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The Interplay between Active Ageing and Silver Economy – a QCA Analysis

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Abstract

Ageing, the most salient policy challenge of the 21st century, can convert into an economic venture. In order to grasp this aspiration, this paper examines the interplay between active ageing and the demand side of the silver economy from both national and the EU perspective. The goal is to configure a combination of policies recommended by the active ageing framework that ameliorates silver consumption. Qualitative comparative analysis (QCA) demonstrated that the intersection between higher public healthcare spending, active social life, achieving employment targets and retirement before or at statutory retirement age constitutes a sufficient combination to exploit the potential of the silver economy. Therefore, the active ageing framework theoretically underpins the silver. However, the argument is not empirically compelling because only a minor proportion of the EU member states have actively engaged in exploitation of the silver economy potential.

Keywords: active ageing, European Union, qualitative comparative analysis, silver economy

1. Introduction

Ageing population is one of the main policy challenge of the 21st century, especially in the Western countries. Old-age population growth, increasing old age dependency ratio as the result of increasing life expectancy and declining fertility rates are some of the alarming trends in Europe. In the European Union, the proportion of the old age population will reach 30 per cent of total population, while the old-age dependency ratio will increase from 4:1 to 2:1 by 2050 (Kène Henkens and Schippers 2012; European Commission 2015). Hence, ageing and related challenges such as social protection and

healthcare are at the top of the European Union's policy agenda. For instance, the Commission considers the implications of ageing in the Europe 2020 Strategy as a component of sustainable and inclusive growth prospects. Understanding ageing as the source and/or generator of economic growth is the result of the paradigmatic shift regarding position and role of the elderly in an economy. The paradigm changed from the "elderly care" to "active citizenship" (Formosa 2017). In the period from the 1940s to the 1980s, the policies concerning the old-age aimed to place the elderly outside the labour market as soon as possible while ensuring the income security through developing pension systems. In other words, the elderly were "cared for" (by the state). From the late 1980s onward, there has been an effort to "re-integrate" the elderly in socio-economic life. This leaves us with a desirable scenario for the future in which the elderly are "active citizens" fully included in socio-economic life (Walker and Maltby 2012; see also Walker 2001 and 2006). Moreover, this scenario has the potential to utilise various economic opportunities created by ageing. The "active citizenship" is a synonym for active ageing, a concept introduced by the World Health Organisation (WHO) in 2002. The active ageing policy framework appears to be one of the most streamlined responses to population ageing and its long-run economic, financial, and budgetary implications at the EU level.

From an economic point of view, ageing unlocks new market opportunities. The interaction between the supply and demand side of the newly emerged and growing market with the elderly (60+) as the targeted consumer group has been framed in the so-called "silver economy" concept. This paper examines the demand side of the "silver economy" in the EU. In particular, the paper explores the interplay between the "active ageing" framework as the mainstream policy response to ageing and the "silver economy" including the market opportunities that ageing processes convey. The research question of this paper is the following: *Under which conditions does the active ageing policy framework underpin the old-age consumption in the European Union?* I deem the interaction between the active ageing policy framework and silver economy as a set-relationship. Therefore, I use qualitative comparative analysis (QCA) to answer the research question empirically. This paper undertakes both national and an EU-wide approach to the question at hand.

The results demonstrate that the active ageing policy framework displays a strong subset relation with the silver consumption in the EU. Therefore, the framework is theoretically relevant for turning ageing effects into economic ventures notably through utilising silver economy opportunities. Specifically, two policy combinations are sufficient for improving silver consumption. The first one encompasses higher public healthcare expenditure, retirement before or at the statutory age and socially active life in the old age including activity such as volunteering. The second combination comprises higher public healthcare expenditure, socially active life in the old age (volunteering) and achieving national employment targets of the member states. However, empirical support for a strong subset relation and theoretical relevance of active ageing framework for the silver economy is humble. Inclusion of only eight EU member states in the solution formula mirrors the claim. In other words, the active ageing framework (as it is) is conducive for exploiting opportunities from silver economy, yet concrete policy actions aiming to achieve this goal are absent.

The following two sections of the paper define the two key concepts of this study: active ageing and silver economy. The fourth section discusses the interaction between the two. The fifth section illustrates the methodological framework of this study. The sixth section discusses theoretical and empirical relevance of the findings. Finally, the conclusion summarises the main arguments of the paper.

2. Active ageing

Due to lack of a precise and universally accepted definition (Walker and Maltby 2012), the concept of active ageing can be understood from numerous angles. In the broadest terms, active ageing is “the capacity of people as they grow older, to lead productive lives in society and the economy” (OECD 1998:84). To emphasize quality of life, the WHO offers a more streamlined definition of active ageing and understands it as “the process of optimising opportunities for health, participation and security in order to enhance quality of life as people age” (WHO 2002:24). The European Commission defines active ageing as “a coherent strategy to make ageing well possible in ageing societies” [that includes] “lifelong learning, working longer, retiring later and more gradually, being active after retirement and engaging in capacity enhancing and health sustaining activities” (European Commission 2002:6). This paper adopts the Commission’s

definition of active ageing, as it is seemingly the most suitable for the purposes of capturing both national and the EU angle in the empirical analysis.

Active ageing and related themes have been present in the EU's discourse since the 1990s. The first proclamation of the importance of active ageing was The European Year of Older People in 1993 addressing the issue of generational solidarity. In 1999, conclusions from the EU Helsinki Summit gave eminence to ageing of the labour force and prospects for employment of older workers. The Lisbon Council in 2000 took a decisive step to combat ageing through economic policy by adopting a ten-year strategy for the EU to become a more competitive and knowledge driven economy. The ageing challenge was incorporated into strategy notably through employment. However, the strategy proved too ambitious to, and has therefore been reiterated by the Commission under the Europe 2020 Strategy (Walker and Maltby 2012). The Europe 2020 Strategy encourages an inclusive growth that directly refers to ageing and its implications. Particularly, the "An agenda for new skills and jobs" flagship initiative incorporated into the Strategy, the EU aims to invest in skills, modernising labour markets, and ensure the sustainability of contemporary social models (European Commission 2010).

The EU has addressed population ageing and pursued the active ageing policy strategy mainly through its economic dimension, notably employment. Ageing can generate both job creation and job loss trends example (see Schulz and Radvansky 2014). Moreover, the Commission introduced the Active Ageing Index (AAI), a comparative measure of policy outcomes related to ageing. The AAI report from November 2014 illustrates a progress in pursuing active ageing policies in the majority of the member states comparing to 2012 (EC 2014; see Zaidi 2015). However, a framed collaboration between different levels of governance and actors such as businesses, regions, cities and consumers is still in an early stage of development (Ahtonen 2012).

In terms of economic effects of population ageing, the active ageing as a policy strategy permeates throughout four policy realms: pensions/retirement, employment, health and citizenship (Walker 2001). The policy realms overlap with the Commission's definition of active ageing. Moreover, they reflect the WHO's economic dimension of active ageing including income, social protection and work as the main determinants (WHO 2002). The four policy realms reflecting economic effects of ageing (encompassed in the active ageing framework) are the core of the empirical analysis in this paper.

3. Silver economy

As the active ageing concept, silver economy lacks universally accepted definition. The European Commission (2015:7) defines silver economy as “economic opportunities arising from the public and consumer expenditure related to population ageing and the specific needs of the population over 50”. In addition, the OECD (2014:2) understands silver economy as “an environment in which the over-60 interact and thrive in the workplace, engage in innovative enterprise, help drive the marketplace as consumers and lead healthy, active and productive lives”.

A portion of literature narrows the definition and focus to the consumption/demand side of the silver economy. For instance, Zsarnoczky (2016) defines silver economy as a group of senior people that is one of the most important in terms of buying power in contemporary economic environment.¹ In addition, Schulz and Radwansky (2014) highlight the effects of ageing on the consumption structure and deem “silver consumption” as an opportunity for specific sectors and small economies. The “silver consumption” refers to households with a reference person older than 60 years of age. In contrast, Štefánik et al. (2013:7) define silver economy as “a set of economic activities linked to the production of goods and services designed to target the elderly population” and therefore focus on the supply side of silver economy.² This paper focuses on demand side of the silver economy.

The motivation to study demand side of the silver economy is underpinned by statement that “silver economy in an industry of the future that is worth discovering and developing” (Heinze and Naegele 2009:40). Five developments support this statement. Firstly, today’s old-age cohorts are relevant actors in private consumption whereas, in the past, they were neglected as private consumers. Secondly, the elderly are a heterogeneous group and thus will have differentiated consumption habits. This generates economic activity and consequential growth in a range of economic sectors. Thirdly, today’s cohorts

¹ Silver economy interlinks with numerous sectors in an economy. With ageing, new demand will penetrate the market with specific needs and (ideally) with sufficient income and willingness to purchase supplied goods and services. Some of the consumer segments include: media, smart home/real estate, tourism/medical tourism, home delivery, recreation, local markets, home services etc. (see Zsarnoczky 2016).

² Innovative products such as the Google Glass to assist people with Parkinson’s and Alzheimer’s disease or the Fujitsu’s phone responsive to safety exemplify elderly-targeted products (OECD 2014, European Commission 2015).

of older people demand involvement in discussion concerning quality of life. In other words, they have become more active and engaged in socio-economic activities. Fourthly, senior citizens aim to preserve and increase independent living. Finally, the future of silver economy counts on “singularity of old age”. The “singularity” refers to increase of small or one-person (old-age) households. This is particularly relevant from the economic point of view as the private demand continues to be governed by households, not by heads per household (Heinze and Neagele 2009). In the EU, the share of households with a reference person over 60 years of age will increase from 36% in 2010 to more than 43% in 2030. Similarly, total household consumption in the share of 60+ years of age households will increase in the following decades (Schulz and Radwansky 2014).³ In sum, the reasoning behind embracing ageing as an economic opportunity lies in the consumption potential of the increasing elderly population.

Numbers, current value, and growth prospects of the “silver economy” buttress the optimistic views on its full potential that is yet to be exploited. For instance, the wealth management division of the Bank of America, Merrill Lynch (2014) estimates the value of the silver economy market to be approximately \$7 trillion per year with the growth potential of around \$15 trillion by 2020, making it the third largest market in the world. In addition, Euromonitor estimates that the spending power of the “baby boomers” who have been entering the 60+ age cohort will reach around \$15 trillion by 2020 globally.⁴ Moreover, the SilverSUDEO⁵ project approximates the value of market for the “silver economy” at €420 billion (European Parliament 2015). Further exploitation of growth and consumption potential of the “silver economy” corresponds to goals of the active ageing policy framework. The following section discusses the interplay between the two concepts that will later serve as the core of empirical analysis.

3.1. The interplay between active ageing and silver economy

³ Data and findings are the result of the NEUJOBS project (see <http://www.tmlleuven.be/project/neujobs/home.htm>; accessed November 2017)

⁴ See Boomers as Consumers at <http://www.euromonitor.com/boomers-as-consumers/report> (accessed November 2017)

⁵ See SEN@ER - Silver Economy Network of European Regions at http://www.silvereconomy-europe.org/network/about_en.htm (accessed November 2017)

This paper understands the interplay between the active ageing and the silver economy primarily throughout a single magnitude – policy sectors. In particular, the interplay is embodied in the four above-indicated policy realms (pension/retirement, health, citizenship/participation, and employment). The policy realms constitute the core of active ageing policy framework and are the channels to combat population ageing with an overarching aim to transform ageing from an unresolvable policy challenge into a socio-economic venture. Silver economy, especially its demand side then would arise as the result of the overarching aim. Not to mention, the Commission’s definition of active ageing directs a researcher to expect that all four policy realms positively affect demand side of the silver economy.

The relevance of pension/retirement sector in relation to the silver economy demand (consumption) is undisputable. In the EU, public and/or private pensions cover almost two-thirds of the total income of the elderly (Pallares-Miralles, Romero, and Whitehouse 2012).⁶ Two components are crucial in determining the final pension benefit: time spent in labour market (years of contributions to a pension scheme) and retirement age (see Wise 2006; Schwarz et al. 2014; Fox and Palmer 2001). In other words, employees should aim to stay employed longer in order to have a higher final pension. Nevertheless, the retirement systems in the EU suffer from the gap between the statutory retirement age (legally set age to claim full pension benefits) and effective retirement age (age at people actually start claiming (partial) pension benefits). According to the European Union Labour Force Survey from 2012, more than 40 per cent of people retire prior to reaching the statutory retirement age.⁷ Hence, if a person retires prior reaching the statutory retirement age his/her pension will be lower. In contrast, if a person retires after he/she reaches the statutory retirement age and spends more years in the labour market, the final pension will increase. As a response to both ageing and the retirement age gap, twelve member states have implemented measures to “punish” early retirement by reduction of

⁶ See also Income Components Statistics (http://ec.europa.eu/eurostat/statistics-explained/index.php/Income_components_statistics; accessed April 2018) and Social Protection Statistics (http://ec.europa.eu/eurostat/statistics-explained/index.php/Social_protection_statistics; accessed April 2018)

⁷ See European Union Labour Force Survey - Eurostat at <http://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey> (accessed April 2018)

the final pension amount on a yearly basis.⁸ Contrariwise, the member states started to “award” late retirement (European Commission et al 2015).

According to the Commission’s definition of active ageing, citizenship/participation constitutes the second policy realm relevant for pursuing the active ageing policies to exploit silver economy (see above). It includes political, social, cultural, and leisure activities (WHO 2002, Walker 2002). One of the most prominent activity within the citizenship sector is volunteering. Eurostat classified volunteering as one of the *quality of life* indicators within the leisure and social interactions component.⁹ Volunteering activities enrich the life of the elderly by making them active and involved citizens and consequently contribute to quality of life. Therefore, a higher level of involvement in socio-economic life may broaden consumption possibilities. Unfortunately, empirical support for this statement is absent. However there is evidence that volunteering and participation in socio-economic life enhance the elderly’s well-being (see Oman et al. 1999; Tabassum et al. 2016; Wheelock et al. 2009). Thus, volunteering acts as an intermediary between an active life and consumption drives. In other words, there is an indirect theoretical and rather than empirical expectation for the effects of volunteering on silver consumption.

Healthcare is the third realm for which the active ageing policy framework was expected to have significant implications. Ageing is one the main drivers of increased healthcare and elderly long-term care expenditure (see Zweifel, Felder, and Meiers 1999; Dormont et al 2006; Smith, Newhouse, and Freeland 2009; Rechel et al. 2009; de Meijer et al. 2013; OECD 2014). Increasing government healthcare expenditure is the result of increased demand for healthcare services coming from the elderly. The assumption is straightforward – healthier elderly have the opportunity to live longer and active life and thus have more prospects for consumption.

Employment, the fourth crucial policy sector within active ageing framework, is one the most prominent macroeconomic aggregates and immensely affects demand and consumption (Blanchard 2010). As indicated in the literature review, the EU has

⁸ Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Italy, Malta, the Netherlands, Slovakia, and Spain

⁹ See Quality of Life Indicators - Measuring Quality of Life - Statistics Explained at http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_indicators_-_measuring_quality_of_life (accessed November 2017)

addressed the ageing challenge mostly with employment measures and targets. As indicated, employment is a pertinent segment of the Europe 2020 Strategy with a target of 75% for employment of the population aged 25-64. Correspondingly, national employment targets were set across the EU member states (European Commission 2015). In sum, each of the four policy sectors is expected to have an impact on demand side of the silver economy. This paper aims to configure a combination of the four sectors that ameliorates the silver economy consumption rather than evaluate their independent effects.

4. Methodology

Three features distinguish qualitative comparative analysis (QCA) from other non-set-theoretic methods: a) data consists of set-membership scores; b) relations between social phenomena are modelled in terms of set relations (necessity/sufficiency); c) results emphasise causal complexity. There are two main types of QCA analysis – crisp and fuzzy. In contrast to crisp analysis where set membership scores are limited to 0 and 1, fuzzy analysis allows for a partial set membership scores (any value between 0 and 1) (Schneider and Wageman 2012).

Table 1 Operationalisation of conditions and the outcome

CONDITION	NOTATION	OPERATIONALISATION VARIABLE
Income/retirement	GAP	The difference between effective retirement age and statutory retirement age
Citizenship/participation	CIT	% of the elderly participating in informal volunteering activities
Healthcare	HE	Government expenditure on healthcare as % of GDP
Employment	EMPT	EU member states' national employment targets
OUTCOME	NOTATION	OPERATIONALISATION VARIABLE
Silver consumption (60+ age cohort)	SC	Consumption of the elderly (60+) per household in PPS (purchasing power standards)

Source: author

QCA aims at causal interpretation of different combinations of conditions in their absence or presence and an outcome (Schneider and Wageman 2012), rather than evaluating *net effect* of a single condition on the outcome – as practiced in, for example, regression analysis. In this paper, I analyse combinations of four conditions (income/retirement, citizenship/participation, healthcare, and employment) in respect to a single outcome (silver consumption) (see Table 1). The conditions embody policy sectors in which the

active ageing policy framework has an impact according to the Commission's definition. I perform fuzzy set QCA (fsQCA) analysis on the sample of 25 EU member states.¹⁰ FsQCA requires the raw data (operationalisation variables) to be transformed into set-membership scores thorough the process of calibration (see Table 2). In the calibration process, for three conditions (GAP, HE, and EMPT) I use a six-value fuzzy set calibration (Ragin 2008) whereas for the CIT condition and for the outcome SC I use a "continuous" fuzzy set calibration (Ragin 2008). Calibration criteria have been selected based on the literature support, in-depth case knowledge and natural gaps in raw data, included in the sample (see Appendix 1).

For the GAP (retirement/income) condition, I assign fuzzy scores according to "punishment/award" interaction described in the section 3.1. Therefore, the operationalisation variable is the difference between are effective and statutory ages for males of the 25 EU member states for 2015. The main data source is the European Commission's most recent Age Report (European Commission et al. 2015).¹¹ Fuzzy scores higher than 0.5 represent a positive gap between the effective (the age at which a person actually retires) and statutory (legally set retirement age) retirement age whereas fuzzy scores lower than 0.5 represent a negative gap between the two. In other words, higher fuzzy scores indicate higher final pension benefit due to the longer stay in the labour market and more contributions to the pension scheme. In particular, a positive gap (retirement at least two years *later* than the statutory age) represents the threshold for full membership in the GAP set/condition (score 1). The crossover point (score 0.5) equals to retirement *exactly* at the statutory age. A negative gap (retirement at least two years before reaching the statutory age) signifies the threshold for full non-membership (score 0) in the GAP set.

In addition, I operationalise the HE (healthcare) condition with public spending on healthcare as a proportion of GDP. Fuzzy scores higher than 0.5 represent higher

¹⁰ Three EU member states are excluded from the empirical analysis – the United Kingdom, Croatia and Romania. The UK will soon leave the EU and it is therefore irrelevant for answering the research question. Croatia and Romania are excluded because of missing data for the *citizenship* condition in the QCA analysis. QCA as a methodological tool does not replace missing data (Ragin 2008; Schneider and Wagemann 2012).

¹¹ I use the raw data for males because the EU member states are in the process of gradual equalisation of the retirement ages for men and women. In addition to aiming for equalizing the statutory retirement age for both men and women, there is a general trend of a gradual increase of the statutory retirement age among the member states, regardless of gender.

healthcare expenditure and are thus more in the HE set. In contrast, scores lower than 0.5 represent lower healthcare expenditure and are more out of the HE set. I use three criteria to calibrate qualitative thresholds (0, 0.5 and 1). The qualitative criteria include WHO's healthcare expenditure standards and healthcare spending categorizations illustrated in the WHO's Global Health Expenditure Atlas (2016). These have been supported with quantitative clustering of raw data for the HE condition. In particular, the threshold for full-non membership is the expenditure lower than 5% of GDP. The expenditure higher than 11% of GDP is the threshold for full membership in the HE set. The EU average expenditure (8.2-8.5%) serves as the crossover point. Eurostat was the main source for healthcare expenditure data (year 2015).¹²

Moreover, in the attempt to capture an EU-wide perspective, I use data on the national employment targets (for 2016) framed in the Europe 2020 Strategy (European Commission 2010) to operationalise the EMPT (employment) condition. I assigned the fuzzy thresholds (1, 0.5, and 0) according to successful and unsuccessful achievement of pre-determined national employment targets. Fuzzy scores higher than 0.5 indicate close-to-successful (scores 0.6 and 0.8) or completely successful achievement of the employment target (score 1) whereas fuzzy scores lower than 0.5 indicate far-from-successful (scores 0.2 and 0.4) or completely unsuccessful national employment target achievement (score 0).

I use "continuous" variant of fuzzy score calibration for the CIT (citizenship/participation) condition and for the outcome SC (silver consumption). The "continuous" fuzzy score calibration allows a case to have the values anywhere in the 0.0 to 1.0 interval (see Ragin 2008). Operationalisation variable for the CIT condition is the proportion of the elderly (60+) participating in informal volunteering organisations. I use quantitative clustering to identify natural gaps in raw data as the criterion to determine the thresholds due to lack of qualitative evidence and universally accepted standards. The threshold for full membership (score 1) is 50%, the crossover point (score 0.5) equals to 20% while the threshold for full non-membership (score 0) equals to 10%. I employ Eurostat's most recent data (for 2010).

¹² In the case of Malta I used the WHO's Global Health Expenditure Atlas (year 2016) because the Eurostat does not provide data on Malta's healthcare expenditure.

Finally, I “continuously” calibrate the outcome SC (silver consumption). The main data source for the outcome was Eurostat’s EU-SILC survey most recent data (for 2010) for the consumption of the elderly (above 60 year of age) per household expressed in PPS.¹³ I apply in-depth knowledge on cases to assign full membership, non-membership and crossover thresholds. In particular, I assign score 1 to Luxembourg and score 0 to Bulgaria, Estonia and Latvia. The reasoning behind it consists of two developments that are inevitably determine consumption capacity of the elderly: 1) at-risk of poverty rate of older people (60+) and 2) aggregate replacement ratio (ARR).¹⁴ Luxembourg scores the highest in the two measurements, whereas Bulgaria, Estonia and Latvia have the lowest scores in the sample. The scores for Bulgaria, Estonia and Latvia do not differ in a significant amount in terms of the two measurements. Fuzzy scores above the 0.5 crossover indicate higher consumption whereas scores below the 0.5 indicate lower consumption. The crossover point (0.5) equals to net median income in the EU for 2010.¹⁵ Median income serves as a supplementary calibration tool external to raw data on silver consumption and maps out overall purchasing power in the EU member states. After calibrating raw data for conditions and the outcome, I conduct the Standard Analysis of sufficiency (SA) (see Schneider and Wagemann 2012:160-195) to inspect what combination of conditions is sufficient for the presence of the outcome. A condition (X) is sufficient for the outcome (Y) when it (X) is a subset of the outcome (Y).¹⁶ The statement of sufficiency implies that (fuzzy) membership scores in the outcome (Y) are higher or equal to (fuzzy) membership scores in condition (X) (Schneider and Wagemann 2012; see Appendix 2 for fuzzy scores).

¹³ PPS (Purchasing Power Standards) - the standardisation and exchange mechanism between PPP (purchasing power parity) and the euro. See Glossary: Purchasing Power Standard (PPS) - Statistics Explained at [http://ec.europa.eu/eurostat/statisticsexplained/index.php/Glossary:Purchasing_power_standard_\(PPS\)](http://ec.europa.eu/eurostat/statisticsexplained/index.php/Glossary:Purchasing_power_standard_(PPS)) (accessed on November 2017).

¹⁴ “The aggregate replacement ratio is gross median individual pension income of the population aged 65–74 relative to gross median individual earnings from work of the population aged 50–59, excluding other social benefits” (European Commission at al 2015:93).

¹⁵ I opted for 2010 data to be consistent with the (most recent) data for the outcome.

¹⁶ There was no need to conduct the Enhanced Standard Analysis (ESA) (see Schneider and Wageman 2012:200-220) as potential pitfalls in Standard Analysis (SA) namely simultaneous subset relations (truth table rows 7 and 8 were in simultaneous relations, but all cases belonging to the rows were typical, not deviant, and were therefore not excluded from the analysis), contradictory easy contrafactuals, contradictory simplifying assumptions, and impossible logical remainders have not affected the results.

5. Results

Results (solutions) of a QCA analysis are Boolean logic expressions derived from the truth table (see Schneider and Wagemann; ch4; see Appendix 3). SA sufficiency analysis produces three types of solutions (see Table 2): conservative (the most complex), intermediate, and parsimonious (see Schneider and Wagemann 2012).¹⁷ In the attempt to answer my research question that is *under which conditions does the active ageing policy framework underpin the old-age consumption in the European Union*, I opt to interpret and discuss the conservative solution. I elaborate on this further in the section.

Table 2 Solutions of the sufficiency analysis

TYPE OF SOLUTION	BOOLEAN EXPRESSION
Conservative	$\sim \text{GAP} * \text{CIT} * \text{HE} + \text{CIT} * \text{HE} * \text{EMPT} \Rightarrow \text{SC}$
Intermediate	$\text{CIT} * \text{HE} \Rightarrow \text{SC}$
Parsimonious	$\text{CIT} * \text{HE} \Rightarrow \text{SC}$

Source: author

There are two key parameters in a QCA analysis of sufficiency: consistency (“incl”) and coverage (“cov.r”). Consistency shows how closely a perfect subset relation is approximated (Ragin 2008). It allows values from 0 (no consistency) to 1 (perfect consistency). Researchers themselves pre-determine a consistency threshold in the sufficiency analysis. I set the consistency threshold at 0.8. Coverage is the degree to which a causal combination “accounts for” instances of an outcome. Its values are within 0 (no coverage) and 1 (perfect coverage) interval. Coverage measures empirical relevance of the solution. A rise in consistency means decrease in coverage and vice versa (Ragin 2008). Additionally, unique coverage (“cov.u”) is “percentage of all cases’ set membership in the outcome uniquely covered by a single sufficient path [of a solution term]” (Schneider and Wageman 2012:334).

The conservative solution unravels two sufficient paths under which silver consumption strives. I interpret the paths and the solution formula as a whole notably through pension systems and socio-economic structure as they significantly interlink with silver economy,

¹⁷ The analysis was conducted in R software environment (“QCA” (Dusa 2018) and “SetMethods” (Medzihorsky, Oana, and Schneider 2017) packages).

purchasing power and living standard in the old age (see Pallares-Miralles et al. 2012; Klimczuk 2016). In contrast to the initial expectations, leaving the labour market sooner (~GAP) is a component of a sufficient path to the silver consumption. Thus, in terms of silver consumption, it is still worth retiring before reaching the statutory retirement age. However, in the long-term, retirement at the statutory age will purport a longer stay in the labour market (compared to now) as there is a general trend of increasing statutory retirement ages in the EU. The absence of the positive retirement age gap stimulates silver consumption in the intersection with the presence of two other conditions – citizenship/participation (CIT) and healthcare (HE). In particular, participating in the informal volunteering activities as a part of an active social life ameliorates prospects for consumption in the old age, as initially expected. The last component in the configuration is higher government’s healthcare expenditure. Table 4 summarizes parameters of fit. Consistency for the first sufficient path is high (0.872) meaning that the path demonstrates a strong sub-set relation and is therefore of substantial theoretical relevance for the outcome. Nevertheless, raw coverage is low (0.451) meaning that empirical evidence of the sub-set relation is humble. In other words, there is little policy support to exploit silver economy opportunities within the active ageing framework. Here we witness a common trade-off between high consistency and low coverage. Four cases (Finland, Italy, Portugal and Spain) are uniquely covered cases by the first sufficient path whereas two cases (Austria and Germany) overlap with the second sufficient path.

As indicated, I aim to interpret individual sufficient paths through pension systems, the most important “providers” of income in the old age. There is no a single variant and/or tradition of pension systems that connects all four uniquely covered cases by the first sufficient path (~GAP*CIT*HE).¹⁸ In particular, Finland has a strong universal component in its social insurance system; Italy is an example of leaning toward the “individualization” of pension (social insurance) system with its notional defined contribution (NDC) (see Börsch-Supan 2004) scheme; Spain and Portugal both maintain a strong social assistance segment in their social insurance systems.¹⁹ In other words, the

¹⁸ The two most prominent pension system traditions are Bismarckian (pensions financed via contributions based on wages or salaries) and Beverigdean (pension financed primarily from the state budget) (see e.g. Cremer and Pestieau 2003; Holzmann, et al. 2008; Delnoij 2013).

¹⁹ Social insurance system – primarily based on the contributions of the beneficiaries; Social assistance system – subsidies from the state budget to meet the costs/needs of the whole social security system (see Ditch 1999);

first sufficient path derived from the active ageing policy framework covers variety of different pension systems. Implications are twofold. On the one hand, active ageing is an overarching framework that performs on a satisfactory level across systems with different consumption power and habits (through the prism of pension systems). On the other hand, it is still unclear which income generating system for the elderly is more efficient than the others in terms of utilising silver economy opportunities from the active ageing framework.

Table 3 Parameters of fit the conservative solution

	<i>Sufficient paths</i>		
	~GAP*CIT*HE	+	CIT*HE*EMPT => SC
Raw coverage	0.451		0.484
Unique coverage	0.074		0.108
Consistency	0.872		0.879
Covered cases*	FIN, ITA, POR, ESP, AUT***, GER***		NED, SWE, AUT***, GER***
Solution consistency	0.894		
Solution coverage	0.558		
Uncovered (deviant) cases**	DEN, BEL, MAL, LUX, CYP, IRL, FRA, GRE		

Source: author

Note: FIN – Finland, ITA – Italy, POR – Portugal, ESP – Spain, AUT – Austria, GER – Germany, NED – the Netherlands, SWE - Sweden

*Cases with membership in path >0.5

**Cases with membership in solution <0.5 and outcome >0.5

***Multiple covered case

The second sufficient path (CIT*HE*EMPT) consists of the intersection of higher healthcare expenditure (HE); higher participation in informal voluntary activities (CIT) (both also appear in the first sufficient path for the outcome); and successful achievement of national employment targets (EMPT). Similarly to the first path, consistency for the second path is high (0.879) whereas raw coverage is low (0.484) (see Table 4). Again, empirical relevance of the path is at stake compared to its theoretical substance expressed in the sub-set relation. The Netherlands and Sweden are the two cases uniquely covered

Information about individual pension system was extracted from the International Social Security Association's (ISSA) official website (see <https://www.issa.int/en/country-details?countryId=AT®ionId=EUR&filtered=true>, accessed May 2018).

by the second path. Coverage of Austria and Germany overlaps with the first sufficient path. Concerning their national pension systems, the Netherlands and Sweden differ significantly (as was the case with the member states uniquely covered by the first path). The Dutch have a system based on social insurance supplemented by state subsidies to ensure a social minimum, while the Swedish, like the Italians, implement notional defined contribution (NDC) scheme and mandatory individual account system beside the basic social insurance system. Therefore, implications for active ageing framework to ameliorate consumption are of same logic as in the case of the first sufficient path, demonstrating the “one size does not fit all” line of argumentation. The implications mainly concern a national perspective as pension systems have deep historical, legal and political roots in national political arenas. Yet, the implication translate to the EU level notably through the interpretation of the solution formula as a whole.

Considering the EU perspective, what does the solution as a whole tell us about the interplay between active ageing policy framework and silver consumption? Active ageing as a policy framework theoretically enhances the silver consumption in the EU and is therefore an effective remedy for combating negative economic effects of ageing and consequently turning ageing in an economic venture. High consistency of the solution formula (0.894) convincingly supports the claim. However, the solution is not empirically compelling for the EU as a whole due to low solution coverage (0.558). As indicated above, eight cases (Finland, Italy, Portugal, Spain, Austria, Germany, the Netherlands and Sweden) are covered by the solution formula. Henceforth, the exploitation of the opportunities deriving from silver economy has limited policy action evidence in the EU as a whole.

The EU still lacks an integrated or coordinated approach to transform ageing into economic venture. The literature (see Heinze and Naegele 2009) suggests that is rather challenging to evaluate the potential of the silver economy at the EU level because consumption structures (of the elderly) vary significantly among the member states. The Eurostat’s data on household consumption by purpose from 2005-2015 confirms this

speculation.²⁰ Different consumption structures among the member states do not come as a surprise if one considers the socio-economic regimes in which they operate.

For example, if one considers typologies relevant to the research question of this paper, such as the three worlds of welfare systems (Esping-Andersen 1990), or the models of silver economy (Klimczuk 2016), one can effectively distinguish between the eight member states included in the solution formula. In particular, Finland and Sweden belong to a socio-democratic welfare system and coordinated silver economy. Austria, Germany and the Netherlands have their place in a coordinated welfare regime and coordinated silver economy. Italy, Spain and Portugal fit to the so-called familistic welfare system and mixed silver economy (Klimczuk 2016). Uncovered (deviant) cases by the solution formula (see Table 4) reiterate the patterns of diversity in both pension systems and socio-economic regimes. Therefore, one cannot conclude that the active ageing framework functions efficiently solely in a certain type of socio-economic regime.

However, the sufficient paths in the solution formula unravel an informative insight notably the two multiple covered cases (Austria and Germany). There is a clear connection between Austria and Germany in both viewpoints of interpretation, pension systems and socio-economic structure. On the one hand, the two countries uphold pension systems solely based on social insurance rooted in the Bismarckian tradition. On the other hand, the literature categorizes both countries as coordinated (silver) economies. Therefore, one could claim that member states with Bismarckian social insurance pension system within coordinated economy efficiently utilize the active ageing policy framework (the solution formula) in respect to silver economy ventures. Inextricable similarities between the two cases weaken the “one size does not fit all” argument that permeates throughout the findings due to the national differences of the covered cases.

Overall, from the EU viewpoint, the argumentation and explanation of the low coverage builds on the “alarming nature of ageing”, the extent to which contemporary demographic momentums disrupt long-term economic prospects. In other words, member states engage in active exploitation silver economy opportunities if the unfavourable

²⁰ See Household Consumption by Purpose - Statistics Explained at http://ec.europa.eu/eurostat/statistics-explained/index.php/Household_consumption_by_purpose (accessed November, 2017).

demographic trends are “severe enough”. Hence, the prevention of the adverse effects of ageing is not present. Demographic traits of the eight member states covered by the solution formula illustrate this. For example, Italy (22%) and Germany (21.1%) have the highest proportion of the elderly in total population in the EU. Moreover, forecasts of old-age dependency ratio by 2030 in the EU estimate one of the highest rates in Italy (44.3%) and Portugal (43.6%). Furthermore, Portugal has the lowest fertility rate in the EU.²¹ Nevertheless, it should be noted that out of the eight member states, Sweden is an exception with a non-alarming demographic picture regarding the above-mentioned indicators. Even though the EU has no direct legal competences in welfare policy including “demographic revival” and pension systems, it should encompass their long-term implications in its “soft law” powers notably fiscal and macroeconomic policy coordination.

In sum, as demonstrated throughout the paper, the economic effects of ageing permeate through various policy sectors and therefore, require a web of policy actions. The presence of ageing implications on numerous policy fronts was the motivation behind opting for the interpretation of the most complex (conservative) QCA solution. Hereafter, there are multiple policy solutions (sufficient paths) to combat ageing and to exploit economic opportunities from the silver economy. From a national perspective, coordinated economy and social insurance pension system rooted in the Bismarckian tradition appear to be more efficient in utilizing advantages of both active ageing and silver economy. From a supranational perspective, the EU as a single market has embraced the active ageing policy framework, but it still lacks the strategy to utilise economic opportunities of ageing notably through silver consumption.

5. Conclusion

This paper examines the interplay between active ageing and the silver economy in the European Union. The active ageing framework is a streamlined policy guideline package to combat ageing, the most salient policy challenge in the 21st century. Silver economy aims to exploit economic opportunities raising from ageing population.

²¹ See Population Data - Eurostat at <http://ec.europa.eu/eurostat/web/population-demography-migration-projections/population-data> (accessed November, 2017)

The aim was to configure under which conditions the active ageing policy framework ameliorates the demand side of the silver economy (old-age consumption). Four policy sectors (retirement/income, citizenship/participation, health, work/employment) in which the active ageing framework has the most explicit effect served as the input side (conditions) of the analysis whereas the old-age consumption was the output side (the outcome). The fuzzy set qualitative comparative (sufficiency) analysis produced two policy combinations sufficient for the outcome. The first one consists of retirement before or at the statutory age, higher public healthcare spending and inclusion of the elderly in social activities (volunteering). It uniquely covers four cases (Finland, Italy, Portugal, Spain). The second combination intersects higher public healthcare spending, inclusion of the elderly in social activities (volunteering) and successfully achieving national employment targets. The second path uniquely covers two cases (Sweden and the Netherlands). Both paths are theoretically compelling, but there is a lack of empirical evidence in terms of policy actions for utilization of the active ageing framework in respect to silver consumption. The same holds for the conservative solution formula as a whole that aims to capture an EU viewpoint on the issue at hand. Interpretation and presentation of results was based on two structural criteria namely pension systems and socio-economic structures. There is a disparity among the covered cases concerning the criteria. Therefore, “one size does not fit all” argument permeates through the interpretation of the sufficient paths. Nevertheless, two multiple covered cases (Austria and Germany) demonstrate a strong similarity regarding the criteria and thus weaken the argument. This insight captures the national viewpoint on the research question and states that coordinated economies upholding social insurance pension systems rooted in the Bismarckian tradition are potentially more efficient (and effective) in utilizing active ageing and silver consumption.

From the EU point of view, low number of member states included in the final solution formula indicates that the EU as a single market is not (yet) efficient in utilizing economic opportunities from ageing despite embracing the active ageing policy framework. Significant differences in institutional and socio-economic structures including consumption habits and the “alarming nature” of contemporary demographics in individual member states are the main obstacles to assess the potential of silver economy

at the Union level. Only those member states where the demography had collided with future economic prospects have been actively exploiting opportunities from ageing. Yet, treating ageing effects a supranational rather than exclusively a national policy challenge may be of benefit.

In conclusion, studying the interplay between the active ageing and the silver economy in the Union provides useful insights into ageing as both national and (especially) supranational policy challenge and a vision how to transform it into an economic venture. The European Union is the “oldest” market in the world. Transformation of negative effects deriving from ageing into economic ventures is a lucrative way to sustain and/or boost somehow prosperous European economy and still rather generous welfare systems.

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Appendix 1 – calibration thresholds for conditions and the outcome

A) Calibration criteria for GAP condition

Fuzzy score	Value (in years)	Threshold criteria
Full membership =1 = positive gap between effective and statutory age	> 2.1	Retiring two or more years <i>after</i> reaching statutory age – significant increase in the final pension amount (approx. 10 or more per cent)
Mostly but not fully in = 0.8	1.1 – 2	Retiring between one and two years <i>after</i> reaching statutory age – somewhat significant increase in the final pension amount (approx.. 5-10 per cent)
More or less in = 0.6	0 – 1	Retiring within a year <i>after</i> reaching statutory retirement age – modest decrease in the final pension amount (approx. 5 per cent)
The highest fuzziness/crossover point = 0.5 = retiring exactly at the statutory age	0	Retiring <i>exactly</i> at statutory age – there is neither “punishment” nor “award” in terms of final pension amount
More or less out = 0.4	0 – (-1)	Retiring within a year <i>before</i> reaching statutory retirement age – modest decrease in the final pension amount (approx. 5 per cent)
Mostly but not fully out = 0.2	(-1.1) – (-2)	Retiring between one and two years <i>before</i> reaching statutory age – somewhat significant decrease in the final pension amount (approx.. 5-10 per cent)
Full non-membership = 0 = negative gap between effective and statutory age	< (-2.1)	Retiring two or more years <i>before</i> reaching statutory age – significant decrease in the final pension amount (approx. 10 or more per cent)

B) Calibration criteria for CIT condition

Fuzzy score	Value range in raw data	Threshold criteria
Full membership = 1	50%	Quantitative clustering that identified natural gaps in raw data.
The highest fuzziness/crossover point = 0.5	20%	
Full non-membership = 0	10%	

C) Calibration criteria for HE condition

Fuzzy score	Value range in raw data (in years)	Threshold criteria
Full membership =1 = very high expenditure	> 11%	1) WHO’s healthcare expenditure standard – country should spend at least 5% of GDP for healthcare to be able to maintain a 90% target in health coverage (WHO 2010). 2) WHO’s Global Health Expenditure Atlas (2016) and its formation of healthcare relative spending categories 3) quantitative clustering (normal measuring) that significantly corresponds to two qualitative criteria and it identifies a gap in raw data (average 0.5 difference between clusters - see Figure 1 below- to be added).
Mostly but not fully in = 0.8 = high expenditure	10.5-11%	
More or less in = 0.6 = above average expenditure	8.6-10.4%	
The highest fuzziness point = 0.5 = average EU expenditure (median point)	8.3-8.5%	
More or less out = 0.4 = below average expenditure	6.5-8.2%	
Mostly but not fully out = 0.2 = low expenditure	5.1-6.4%	
Full non-membership = 0 = very low expenditure	< 5%	

D) Calibration criteria for the EMPT condition

Fuzzy score	Meaning	Threshold criteria
Full membership =1 = completely successful	target achieved	Calibration based on national targets for the employment rate for 2016 in the EU member states a part of EU 2020 strategy (EC, 2010)
Mostly but not fully in = 0.8 = close-to-successful	less than 5% from the target (target 75% and higher – match with the EU-wide target)	
More or less in = 0.6 = close-to-successful	less than 5% from the target (target 69-74.9%- lower than EU-wide target)	
The highest fuzziness point = 0.5	no target defined	
More or less out = 0.4 = far-from-successful	5-10% from target	
Mostly but not fully out = 0.2 = far-from-successful	more than 10% form the target	
Full non-membership = 0 = completely unsuccessful	more than 10% from target and employment decreased in relation to last year	

E) Calibration criteria for the outcome SC

Fuzzy score	Value range in raw data (in PPS)	Threshold criteria
Full membership =1 = high consumption of the elderly	> 30000	Threshold value is strictly case-based. Only Luxembourg is completely “in” the set. The threshold for the full membership was assigned qualitatively based on two criteria that significantly affect consumption of the elderly: 1) the lowest-at-risk of poverty rate of older people (over 60); 2) highest aggregate replacement ratio (ARR)
Degree of membership is more “in” than “out” $0.5 < X < 1$		<i>To be determined by the software</i>
The highest fuzziness point = 0.5	14858	EU net median income for 2010
Degree of membership is more “out” than “in” $0 < X < 0.5$		<i>To be determined by the software</i>
Full non-membership = 0 = low consumption of the elderly	< 6100	The threshold value is case-based and was determined according the same two qualitative criteria as for the fuzzy full membership score threshold. Four cases out of 27 are completely “out” of the set – Romania, Bulgaria, Estonia and Latvia. These cases have the highest at-risk-poverty rate of the elderly and the lowest ARR in the EU27 and thus, the consumption of the elderly is severely limited.

Appendix 2 – Fuzzy scores for conditions and the outcome

COUNTRY	GAP	HE	EMPT	CIT	SC
Austria	0.0	0.6	0.8	0.53	0.81
Belgium	0.0	0.6	0.4	0.08	0.79
Bulgaria	0.4	0.5*	0.4	0.00	0.00
Cyprus	1.0	0.4	0.4	1.00	0.83
Czech Republic	0.6	0.4	0.8	0.01	0.10
Denmark	0.6	0.6	0.8	0.00	0.75
Estonia	0.8	0.2	1.0	0.50*	0.00
Finland	0.2	0.6	0.4	0.68	0.67
France	0.2	1.0	0.8	0.24	0.73
Germany	0.4	0.8	1.0	0.87	0.79
Greece	0.0	0.5*	0.2	0.36	0.73
Hungary	0.6	0.4	0.4	0.01	0.14

Ireland	0.2	0.6	0.6	0.34	0.79
Italy	0.0	0.6	0.4	0.53	0.74
Latvia	0.8	0.2	0.6	0.67	0.00
Lithuania	0.4	0.2	1.0	0.02	0.12
Luxembourg	0.0	0.2	0.6	0.80	1.00
Malta	0.0	0.2	0.6	0.05	0.60
Netherlands	0.6	0.8	0.8	0.84	0.80
Poland	0.2	0.4	0.6	0.83	0.16
Portugal	0.2	0.6	0.4	0.51	0.56
Slovakia	0.4	0.4	0.6	0.55	0.14
Slovenia	0.0	0.5*	0.8	0.93	0.62
Spain	0.0	0.6	0.2	0.81	0.79
Sweden	0.8	1.0	1.0	0.66	0.71

*0.5 scores were re-calibrated into 0.6 in the analysis as Standards of good practice in QCA suggest to exclude 0.5 fuzzy scores

Appendix 3 – Truth Table

	GAP	CIT	HE	EMPT	OUT	n	incl	PRI	cases
7	0	1	1	0	1	4	0.864	0.680	Finland, Italy, Portugal, Spain
8	0	1	1	1	1	2	0.851	0.646	Austria, Germany
16	1	1	1	1	1	2	0.822	0.636	Netherlands, Sweden
3	0	0	1	0	0	1	0.785	0.502	Belgium
6	0	1	0	1	0	3	0.776	0.512	Luxembourg, Poland, Slovakia, Slovenia
4	0	0	1	1	0	2	0.772	0.522	France, Ireland
13	1	1	0	0	0	1	0.713	0.389	Cyprus
2	0	0	0	1	0	2	0.699	0.382	Lithuania, Malta
12	1	0	1	1	0	1	0.618	0.195	Denmark
14	1	1	0	1	0	1	0.556	0.147	Latvia
9	1	0	0	0	0	1	0.497	0.000	Hungary
10	1	0	0	1	0	1	0.441	0.057	Czech Republic, Estonia
1	0	0	0	0	?	0	0.771	0.435	
5	0	1	0	0	?	0	-	-	
11	1	0	1	0	?	0	-	-	
15	1	1	1	0	?	0	-	-	