities, having relevant skills and experiences consistently improves the odds of engaging in entrepreneurship for younger adults and older adults. This has practical implications where developing hands-on skills and experience potentially promotes startup activities more than receiving formal education through traditional schooling.

Overall, older adults did not respond to the crisis any more negatively than younger adults in terms of their entrepreneurial intentions and behavior. In fact, the subsamples responded to the crisis similarly. The biggest difference emerged in how they feel about risk-taking, this depended on their social locations. Further, feelings about risk-taking alone does not necessarily shape

actual risk-taking behavior. External circumstances, such as a financial shock, along with having financial and human capital can create situations that both encourage and discourage entrepreneurial activities. Heterogeneity in entrepreneurial activities among younger adults and older adults also show that aging does not necessarily increase risk aversion, and rather, social location plays a critical role in shaping risk-taking intentions and behaviors.

Figure 1. Percent of adults whose fear of failure prevents business startup

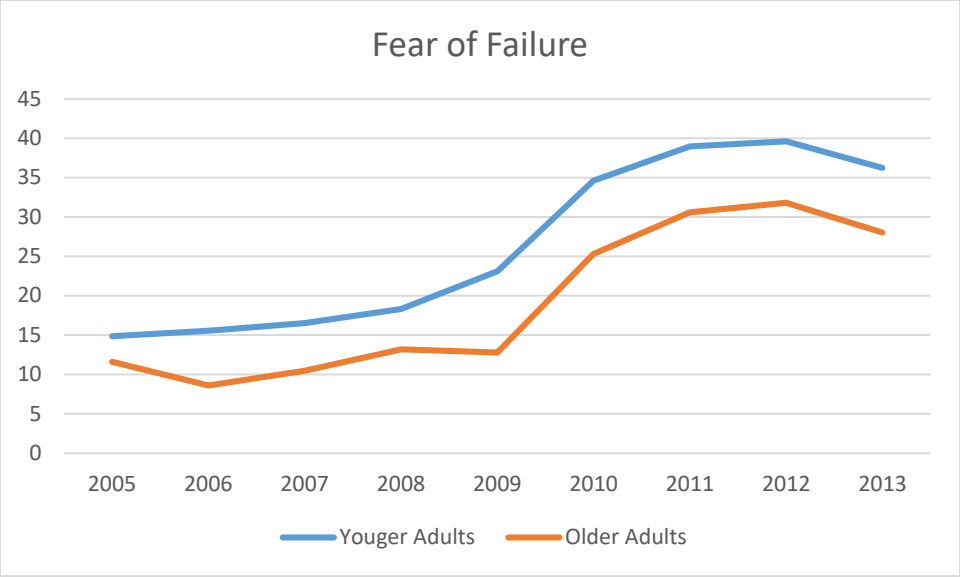


Figure 2. Percent of adults who have intentions to start a business in the next three years

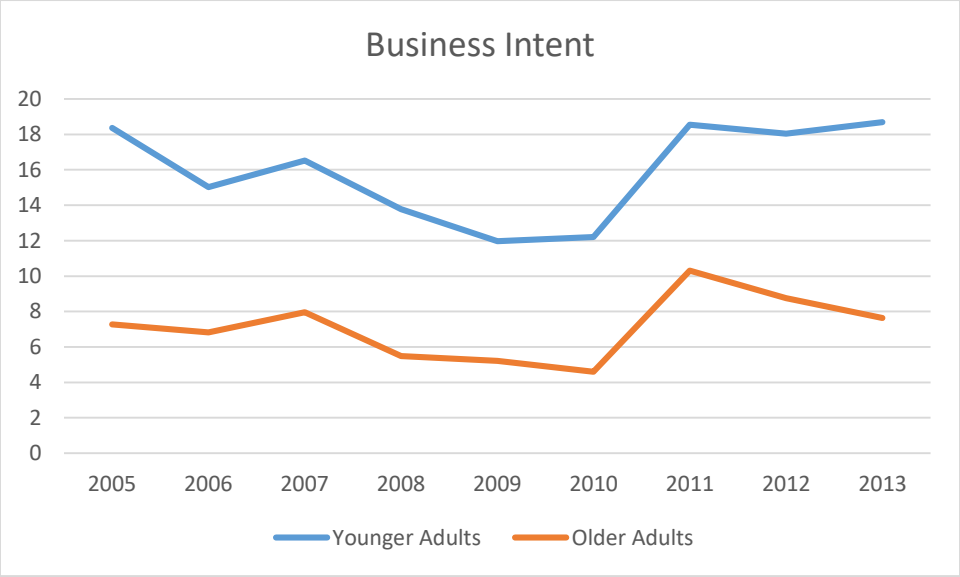


Figure 3. Percent of adults who are new business owners

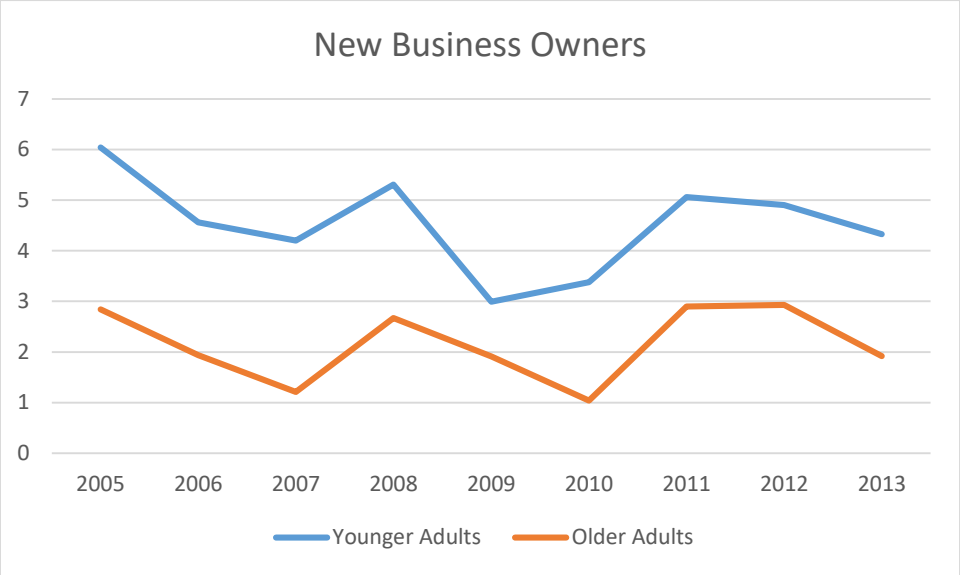


Figure 4. Percent of adults who are established business owners

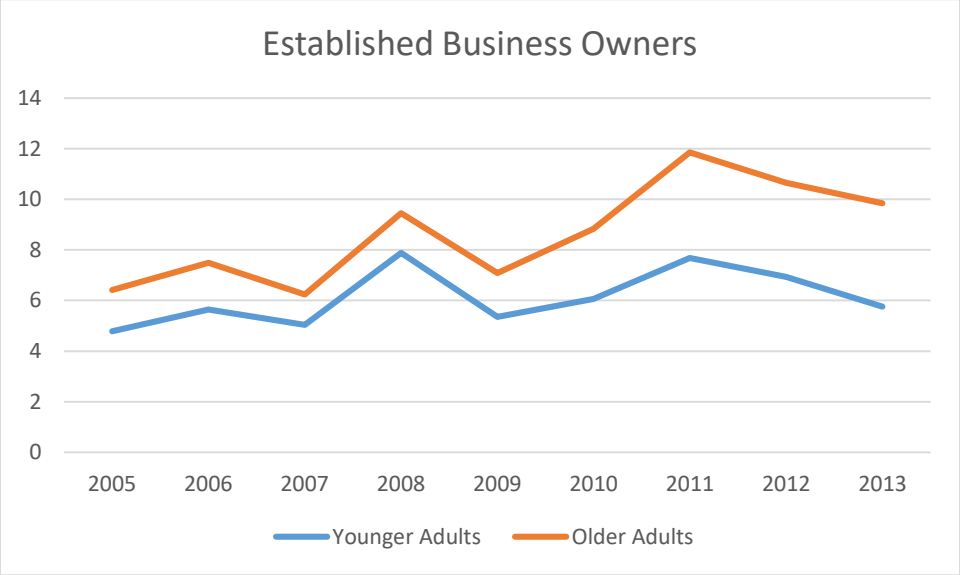
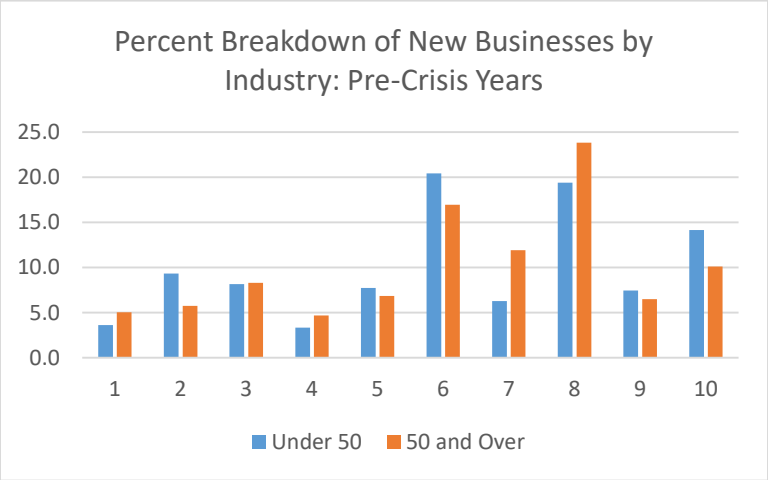


Figure 5a. Percent of new businesses during pre-crisis years (2002 to 2007) by industry and age group



1. Agriculture, forest, hunt, fish
2. Mining, construction
3. Manufacturing
4. Utility, transportation
5. Wholesale trade
6. Retail, hotels, restaurants, bars
7. Financial, insurance, real estate
8. Business services
9. Government, health, education
10. Personal, consumer services

Figure 5b. Percent of new businesses during crisis years (2008 to 2010) by industry and age group

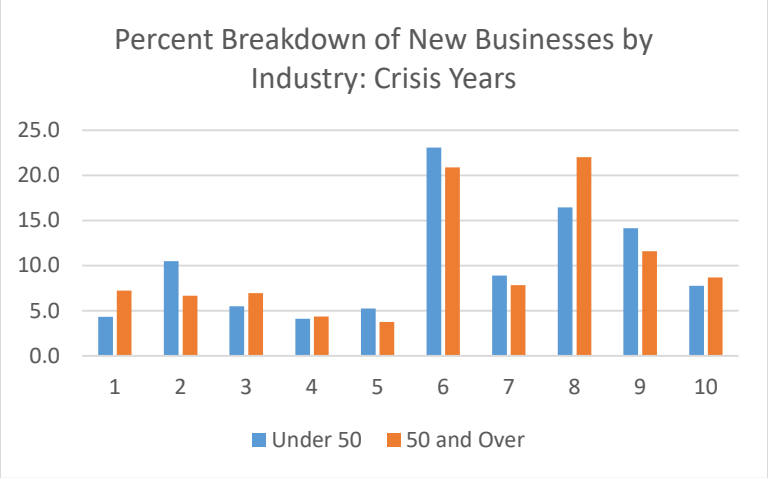


Figure 5c. Percent of new businesses during post-crisis years (2011 to 2015) by industry and age group

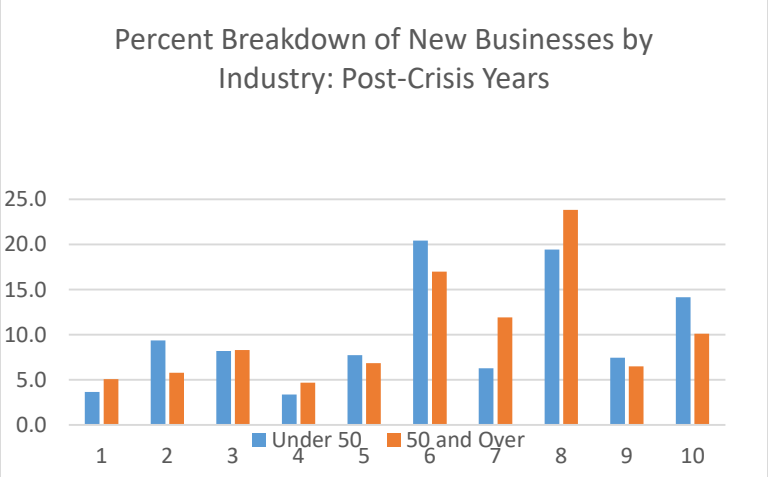
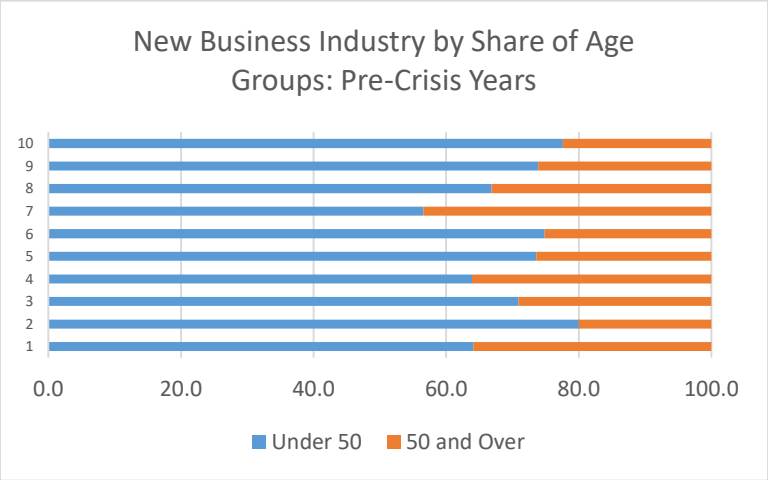


Figure 6a. New business industries by share of age groups during pre-crisis years from 2002 to 2007



1. Agriculture, forest, hunt, fish
2. Mining, construction
3. Manufacturing
4. Utility, transportation
5. Wholesale trade
6. Retail, hotels, restaurants, bars
7. Financial, insurance, real estate
8. Business services
9. Government, health, education
10. Personal, consumer services

Figure 6b. Figure of new business industries during crisis years by share of age groups during crisis years

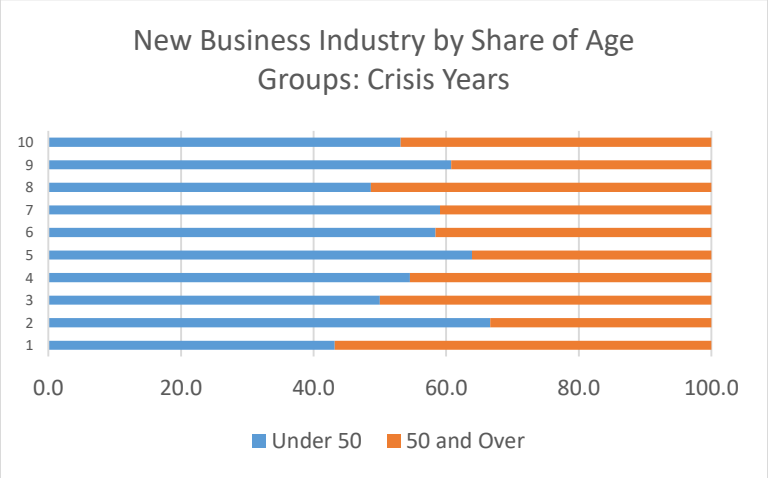


Figure 6c. Figure of new business industries during post-crisis years by share of age groups

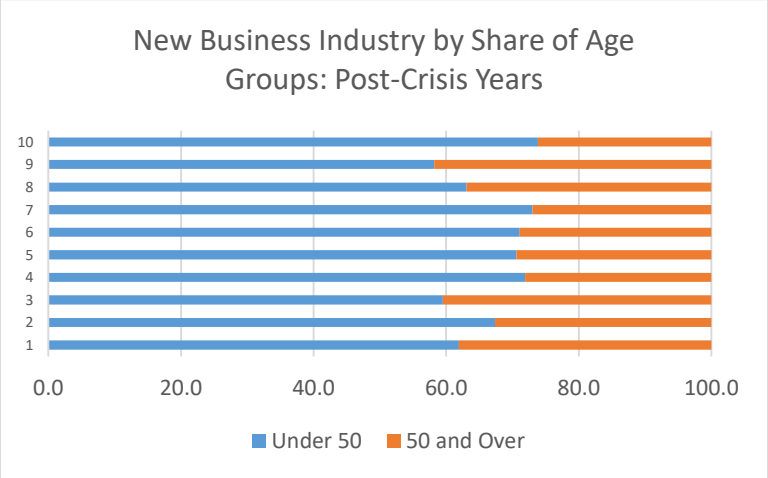


Table 3. Sample descriptive statistics from 2005-2013

	Under 50 (N=13718)			50 and Over (N=15989)		
	Mean	Min	Max	Mean	Min	Max
Dependent Variables						
Fear Prevents Startup	0.299	0	1	0.206	0	1
Startup Intent	0.163	0	1	0.071	0	1
New Entrepreneur	0.045	0	1	0.022	0	1
Established Entrepreneur	0.064	0	1	0.091	0	1
Opportunity-based Business	0.100	0	1	0.045	0	1
Necessity-based Business	0.024	0	1	0.013	0	1
Covariates						
Income						
Low	0.292	0	1	0.372	0	1
Middle	0.334	0	1	0.331	0	1
High	0.374	0	1	0.297	0	1
Education						
≤ Secondary	0.345	0	1	0.359	0	1
Beyond Secondary	0.424	0	1	0.407	0	1
Beyond College	0.231	0	1	0.234	0	1
Female	0.494	0	1	0.519	0	1
Age	35.4	18	49	64.1	50	99
Social Tie	0.300	0	1	0.182	0	1
Skill	0.491	0	1	0.440	0	1

Table 4. Logistic regression results for fear of failure preventing business startup with logit coefficients, standard error, and odds ratios for all adults aged 18 and 99

	Coefficient	SE	OR
Income			
Bottom Third (Ref)			
Middle Third	0.098**	0.035	1.103
Upper Third	0.068	0.037	1.071
Education			
High School of Less (Ref)			
Beyond High School	0.106***	0.033	1.111
Beyond College	0.152***	0.041	1.165
Female	0.194***	0.028	1.214
Age	-0.015***	0.001	0.986
Year			
08-10 Crisis (Ref)			
Before Crisis	-0.555***	0.048	0.574
After Crisis	0.748***	0.032	2.112
Social Tie	0.170***	0.034	1.185
Skill	-0.130***	0.030	0.878
Constant	-1.079***	0.086	0.988
N	29676		
Pseudo R^2	0.0527		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed.

Table 5. Logistic regression results for fear of failure preventing business startup with logit coefficients, standard error, and odds ratios by age group

	Under 50			50 and Over		
	Coefficient	SE	OR	Coefficient	SE	OR
Income						
Bottom Third (Ref)						
Middle Third	0.211***	0.050	1.234	-0.072	0.050	0.931
Upper Third	0.154**	0.052	1.166	-0.156***	0.055	0.856
Education						
High School of Less (Ref)						
Beyond High School	0.136**	0.046	1.146	0.057	0.047	1.059
Beyond College	0.241***	0.057	1.272	0.019	0.059	1.019
Female	0.210***	0.039	1.234	0.136***	0.041	1.146
Age	0.000	0.002	1.000	-0.028***		0.973
Year						
08-10 Crisis (Ref)						
Before Crisis	-0.592***	0.065	0.553	-0.546***	0.071	0.579
After Crisis	0.671***	0.046	1.957	0.859***	0.045	2.361
Social Tie	0.162***	0.044	1.176	0.190***	0.053	1.210
Skill	-0.188***	0.042	0.829	-0.135**	0.044	0.874
Constant	-1.403	0.117		-0.010	0.161	
N	13718			15958		
Pseudo R^2	0.041			0.055		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed.

Table 6. Logistic regression results for intentions to start a business by age group

	Under 50			50 and over		
	Coefficient	SE	OR	Coefficient	SE	OR
Income						
Bottom Third (Ref)						
Middle Third	-0.315***	0.064	0.730	-0.183*	0.084	0.833
Upper Third	-0.480***	0.066	0.619	-0.378***	0.087	0.685
Education						
High School of Less (Ref)						
Beyond High School	0.028	0.058	1.029	0.144	0.080	1.155
Beyond College	-0.099	0.074	0.906	0.177	0.094	1.194
Female	-0.285***	0.051	0.752	-0.224***	0.067	0.799
Age	-0.020***	0.003	0.980	-0.062***	0.004	0.940
Year						
08-10 Crisis (Ref)						
Before Crisis	0.308***	0.077	1.361	0.335***	0.098	1.398
After Crisis	0.338***	0.063	1.402	0.411***	0.077	1.509
Fear	-0.220***	0.056	0.803	-0.120	0.080	0.887
Social Tie	0.891***	0.052	2.437	0.954***	0.069	2.596
Skill	1.483***	0.061	4.406	1.721***	0.089	5.588
Constant	-1.977***	0.153		-0.222***	0.304	
N	13718			15958		
Pseudo R^2	0.132			0.172		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed.

Table 7. Logistic regression results for being a new business owner by age group

	Under 50			50 and Over		
	Coefficient	SE	OR	Coefficient	SE	OR
Income						
Bottom Third (Ref)						
Middle Third	0.284*	0.124	1.328	0.236	0.162	1.266
Upper Third	0.307*	0.123	1.359	0.369*	0.160	1.446
Education						
High School of Less (Ref)						
Beyond High School	0.023	0.106	1.023	0.060	0.144	1.062
Beyond College	0.127	0.123	1.135	0.268	0.157	1.308
Female	-0.108	0.088	0.898	0.023	0.114	1.023
Age	-0.005	0.005	0.995	-0.050***	0.008	0.951
Year						
08-10 Crisis (Ref)						
Before Crisis	0.254*	0.128	1.289	-0.204	0.170	0.815
After Crisis	0.173	0.106	1.189	0.083	0.124	1.086
Fear	-0.346	0.101	0.707	-0.085	0.136	0.918
Social Tie	1.341***	0.095	3.821	1.572***	0.119	4.815
Skill	2.063***	0.154	7.866	1.579***	0.170	4.849
Constant	-5.404***	0.302		-2.601	0.549	
N	13718			15989		
Pseudo R^2	0.163			0.176		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed.

Table 8. Logistic regression of involvement in an opportunity-based entrepreneurial activity

	Under 50			50 and Over		
	Coefficient	SE	OR	Coefficient	SE	OR
Income						
Bottom Third (Ref)						
Middle Third	0.060	0.086	1.062	0.093	0.113	1.097
Upper Third	0.227**	0.085	1.255	0.191	0.112	1.210
Education						
High School of Less (Ref)						
Beyond High School	0.141	0.076	1.152	0.093	0.103	1.098
Beyond College	0.116	0.090	1.123	0.317**	0.114	1.373
Female	-0.123	0.063	0.884	-0.031	0.083	0.970
Age	-0.011**	0.004	0.989	-0.050***	0.005	0.951
Year						
08-10 Crisis (Ref)						
Before Crisis	0.489***	0.095	1.631	0.086	0.124	1.090
After Crisis	0.380***	0.078	1.463	0.331***	0.093	1.392
Fear	-0.413***	0.072	0.661	-0.209*	0.102	0.811
Social Tie	1.253***	0.065	3.500	1.416***	0.084	4.120
Skill	2.031***	0.097	7.621	1.814***	0.125	6.134
Constant	-4.134***	0.210		-2.081***	0.388	
N	13718			15989		
Pseudo R^2	0.191			0.197		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed.

Table 9. Logistic regression of involvement in a necessity-based entrepreneurial activity

	Under 50			50 and Over		
	Coefficient	SE	OR	Coefficient	SE	OR
Income						
Bottom Third (Ref)						
Middle Third	-0.467***	0.132	0.627	-0.894***	0.180	0.409
Upper Third	-1.291***	0.158	0.275	-1.123***	0.187	0.325
Education						
High School of Less (Ref)						
Beyond High School	-0.226	0.127	0.798	0.281	0.173	1.324
Beyond College	-0.442*	0.180	0.643	0.225	0.219	1.253
Female	-0.234*	0.117	0.791	-0.003	0.147	0.997
Age	0.018**	0.007	1.018	-0.059***	0.010	0.942
Year						
08-10 Crisis (Ref)						
Before Crisis	-0.281	0.196	0.755	-0.555*	0.272	0.574
After Crisis	0.382**	0.141	1.465	0.331*	0.161	1.393
Fear	0.183	0.121	1.201	0.422**	0.157	1.524
Social Tie	1.048***	0.120	2.851	0.965***	0.151	2.626
Skill	1.501***	0.160	4.487	1.736***	0.210	5.675
Constant	-5.263***	0.364		-1.944**	0.681	
N	13718			15989		
Pseudo R^2	0.117			0.136		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, two-tailed.

CHAPTER 3:

The Paradox of Pension Spending on the Self-Employment of Older Adults

Policymakers promote self-employment with the anticipation of creating jobs, lowering unemployment rates, and boosting the economy (Hatfield 2015; Jakobsen and Ellegaard 2008), but the assumed success of self-employment and small enterprises is contingent on market conditions, the quality of the government, and labor regulations (Lewis and Walker 2011). In short, self-employment influences and is influenced by institutional contexts. As a result, self-employment and entrepreneurship studies that largely focused on individual-level analyses have moved beyond the individual by situating self-employment in regional, national, and cross-national contexts. Studies investigate how contextual factors shape self-employment participation (Fairlie, Kapur, and Gates 2011; Kwon, Heflin, and Ruef 2013; Stenholm, Acs, and Wuebker 2013; Thébaud 2015a; Thornton 1999; Torrini 2005; Zissimopoulos and Karoly 2007) and the resulting quality and outcome (Hallerod, Ekbrand, and Bengtsson 2015; McManus 2000; Thébaud 2015a).

At the heart of these burgeoning studies prevails a central debate of whether and how institutional arrangements, and more specifically welfare transfers, promote or hinder self-employment (Henrekson 2005; Kreide 2003; Marlow 2006; McManus 2000; Rapp, Shore, and Tosun 2017; Thébaud 2015a). On the one hand, higher welfare schemes designed to protect the male bread-winner in corporatist states, such as Germany, limit self-employment and business opportunities because high levels of labor-market protections create structural sticky points rendering self-employment less desirable (Kreide 2003). The welfare state protects the employer-employee relationship and the trade-off for leaving employment for entrepreneurial work may be

high when standard employed is tied to basic pension. In addition, with high levels of social protection and moderate levels of employment protection characterized in social democratic welfare states, such as Sweden, a s strong welfare state can have a crowding out effect and disincentivize entrepreneurship (Braunerhjelm and Henrekson 2013; Clausen 2011; Davidsson and Henrekson 2002; Henrekson 2005). Generous state-sponsored social services and high taxes may limit entrepreneurial interest. The flipside of the coin argues that welfare arrangements promote self-employment (McManus 2000; Rapp et al. 2017; Thébaud 2015a) by relieving some of the risks associated with self-employment or starting a business.

I weigh in on whether generous welfare schemes limit or promote self-employment by focusing on older adults, 50 years and over, across European countries with different arrangements and pathways to the welfare state. Among a range of welfare programs, I pay attention to public pension spending because pension has an especially important consequence on employment histories and economic well-being in later life. I also juxtapose self-employment with employment opportunities by looking at the unemployment rate and its effect on older adults' self-employment. Advanced countries are coming to face with aging populations and slowed population growth while grappling with the sustainability of old-age welfare programs, particularly public pension (Kochhar and Oates 2014; OECD 2019). In response to significant population changes, many countries have raised their full eligibility ages in recent years. Meanwhile, labor market opportunities have become more limited as adults age due to increasing job precarity (Kalleberg 2009), compounded by workplace ageism and discrimination (Ebbinghaus and Radl 2015; Macdonald and Levy 2016; Nelson 2002; Taylor et al. 2013; Walker et al. 2007). As countries move toward reducing pension benefits and raising eligibility

ages (OECD 2019), the reduction of the welfare state comes at a time during when the economic security and well-being of older adults are becoming increasingly consequential.

In cases where older adults can no longer continue their salaried work, whether voluntarily or involuntarily, some enter self-employment to extend their working lives (Moen and Flood 2013; Tomlinson and Colgan 2014). Self-employment may buffer older adults against poverty by giving them the flexibility to work beyond the traditional retirement age (Lain et al. 2019), and self-employed earnings may serve as their primary source of income or contribute to supplemental income. However, high rates of in-work poverty are found among more older, self-employed adults (Hallerod et al. 2015), especially in contexts where pension works to reduce poverty rather than replace income. Therefore, self-employment presents as a potential pathway to prolong work life and work toward economic security, but this is contingent on public policies on pension and employment opportunities.

Engaging with institutional theory and an economic embeddedness perspective (Block and Somers 2014; Krippner and Alvarez 2007; Polanyi 1957; Thornton 1999) to self-employment, this chapter investigates how varying arrangements of pension and employment opportunities invariably shape older adults' odds of being self-employed. On the one hand, generous pension and its eligibility tied to a history of continuous employment in strong welfare states may hinder self-employment because it has a crowding out effect. On the other hand, generous pension schemes tend to disadvantage marginalized segments of the workforce, such as older workers and women, and may encourage self-employment among these groups. This chapter uses the European Union Statistics on Income and Living Conditions (EU-SILC) cross-sectional data from 2014 for a cross-national comparison of self-employment among older

adults. I examine 30 high-income and middle-income countries[7] with different pathways to welfare regimes (Esping-Andersen 1990) and varying durations of market capitalism to investigate two factors that importantly pertain to late-life self-employment. One is government welfare spending on pension and the other is employment opportunities using unemployment rate as a proxy. The countries offer between-country variability in both pension benefits and labor market environments to allow relevant cross-national comparisons in late-life self-employment.

BEYOND INDIVIDUALS AS RATIONAL CHOICE ACTORS

Individual-level push and pull factors of self-employment among older adults straddle between functionalist perspectives and rational choice theory perspectives with necessity-based and opportunity-driven rationale (Henley 2016; Kim, Aldrich, and Keister 2006; Moulton and Scott 2016; Walker and Webster 2007; Weller et al. 2016; Zissimopoulos and Karoly 2009). Beyond the individual-level tension, self-employment is situated within a broader context where institutions constrain or promote self-employment (Kreide 2003; Marlow 2006; Pagán-Rodríguez 2012; Rapp et al. 2017; Stenholm et al. 2013; Thébaud 2015a; Thornton 1999; Tubergen 2005), inviting policy debates and implications.

Labor market opportunities, pension arrangements, and self-employment are intimately linked issues that have consequences on late-life economic well-being (Cahill et al. 2016; Dewilde 2012). Older adults, especially 50 years and older, experience limited employment options and increased precarity in the waged labor market (Horst et al. 2017; Lain et al. 2019;

[7] Countries include Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czech Republic, Denmark, Estonia, Greece, Spain, Finland, France, Croatia, Hungary, Ireland, Iceland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Sweden, Slovenia, Slovak Republic, and the UK.

Loretto and Vickerstaff 2015). Although older adults transition into or delay their retirement through bridge jobs in the form of part-time work, non-paid work, or self-employment (Beehr and Bennett 2014; Cahill et al. 2013, 2015; Dingemans et al. 2016; Quinn and Kozy 1996), evidence suggests that these transitions may be involuntary. For instance, older adults exit from the waged labor market and retire earlier than planned (Ebbinghaus and Radl 2015; Nelson 2002; Neumark 2009; Walker et al. 2007) as a result of experiencing workplace ageism and age discrimination (Ebbinghaus and Radl 2015; Macdonald and Levy 2016; Nelson 2002; Taylor et al. 2013) or because of health issues (Behncke 2012; Zissimopoulos and Karoly 2007) that prevent them from working at their full capacity. In fact, adults over 50 years of age experience employment precarity and layoffs before they retire (Cahill et al. 2015, 2016). Overall, however, entrepreneurship scholars find consensual evidence that male workers with more resources tend to start a business. Specifically, individuals with more human and financial capital are more likely to engagement in entrepreneurship through business creation (Blanchflower 2000; Fairlie et al. 2011; Kim et al. 2006; McManus 2000). Therefore, as workers age, they have longer work histories and, in turn, more opportunities to accumulate human and financial capital needed to start a business.

Hypothesis 1: With more past opportunities for accumulation of experiences, networks, and financial resources, older adults' self-employment odds will increase with age.

Studies examining the relationship between unemployment and self-employment find mixed results (Buchmann, Kriesi, and Sacchi 2009; Fritsch, Kritikos, and Pijnenburg 2015; Halicioglu and Yolac 2015). At the individual-level, workers with unstable work and

unemployment histories tend to become self-employed compared to those in more advantaged and stable situations (Evans and Leighton 1989; Zissimopoulos and Karoly 2009). When unemployment rate is low, finding jobs is presumably easier. With high unemployment rates, however, employment opportunities tend to become limited. While self-employment and business startup activities increase with high unemployment rates, the effect is pronounced during periods of recession (Fritsch et al. 2015) and not significant when absent of employment uncertainty (Buchmann et al. 2009). Because of labor market segmentation, self-employment entry in relation to unemployment rate also depends on the industry and occupational position of individuals (Buchmann et al. 2009). Cross-national variability additionally shows that a high unemployment rate may function as an antecedent to higher self-employment in some countries (Halicioglu and Yolac 2015). As for a reverse temporal order of whether self-employment reduces unemployment rate, their dynamic, concurrent, and long-term effects make it difficult to disentangle the relationship, which may partially explains the mixed results in the relationship between unemployment and self-employment (Thurik et al. 2008). By and large, however, given that a substantial number of older adults experience unemployment before retirement, older adults' odds of self-employment will be greater in countries with higher unemployment rates.

Hypothesis 2: Older adults' self-employment odds will be higher in countries with higher unemployment rates.

Embedding the individual within a broader context, institutional conditions shape entrepreneurial and self-employment behavior across different labor market segmentations (Henrekson 2005; McManus 2001; Stenholm et al. 2013; Thébaud 2015a). Strong welfare

policies found in social democratic countries such as Sweden and corporatist states such as France generally aim to protect workers against labor market risks. In comparison, market-oriented liberal states such as the US and the UK generally do not (Esping-Andersen 1990) as individual employees shoulder the brunt of the risk more than the employer and the state (Kalleberg 2009; Powell and Taylor 2016). Consequently, welfare policies have implications on employment opportunities and outcomes and the extent of employment protections and unemployment benefits can make self-employment a more attractive or riskier employment option compared to paid employment. Generally, more established welfare-state provisions tend to be male-focused and oriented toward protecting the employee-employer relationship. Strong welfare states typically protect the male breadwinner through employment policies that protect them against labor-market vulnerabilities (Kreide 2003).

A cross-national comparison of self-employed men in the US and Western Germany shows that the charactieristics and quality of self-employment vary in the two diferent national contexts (McManus 2000). In the US where institutional structures are more loosely arranged and less regulated than in Germany, self-employed men on average had higher earnings premium than their German couterparts. There was also more heterogeneity and variability in the quality of self-employment jobs with more self-employment opportunities on both extremes of high quality and low quality work. There were also opportunities for formal and informal skill transitions in the US than in Germany (McManus 2000). Although men with more job insecurities were more likely to enter self-employment compared to men with more secure labor-market positions, men with highest levels of human and financial capital were likely to pursue self-employment in both national contexts. Because welfare provisions protect against labor-market vulnerability, both opportunity-driven and necessity-based self-employment were

generally perceived as risky. The comparison between the two countries with diverging institutional arrangements suggests that self-employment is regarded as a less attractive form of work in contexts with stronger welfare provisions. Marginalized workers such as older adults and women, however, may not be afforded similar levels of protection in countries with strong welfare arrangements.

Pension is an especially important welfare concern for older adults and policymakers (Di Gessa et al. 2016; Price et al. 2016) as public pension makes up one of the largest government welfare spending across advanced countries (Foster 2018; Jensen et al. 2018; OECD 2006, 2019). With growing aging populations, many countries are gradually increasing their fully pensionable age and scaling back on welfare benefits (OECD 2019; Ron Davies 2014). For older adults, pension schemes have pivotal consequences on their self-employment participation and economic well-being in later life (Curl et al. 2014) because some countries are turning to self-employment to address labor and pension-related issues among older adults (Lewis and Walker 2011; Thurik et al. 2008). Pension benefits may include old-age and survivors' pension benefits that individuals receive when they either exit from the labor market and retire or when they reach a pensionable age to receive the guaranteed income. This can be in the form of cash transfers as well as services to older adults, such as home-help service, rehabilitation services, and residential care (OECD 2019). While state pension transfers are especially crucial among older adults, those benefits interact with individual work and health histories to impact later life poverty risks. In countries with means-tested benefits, such as the UK, a combination of both state and private pension are needed to ensure economic security among older adults (Price et al. 2016). In contrast, countries such as Belgium with pension schemes designed for income replacement, pension may effectively prevent late-life poverty, especially for adults with minimal employment

interruptions. Comparing the two countries, the effect of unemployment on later life income is more substantial in the UK where older adults experience a 2.0 percent decline (Dewilde 2012). As for the self-employed, however, the effect of self-employment on pension income is more substantial in Belgium where each year spent in self-employment decreases old-age income by 0.8 percent compared to a smaller percent change of 0.6 in the UK (Dewilde 2012).

Generally, men over 50 are more likely to be self-employed than women in the same age group (Marlow and McAdam 2013; Moulton and Scott 2016; Pienta and Hayward 2002). While older women are the least likely to be self-employed, those that do enter self-employment do so because they could not find alternative work in wage employment or experienced little advancement in paid work (Walker and Webster 2007). A narrative-based qualitative study in the UK supports the argument that some older women see self-employment as a viable work option because they are excluded from the wage or salary employment (Tomlinson and Colgan 2014). Therefore, women's limited access to paid labor, particularly in older years, influence their likelihood of becoming self-employed in later life. Heterogeneity exists, however, due to different mechanisms at work between women with diverging statuses. Self-employed non-professional mothers and wives suffer the most penalties in the form of negative earnings especially when compared to self-employed men and self-employed professional women (Budig 2006).

Hypothesis 3: Higher public pension spending will be associated with higher self-employment odds among older adults.

Hypothesis 4: Higher public pension spending will be associated with higher self-employment odds among those with lower income.

With women's increased participation in the labor force, some countries also offer generous welfare benefits to mitigate work-family conflict. For example, in social democratic welfare states (Esping-Andersen 1990) such as Sweden, Finland, and Iceland that provide more generous welfare provisions for childcare, a large portion of women participate in the paid labor market (Hobson 1994; Orloff 1993; Sainsbury 2009) though the quality of work opportunities and types of welfare arrangements still vary depending on gendered assumptions about men and women's roles in the family (Gornick and Meyers 2003; Misra, Moller, and Budig 2007; Orloff 2009). Welfare provisions come in various forms including direct cash transfers as well as government-subsidized childcare facilities and childcare services. Most women in generous welfare states participate in the public sector of the labor market as opposed to the private sector, and many are employed part-time as opposed to full-time. In other words, high female employment rates in the social democratic states result from the combination of welfare provisions and state-led labor market arrangements that make available part-time, public sector jobs in tandem with paid leave and subsidized childcare that mitigate work-family conflict. For single mothers, welfare benefits may not be enough to surmount the obstacles and risks involved in self-employment (Marlow 2006). In the case of younger women, overall, institutional arrangements that alleviate women's responsibilities at home and childcare influence women's participation in both paid employment and self-employment as well (Hobson 1994; Orloff 1993; Sainsbury 2009; Thébaud 2015a).

Thébaud's (2015a) cross-national study elucidates how the rate and quality of entrepreneurship vary across different macro-level contexts among women, and that this is in part due to different levels of social support and availabilty of alternative forms of work that

influence individual labor market outcomes. In countries with persisting work-family conflict, such as the US, women find entrepreneurship as a comparatively attractive employment opportunity and are more likely to pursue growth-oriented entrepreneurship whereas women in countries that help mitigate work-family conflict start smaller businesses (Thébaud 2015a). In the European Union, women comprise a smaller group of the self-employed than men, and self-employed women are more likely to work part-time and have home-based businesses home-based (Marlow and McAdam 2013).

In strong welfare states with pension tied to paid employment, older women who are excluded from those protective policies may have higher self-employment odds. Although larger public pension spending may encourage self-employment, the quality of the work condition may be poor. Older women's employment histories, for example, are marked by a myriad of interruptions with life course events such as marriage and childrearing. These events usually lower their pension benefits (OECD 2019; Sainsbury 2009). Reduced pension and less opportunities to accumulate wealth over the life course, therefore, may require older women to prolong their work years (Curl et al. 2014). Self-employment affords the flexibility to lengthen work years through potentially shorter and more flexible work hours rather than leaving formal employment altogether and permanently exiting from the labor force (Cahill et al. 2013; Karoly and Zissimopoulos 2004; Zissimopoulos and Karoly 2007). In these cases, older persons' self-employment odds may increase because of their limited opportunities to accumulate wealth over the life course. But because self-employment largely consists of low-quality work, self-employed adults may still experience low income and suffer in-work poverty (Hallerod et al. 2015). Together, in strong welfare states, older women who generally do not benefit as much as men from existing pension schemes may have higher self-employment odds. Additionally, higher

public pension spending will be associated with higher self-employment odds among older adults with lower income.

Hypothesis 5: Higher public spending will be associated with higher self-employment odds among women.

METHOD

Data

Individual-level data come from EU-SILC 2014 cross-sectional survey. EU-SILC is a nationally representative survey of adults aged 16 and older across its member European countries. It collects social and economic data annually and contains indicators on income, poverty level, living conditions, and levels of social exclusion. The survey gathers both individual-level and household-level data. Country-level data come from International Labour Organization (2018).

Sample

The sample consists of 232,619 adults aged 50 and above, among whom 106,523 are male and 126,097 are female across 30 countries (Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czech Republic, Denmark, Estonia, Greece, Spain, Finland, France, Croatia, Hungary, Ireland, Iceland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovenia, Slovak Republic, and the UK). The sample size for each country ranges from 2,732 in Iceland to 20,837 in Italy. The set of 30 countries contains a range of high income and middle income countries with different institutional history, variegated pathways to welfare

regimes, and different periods of market capitalism with the inclusion of transition economies. Select countries, therefore, offer between-country variability in both institutional and market arrangements. Although the survey includes responses from individuals who are aged 16 and over, I restricted the sample to individuals 50 and over. 54.2 percent of the adults in the total sample are female, and the average sample age is 64.4 years with a range from 50 to 80.

MEASURES

Outcome Measure

The outcome variable, self-employed, is a binary measure where those who responded their current economic status as self-employed, both full-time and part-time, are coded as 1. Other responses coded as 0 include employee working full-time and part-time, student or in-training, in retirement, disabled or unfit to work, in compulsory service, caretaking or domestic work, and other inactive person.

Individual-level Variables

Individual-level variables include gender, marital status, educational level, general health, age, and income. Gender is coded as female=1 and male=0. Educational level is an ordinal variable, coded from 0 to 4 (0=less than secondary education degree, 1=secondary degree, 2=beyond secondary, 3=college degree, and 4=graduate level education). Marital status is a binary variable with those currently married coded as 1 and others responses, including those never married, divorced, widowed, and separated, coded as 0. I include health as a binary variable where

general health, self-reported data, from the EU-SILC is recoded from five categories of very good, good, fair, bad, and very bad. 1 represents good health, which includes very good and good responses. 0 represents not good health, and this includes responses for fair, bad, and very bad health. Age is a continuous variable and ranges from 50 to 80 years. Although survey respondents also comprise of adults over 80 years of age, the EU-SILC collapses them into one age group as 80 years.

Table 10 displays the descriptive statistics of individual-level variables for the sample by country. An average of 6.27 percent of the sample are self-employed, and self-employment rate ranges from 2.72 percent in Hungary to 13.47 percent in Finland. Lower levels of self-employment are found in Bulgaria at 3.48 percent, Estonia at 3.97 percent, Croatia at 2.86 percent, Luxembourg at 3.91 percent, Latvia at 2.78 percent, Slovenia at 3.33 percent, and Slovakia at 3.79 percent. Even though 67 percent of the overall sample report good health, a smaller portion of older adults in Estonia (26.3 percent), Croatia (28.4 percent), Hungary (27.5 percent), Lithuania (14.6 percent), Latvia (15.9 percent), Portugal (19.6 percent), and Slovakia (35.1 percent) report good health. Compared to the average age of 64.4, the average age of self-employed older adults across the sample is 60.1 years, suggesting that younger of the older adults tend to be self-employed.

Country-level variables

Country-level variables allow for the investigation of institutional-level effects on individual outcomes. The key country-level independent variables include public pension spending and unemployment. Public pension spending, measured as percent of GDP, includes old-age and

survivors' pension benefits that individuals receive when they either exit from the labor market and retire or when they reach a pensionable age to receive the guaranteed income. Spending is an indicator of the extent to which a country offers cash transfers and services to older adults to provide public financial support. This measure additionally comprises of social spending on older adults for other related services, such as home-help service, rehabilitation services, and residential care. The second independent variable is unemployment rate (International Labour Organization 2018) Studies find that small business ownership is common when there is unemployment and job insecurity (Hughes 2003; Thurik et al. 2008; Tomlinson and Colgan 2014).

The analysis includes GDP per capita in US dollars as a covariate (International Labour Organization 2018). Prior research suggests a negative association between GDP per capita and business ownership (Blanchflower 2000; Falco and Haywood 2016). The summary statistics for the country-level variables are in Table 11. I calculated the Variance Influence Factor (VIF) for country-level variables (Table 12) to check for collinearity. The VIF calculates how much multicollinearity inflates the variance of the estimated coefficients. The mean VIF for country-level variables are equal to or less than 1.61. The VIF for each of the variables are within the rule of thumb of 10.

ANALYTICAL APPROACH

This analysis uses hierarchical generalized linear modeling (HGLM). The method allows for a simultaneous analysis of the relationship among observations within one level and the relationship across levels (Raudenbush and Bryk 2002), such as individual-level observations

nested within country-level observations. Applying logistic regressions instead of HGLM fails to account for the shared country variance (Raudenbush and Bryk 2002), because the standard errors will be misestimated by overestimating the effect of individual characteristics on entrepreneurship outcomes. By accounting for between-group differences and within-group differences in nested data, hierarchical linear modeling corrects for the violations of disaggregated or aggregated data (Hofmann 1997). Multilevel modeling is a useful tool when taking an embeddedness perspective. It situates individual characteristics that are linked with self-employment within institutional contexts and allows for simultaneous analysis without overestimating random error (Thébaud 2015a; Thornton 1999; Tubergen 2005).

This chapter investigates how pension spending and unemployment affect self-employment participation among older adults by looking at the effect of public pension spending and unemployment on the odds of self-employment using cross-sectional data. Data are structured as individuals within countries. Because the outcome variable is dichotomous, self-employed or not self-employed, the model uses Bernoulli distribution outcomes and calculates the probability of an individual being self-employed from 0 to 1.

I constructed a series of models using this setup for hierarchical generalized linear modeling. Each of the models compares outcomes in the odds of being self-employed. The first model includes level-1 variables with all the individual-level characteristics, gender, marital status, education level, general health, age, and logged income. Age, education, and logged income are centered at the group mean. Level-1 does not include any error term because unlike continuous outcome variables, level-1 residual error term does not need to be specified in the Bernoulli distribution (Houchens, Chu, and Steiner 2007).

Model 1

$$\text{Prob}(selfemployed_{ij}=1|\beta_j) = \phi_{ij}$$
$$\log[\phi_{ij}/(1 - \phi_{ij})] = \eta_{ij}$$

$$\eta_{ij} = \gamma_{00} + \gamma_{10}*FEMALE_{ij} + \gamma_{20}*AGE_{ij} + \gamma_{30}*MARRIED_{ij} + \gamma_{40}*EDUC_{ij} + \gamma_{50}*HEALTH_{ij} + \gamma_{60}*LOGINC_{ij} + u_{0j}$$

The second model includes all the country-level variables, and all country-level variables have been grand mean centered. This model includes the random slope effect for age because age and income. They are two key individual-level variables of concern.

Model 2

$$\eta_{ij} = \gamma_{00} + \gamma_{01}*GDP_j + \gamma_{02}*UNEMPLOYMENT + \gamma_{03}*PENSION_j + \gamma_{10}*FEMALE_{ij} + \gamma_{20}*AGE_{ij} + \gamma_{30}*MARRIED_{ij} + \gamma_{40}*EDUC_{ij} + \gamma_{50}*HEALTH_{ij} + \gamma_{60}*LOGINC_{ij} + u_{0j} + u_{2j}*AGE_{ij} + u_{6j}*LOGINC_{ij}$$

The third model includes cross-level interactions between the country-level variables and key individual-level variables. The cross-level interactions between age and pension and age and unemployment help explain whether pension spending and unemployment rates have a particular effect on age and self-employment odds.

Model 3

$$\eta_{ij} = \gamma_{00} + \gamma_{01}*GDP_j + \gamma_{02}*UNEMPLOYMENT + \gamma_{03}*PENSION_j + \gamma_{10}*FEMALE_{ij} + \gamma_{20}*AGE_{ij} + \gamma_{21}*UNEMPLOYMENT*AGE_{ij} + \gamma_{22}*PENSION_j*AGE_{ij} + \gamma_{30}*MARRIED_{ij} + \gamma_{40}*EDUC_{ij} + \gamma_{50}*HEALTH_{ij} + \gamma_{60}*LOGINC_{ij} + u_{0j} + u_{2j}*AGE_{ij}$$

Model four includes a cross-level interaction between country-level variables and income. The cross-level interactions between income and pension and income and unemployment help explain the effect of pension and unemployment and income on self-employment odds.

Model 4

$$\eta_{ij} = \gamma_{00} + \gamma_{01}*GDP_j + \gamma_{02}*UNEMPLOYMENT + \gamma_{03}*PENSION_j + \gamma_{10}*FEMALE_{ij} + \gamma_{20}*AGE_{ij} + \gamma_{30}*MARRIED_{ij} + \gamma_{40}*EDUC_{ij} + \gamma_{50}*HEALTH_{ij} + \gamma_{60}*LOGINC_{ij} + \gamma_{61}*UNEMPLOYMENT*LOGINC_{ij} + \gamma_{62}*PENSION_j*LOGINC_{ij} + u_{0j} + u_{6j}*LOGINC_{ij}$$

The final model includes a cross-level interaction between country-level variables and gender. The cross-level interactions between female and pension and female and unemployment help explain whether pension and unemployment specifically affects older men and older women differently in their self-employment odds.

Model 5

$$\eta_{ij} = \gamma_{00} + \gamma_{01}*GDP_j + \gamma_{02}*UNEMPLOYMENT_j + \gamma_{03}*PENSION_j + \gamma_{10}*FEMALE_{ij} + \gamma_{11}*UNEMPLOYMENT_j*FEMALE_{ij} + \gamma_{12}*PENSION_j*FEMALE_{ij} + \gamma_{20}*AGE_{ij} + \gamma_{30}*MARRIED_{ij} + \gamma_{40}*EDUC_{ij} + \gamma_{50}*GHEALTH_{ij} + \gamma_{60}*LOGINC_{ij} + u_{0j} + u_{1j}*FEMALE_{ij}$$

When models entail cross-level interactions, group-mean centering is recommended for level-1 predictors and grand-mean centering is recommended for level-2 predictors to interpret the main effect testing for the cross-level interaction (Bauer and Curran 2005).

In the analytical models, the intercept varies randomly. The slope for age and income varies randomly in model two with the country-level covariates. The slope for age varies randomly in model three with cross-level effects and the slope for income varies randomly in model four with cross-level effects. Because I want to investigate the differences between countries in the cross-level interaction effect on general pensionable age and income levels, I assume that the effect varies randomly within the population of countries. Therefore, I test and estimate the variance of the random effect across the population by introducing the random slope for age and income in the respective models that examine each of the individual-level factors. The slope for the other variables are fixed to prevent overfitting the model.

RESULTS ON SELF-EMPLOYMENT ODDS

Table 13 shows the results from hierarchical models predicting the odds of being self-employed as a function of individual- and country-level covariates. Model 1, the baseline model, fits only the individual, level-1 variables. Model 1 shows that generally, the odds of being self-employed is very low with a coefficient of -3.735 ($p < 0.001$) and odds ratio of 0.024. Consistent with existing entrepreneurship and self-employment studies, women's odds of being self-employed is lower than men's odds. With a coefficient of -1.077 ($p < 0.001$) and an odds ratio of 0.341, women are approximately one third as likely as men to be self-employed. The relationship between marital status and self-employment are positive with a coefficient of 0.257 ($p < 0.001$) and odds ratio of 1.293. This means that being married increases self-employment odds by 29.3 percent. Health is a substantial and statistically significant variable on self-employment odds with a coefficient of 0.755 and odds ratio of 2.127 ($p < 0.001$). Among older adults, being in good health increases self-employment odds by more than double compared to not being in good health. With an increase in age, self-employment odds decrease with a coefficient of 0.161 and odds ratio of 0.851 ($p < 0.001$), and the relationship is true across all models. Findings do not support Hypothesis 1. Figure 7a shows the inverse relationship between age and self-employment with the constant held at zero such that a 50-year old single male in poor health, for example, has self-employment odds of almost 0.2 compared to a 57-year old single male whose odds are closer to 0.072 and a 73-year old single male with odds of 0.006. Self-employment also has an inverse relationship with income where the odds decrease with a coefficient of 0.697 and odds ratio of 0.298 ($p < 0.001$) with increasing income. Unlike entrepreneurship studies that generally find increasing self-employment odds with higher income, the trend does not hold

among older adults. Figure 7b displays the inverse relationship between self-employment and income.

The second model includes level-2 country covariates and random effects slope for age, income, and female, the three individual-level variables of interest. Table 13 shows country-level effects on self-employment odds. Excluded from the table is GDP, which was included in the analyses but did not have statistical significance. Unemployment does not have any statistical significance in Model 2, thus finding no support for Hypothesis 2, while public pension spending, as percent of GDP, has a positive and statistically significant relationship (coefficient = 0.070, $p < 0.01$, odds ratio = 1.072) with self-employment. In other words, a larger public pension spending is associated with higher self-employment odds. This support Hypothesis 3 which expects self-employment to be higher with higher pension spending because strong welfare states tend to protect young, male breadwinner from labor market vulnerabilities and less so with marginalized groups, such as older adults and women. Figure 8a shows self-employment odds for random effects on the intercept and age slope. Pension spending has a larger effect with the younger of the older adults with younger of the older referring to adults between 50 and 65 years of age. With increasing age, the effect of pension spending decreases and the gap between higher pension spending and lower pension spending on self-employment odds becomes smaller. This suggests that pension spending does not affect older adults uniformly. Younger of the older adults who are more likely to be working instead of being in retirement are affected more by public pension spending.

Similarly, Figure 8b shows self-employment odds for random effects on the intercept and income slope. The odds of being self-employed is highest with lower income levels and decrease with increasing income in contexts with both higher pension spending and lower pension

spending. This aligns with country-specific studies that find economic and job precarity linked with self-employment where self-employment is typically the lower-quality employment option (Henrekson 2005) and self-employment likelihood is higher among adults with lower income (Curl et al. 2014). Although self-employment odds are higher with higher pension spending, the gap in the self-employment odds between higher and lower pension spending decreases as income increases. In other words, the effect of pension spending on self-employment is larger for older adults with smaller income amounts, and this pension effect decreases substantially among older adults with larger income levels. Results suggest that larger public pension spending is related to increasing self-employment odds among older adults. However, the relationship is more nuanced. Pension spending matters more for the younger of the older adults and those with less money. Older women's self-employment odds are low with a coefficient of -1.121 and odds ratio of 0.326. In other words, women are one third as likely as men to be self-employed. Given the already low odds of self-employment among adults, results show that self-employment participation declines especially for older women.

The third model includes the cross-level effects between country-level variables, unemployment and public pension, and age. Holding the constant at the mean, the cross-level effects have statistical significance. The cross-level interaction between age and unemployment (Figure 9b) has a coefficient of 0.002 and odds ratio of 1.002 ($p < 0.05$). This means that although unemployment, overall, does not have a statistically significant effect, it does have statistically significant effect as older adults age because it improves their self-employment odds. Self-employment odds are higher as adults age in contexts with lower unemployment rates. The cross-level interaction between age and pension spending has a coefficient of -0.005 and an odds ratio of 0.995 ($p < 0.05$). Although the effect sizes are small, the finding does not support

Hypothesis 2 which expects older adults' self-employment odds to be higher in countries with higher unemployment rates. Instead, evidence suggests the opposite, especially as adults age. The significant cross-level effect between unemployment and age suggest that unemployment rates matter more with increasing age. The cross-level effect between age and pension, on the other hand, lowers self-employment odds. As adults age, pension spending matters less on self-employment odds. Findings only partly support Hypothesis 3.

Both pension spending and unemployment rate matter more for younger of the older adults. As adults reach the sample average age of 64.4, pension spending and unemployment rate no longer matter. Given that 65 tends to be the average retirement age, data point to country-level factors mainly affecting older adults who have not yet reached retirement age. This suggests that retirement, though not explored here, is a significant institutional and cultural practice.

The fourth model includes the cross-level effects between country-level variables, unemployment and public pension, and income (Figure 10). Although self-employment odds are very low in general when holding the constant at the mean, self-employment odds decrease with increasing income. In other words, the odds are generally higher among older adults with lower income. However, a cross-level effect between income and pension increases self-employment odds. This means that, for those with higher incomes in countries with higher pension spending, their self-employment odds increase. Generally, older adults with lower income have higher odds of self-employment, but countries with higher pension spending also increases self-employment odds of those with higher income. The gap in the odds of being self-employed between older adults in countries with higher pension spending and those with lower pension spending widens with increasing income level. However, this gap narrows substantially to virtually no difference,

irrespective of the amount of country-level pension spending, among older adults with beyond 95th percentile in income level. This suggests that while older adults are not likely to be self-employed, this is even less likely among those with very high income levels.

Surprisingly, pension levels and unemployment rate do not affect older women's odds of self-employment. The coefficients in Model 5 with the interaction terms were not statistically significant. The country-level variables, pension and unemployment rate, were also statistically not significant when the interaction terms were introduced in the model. This may be due to women's already low self-employment participation level. Results do not support Hypothesis 5

DISCUSSION

This chapter weighs in on the debate between whether generous welfare schemes hinder or promote self-employment. Embedding the self-employed within an institutional context and using multilevel models, this approach dialogues with entrepreneurship and self-employment studies that move beyond an individual-level analysis and apply institutional theory. Although older adults do not reflect the typical face of self-employed workers and entrepreneurs, the growing number of self-employed older adults shows a telltale sign that limited employment opportunities exist for older adults in some aging societies. In the debate between whether a larger welfare spending encourages or discourages self-employment, this chapter finds evidence that larger pension spending is related to higher self-employment rates among older adults across 30 European countries.

In many self-employment and entrepreneurship studies, the definition of self-employment fundamentally complicates the investigation of its phenomena. In some cases, only starting an incorporated business and establishing a firm is treated as self-employment while in other cases, it also includes freelance work and farm work. Yet in others, being an owner of a large corporation does not qualify the owner as self-employed because of their status as employer to a large number of employees. While qualitatively, these are very different forms of work, they may also be aggregated into a single self-employment category. Additionally, countries may adopt different perceptions, languages, and understandings of self-employment. Therefore, even if the collected data come from the same harmonized cross-national dataset, such as the EU-SILC, the varied understanding of self-employment is not adequately addressed. cannot capture.

Of the different welfare benefits, pension is an especially critical concern among policymakers as its sustainability looms over growing older adult populations. Pension eligibility

often hinges on employment history and participation in paid employment these factors along with a generous pension scheme potentially competes with self-employment. It is important to note that pension schemes not only vary greatly from country to country but they also change over time. Although the present chapter finds little statistical link between unemployment rate and self-employment, existing studies suggest that unemployment rate has an effect during periods of prolonged high unemployment rates, such as a recession. The absence of an unemployment effect, consequently, may be due to relatively uneventful employment conditions, and results may look differently under periods of employment uncertainty. Furthermore, many countries have strong protections for those with employment contracts and force a retirement age, potentially limiting the effect of unemployment on older adults.

Overall, despite statistical significance, the effect size of welfare spending on self-employment remains very low. The small effect sizes may be due to restricting the sample to 50 and older. Future analyses using age as a categorical variable and applying interaction effects to the different age categories may result in stronger age and welfare spending effect on self-employment. Although countries with higher pension spending has higher odds of self-employment among older adults, the results presented here require a closer examination around specific contexts of each country. For example, in countries with means-tested welfare programs, such as the UK, pension benefits function as a key support to maintaining income levels above the official poverty line among older adults (Price et al. 2016). In other words, these programs are designed to alleviate poverty risks, and without those programs, older adults may have income levels that fall below the poverty line. Therefore, means-tested pensions may not adequately provide enough economic support for older adults to have a high quality of living and income security unless they have other income resources. Some pension schemes, such as

defined benefit pension plans in the US for instance, penalize older workers who continue to work for pay beyond pensionable age (Penner et al. 2002). Extending work lives, whether through paid employment or self-employment, would involve changing policies around state pensionable age and retirement age (Powell and Taylor 2016).

Meanwhile, poverty rate tends to be higher for women than men in most OECD countries, and in countries with universal welfare programs, greater universalism is linked with poverty reduction for older women (Leitner 2001). Therefore, greater self-employment odds among older adults with lower income levels suggest that self-employment in older age may be more closely linked with economic necessity. Necessity-based self-employment among older adults may also be more prolific in contexts with high rates of employment in the informal economy. However, available datasets do not capture activities in informal economies.

On a similar vein, a weakness of this chapter is its lack of detailed look into the types of self-employed work that older adults engage in and its variability across the different national contexts. Although this limitation stems from lack of data, considering the quality of self-employment will better elucidate what contexts support higher quality self-employment, under what conditions do lower quality self-employment exist, and their role in older adults' economic security.

To better account for unemployment effects, an investigation over time, rather than cross-sectional, may shed more clues about older adults' self-employment participation. A life course approach that takes into account one's career history in the context of broader employment conditions over time better paints an understanding of how life course experiences shaped by welfare arrangements and changing employment opportunities influence late-life self-employment. Additionally, rather than unemployment rate, examining the quality and breadth of

unemployment protection, and whether this also applies to self-employed workers, may offer another lens to analyzing the relationship between welfare policies and self-employment among older adults. Similarly, rather than asking whether policies hinder or promote self-employment, future research may pose a more nuanced question of how the different arrangement of policies and protections, or the lack thereof, promote different kinds of self-employment whether they are small-scale, solo operations or larger, more lucrative businesses, or in terms of whether they are forms of employment involving low-quality work in poor conditions or high-quality work.

Overall, prolonging work life has important implications to the economic well-being of older adults. This chapter finds a positive link between larger pension spending and self-employment among older adults. Results suggest that countries with higher public pension spending has higher self-employment odds for older adults. However, heterogeneity among older adults and variations in the quality of self-employment suggest that late-life self-employment tends to be more necessity-based. Decreased odds with increasing income underscores how social location and embedding them within larger market and policy contexts matter for a better understanding of older adults' self-employment activities.

Table 10. Individual-level descriptive statistics by country (N=232,619)

	% Female	% Self-employed	% Married	% In Good Health	Education	Log Income	Average Age	Average Age of Self-employed
Austria	53.8	5.30	63.1	55.7	3.0	7.31	64.03	56.45
Belgium	52.9	4.31	65.4	63.2	2.7	7.25	63.90	57.94
Bulgaria	56.4	3.48	62.5	37.2	2.7	6.69	65.58	57.56
Switzerland	52.8	7.11	67.8	71.7	3.1	8.09	64.40	60.14
Cyprus	53.1	5.46	77.8	52.6	2.1	7.11	64.53	58.00
Czech Republic	55.6	5.10	63.3	35.2	3.0	6.89	65.06	57.15
Denmark	49.9	5.74	76.3	63.9	2.9	8.34	62.93	59.35
Estonia	57.5	3.97	56.6	26.3	3.0	7.12	64.93	58.35
Greece	52.9	9.40	71.9	50.4	1.9	6.41	66.06	57.39
Spain	54.0	6.77	69.0	53.5	1.8	7.04	64.82	57.39
Finland	50.2	13.47	72.3	56.1	3.1	7.84	62.77	57.35
France	54.0	4.11	66.0	53.1	2.5	7.38	64.64	57.23
Croatia	55.6	2.86	64.8	28.4	2.6	6.62	64.89	56.66
Hungary	59.3	2.72	56.1	27.5	2.8	6.82	63.61	56.58
Ireland	51.7	8.40	62.6	70.7	2.5	7.03	64.75	61.15
Iceland	49.7	10.25	75.4	64.0	2.9	8.73	62.24	59.20
Italy	54.4	8.11	67.5	49.0	2.1	6.99	65.49	58.50
Lithuania	57.0	4.45	67.2	14.6	3.1	6.98	64.92	57.54
Luxembourg	50.7	3.91	69.2	58.3	2.4	7.51	62.41	56.89
Latvia	63.6	2.78	46.0	15.9	3.0	7.00	65.99	58.58
Malta	53.5	3.90	72.9	51.8	1.8	6.89	64.27	56.99
Netherlands	51.0	7.07	73.1	69.6	2.9	8.12	62.18	58.30
Norway	49.1	5.63	74.7	70.7	3.2	8.76	62.84	59.43
Poland	57.3	8.27	67.6	28.1	2.6	6.71	63.87	56.79
Portugal	55.2	5.01	69.3	19.6	1.3	6.79	65.49	58.39
Romania	55.1	10.39	63.5	36.3	2.5	6.40	65.71	60.65
Sweden	49.9	6.35	66.7	72.6	2.9	8.12	64.98	58.77
Slovenia	52.1	3.33	71.2	40.5	2.9	7.06	63.45	54.97
Slovak Republic	58.5	3.79	64.4	35.1	2.9	6.98	63.17	55.48
United Kingdom	53.1	6.71	64.4	57.1	2.7	7.24	65.47	59.19
Total	54.2	6.27	67.0	45.0	2.6	7.20	64.42	60.10

Table 11. Country-level descriptive statistics (N=31)

Variable	Mean	SD	Min	Max
GDP per capita	35389.04	22958.45	7853.33	119225.40
Unemployment rate	10.76	5.64	3.48	26.49
Pension as % of GDP	11.77	3.00	7.00	17.20

Table 12. Multicollinearity test for country-level variables

Variable	VIF	1/VIF
GDP per capita	1.62	0.609
Unemployment rate	1.76	0.567
Pension as % of GDP	1.37	0.729
Mean VIF	1.61	

Table 13. Multi-level generalized logistic regression estimates of the effect of country-level contexts on the log-odds of being self-employed among older adults across 30 European countries

Fixed Effect	Model 1 Coefficient	OR	Model 2 Coefficient	OR	Model 3 Coefficient	OR	Model 4 Coefficient	OR	Model 5 Coefficient	OR
Intercept	-3.735***	0.024	-3.936***	0.020	-3.841***	0.021	-3.829***	0.022	-3.758***	0.023
Individual-level										
Female	-1.077***	0.341	-1.121***	0.326	-1.083***	0.338	-1.099***	0.333	-1.106***	0.331
Married	0.257***	1.293	0.278***	1.320	0.274***	1.316	0.261***	1.298	-0.163***	0.850
Education	0.193*	1.213	0.200*	1.221	0.201*	1.223	0.194*	1.215	0.266***	1.305
Health	0.755***	2.127	0.807***	2.241	0.778***	2.178	0.801***	2.228	0.192*	1.212
Age	-0.161***	0.851	-0.173***	0.841	-0.173***	0.841	-0.162***	0.850	0.760***	2.139
Log Income	-0.697***	0.498	-0.866***	0.421	-0.717***	0.488	-0.853***	0.426	-0.703***	0.495
Country-level										
Unemployment			-0.027	0.973	0.000	1.000	-0.020	0.980	-0.016	0.984
Pension			0.070**	1.072	0.005	1.005	0.050*	1.052	0.039	1.040
Interactions										
AgexUnemployment					0.002*	1.002				
AgexPension					-0.005*	0.995				
IncxUnemployment							-0.025	0.976		
IncxPension							0.047*	1.049		
FemalexUnemployment									0.008	1.008
FemalexPension									-0.004	0.996

* $p <$ 0.05, ** $p <$ 0.01, ***$p <$ 0.001

Figure 7a. Self-employment odds with increasing age without country-level covariates

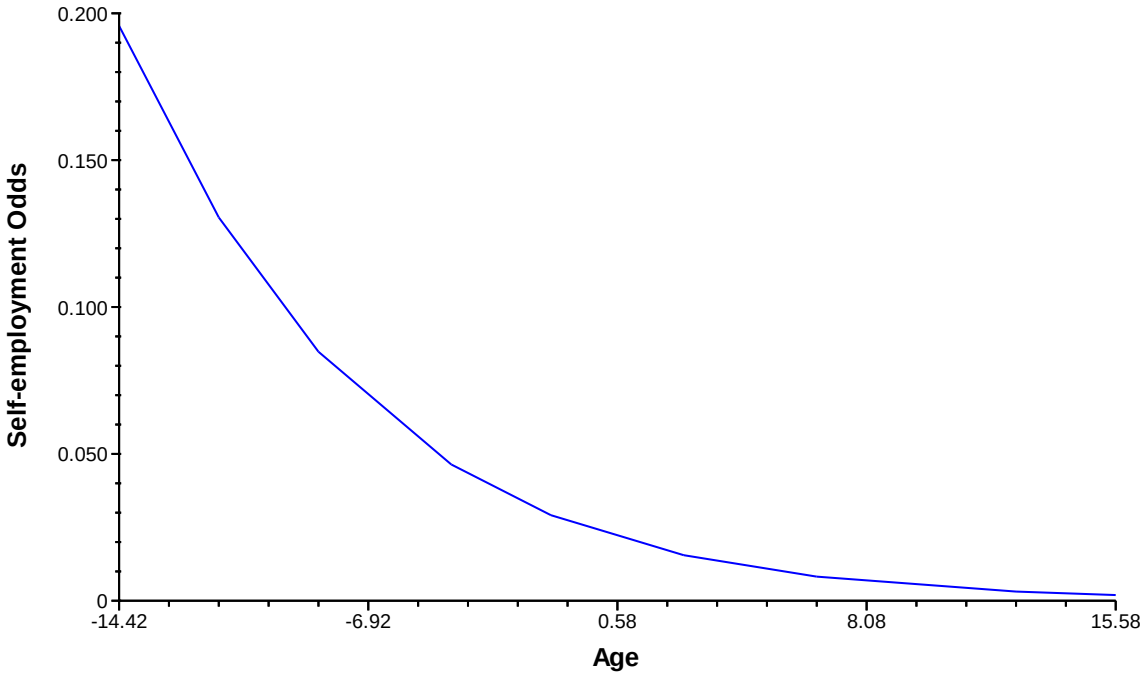


Figure 7b. Self-employment odds with increasing income without country-level covariates

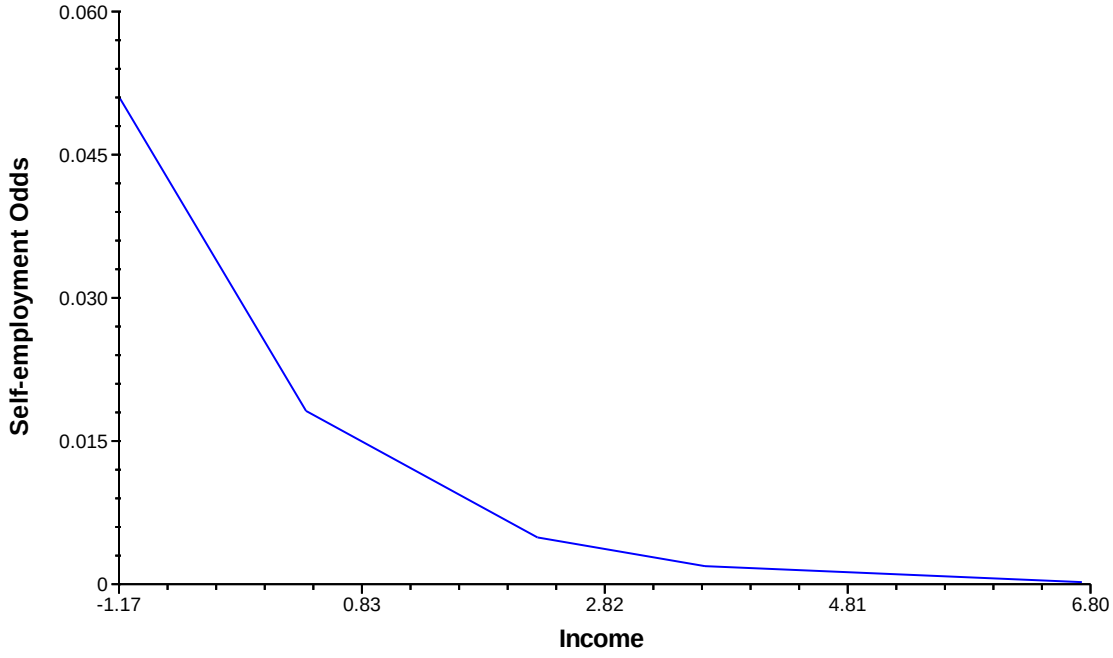


Figure 8a. Pension spending and age on self-employment odds with random intercept and random age slope

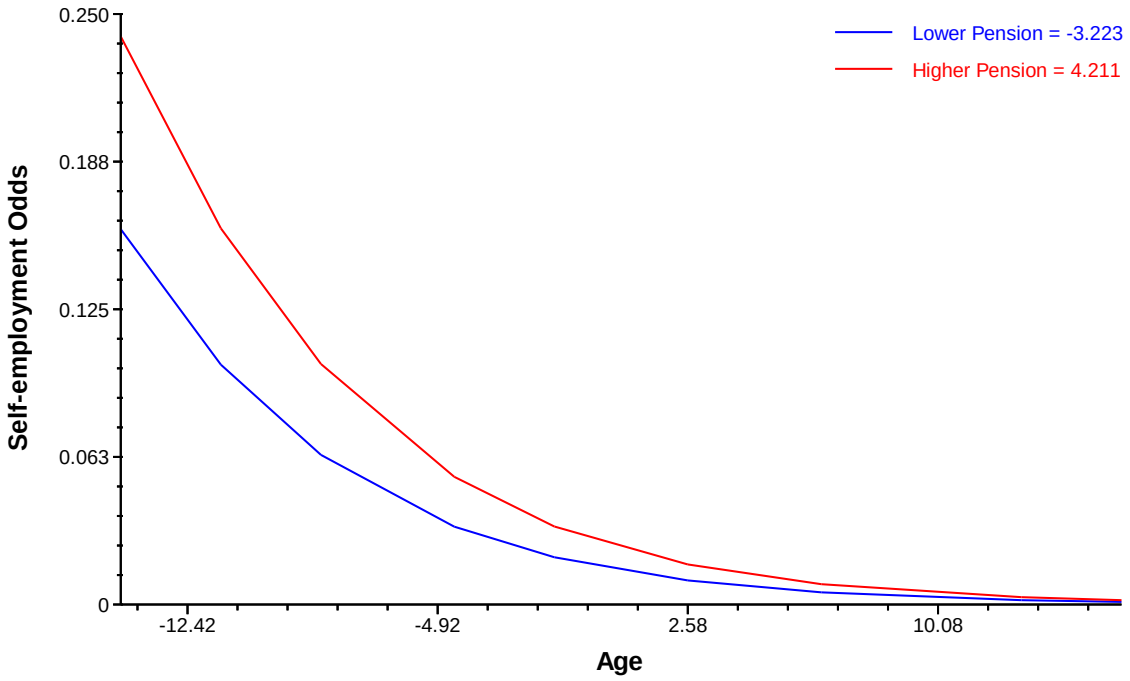


Figure 8b. Pension spending and income on self-employment odds with random intercept and random income slope

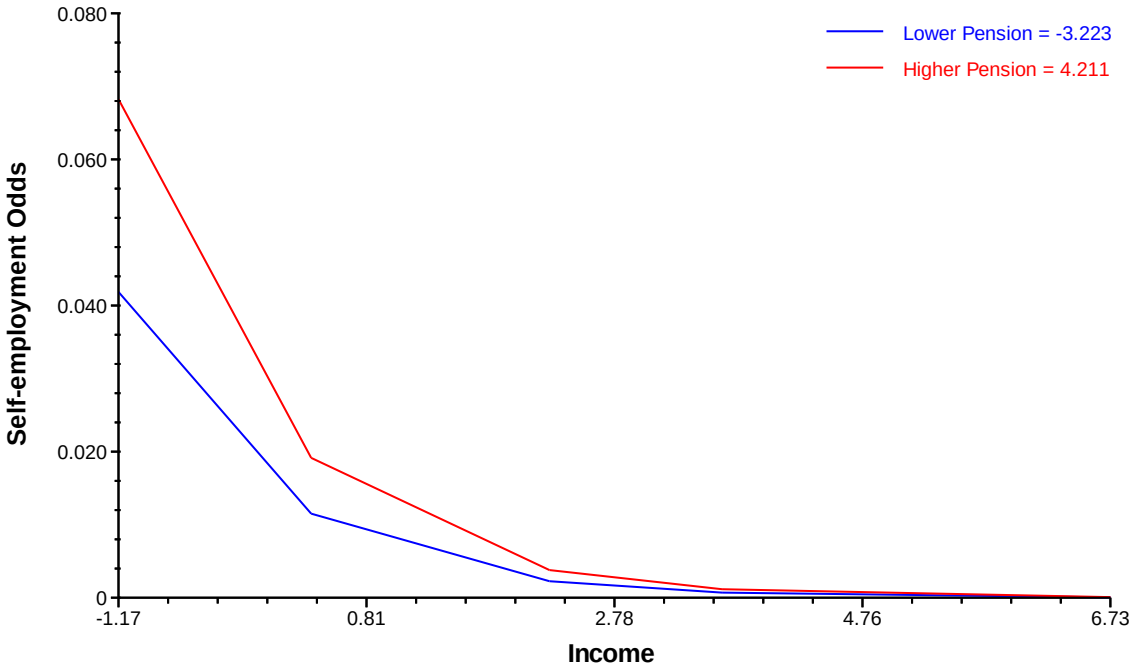


Figure 9a. Pension spending and age on self-employment odds with random intercept, random age slope, and cross-level interaction between age and pension

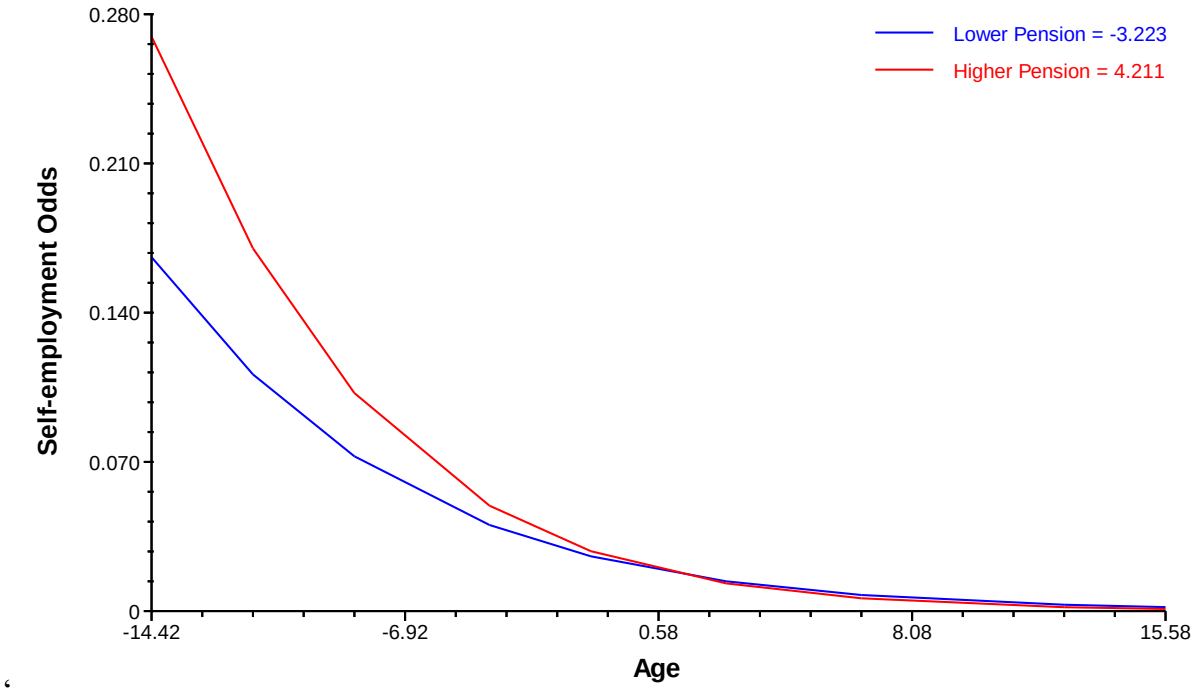


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Figure 9b. Unemployment rate and age on self-employment odds with random intercept, random age slope, and cross-level interaction between age and unemployment

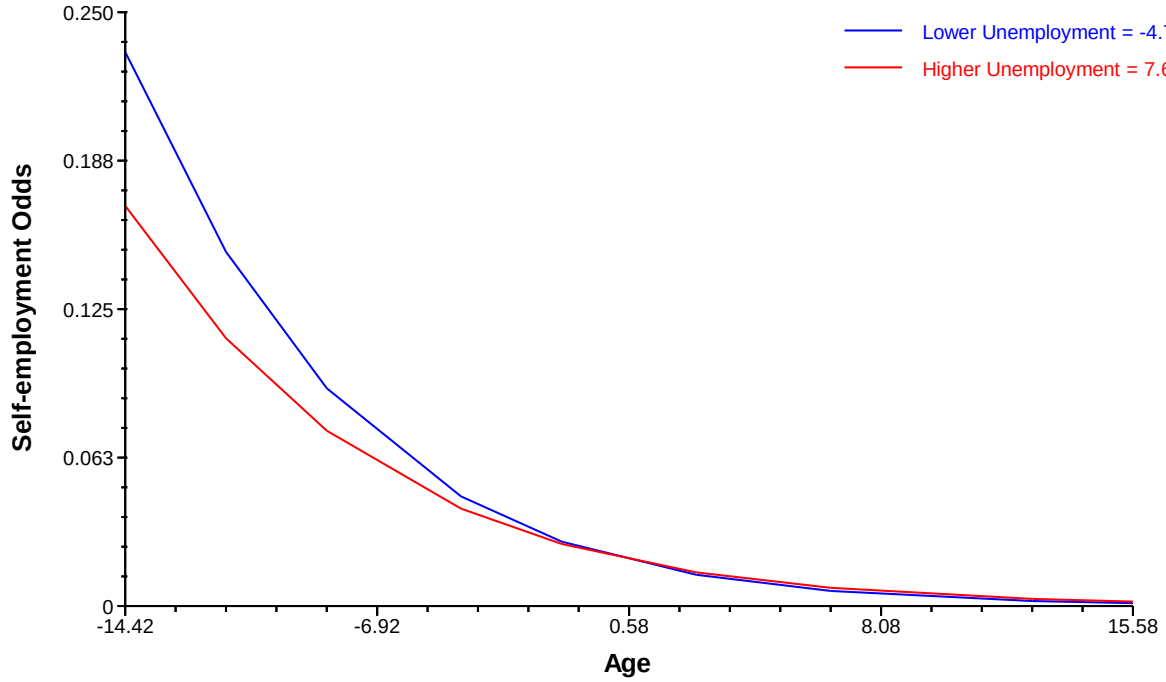
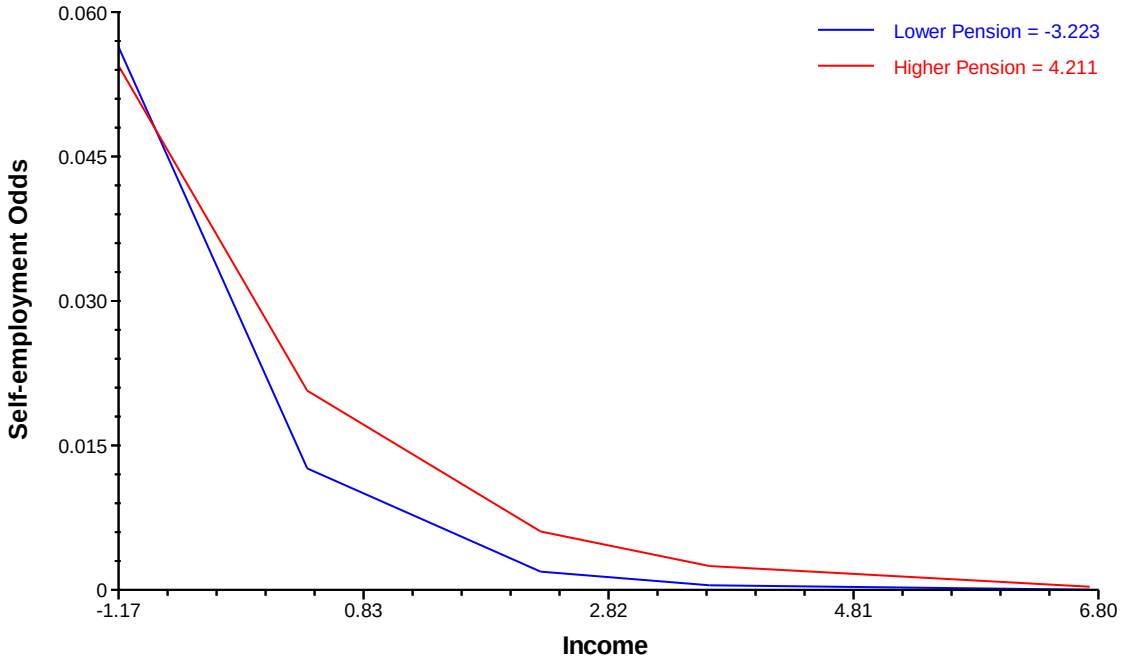


Figure 10. Pension spending and income on self-employment odds with random intercept, random income slope, and cross-level interaction between pension and income



CHAPTER 4:
THE IMPACT OF SELF-EMPLOYMENT ON SELF-RATED HEALTH

Countries across Europe and other advanced regions are supporting and adopting active aging policies in the face of shifting demographics with aging populations, increased longevity, scaling back of social benefits, and changes in social and work environments (European Commission 2007; Foster and Walker 2015; Morrow-Howell, Hinterlong, and Sherraden 2001; EPSCO 2012; WHO 2002). An active aging framework takes a comprehensive approach to aging by considering social, economic, physical, and mental well-being. Policies aim to promote healthy aging from a life course perspective with the goal of reducing poverty and social exclusion and improving physical and mental health among older adults. Meanwhile, countries have been promoting self-employment among general populations to address employment growth and to stimulate the economy. Policies offer entrepreneurial tax relief (Hatfield 2015), easier access to credit, and more flexible arrangements for making social contributions (Jakobsen and Ellegaard 2008). Against this background, the number of self-employed adults, including self-employed older adults, grew[8] (Eurostat 2020) alongside an increase in the overall employment rates of older adults in most G20 and OECD countries from 2003 to 2013 (OECD 2020b).

Labor market participation is an important productive activity that supports an active and fulfilling life in older adulthood (Foster and Walker 2015). Productive activities refer to market and nonmarket activities that produce economic and noneconomic benefits beyond the individual (Butler and Gleason 1985). These activities are posited to enable older adults to maintain their

[8] Although the number of self-employed older adults grew, the rate has not increased across all EU countries. In those countries, even though a large portion of adults 50-64 are self-employed, the increased number of the self-employed is due to the growing aging population, not an increase in rate.

psychological and physical health through sustained economic roles and activities that integrate them within society (Butler and Gleason 1985; Johnson and Mutchler 2014). This chapter explores whether employment promotes active aging goals and outcomes (Baker et al. 2005; Russell et al. 2018), particularly focusing on the effect of self-employment on health.

Existing research on the relationship between productive work in older age and its outcomes paints a mixed landscape of results. The relationship between structured, unpaid work such as volunteering, and health is generally positive where older adults experience better physical and psychological health outcomes (Burr et al. 2011; Glass et al. 1999; Johnson and Mutchler 2014; McDonnall 2011; Moen and Flood 2013; Morrow-Howell et al. 2003; Russell et al. 2018; Thoits and Hewitt 2001). In contrast, research on productive, market activities such as employment has equivocal findings (Calvo et al. 2013; Jokela et al. 2010; Kim and Feldman 2000; McIntosh and Danigelis 1995; Ray and Heppe 1986; Reynolds et al. 2012; Syse et al. 2017). Further, studies do not distinguish between paid employment and self-employment when different employment experiences, motivations, and conditions may contribute to the conflicting outcomes. Therefore, the effect of self-employment on older adults' health may invariably differ compared to paid employment, calling for a closer, separate analysis.

This chapter examines the effect of self-employment on health by disaggregating employment into paid employment and self-employment. The goal is to explore whether self-employment promotes active aging by exploring the link between self-employment and overall health among older adults as prior studies tend to lump the two forms of employment into one. On the one hand, self-employed older adults can maintain their economic roles and activities beyond the traditional retirement age. Self-employment also allows for greater flexibility in work hours and conditions (Cahill et al. 2016; Hundley 2001). Furthermore, income from self-

employment can help boost financial security. For those with limited access to paid labor market, whether due to age, disability, or gender (Haider and Loughran 2005; Penner et al. 2002), self-employment opens work opportunities.

On the other hand, self-employment may introduce stressors, especially if older adults are working because of financial necessity (Cahill et al. 2015, 2016; Curl et al. 2014). In addition, disadvantaged groups in self-employment typically tend to have lower status occupations under potentially sub-optimal work conditions (Curl et al. 2014). Self-employed older adults in lower quality jobs may need to work longer hours and stay employed for a greater number of years for survival or because of inadequacies in retirement readiness. These adults may be economically engaged and productive, but continued self-employment may hinder their health and well-being.

The 2014 EUSILC longitudinal data spanning from 2011 to 2014 are used to assess the effect of self-employment on health. While the complete dataset comprises of 31 countries, this chapter uses data from only 27 as countries with missing data on pertinent variables are dropped from the analyses. Analyses use self-rated health as the dependent variable and examines how it changes in the four-year span among older adults across the different employment statuses. Based on the productive activity framework, older adults who are not engaged in productive activities should experience a larger decline in their health over time. Employed older adults, in comparison, should experience a small decline in their health. Self-employed older adults should also experience a smaller decline in their health. Included in the analyses are older adults who are responsible for caregiving and domestic work. Though engaged in productive work, these adults may not experience as much protective factor from engaging in productive work compared to employed and self-employed adults and may experience greater decline in their

health as caregivers generally experience negative tolls on their health while taking care of others (Flood and Moen 2015; Moen, Dempster-McClain, and Williams 1992).

ACTIVE AGING, PRODUCTIVE WORK, AND HEALTH

Participating in productive activities generally promotes a better quality of life and improved health (Burr et al. 2011; Glass et al. 1999; Johnson and Mutchler 2014; McDonnall 2011; Moen and Flood 2013; Morrow-Howell et al. 2001; Musick and Wilson 2003; Russell et al. 2018; Thoits and Hewitt 2001). Productive activities include both paid and nonpaid work that create economic and non-economic benefits to individuals, communities, and society (Butler and Gleason 1985). Examples of structured, non-paid work include volunteer work and caregiving to family members. The concepts of active aging and productive activities shift perspectives on aging away from old age dependency and decline. Instead, they focus on how continued social and economic activities contribute to personal and social benefits in older adulthood (Butler and Gleason 1985; Johnson and Mutchler 2014).

Studies on paid employment find conflicting results on the link between employment status and well-being. In their qualitative study with adults over the age of 65 in the United Kingdom, Reynolds, Farrow, and Blank (2012) found that adults who continue to work acknowledge that work helps them to maintain their health and continue their personal development. In fact, study participants emphasize the benefits that they saw in making meaningful contributions to society, having control over their health by staying physically and mentally active, and using the later life stage as time for continued personal development. These factors added more value to their lives than the financial gains from working. Among older

adults over 55 years of age, full-time employees experience the highest levels of happiness, then part-time workers, and lastly, the retired (Ray and Heppe 1986). Other studies also find that older adults who work post-retirement are happier and healthier than those who do not work (Kim and Feldman 2000; Zhan et al. 2009) though these studies do not make distinctions between wage- and salary-work versus self-employment.

In contrast, McIntosh and Danigelis' (1995) cross-sectional study using the Americans' Changing Lives survey data found a positive effect of participating in religious activities and formal volunteering on health conditions but no effect of paid work on improving health conditions. While Calvo, Sarkisian, and Tamborini (2013) found that early retirement negatively affects health, older adults who continue working beyond the retirement age do not see added health benefits. Other studies using longitudinal data also find better mental health and physical health conditions among those who retire at the statutory retirement age or early voluntary retirement when retirement is not due to poor health (Syse et al. 2017) compared to those who work beyond retirement age (Jokela et al. 2010).

In recent years, older adults have increasingly delayed retirement through bridge jobs and self-employment (Cahill et al. 2013; Quinn and Kozy 1996). However, paid work and self-employment potentially involve different work motivations (Cahill et al. 2015) and dissimilar work conditions. Therefore, employment status should be disaggregated to discern the difference between paid work and self-employment. Equivocal conclusions in the relationship between paid work and health also point out the value in distinguishing between different forms of later life work.

Network based studies find links between social networks and social integration, and how networks borne from productive activities improve the quality of life. Retirement and negative

health conditions, more common in older age, significantly reduce the size of social networks, particularly for male retirees compared to women retirees (Cornwell et al. 2010; Hatch and Bulcroft 2016) though recent findings suggest that this may not be true for the younger[9] of the older adults in the case of the Netherlands (Cozijnsen, Stevens, and Van tilburg 2010; Suanet and Huxhold 2020). Nevertheless, the shrinking of social networks as a result of employment loss can aggravate older adults' well-being. Older adults who work full-time spend more time interacting with work colleagues than those working part-time or self-employed while unemployed older adults spend more time engaged in solitary activities such as watching TV compared to those who are self-employed or employed part-time (Flood and Moen 2015). The finding suggests that unemployment or nonworking status increases engagement in solitary and socially isolating activities among older adults. Lee and Smith (2009) also find more depression among retirees than those in the paid labor market. Yet, a large criticism of research on retirement and health outcomes is the unclear direction of the relationship. Arguably, retirees may more likely experience poor health than working adults because they lost their economic role. Conversely, limiting health conditions may be the reasons for retirement as health status changes often influence transitions from the labor market to retirement (Haider and Loughran 2005).

The benefits of formal volunteer work, compared to employment, are more well-established (Burr et al. 2011; Luoh and Herzog 2002; Morrow-Howell et al. 2001; Musick and Wilson 2003; Wilson 2007). Volunteer work improves physical health as well as mental health (Burr et al. 2011; Morrow-Howell et al. 2003; Musick and Wilson 2003). Older adults try to maintain continuity as they transition from middle-age to older age (Atchley 1989), and later life

[9] The younger cohort consists of adults born from 1938 to 1947, and the older cohort consists of those born from 1928 to 1937.

volunteering improves quality of life by mitigating potentially adverse effects of leaving paid work through role substitution (Mutchler, Burr, and Caro 2003). Losing a substantially important social and economic role may have negative health consequences, but transitioning from paid work to formal volunteer work limits the negative effect of labor force exit by replacing one role with another.

In addition to mitigating the effect of role loss, volunteering also has social benefits. It increases social integration (Moen et al. 1992) by enabling older adults to build new social networks and connections (Russell et al. 2018) from where they can also draw social resources. Compared to non-volunteers, volunteers tend to have more social contacts, and they may be able to find more social resources in those ties. The newly formed ties can serve as protective factors promoting better health.

However, the positive effects of volunteering on older adults' life outcomes tend to vary depending on the quality or the commitment level of that activity. For instance, the relationship between volunteer work and mental health is curvilinear where moderate levels of volunteering is associated with better health than high commitment or no commitment (Burr et al. 2011; Musick, Herzog, and House 1999). These suggest that structured, productive work with moderate commitment levels tend to have more positive health outcomes for older adults than low levels or high levels of work.

Similar to formal, structured volunteer work, self-employment offers more structure than retirement, connects older adults to a goal-oriented work, and potentially offers more flexible work conditions than full-time, paid work. Older adults want more flexible work arrangements and to prolong their work lives over retiring all together (Eurobarometer 2012). Self-employment has more work flexible work conditions than paid employment (Blanchflower and Oswald 1998;

Cahill et al. 2016; Hamilton 2000; Hundley 2001). Self-employment also creates opportunities for adults to be economically engaged and maintain their economic role in older age (Reynolds et al. 2012) while connecting older adults to work-related networks. Therefore, self-employed older adults potentially experience better health than employed adults.

A large body of self-employment literature examining its push and pull factors (Boylan and Burchardt 2002; Budig 2006; Hughes 2003; Moulton and Scott 2016; Thébaud 2016; Walker and Webster 2007) offers more closely examined insight into why older adults may experience better health. Pull factors include higher potential earnings, schedule flexibility, nontraditional work hours, work from home arrangements, and work satisfaction (Cahill et al. 2016; Hughes 2003; Hundley 2001; Pienta and Hayward 2002; Thébaud 2016). Pienta and Hayward (2002) note that self-employed adults may adjust their work arrangements more flexibly depending on their health needs or work preferences. A study of disabled and non-disabled adults over 50 years of age in the UK found that adults with musculoskeletal problems and women with mental health conditions are likely to be self-employed (Boylan and Burchardt 2002). Studies suggest that self-employed individuals find greater satisfaction in their work because of greater autonomy and flexibility (Blanchflower and Oswald 1998; Hamilton 2000; Hundley 2001).

However, some older adults engage in self-employed in later life for other reasons. Push factors such as poor labor market opportunities, limited earnings prospects, and job precarity including layoffs and involuntary job loss (Biehl et al. 2014; Blanchflower and Oswald 1998; Kalleberg 2009), job inflexibility, and loss of benefits or health (Moulton and Scott 2016) are notable. Women and minority groups tend to be pushed into self-employment because of eroding work conditions, limited employment opportunities and options, and caring responsibilities (Boylan and Burchardt 2002; Hughes 2003; Simoes, Crespo, and Moreira 2016; Thébaud 2016;

Tubergen 2005; Walker and Webster 2007). Indeed, the rate of women's self-employment has been increasing faster than men's self-employment (Hatfield 2015). Similar arguments are made for disabled workers who may turn to self-employment as a viable work option because of the lack of employment opportunities and labor market discrimination (Boylan and Burchardt 2002) and older adults with health issues are more likely to enter self-employment after age 50 (Zissimopoulos and Karoly 2007). Older adults also perceive age-based discrimination in the labor market and believe that older age disadvantages them as job applicants (Ron Davies 2014).

While having to be self-employed at an older age out of financial necessity or due to poor health conditions may signal that self-employment could be a stressor, self-employment from the productive aging perspective can also create a context for improving the overall health of older adults. Investigating the relationship between self-employment and health outcomes has important policy implications as it helps elucidate whether self-employment promotes active aging policy goals and health outcomes. Given the policy push for increased self-employment, whether this form of employment contributes to older adults' well-being deserves a closer examination.

DATA

This chapter uses 2011 to 2014 data derived from the 2014 European Union Statistics of Income and Living Conditions (EU-SILC) longitudinal dataset from Eurostat. The annual EU-SILC survey contains nationally representative sample data on social exclusion, income, poverty, and living condition indicators for persons 16 and older across its member European countries. EU-SILC captures both cross-sectional and longitudinal data which are self-reported information collected from interview surveys and phone interviews. Longitudinal data span four years with a

four-year rotational design. Each wave replaces a quarter of the sample every year. Individual data may include observations for only one year to all four years. Although the complete dataset includes 31 countries, only 27 countries[10] are incorporated in the analyses as some countries with missing data on pertinent variables were dropped. Due to the focus of the study on older adults, this chapter restricts the sample to adults 50 and older. Because of the sampling design, including more years in the analyses yields a smaller sample size than the complete dataset. Table 14 shows the descriptive statistics of the sample with the mean and standard deviation.

Dependent Variable: Good Health

The dependent variable of interest is good health which comes from the general self-rated health measure. The survey captures the respondent's self-rated health condition, ranging from very good, good, and fair to bad, and very bad in an ascending order from 1 for very good health to 5 for very bad health. The variable was reverse coded for better health with ascending values from 1 to 5 where 1 represents very bad health and 5 represents very good health. Although self-reported health does not reflect the actual health condition of the respondent, its high correlation with whether the respondent has chronic illness and experiences activity limitations because of health issues shows the relevance of self-rated health as an indicator for gauging respondent's overall health status (Table 16).

[10] Austria, Belgium, Bulgaria, Cyprus, Czechia, Estonia, Greece, Spain, Finland, France, Hungary, Ireland, Iceland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Sweden, UK

Independent Variable: Self-employed

The independent variable of interest, self-employment, comes from the survey question asking the individual's current economic status. Categories consist of employee working full-time, employee working part-time, self-employed working full-time, self-employed working part-time, unemployed, student or in further training doing unpaid work, in retirement, disabled, in compulsory military service, fulfilling domestic and caring responsibilities, and other inactive person. The EU-SILC defines self-employment as working in one's own business, professional practice, or farm for earning an income, irrespective of whether or not the enterprise actually generates profitable income. Self-employed is a dichotomous variable with 1 for self-employed and includes both full time and part time. 0 represents all other employment and non-employment statuses.

Individual Covariates

Control variables include gender, age, education level, marital status, and income. Gender is a dichotomous variable with female coded as 1 and male coded as 0. Age is a continuous variable from 50 to 80 and modeled linearly. While 50 is not old age and public opinion does not view adults as old until the age of 63.9 on average (Eurobarometer 2012), many employment-related studies treat 50 years as an important age marker in later work years (Handwerker 2011; Lee and Smith 2009; Moen and Flood 2013; Pleau and Shauman 2012). Although the EU-SILC data collapse all adults over 80 years of age into one category as 80 and older, thereby creating an age ceiling, very few older adults beyond this age work. Education level measures the highest educational level attained with six categories based on the International Standard Classification

Education (ISCE) classifications. This was recoded to a dichotomous variable with 1 for those with beyond high school education level and 0 for those with high school education and less. Marital status, a five-category variable, is also recoded with currently married individuals coded as 1 and all other statuses coded as 0. Income is included as logged income of total gross employee cash or near cash transformed.

In addition to the covariates, other employment statuses are dummy coded. They include employed, unemployed, care work, disabled, and retired. Because of the small number of respondents in the other categories, including those who are other inactive persons, students or in training, and in compulsory military service, those respondents are counted as unemployed persons. Although collapsing these categories together with unemployment attenuates the effect of unemployment, additional analyses with separate other and unemployment categories do not show significant statistical difference. Table 15 shows the correlation matrix of the variables in the analyses.

METHODS

This chapter applies three-level hierarchical growth models to measure change in self-reported health over time. Typically, growth models are two-level hierarchical models where time is nested within individuals. Therefore, level one includes the time variable, and level two represents the between-person model. Growth models are useful for measuring change over time (Raudenbush and Bryk 2002) because each time when individuals report their health, the instance is nested within the respondent and the slope for each individual is calculated. The correlated residuals can be better accounted for compared to when calculating the average slope

across all students for each time measure. The nesting of time within individual controls for correlated residuals that would, otherwise, make it more difficult to parse out actual change from noise from one time-point to another.

The chapter uses a three-level approach to control for country-level factors that may influence individual health statuses. There are no country-level variables in the analyses, however, because this chapter only considers how self-reported health changes within individuals over time and how this compares between them. This chapter does not investigate how country-level factors account for individual-level outcomes or compare the differences between countries over time. By nesting individuals within countries without any level-three variables, country-level effects are controlled. The growth model in this chapter applies a linear function of the slope assuming a constant change in health over time rather than quadratic or cubic because health conditions do not shift in erratic ways for most individuals unless a sudden illness develops for instance.

Analyses start with a null growth model where level one includes self-rated health as the outcome variable and time as the predictor variable while the intercept and the slope at level two are set as random effects to vary randomly. Significant variance components for levels three, two, and one indicate that the starting values and the slope for older adults' health level are different between people and their rate of change over time varies significantly. The significance of the null model indicates that three-level modeling is appropriate for analyzing the data.

Level-1 Model

$$\text{Health}_{tij} = \pi_{0ij} + \pi_{1ij}*(Year_{tij}) + e_{tij}$$

Level-2 Model

$\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + r_{1ij}$

Level-3 Model

$\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$

Mixed Model

$Health_{tij} = \gamma_{000} + \gamma_{100}*Year_{tij} + r_{0ij} + r_{1ij}*Year_{tij} + u_{00j} + u_{10j}*Year_{tij} + e_{tij}$

After the null model, the second model includes all the employment statuses at level two. Given the focus on the change of health over time, the chapter adds random effects to the slope to allow for slope estimates based on each observed data. While the intercept also includes random effects, it does not estimate the intercept based on the demographic and employment status of each respondent because the general starting point for self-rated health is not statistically significant across the different employment statuses except for the disabled status.

Level-1 Model

$Health_{tij} = \pi_{0ij} + \pi_{1ij}*(Year_{tij}) + e_{tij}$

Level-2 Model

$\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + \beta_{11j}*(SE_{ij}) + \beta_{12j}*(EMP_{ij}) + \beta_{13j}*(RET_{ij}) + \beta_{14j}*(DIS_{ij}) + \beta_{15j}*(CARE_{ij}) + r_{1ij}$

Level-3 Model

$\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$
$\beta_{11j} = \gamma_{110}$
$\beta_{12j} = \gamma_{120}$
$\beta_{13j} = \gamma_{130}$

$\beta_{14j} = \gamma_{140}$
$\beta_{15j} = \gamma_{150}$

Mixed Model

$$Health_{tij} = \gamma_{000} + \gamma_{100}*Year_{tij} + \gamma_{110}*Year_{tij}*SE_{ij} + \gamma_{120}*Year_{tij}*EMP_{ij} + \gamma_{130}*Year_{tij}*RET_{ij} + \gamma_{140}*Year_{tij}*DIS_{ij} + \gamma_{150}*Year_{tij}*CARE_{ij} + r_{0ij} + r_{1ij}*Year_{tij} + u_{00j} + u_{10j}*Year_{tij} + e_{tij}$$

The full model includes the employment statuses and demographic variables. Age and log income are centered around the group mean and account for the mean values for comparisons between individuals within countries. The full mixed model is as follows:

Full Mixed Model

$$Health_{tij} = \gamma_{000} + \gamma_{100}*Year_{tij} + \gamma_{110}*Year_{tij}*FEMALE_{ij} + \gamma_{120}*Year_{tij}*AGE_{ij} + \gamma_{130}*Year_{tij}*MARRIED_{ij} + \gamma_{140}*Year_{tij}*EDU_{ij} + \gamma_{150}*Year_{tij}*EMPLOYED_{ij} + \gamma_{160}*Year_{tij}*RETIRED_{ij} + \gamma_{170}*Year_{tij}*DISABLED_{ij} + \gamma_{180}*Year_{tij}*CARE_{ij} + \gamma_{190}*Year_{tij}*NEWSELFE_{ij} + \gamma_{1100}*Year_{tij}*SELFE_{ij} + \gamma_{1110}*Year_{tij}*LOGINC2_{ij} + r_{0ij} + r_{1ij}*YEAR_{tij} + u_{00j} + u_{10j}*YEAR_{tij} + e_{tij}$$

RESULTS

Results from the unconditional model with self-rated health as the outcome and time which has measures from 2011 to 2014 show that the overall self-rated health declines over time, and this decline is statistically significant net of all other factors (Table 17). The level two variance component in the random effect in the intercept is 0.631 with a standard deviation of 0.794 (df=15,566; $p < 0.001$) and the variance for the random effect in slope is 0.018 with a standard deviation of 0.135 (df=15,566' $p < 0.001$). The variance component for random effects on the intercept between countries is 0.088 (sd=0.297, def=26, $p < 0.001$) and the random effects between individuals is 0.0004 (sd=0.020, df=26, $p < 0.001$). In 2011, the average self-rated health across individuals was 3.568 out of 5 with 1 being very poor health and 5 being very good health. Each year, self-rated health goes down by 0.027 points (SE=0.005, $p < 0.001$).

The conditional model with the employment statuses with unemployed as the reference category and the independent variable, self-employment, shows significance in self-rated health from 2011 to 2014. The average self-rated health across all older adults at the starting point in 2011 was 3.564 out of 5 and self-rated health declined by 0.020 points (SE=0.020, $p < 0.001$) each year. Each random effects coefficient for the slope represents the change in self-rated health over time across each employment status with unemployment as the reference category. The change in self-rated health is significant for those who are employed (coefficient=0.024, SE=0.008, $p < 0.001$). Compared to unemployed older adults, their slope increases by 0.012 points more. The change in self-rated health for adults who are unable to work because of a disability also is significant, but the direction is negative where their slope decreases by 0.026 (SE=0.008, $p < 0.001$) compared to unemployed older adults. The slope for older adults who engage in care and domestic work also have a statistically significant negative slope where their health declines by 0.020 points (SE=0.010, $p < 0.41$) compared to unemployed older adults. The slope for self-employed adults and retired adults are not statistically significant. Therefore, their rate of change in health is not statistically different from the rate of change among unemployed older adults. When only considering older adult's employment status, employment is associated with better health over time while disability and caregiving are associated with poorer health over time compared to unemployment. Figure 11 displays the relative slope, meaning the change in self-rated health, for each of the employment statuses from 2011 to 2014.

The full model includes all the demographic variables for random effects in the slope. The change in self-rated health in the full model also considers gender, age, marital status, education, and log income. Model results with robust standard errors show no statistical significance for gender. There is no statistical difference in the change for self-rated health

between men and women. The statistically significant negative coefficient for age (coefficient=-0.003, SE=0.0006, $p < 0.001$) shows that individuals experience health decline as they age. Marital status, on the other hand, has a statistically significant positive coefficient of 0.020 (PE=0.003, $p < 0.001$). Marriage boosts self-rated health and mitigates decline over time. Education also mitigates the declining health over time with a statistically significant positive coefficient of 0.047 (SE=0.005, $p < 0.001$). Older adults with higher levels of education experience less decline in their self-rated health over time compared to older adults with less than a high school degree. Income effect is statistically significant and substantial as an increase of one in log income improves self-rated health by 0.137 points (SE=0.013, $p < 0.001$).

Compared to the unemployed, older adults who are retired or do care work experience similar levels of decline in self-rated health over time. Disabled older adults experience statistically significant and more substantial decline in their health compared to unemployed older adults with a coefficient of -0.197 (SE=0.014, $p < 0.001$). Older adults who work, on the other hand, experience improving heaving compared to unemployed older adults, which mitigates the effect of time on declining health. Self-employed older adults have a statistically significant and positive coefficient of 0.029 (SE=0.001, $p < 0.003$) and employed older adults have a significant and positive coefficient of 0.023 (SE=0.004, $p < 0.001$). Figure 12 shows the change in health across the different employment statuses with the demographic characteristics at the mean.

Only a quarter (24.8 percent) of self-employed older adults have employees while three fourth (75.2 percent) of the self-employed work solo. Therefore, most self-employed older adults will likely have a small business, and income generated from self-employment may supplement or increase their income rather than owning profit-generating, larger-scale businesses. 28.6

percent of self-employed older adults work under 40 hours a week while 35.3 percent work between 40 to 49 hours a week and 36.1 percent of self-employed older adults work 50 hours or more per week, showing that more self-employed older adults work full-time. Most older adults are not self-employed, however, beyond 65 years of age. While, on average, 11.7 percent of older adults are self-employed in their fifties, less than five percent are self-employed by the age of 65 and this number dwindles to less than one percent by the age of 77. Therefore, there is a dramatic decrease in the number of self-employed as adults age. Further, the number of self-employed adults over 65 years of age not only decrease but they also work less hours.

Additional analyses of the 2014 cross-sectional data which also contains the module on material deprivation offer a picture of how self-employed adults fare in their material conditions compared to other older adults. 92.4 percent of employed and 92.5 percent of self-employed older adults can afford meals with meat, fish, or chicken compared to 79.4 percent of disabled and 74.4 unemployed older adults. In other words, while most working adults can afford to have a meal with meat, nearly one fifth of disabled older adults and one fourth of unemployed older adults cannot afford it. This suggests that employment may importantly allow older adults to have more balanced diet which is an important component of maintaining good health. Similarly, 70.4 percent of employed and 63.5 percent of self-employed older adults can afford to travel for a week away from home compared to only 39.9 percent of disabled and 29.2 percent of unemployed older adults.

Self-employed and employed older adults who are involved in productive activities experience less drastic decline in their health over time than older adults who are not engaged in productive activities. These older adults include unemployed adults and retired adults. Caregivers do not have statistically significant difference in their health decline compared to

unemployed older adults. Although older adults who provide care work and domestic work also perform productive activities, they do not experience similar positive effects of productive work that employed and self-employed adults experience. This suggests that caregiving has a negative toll on the caregiver in ways that other productive activities do not.

CONCLUSION

This chapter offers evidence on the positive relationship between self-employment and health where self-employed older adults experience a smaller decline in their health over time compared to older adults who are not engaged in productive activities. This suggests that self-employment can potentially mitigate or slow down health declines because it allows older adults to sustain economic roles and activities, similar to paid work, that keep them active and integrated in society.

The number of self-employed adults grew steadily from across Europe 2002 to 2020. With the 28 EU countries combined, the number of self-employed older adults aged 50 to 74 grew from approximately 10,842,100 persons to 12,084,000 in 2009 to 14,459,400 persons in 2018 (Eurostat 2020). Despite this increase in number, the rate has not necessarily grown in tandem, and in some countries, the rate has decreased. In some cases, encouragement of self-employment comes with retrenchment of welfare benefits and raised retirement age. Policies with active aging in mind should consider special circumstances of older adults and age-specific concerns to promote older adults' entry to self-employment.

The analyses in this chapter are limited to only four years, and the analytical approach was limited to less complex models with a linear relationship in consideration of parsimony.

Investigating change over a larger timespan, however, may tell a different story. Modeling a linear relationship assumes constant change, rather than a discontinuous change, over time. Yet life events outside of employment history such as moving to a different region, loss of friends or family, or a sudden development of health conditions can drastically alter health trajectories and affect health outcomes such that they deviate from a linear relationship. Investigating a longer span of time with measures for discontinuous change, therefore, may offer a clearer picture of older adults' longer term health outcomes.

This chapter does not contextualize self-employment by also considering cross-national differences in their active aging policies and to the extent that those differences affect health outcomes. However, country-level effects need also be accounted for in order to build a fuller picture. For example, men and older adults 55 and over tend to agree that retirement age needs to increase, but overall, the majority of adults in countries such as Romania (87%), Latvia (86%), Slovakia (83%), and Croatia (81%) disagree with raised retirement age compared to Denmark (58%), the Netherlands (55%), Ireland (53%), the UK (51%) and Austria (49%) (Eurobarometer 2012). Such large variations suggest that despite a unified active aging policy framework in Europe, each country still has its unique socio-cultural, labor market, and welfare environments and institutional arrangements to consider for developing self-employment policies that address active aging with a more holistic lens.

Although there is a positive relationship between self-employment and health where employed adults experience smaller health declines over time compared to nonemployed adults, specific mechanisms through which self-employment improves health is not explored here. The prominent negative change among disabled older adults and other productive but nonemployed adults suggest that disabilities aggravate health declines and not all productive activities promote

health outcomes. Policies that prioritize productive aging through increased employment alone, therefore, may miss the holistic goals of active aging among older adults.

Table 14. Descriptive statistics of the variables

Variable	**Mean**	**SD**	**Min/Max**
Year	2.78	1.03	1 (2011)/4 (2014)
Health (Self-rated) (N=48,450)	3.45	0.91	1/5
Employment Status (N=48,910)			
Self-employed	0.06	0.23	0/1
Retired	0.36	0.48	0/1
Employed	0.28	0.45	0/1
Disabled	0.05	0.21	0/1
Unemployed	0.21	0.41	0/1
Care	0.05	0.22	0/1
Covariates N=(48,910)			
Female	0.50	0.50	0/1
Age	59.89	6.66	50/80
Education	0.20	0.40	0/1
Married	0.68	0.47	0/1
Log Income	11.08	0.18	10.97/13.42

Table 15. Correlation matrix of the variables

	Health	Time	Self-employed	Employed	Retired	Disabled	Care	Female	Age	Married	Education	Log Income
Health	1.000											
Time	-0.012	1.000										
Self-employed	0.114	0.002	1.000									
Employed	0.266	-0.009	-0.152	1.000								
Retired	-0.205	0.010	-0.267	-0.590	1.000							
Disabled	-0.194	-0.013	-0.053	-0.117	-0.206	1.000						
Care	0.006	-0.002	-0.076	-0.167	-0.294	-0.058	1.000					
Female	-0.072	0.003	-0.110	-0.057	-0.021	-0.013	0.254	1.000				
Age	-0.295	0.024	-0.185	-0.524	0.656	-0.115	0.017	0.051	1.000			
Married	0.127	-0.005	0.056	0.079	-0.083	-0.032	0.030	-0.196	-0.181	1.000		
Education	0.189	0.034	0.039	0.198	-0.098	-0.047	-0.103	-0.039	-0.126	0.049	1.000	
Log Income	0.285	-0.012	-0.053	0.680	-0.431	-0.085	-0.131	-0.125	-0.415	0.083	0.293	1.000

Table 16. Correlation matrix of the three health measures

	Chronic Health	Activity Limitations	Self-Rated Health
Chronic Health	1.000		
Activity Limitations	0.579	1.000	
Self-Rated Health	-0.548	-0.635	1.000

Table 17. Three-level hierarchical growth modeling of change in self-rated health from 2011 to 2014 with robust standard errors (N=48,450)

	Model 1		Model 2		Model 3	
Independent Variables	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Intercept, random effects	3.568***	0.058	3.564***	0.058	3.563***	0.059
Slope, random effects						
Time	-0.027***	0.005	-0.020**	0.006	-0.052***	0.006
Unemployed (reference)						
Self-employed, γ_{150}			0.012	0.009	0.029***	0.010
Employed, γ_{160}			0.024***	0.005	0.023***	0.004
Retired, γ_{170}			-0.007	0.007	0.010*	0.007
Disabled, γ_{180}			-0.206***	0.014	-0.197***	0.014
Care, γ_{190}			-0.020*	0.010	0.012	0.009
Female, γ_{110}					-0.001	0.005
Age, γ_{120}					-0.003***	0.001
Married, γ_{130}					0.020***	0.003
Education, γ_{140}					0.047***	0.005
Log income, γ_{1100}					0.137***	0.013
Random Effects						
Time slope s.d.	0.135		0.142		0.149	
Between individual intercept s.d.	0.793		0.792		0.793	
Between-country time s.d.	0.019		0.020		0.019	
Between-country intercept s.d.	0.298		0.295		0.298	

*$p < 0.01$, **$p < 0.05$, ***$p < 0.001$, two-tailed test.

Figure 11. Change in self-rated health from 2011 to 2014 by employment status

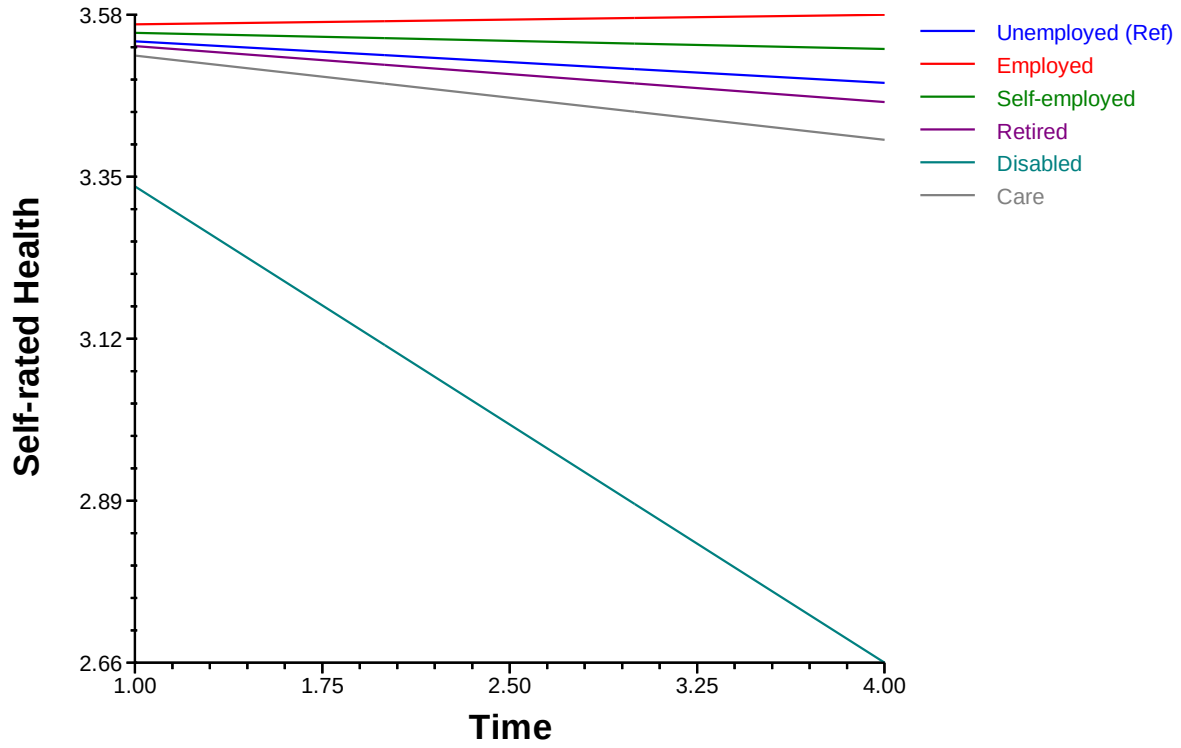
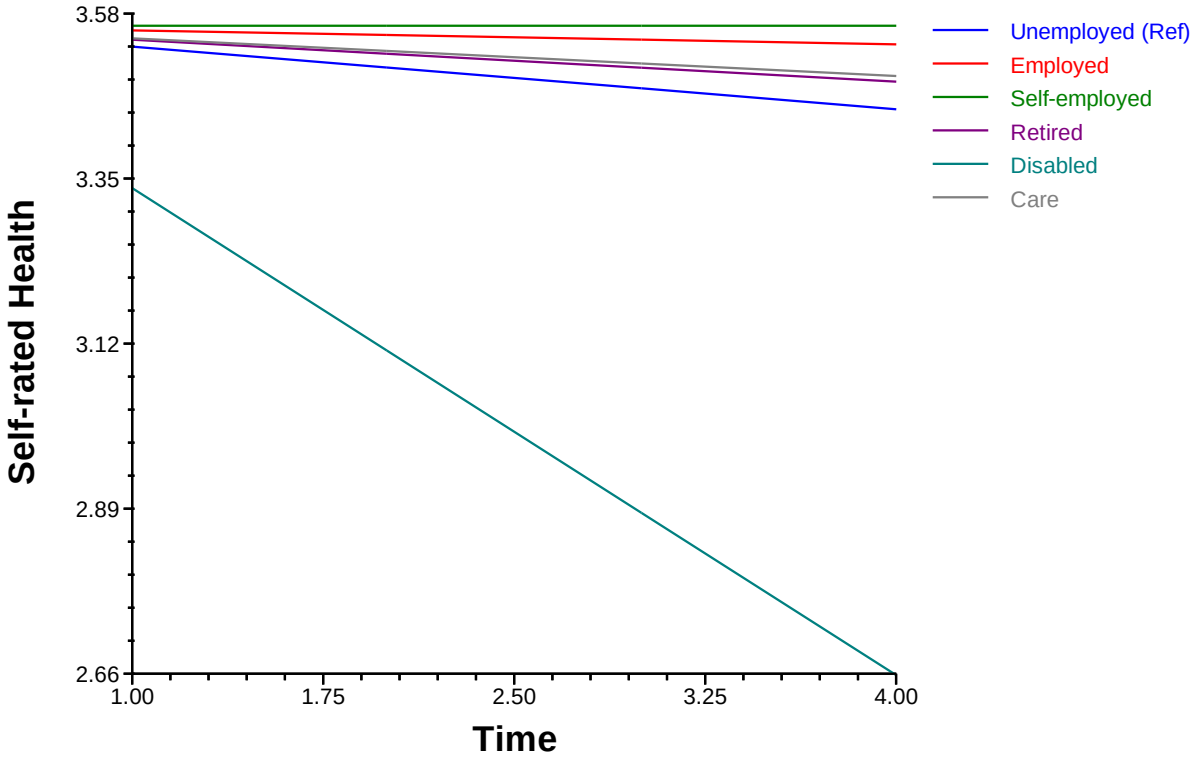


Figure 12. Full model of the change in self-rated health from 2011 to 2014 by employment status



CHAPTER 5: CONCLUSION

Findings, Limitations, and Looking Forward

Overall, while self-employment potentially offers an avenue to prolong work life, older adults who engage in this type of work tend to be younger and poorer of the group. Chapter 2 challenges the prevailing perception that older adults are more averse to uncertainty by also considering how social factors shape risk-taking. Using 2005-2013 individual-level US GEM APS data, the chapter specifically explored how the 2008 economic recession, a shared macro-level experience, affected older adults' entrepreneurial behavior and compared it to that of younger adults' behavior in the US. As a collectively experienced event that left an indelible mark on the structural conditions of the labor market, empirical analyses expanded risk-taking as an individual trait to a behavior shaped by social forces such as an historical economic event. Contrary to popular understandings about older adults, findings show that an economic downturn did not thwart their entrepreneurial activities any more than it affected younger adults' activities. Evidence suggests that older adults do not necessarily react more negatively towards risk and uncertainty, and their risk orientation does not directly relate to actual risk-taking behavior. Instead, social factors such as structural changes in the labor market due to the recession at the macro-level and social and human capital at the individual-level may contribute to increased entrepreneurial undertakings.

A closer examination reveals that poorer older adults generally have higher odds of pursuing entrepreneurship than their counterparts with higher income, and this is truer after a crisis period with necessity-based entrepreneurial activities. Among older adults with less income, self-employment likely stems from financial need, irrespective of their individual

orientations toward risk and uncertainty, because the crisis leaves them more vulnerable in negative labor market conditions. In times of recession and thereafter, self-employment becomes an alternative employment option to paid work. Unfortunately, however, poorer older adults may participate in low-quality self-employment because entrepreneurial activities are necessity-based, while wealthier older adults have higher odds of pursuing opportunity-driven entrepreneurship that may be linked to high-quality work. This leaves middle class older adults the least likely to engage in self-employment. They are neither the most vulnerable to be pushed into low-quality self-employment nor the most resourced to take advantage of opportunity-driven entrepreneurship. Evidence from this chapter suggests that the saliency of labor market conditions or active aging depends on older adults' social location, especially class position. Analyses are limited to income data, however, and future research with wealth and assets data may better reveal the mechanisms shaping the relationship between age and risk-taking in later life through self-employment. Experience of financial strain may also elucidate some of the mechanisms better than simply wealth as the degree of financial strain potentially captures whether certain employment behavior is related to financial necessity.

Increased reliance on technology and expanded influence of the technology sector may also shape risk-taking and self-employment odds. The digital divide and growing use of technology is increasingly consequential on inequality and stratification among older adults. In workplaces, some older adults experience a technological disadvantage compared to their younger counterparts. In the US, anecdotal experiences of older teachers who suddenly had to shift to remote, online teaching during the 2020 global pandemic reflect their frustration in adopting and incorporating new technology into their teaching. They account that their ability to effectively teach was curtailed by a lack of skill-level appropriate training. Older adults also

experience more difficulty in participating in the growing gig economy. The gig economy, encompassing many types of short-term, freelance, or home-based work, largely runs on technology platforms. Learning and adopting new platforms may be a too high bar for some older adults. It begs the question: what type of work is suitable and who is excluded from this growing sector of self-employed workers? Younger adults may be more willing to take risks in the gig economy and, therefore, their participation may be greater, but, on the other hand, the gig economy may be set up for how younger adults work and take risks.

Moving away from the US case, Chapter 3 engages with institutional theory to analyze how institutions, through policies, practices, and programs, shape self-employment odds through a cross-national across European countries. Using the 2014 cross-sectional EUSILC data across 30 European countries, I employ hierarchical generalized linear modeling (HGLM) to investigate the relationship between pension spending and self-employment odds. Analyses move beyond theories of rational choice and agency by applying an economic embeddedness perspective (Block and Somers 2014; Krippner and Alvarez 2007; Polanyi 1957; Thornton 1999) and considering how contexts are shaped by institutions through policies and practices that influence individual-level self-employment outcomes (Pagán-rodríguez 2012; Thébaud 2015a). The chapter finds a positive association between public pension spending and self-employment among older adults. Self-employment odds are higher in country contexts with higher public pension spending, providing some evidence that greater spending promotes self-employment. However, a closer examination reveals that this generally applies to adults who have not yet reached retirement age and those who have lower income. Although a larger pension spending is associated with greater odds of later-life self-employment, the data on self-employment activities among lower income earners suggest that they are not opportunity-driven pursuits. This finding

aligns with the US case in Chapter 2 where poorer older adults pursue self-employment more than adults with relatively higher incomes. Welfare policies and labor market conditions not only shape self-employment odds but also produce unintended consequences of institutionalizing later life inequality.

The dissertation finds some gender effect, underscoring the disparate life histories between men and women that produce a gendered life course. In the case of unemployment, for example, working women who exit the labor market from child bearing and childrearing do not qualify for unemployment, and this negatively affects their capacity to save for future retirement or contribute to their pension funds. Working men, on the other hand, qualify for unemployment when they lose their jobs. Though they lose opportunities to make pension or Social Security contributions, they can claim unemployment benefits that women who have exited the labor market cannot. Institutions play a critical role in aggravating or ameliorating inequality depending on the worker's social location, which has implications on their later life social and financial well-being.

Ultimately, most self-employment work remains limited to the younger of the older adults—adults generally under 65 years who have not yet reached retirement or pensionable age. Although evidence suggests that older adults use self-employment as a bridge job or to ease into retirement, and findings of this study align with existing research, self-employment does not appear to extend their work lives beyond retirement age as policymakers hope for without appropriate institutional resources and cultural shifts. The notable decline in labor force participation once adults reach the traditional retirement or pensionable age of 65 suggests a persistent retirement culture.

This trend also calls for a more systematic approach to exploring appropriate age cut-offs for investigating aging and age-related outcomes. Although this dissertation follows the precedence of existing employment scholarship by considering 50 as the cut-point for delineating older and younger adults, future research can empirically explore the different age cut-points. An empirical exploration of where, when, and how age matters by analyzing the different inflection points in the data, rather than first choosing an arbitrary age cut-point, may tell a better story of what happens in the aging process and how we should define older age.

The chapter raises an important caveat. Rather than the amount of pension spending, the arrangement of welfare provisions in conjunction with the spending amount may be more important. Based on Esping-Andersen's work on welfare regimes, countries such as Denmark and Sweden, categorized as social-democratic countries, are characterized by a universal pension system. This arrangement looks very different compared to means-tested pension systems found in liberal countries, such as the US and the UK. The arrangements in social-democratic and liberal countries are still different compared to corporatist countries, such as France, where generous public spending accompanies income-tested pension systems. One of the weaknesses of the EU-SILC is its exclusion of Germany as a member country. Therefore, analyses do not include a prime corporatist country. A cross-sectional approach also overlooks the fact that institutional contexts shift with time.

Methodological and data limitations restrict the scope of the research to consider only a few policies and practices. They also fail to account for the shifting of those pieces along with the sometimes contradictory and disjointed realities that older adults face as social actors when all the policies and practices come together. For example, Germany raised its pensionable age after its 2007 pension reform from 65 to 67 years (Coppola and Wilke 2014) while in the

Netherlands, the average retirement age of 64 in 2014 rose to 66 in 2018 and will rise to 67 by 2024 (OECD 2019). Pensionable age has become a moving target where adults who looked forward to retiring at a certain age may have to work a few more months to years to be eligible.

Unlike Chapters 2 and 3, Chapter 4 takes a micro-level approach to investigate the health consequence of self-employment. The study empirically tests theoretical claims of active aging and productive activities that claim that continued engagement in social and economic activities helps older adults live healthier lives. Studies on volunteer work offer consistent evidence supporting this argument, while research on carework and employment offers mixed findings. This chapter employs growth models using the 2014 EU-SILC longitudinal data to discern change in self-rated health by employment status among older adults. A four-year observation of change in self-rated health among older adults across mid-income and high-income countries show that employed and self-employed older adults experience the smallest decline in health compared to nonworking adults. This finding, however, is based on only four years of data.

In addition to the active aging framework where older adults are the social agents of change, cultural attitudes toward older adults, and how they are viewed in specific socio-cultural contexts need be examined. Whether societies view older adults as valuable members or burden on resources may inform their approach to creating policies to address aging population issues. Moreover, these value systems change not only over time but across and between different generations. Generational differences in attitudes and expectations around work and retirement may exist. Older adults currently near retirement age may expect to retire and enjoy a similar retirement lifestyle to prior generations. In some cases, those older adults may be expected to be independent and take care of themselves. In other contexts, older adults' responsibilities may extend beyond themselves to include younger family. Younger adults may have diverging work

plans and retirement outlook compared to older adults, shaped by different social circumstances, especially with limited proportions of young people in the economy who actually have pension.

One concern of Chapter 4 is the direction of effect. Self-employed adults may be a self-selecting group of workers who are generally healthy, and having better health may explain their participation in self-employment over an exit from the labor force. Therefore, investigating correlations between self-employment and other behaviors of healthy people may help disentangle the issue of directionality. More importantly, investigating self-employment consequences on health through a life course perspective may offer clearer links between the self-employment and health relationship. For an adequate analysis of change over time, longitudinal data with longer terms are appropriate.

Many gerontology studies use the Health and Retirement Study (HRS) longitudinal data for the US case and the Survey of Health, Ageing and Retirement in Europe (SHARE) for the European cases. The HRS began data collection in the 1990s and is considered as one of the most representative and comprehensive longitudinal dataset for adults 50 and over in the US. Chapter 2 does not utilize HRS, however, because the focus lies on the range of entrepreneurial activities impacted by the economic crisis. Other datasets that compile the US data often used in aging studies include the American Community Survey, the Panel Study of Income Dynamics (PSID), and Current Population Survey.

Currently, SHARE includes 27 European countries and Israel for a combined dataset of 28 countries. For Chapter 3 that makes a cross-national comparison, I chose the EU-SILC over SHARE because EU-SILC includes a few more countries than SHARE. The few additional countries make an important difference when applying HGLM because a greater number of cases in higher analytical levels gives more power to multilevel models. A smaller number of countries

would severely limit the number of variables and covariates that the models could handle in the analyses. Chapter 4 would have benefitted the most from using SHARE to analyze the change in health over time across different late-life employment statuses. Modeled after the US HRS dataset, SHARE has richer and deeper levels of data on health and cognitive outcomes as well as genetic profiles that allow for investigations considering biological outcomes beyond a simple self-rated health outcome. Another limitation of the current chapter is its short-term analysis of only four years compared to many more available in SHARE. Nevertheless, SHARE has its own limitations as it does not span the entire life course of the individual when we know that early life events have a cumulative effect on later life outcomes. Therefore, limited data on health and employment histories, or the antecedent factors, leading up to old age curtail an analysis with a truly, fuller life course perspective.

Despite these limitations, the dissertation offers policy implications illuminating how an investment in the economic wellbeing of older adults may result in better health outcomes and health expenditures savings. Chapter 2 frames risk as a factor that individuals shoulder, but it also shows the need for policies that reduce individual risk burdens and exposure. In France, for example, policy change allowing self-employed adults to claim unemployment upon losing their business increased self-employment activities. Policies that also carefully consider the unique strengths of older adults and the kinds of risks they are willing to take may help develop business opportunities for this population. As Chapter 3 shows, younger of the older adults engage in self-employment when social protections are in place. Hence, creating contexts with generous social protections and less rigid pension policies linked to more flexible work arrangements and retirement pathways may encourage older adults to live more active lives as articulated in the active aging framework. Public pension benefits with a flexible pensionable age range, for

instance, can extend from employer-employee paid work to self-employed work as well. In the US, comprehensive healthcare benefits divorced from employer-sponsored healthcare programs and wider availability to broader groups may encourage interest and investment in self-employment. The link between productive work and later life health outcome in Chapter 4 shows that health decline is mitigated among self-employed older workers. Therefore, as adults prolong their work lives, maintain their livelihood, and create opportunities to continue their social and economic roles, these factors may insulate against financial precarity and mitigate health declines associated with aging, which, in turn, can lead to savings in healthcare expenditures. Consequently, investing in small businesses and self-employment opportunities for older adults may not only be good for the economy but also good for health.

Even though very few theories specifically pertain to late-life self-employment, the empirical chapters weave through theories of uncertainty and risk, economic embeddedness, and active aging and productive work to underscore heterogeneity among older adults and how heterogeneity interacts differently with older adults' contexts and environment that result in, sometimes, counterintuitive outcomes. Together, the findings of this dissertation bridge research and literature in economics, managements, psychology, and gerontology to bring in a sociological perspective because individuals and social structures move interdependently.

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