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SUBJECTIVE WELL-BEING OF THE ELDERLY POPULATION

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AUTHORSHIP STATEMENT

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ZAHVALE

Za vso podporo med študijem se želim zahvaliti Martini, staršem ter Tanji. Za nasvete in pomoč pri pisanju disertacije se zahvaljujem svojemu mentorju, Miroslavu Verbiču, zahvala pa gre tudi sodelavcem na Inštitutu za ekonomska raziskovanja in prijateljem.

SUBJECTIVE WELL-BEING OF THE ELDERLY POPULATION

Summary

Subjective well-being is “a broad category of phenomena that include people’s emotional responses, domain satisfactions, and global judgements of their lives” (Diener, Suh, Lucas, & Smith, 1999). As such, it is an umbrella term for all the distinct ways in which we evaluate our lives. Its importance can be traced back to the findings of Bentham (1776) and Mill (1863), who concluded that society should aim for the “greatest happiness for the greatest number.” Throughout the years, subjective well-being became an important line of research in different research contexts throughout various disciplines, such as psychology, sociology, and economics. The growing impact of subjective well-being research can be seen in the increasing number of national and cross-national surveys that include subjective well-being measures as well as policy-making issues that found their way into public discourse. In this doctoral dissertation, which consists of a series of scientific articles, we study economic issues pertaining to the subjective well-being of the elderly population, which has become of increased interest in economics due to the demographic trends in Europe and the United States. These trends have stimulated debate on the socioeconomic impact of population aging, especially in the light of the most recent financial crisis.

In the first and second articles, we provide a thorough systematic overview of subjective well-being research in the field of economics and subjective well-being research among the elderly, respectively. By using bibliometric methods, we provide valuable information on the most important articles, authors, journals, organizations, and countries in the respective fields. Furthermore, we answer important questions on how the fields are developing and where research gaps exist. Our findings suggest a substantial broadening and globalization of both fields. In the field of the economics of subjective well-being we were able to distinguish three bigger clusters of articles concerned with the effect of income on subjective well-being, the dynamics between job satisfaction and life satisfaction, and the role of positive affect in different research contexts. Furthermore, we found subjective well-being emerging in new areas, such as environmental and ecological economics. Regarding research on subjective well-being among the elderly, we found numerous clusters of articles indicating a multidisciplinary nature of the field and exploring topics such as the relationship between life satisfaction and aging, volunteering, religion, health, physical activity, emotions, and gender differences, or even tackling methodological issues.

In the third article we address the topic economists pay the most attention to in the context of subjective well-being research, namely the effect of economic standing on subjective well-being. By studying the effect of both flow and stock measures of economic standing on subjective well-being, i.e. income and net wealth, as well as addressing the often neglected endogeneity issues, we provide a valuable addition to the existing literature. To conduct the analysis we used data from the Survey of Health, Aging and Retirement in

Europe (SHARE), which allowed us to study how different welfare regimes impact the effect of economic standing on subjective well-being. First, we found the overall direction of bias of the ordinary least squares estimates to be negative, which is consistent with previous findings and supports the notion that income is positively correlated with variables, such as for example working hours, which negatively affect subjective well-being. These findings suggest caution when interpreting previous cross-sectional studies. Second, our findings indicate that the effects of income and wealth on subjective well-being are strongly impacted by the welfare regime, which confirms that the welfare state is linked to subjective well-being through its instruments of decommodification and stratification. These results suggest caution when studying the relationship between economic standing and subjective well-being across multiple countries.

In the fourth article we reverse the question and study subjective well-being as a cause. By utilizing data from the English Longitudinal Study of Ageing (ELSA) of individuals aged 50 and above, we aim to establish a causal link between subjective well-being and six different types of consumption (food consumed at home, food consumed outside of home, spending on clothing, leisure consumption, monthly rent, and utility consumption). To address the reverse causality issue, as well as other potential sources of bias, we exploited the longitudinal dimension of our dataset and instrumented for subjective well-being. We found a positive effect of subjective well-being on spending on food outside of home and leisure activities, both of which share the properties of hedonic goods. These results are supported by previous studies, which found an increased sociability of individuals with higher levels of subjective well-being. We found no statistically significant effect of subjective well-being on food consumed at home, spending on clothing, monthly rent, and utility consumption, which share several properties of utilitarian goods. These findings provide several practical implications for the providers of these products, marketers, and even policy-makers.

In the last article, we assess the relationship between different quality of life domains (Control, Autonomy, Pleasure, and Self-realization) and the stock market participation of the elderly. To do so, we use data from the Survey of Health, Aging and Retirement in Europe (SHARE) and hypothesize a structural equation model in which the effect of the four domains of interest is transmitted through the effects on risk behavior and trust. The results of the structural equation model suggest that the overall quality of life positively affects stock market participation, which is in line with findings in the literature on subjective well-being. We found that quality of life affects stock market participation through its positive effect on risk-seeking behavior, thus supporting the Affect Infusion Model, which propagates a positive relationship between subjective well-being and risk-seeking behavior.

Keywords: subjective well-being; happiness; life satisfaction; bibliometrics; the elderly; income; wealth; welfare; consumption; economic behavior; stock market participation

SUBJEKTIVNA BLAGINJA STAREJŠE POPULACIJE

Povzetek

Subjektivna blaginja zajema široko skupino pojavov, ki vključujejo človekove čustvene odzive, zadovoljstvo s posameznimi domenami življenja in globalne presoje življenja (Diener, Suh, Lucas, & Smith, 1999). Kot taka predstavlja krovni izraz za vse načine, s katerimi ocenjujemo svoje življenje. Njen pomen je poudarjen že v delih Benthama (1776) in Milla (1863), ki skleneta, da bi morala družba stremeti k največji sreči za največje število ljudi. Skozi leta je postala subjektivna blaginja pomembna raziskovalna tema v različnih raziskovalnih kontekstih in v različnih disciplinah, kot so psihologija, sociologija in ekonomija. Naraščajoč pomen raziskav s področja subjektivne blaginje je razviden iz vse večjega števila nacionalnih in nadnacionalnih raziskav, ki merijo subjektivno blaginjo, kot tudi iz vprašanj oblikovanja politik, ki so se znašla v javni razpravi. V doktorski disertaciji, ki je sestavljena iz niza petih znanstvenih člankov, preučujemo ekonomska vprašanja v zvezi s subjektivno blaginjo starejšega prebivalstva, ki postaja vse bolj zanimiv predmet ekonomskih raziskav zaradi demografskih trendov v Evropi in Združenih državah Amerike. Ti trendi so spodbudili razpravo o socioekonomskem vplivu staranja prebivalstva, zlasti v luči zadnje finančne krize.

V prvem in drugem članku podajamo temeljit sistematičen pregled raziskav s področja ekonomije subjektivne blaginje in subjektivne blaginje starejših. Z uporabo bibliometričnih metod podajamo dragocene informacije o najpomembnejših člankih, avtorjih, revijah, organizacijah in državah z omenjenih področij. Prav tako odgovorimo na pomembna vprašanja v zvezi z razvojem obeh znanstvenih področij in obstoju znanstvenih vrzeli. Naši rezultati kažejo na znatno širitev in globalizacijo obeh področij. Na področju ekonomije subjektivne blaginje lahko ločimo med tremi večjimi skupinami člankov, ki se ukvarjajo z vplivom dohodka na subjektivno blaginjo, dinamiko med zadovoljstvom z delom in zadovoljstvom z življenjem ter vplivom pozitivnega učinka v različnih raziskovalnih kontekstih. Poleg tega ugotavljamo, da se subjektivna blaginja pojavlja na novih področjih, kot sta ekonomija okolja in ekologije. V zvezi s področjem subjektivne blaginje starejših smo zaznali različne skupine člankov, ki kažejo na multidisciplinarno naravo področja in raziskujejo teme, kot so razmerja med subjektivno blaginjo in staranjem, prostovoljstvom, vero, zdravjem, telesno aktivnostjo, čustvi in razlikami med spoli, ali obravnavajo celo metodološka vprašanja.

V tretjem članku obravnavamo temo, ki ji ekonomisti v okviru raziskav subjektivne blaginje posvečajo največ pozornosti, in sicer vplivu ekonomskega položaja na subjektivno blaginjo. S preučevanjem vpliva dohodka in premoženja na subjektivno blaginjo ter obravnavanjem v literaturi pogostokrat zanemarjenega vprašanja endogenosti pomembno prispevamo k obstoječi literaturi. Za izvedbo analize smo uporabili podatke iz Raziskave o zdravju, procesu staranja in upokojevanja v Evropi (SHARE), ki nam je omogočila preučitev vpliva ekonomskega položaja na subjektivno blaginjo v različnih sistemih

socialne ureditve. Ugotovili smo, da je splošna smer pristranskosti ocene z metodo najmanjših kvadratov negativna, kar je skladno s prejšnjimi ugotovitvami ter kaže na to, da je dohodek pozitivno koreliran s spremenljivkami, kot je na primer delovni čas, ki negativno vplivajo na subjektivno blaginjo. Te ugotovitve kažejo, da je treba biti previden pri interpretaciji študij, izvedenih na presečnih podatkih. Ugotovili smo tudi, da sistem socialne blaginje pomembno vpliva na učinka dohodka in premoženja na subjektivno blaginjo, kar potrjuje, da je socialna država povezana s subjektivno blaginjo prek instrumentov dekomodifikacije in stratifikacije. Ti rezultati kažejo, da je potrebna previdnost pri preučevanju razmerij med ekonomskim položajem in subjektivno blaginjo v več državah.

V četrtem članku obrnemo vprašanje in preučujemo subjektivno blaginjo kot vzrok. Z uporabo podatkov iz Angleške longitudinalne študije o staranju (ELSA) posameznikov, starih 50 let in več, želimo vzpostaviti vzročno povezavo med subjektivno blaginjo in šestimi različnimi vrstami potrošnje (hrana, ki jo porabimo doma, hrana, ki jo porabimo izven doma, oblačila, prostočasne dejavnosti, mesečna najemnina, komunalna poraba). Za reševanje vprašanja obratne vzročnosti in drugih potencialnih virov pristranskosti smo uporabili longitudinalno dimenzijo svojih podatkov ter instrumentalne spremenljivke za subjektivno blaginjo. Ugotovili smo, da ima subjektivna blaginja pozitiven učinek na porabo hrane izven doma in prostočasne dejavnosti, torej proizvoda, ki si delita številne lastnosti hedoničnih proizvodov. Te rezultate podpirajo študije, ki so pokazale povečano družabnost pri posameznikih z višjimi stopnjami subjektivne blaginje. Statistično značilnih učinkov subjektivne blaginje na porabo hrane doma, potrošnjo oblačil, mesečno najemnino in porabo komunalnih storitev, torej dobrin, ki si delijo več lastnosti utilitarnih dobrin, nismo odkrili. Predstavljeni rezultati imajo številne praktične implikacije za ponudnike omenjenih izdelkov, tržnike ter celo oblikovalce ekonomskih politik.

V zadnjem članku analiziramo razmerja med različnimi domenami kakovosti življenja (to so Nadzor, Avtonomija, Užitek in Samouresničevanje) in udeležbo starejših na trgu vrednostnih papirjev. V ta namen smo uporabili podatke iz Raziskave o zdravju, procesu staranja in upokojevanja v Evropi (SHARE) in predpostavili model strukturnih enačb, v katerem se učinek štirih domen na udeležbo na trgu vrednostnih papirjev prenaša prek učinkov na tvegano vedenje in zaupanje. Rezultati modela strukturnih enačb kažejo, da kakovost življenja na splošno pozitivno učinkuje na udeležbo na trgu vrednostnih papirjev, kar je v skladu z ugotovitvami iz literature na področju subjektivne blaginje. Ugotovili smo, da se učinek prenaša prek pozitivnega učinka na tvegano vedenje, kar podpira model AIM (Affect Infusion Model), ki pravi, da subjektivna blaginja povečuje tvegano vedenje.

Ključne besede: subjektivna blaginja; sreča; zadovoljstvo z življenjem; bibliometrija; starejši; dohodek; premoženje; blaginja; potrošnja; ekonomsko vedenje; udeležba na trgu vrednostnih papirjev

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INTRODUCTION

Description of the broader scientific area of the doctoral dissertation

For millennia people have asked the question: Is my life desirable? The answer lies in the feelings one has about one's own life, regardless of the perception of others. This phenomenon, i.e. an individual's subjective evaluation of their life, is called subjective well-being. The term was first introduced by Ed Diener in 1984 and is defined as a general area of scientific interest, including affective reactions and cognitive judgments, rather than a single specific construct (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). It consists of four components – positive affect, negative affect, global life judgment, and domain satisfaction – which are conceptually related and moderately correlated, yet still provide unique information about one's subjective quality of life (Diener, 2009). Within these four components further distinctions can be made, which are related to specific emotions or domain satisfactions. Because each of the four components has to be studied separately, subjective well-being is often used interchangeably with the less precise but popular term "happiness," which can refer to everything from pleasant moods and emotions to general evaluations.

The scientific field of subjective well-being has come a long way since Wilson's review of happiness research in 1967, where he concluded that "the happy person emerges as a young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious, married person, with high self-esteem, high job moral, modest aspirations, of either sex and of a wide range of intelligence" (Wilson, 1967). Several theories on subjective well-being have emerged during the past decades that can be aligned along multiple dimensions as defined by Diener (2009). These dimensions concern the following: 1. internal vs. external factors of subjective well-being; 2. absolute vs. relative factors by which people assess their lives; 3. inborn and universal vs. learned influences on subjective well-being; 4. global judgments vs. momentary feelings as definitions of subjective well-being; 5. functional happy state vs. dysfunctional happy state in terms of effective functioning; and 8. subjective well-being as a cause vs. subjective well-being as an outcome.

While initially empirical research on subjective well-being fell primarily under the purview of psychologists, it currently excels in its multidisciplinary orientation. Economics was first linked to subjective well-being in 1974 by Richard A. Easterlin, but it was not until recently that findings from subjective well-being research have been considered by standard economic theory (Frey & Stutzer, 2002). Young economic scholars, in particular, embrace the concept of subjective well-being. There are several reasons why. First, subjective well-being can extend economic theory into new areas, such as errors in decision making. Second, it provides valuable insights into how individuals value economic factors, such as income or unemployment. Finally, subjective well-being has

several tangible objective benefits, which concern important outcomes of interest, such as health, income, and social behavior (De Neve, Diener, Tay, & Xuereb, 2013). These benefits raise the argument that higher levels of subjective well-being lead to several positive externalities and that subjective well-being should therefore be put at the heart of public policy.

Despite the scientific progress, in order to successfully implement findings from the existent literature on subjective well-being in public policy, more research is needed that would utilize the availability of new and extended datasets, address the methodological drawbacks of previous studies, address new, previously unstudied research questions, and evaluate the cultural differences among countries. This doctoral dissertation aims to fill some of the voids in the literature. It does so by studying the causes and outcomes of subjective well-being by analyzing individuals in the second half of their lifespans. The elderly population has become of increased interest in economics due to the demographic trends in Europe and the United States. These trends have stimulated debate on the socioeconomic impact of population aging, especially in the light of the most recent financial crisis. Furthermore, maintaining high levels of subjective well-being is one of the important aspects of successful aging due to the unique properties of the elderly, who suffer from increased risks of losses in health, income, and social networks (Pinquart & Sörensen 2000).

Research questions addressed in this dissertation

The doctoral dissertation aims to answer the following research questions, which can be aligned along four dimensions:

- Dimension 1

- *Research question 1:* What is the current state of research in the research fields of the economics of subjective well-being and subjective well-being among the elderly?
- *Research question 2:* How have the respective fields developed over the years and where are they heading in the future?
- *Research question 3:* Which are the most important articles, authors, journals, organizations and countries researching the economics of subjective well-being and subjective well-being among the elderly?

- Dimension 2

- *Research question 4:* How do two different economic standing measures (income and net wealth) affect the subjective well-being of people aged 50 and above?
- *Research question 5:* How do potential biases affect the cross-sectional estimates of the effect of income on subjective well-being?

- *Research question 6:* Is the relationship between economic standing and subjective well-being moderated by the welfare regime?

- Dimension 3
- *Research question 7:* Does subjective well-being affect the consumption behavior of individuals aged 50 and above?
- *Research question 8:* Does the effect of subjective well-being differ among different types of consumption?
- *Research question 9:* How does controlling for reverse causality with instrumental variables affect the estimates?

- Dimension 4
- *Research question 10:* How do different subjective quality of life domains affect the stock market participation of the elderly in different European countries?
- *Research question 11:* Is the effect of subjective quality of life on stock market participation transmitted through the effect on risk behavior or trust?
- *Research question 12:* Is the CASP-12 scale a good measure of the quality of life?

Each dimension of research questions forms one of the four research topics the dissertation addresses. The research topics are detailed below.

The economics of subjective well-being and subjective well-being among the elderly: A bibliometric overview

The dissertation investigates economic issues related to subjective well-being, focusing on people in the second half of their lifespans. These are often interchangeably referred to as "the elderly" or "people in old age," as the mean age of the individuals under study exceeds 65 years of age. Both terms, "subjective well-being" and "the elderly," have become of increased interest to scholars due to the increasing gap between information about well-being contained in aggregated data and the people's own evaluation of it (Stiglitz et al., 2009) on the one hand, and demographic trends which project that by 2050 the share of people aged 65 and above will more than double (He, et al., 2016) on the other. To provide a thorough overview of the research field under study, the thesis conducts two bibliometric analyses on the economics of subjective well-being and subjective well-being among the elderly. These provide important answers about the historic context of the respective fields, as well as the existence of research gaps and possible future development.

The effect of economic standing on subjective well-being in the context of different welfare state regimes

The topic economists probably pay the most attention to in the context of subjective well-being research is the effect of income on the happiness of individuals. However, income is

not the only measure of economic standing and is by some economists considered imperfect (Headey & Wooden, 2004). The thesis therefore studies the effects of income, which is a flow measure restricted to a certain time interval, and net wealth, a stock measure that is accumulated throughout one's entire life span, on the subjective well-being of individuals aged 50 and above. Furthermore, it addresses the various sources of bias that affect the estimation of the effect of income on subjective well-being. The dissertation builds upon Esping-Andersen's (1990) typology of different welfare regimes, which classifies welfare states based on decommodification, social stratification and the private-public mix, to identify whether the results regarding the effect of economic standing on subjective well-being found in the literature are generalizable to countries with different institutional settings.

The effect of subjective well-being on consumer spending

While most researchers still study subjective well-being as an outcome, lately more and more scholars are addressing the reverse causality issue and studying subjective well-being as a cause. The doctoral dissertation aims to add to this literature by studying the effect of subjective well-being on the consumption behavior of individuals aged 50 and above. The thesis studies the effect on six types of consumption with distinct properties, namely food consumed at home, food consumed outside of home, spending on clothing, leisure consumption, monthly rent, and utility consumption. Furthermore, the objective of the thesis is to establish causality, which is a challenging task due to endogeneity-related problems in subjective well-being equations. Therefore, it uses an instrumental variables strategy to mitigate potential biases.

Subjective quality of life and stock market participation of the elderly

Although subjective well-being and quality of life are different scientific concepts, they share several properties, which is particularly true of subjective well-being and quality of life measured by the respondent's subjective evaluation of certain domains (Fernández-Ballesteros, 2011). Such is the case with the CASP-12 scale, which the thesis utilizes to study how four quality of life domains, namely the Control, Autonomy, Pleasure, and Self-Realization domains, affect the stock market participation of the elderly. The thesis proposes that the effect is transmitted through risk behavior and trust. Furthermore, to establish whether the CASP-12 scale is an appropriate measure of the subjective quality of life in a multicountry setting, the thesis first assesses its psychometric properties. Finally, the multicountry setting allows the doctoral dissertation to explore the cross-cultural robustness of the obtained results.

An assessment of the dissertation's contribution to the field of knowledge

By studying the presented research topics and answering the given research questions, the thesis provides several contributions to the relevant field of knowledge. To answer the research questions aligned along the first dimension, the thesis provides two separate bibliometric analyses on the economics of subjective well-being and subjective well-being among the elderly. The respective fields have experienced a massive increase in the number of published articles, as well as the number of citations. Furthermore, research focusing on subjective well-being among the elderly is one of the originators of subjective well-being research in general. This suggests that the aforementioned fields would benefit from an analysis that would provide them with proper historical context as well as identify their potentials for future development. The thesis therefore offers the first quantitative systematic overview of the respective fields. By providing answers on their most important articles, authors, journals, organizations and countries, the thesis offers relevant information for young scholars who have just started studying subjective well-being, as well as scholars with numerous years of experience and published articles.

Several scholars have analyzed the relationship between income and subjective well-being, both on the "micro" and on the "macro" level. While on the "macro" level the ongoing debate regarding the Easterlin paradox (Easterlin, 1974) remains fierce, on the "micro" level scholars are in far greater agreement. However, several research gaps exist that concern the potential biases that affect the relationship between income and subjective well-being, the usage of different economic standing measures, as well as the role of cultural and institutional settings. By studying the effect of economic standing on the subjective well-being of the elderly in a multicountry setting, the dissertation addresses several of these gaps. First, in its operational model specification, the thesis includes both a flow measure as well as a stock measure of economic standing. Second, to our knowledge, the thesis is the first to address several potential sources of bias in the relationship between income and subjective well-being while studying the role of different welfare regimes. Finally, the thesis provides an answer to the question whether the results in the literature regarding the effect of economic standing on subjective well-being are generalizable to different welfare regimes and countries.

What generates demand for specific products is a crucial question for the providers of these products. Furthermore, it has several implications for marketers who target specific individuals. However, while there are several studies that concern the effect of short-term emotions on consumer spending, only a few analyze the effect of long-term subjective well-being on consumer spending. Given the potential impact of subjective well-being on long-term buying behavior, this is somewhat surprising. To our knowledge, only Zhong & Mitchell (2012) and Guven (2012) have studied the effect of subjective well-being on consumption behavior. Both studies have their limitations, as they do not differentiate between different types of products. The thesis is therefore the first attempt to establish a

causal effect of subjective well-being on several types of consumption using a longitudinal design.

While people are advised to reduce risky investments with age, such a strategy may be inappropriate for people with longer life spans or goals expanding beyond their lifetimes (Kim, Hanna, Chatterjee, & Lindamood, 2012). This finding suggests the rise of the importance of the stock market even for older individuals. Since the literature on the effect of subjective well-being on stock market participation remains scarce, the thesis aims to add to it by studying the relationship between subjective quality of life and the stock market participation of people aged 50 and above. To do so, the thesis first assesses the psychometric properties of the CASP-12 scale, which is used by numerous scholars, and then provides new insights regarding its use as a measure of the quality of life in a multicountry setting. Furthermore, the thesis is the first to make a distinction between different subjective quality of life domains while studying their relationship with the stock market participation of people aged 50 and above.

Data and methodology

This dissertation uses several data sources in order to answer the presented research questions. For the bibliometric analyses it utilizes data from the Web of Science database of articles from the following citation indexes: Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Conference Proceedings Citation Index – Science (CPCI-S), and Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH). The database provides all the relevant information on the articles' titles, authors, journals, years of publication, the authors' organizations and countries, key words and abstracts, as well as citation data, thus allowing the use of several bibliometric techniques. To shed light on the effect of economic standing on the subjective well-being of the elderly, as well as the role different welfare regimes play in mitigating this relationship, the thesis employs data from the Survey of Health, Ageing and Retirement in Europe (SHARE). SHARE is a multicountry panel database that covers individuals aged 50 and above. Among other things, it provides micro data on the respondents' financial standing, health, family networks, and subjective well-being. Because it includes several countries, it enables the study of differences among individual welfare regimes and countries. SHARE is also used in analyses of the relationship between subjective quality of life and the stock market participation of the elderly as it contains the CASP-12 scale. The scale consists of 12 items grouped into four quality of life domains, allowing an analysis of the relationship between the four domains and stock market participation. To study the causal effect of subjective well-being on consumption behavior, the thesis utilizes data from the English Longitudinal Study of Ageing (ELSA). Like SHARE, ELSA is a panel survey of individuals aged 50 and above. Due to numerous questions asking respondents about their spending, it allows an investigation of the effect of subjective well-being on several types of consumption.

The thesis employs several methodological approaches. To provide a thorough bibliometric analyses, it utilizes cited references, which are according to Garfield (1979) the most objective measure of an article's importance to current research. It uses bibliographic coupling – a technique that connects sources based on the number of citations they share – to cluster articles, authors, and journals. Moreover, it conducts a co-citation analysis, which connects sources based on how often they are cited together, to address some of the limitations of bibliographic coupling. Because of the potential biases that might affect the ordinary least squares estimates of the effect of income on subjective well-being, the thesis exploits the longitudinal dimension of the dataset and uses instrumental variables for income to address not only unobserved heterogeneity but also the omitted time-varying variables bias. The thesis follows a similar strategy in determining the causal effect of subjective well-being on the consumption of different types of products. Finally, the doctoral dissertation uses structural equation modelling, which encompasses a measurement model and a structural model, to asses the relationship between different subjective quality of life domains and the stock market participation of the elderly.

Structure of the doctoral dissertation

The dissertation is organized as five chapters presented in the format of scientific articles, namely:

- Article 1: The economics of subjective well-being: A bibliometric analysis;
- Article 2: Subjective well-being among the elderly: A bibliometric analysis;
- Article 3: The effect of economic standing on subjective well-being in the context of different welfare regimes;
- Article 4: The effect of subjective well-being on consumer spending;
- Article 5: Subjective quality of life and stock market participation of the elderly: A structural equation modelling approach.

The articles can be read individually, which may lead to repetition when describing the related literature, the data sources used, and the methods. They are followed by a conclusion, which summarizes the findings and assesses the scientific contribution of the thesis to the literature. The thesis is concluded with an extended abstract in the Slovenian language.

1 THE ECONOMICS OF SUBJECTIVE WELL-BEING: A BIBLIOMETRIC ANALYSIS[1]

Abstract

In this article we analyze the economics of subjective well-being through a bibliometric lens. To do so we created a broad dataset of bibliographic data by using the search terms "subjective well-being", "happiness", "life satisfaction" and "positive affect" on the Web of Science webpage and limiting the articles to those published in the research area of business economics. By combining quantitative and qualitative methods, we were able to trace and review the development of subjective well-being research in the field of economics, as well as distinguish the most important articles, authors, journals, organizations and countries in the field. We found a big leap in subjective well-being research after the global financial crisis in 2008, as more and more scholars started to question the approach to well-being of standard economic theory. The still relatively young scientific field keeps expanding and maturing by providing answers to new, as well as old research questions.

Keywords: subjective well-being; happiness studies; life satisfaction; positive affect; bibliometric mapping; bibliographic coupling

JEL Classification: I31

[1] Published as Dominko, M., & Verbič, M. (2019). The economics of subjective well-being: A bibliometric analysis. *Journal of Happiness Studies*, *20*(6), 1973-1994.

1.1 Introduction

The importance of empirical subjective well-being research can be traced to the findings of the moral philosophers of the nineteenth century, specifically Jeremy Bentham (1776) and John Stuart Mill (1863) and their "greatest happiness principle", by which they define utility as human happiness and conclude that society should aim at the "greatest happiness for the greatest number". Because happiness is considered by many to be the ultimate goal in life, subjective well-being became an important line of research in different research contexts throughout various disciplines, such as psychology, sociology, medicine or gerontology. The growing impact of subjective well-being research can be seen in the increasing number of national and cross-national surveys that include subjective well-being measures – Dolan (2008) identifies 19 such surveys – as well as policy-making issues that found their way into public discussion.

Empirical subjective well-being research has been linked to economics already in Richard A. Easterlin's seminal 1974 work "Does economic growth improve the human lot? Some empirical evidence" (Easterlin, 1974). At the time, only a few researchers followed his ideas due to the rejection of subjective measures of well-being by standard economic theory. Orthodox or neoclassical economics is concerned with the preference satisfaction account of well-being, where, according to MacKerron (2012), well-being consists in the freedom and resources to meet one's own wants and desires, steering away from subjective measures and interpersonal comparisons. It was not until 1997 and a symposium published by the *Economic Journal* that general awareness within the economic sphere regarding subjective well-being was raised, which resulted in economists conducting empirical research on the determinants of subjective well-being in different countries and periods (Frey & Stutzer, 2002). After the global financial crisis in 2008, research on the economics of subjective well-being surged. Stiglitz et al. (2009) attribute the increased interest in subjective well-being to the increasing gap found between information on well-being contained in aggregated data and people's own evaluation of it.

In this article, we aim to provide a systematic overview of subjective well-being research in the field of economics by using bibliometric methods. We draw our bibliographic "metadata" from the Web of Science core collection, which allows us to create a relatively clean database of articles and citation data. In order to identify the most important articles, authors, journals, organizations and countries in subjective well-being research in the field of economics, we use quantitative scientometric methods. We furthermore combine quantitative and qualitative methods to understand the development and historic context of the field. The rest of the article is organized as follows. Section 2 presents the data and methods used to analyze the economics of subjective well-being. Section 3 provides the results and findings of our analysis, while section 4 concludes the article.

1.2 Data and Methodology

Diener, Suh, Lucas, & Smith (1999) define subjective well-being as "a broad category of phenomena that include people's emotional responses, domain satisfactions, and global judgements of their lives" (p. 277). As such, subjective well-being is not a monolithic concept, as pointed out by MacKerron (2012), but more of an umbrella term for the distinct ways in which we evaluate our lives. Consequently, the terminology in the scientific field of subjective well-being is far from unified. When creating the dataset, we therefore had to strike a balance between missing out on important but highly specialized concepts, on the one hand, and encompassing other scientific research fields not primarily concerned with the economics of subjective well-being, on the other.

To gather all the relevant information about articles and cited references we used the Web of Science database of articles from the following citation indexes: Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Conference Proceedings Citation Index – Science (CPCI-S) and Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH). We based our Web of Science topic searches on the findings of Kullenberg & Nelhans (2015), who in their article "The happiness turn? Mapping the emergence of 'happiness studies' using cited references" identified four core concepts in happiness research. Those are "happiness", "life satisfaction", "positive affect" and, finally, "subjective well-being", which in Ed Diener's 1984 article "Subjective Well-Being" (Diener, 1984) started a consolidation of the aforementioned terms by providing a literature review on the findings in the areas of measurement, causal factors and theory. Our inquiry into the identified four core concepts yielded 33,520 articles. We then limited our search to articles in the business economics research area. This reduced our database to 2,939 articles published in the period from 1915 to 2016. The database contains information on the article's title, author, journal, year of publication, author's organization, author's country, key words and abstract. It also contains citation data.

Because our database of articles is relatively small, we were able to qualitatively check whether we were able to include all the relevant articles, as well as refrain from broadening our database to such an extent that it would distort our results. The co-occurrence matrix in Table 1.1 shows the occurrence and overlap of the four terms. As can be seen, the four terms are not used synonymously and the majority of articles used the term "happiness", followed by "positive affect", "life satisfaction" and "subjective well-being". The table furthermore shows that the term with the least overlap is "positive affect", while "subjective well-being" appears in more articles together with "happiness" than on its own. To check whether our database is too limited, we replaced the search term "subjective well-being" with a more general search term: "well-being". This increased the database to 5,940 articles, of which the majority was not related to the economics of subjective well-being. We repeated the exercise by including the search term "quality of life", which

yielded similar results. Based on these results we can conclude that we were able to obtain a database of relevant articles.

Table 1.1: Co-occurrence matrix of terms used in the economics of subjective well-being research (an occurrence or co-occurrence is identified when no other of the remaining four search terms is included)

	Happiness	**Subj. well-being**	**Life satisfaction**	**Positive affect**
Happiness	*1160*	166	252	30
Subj. well-being	166	*114*	32	4
Life satisfaction	252	32	*449*	7
Positive affect	30	4	7	*548*

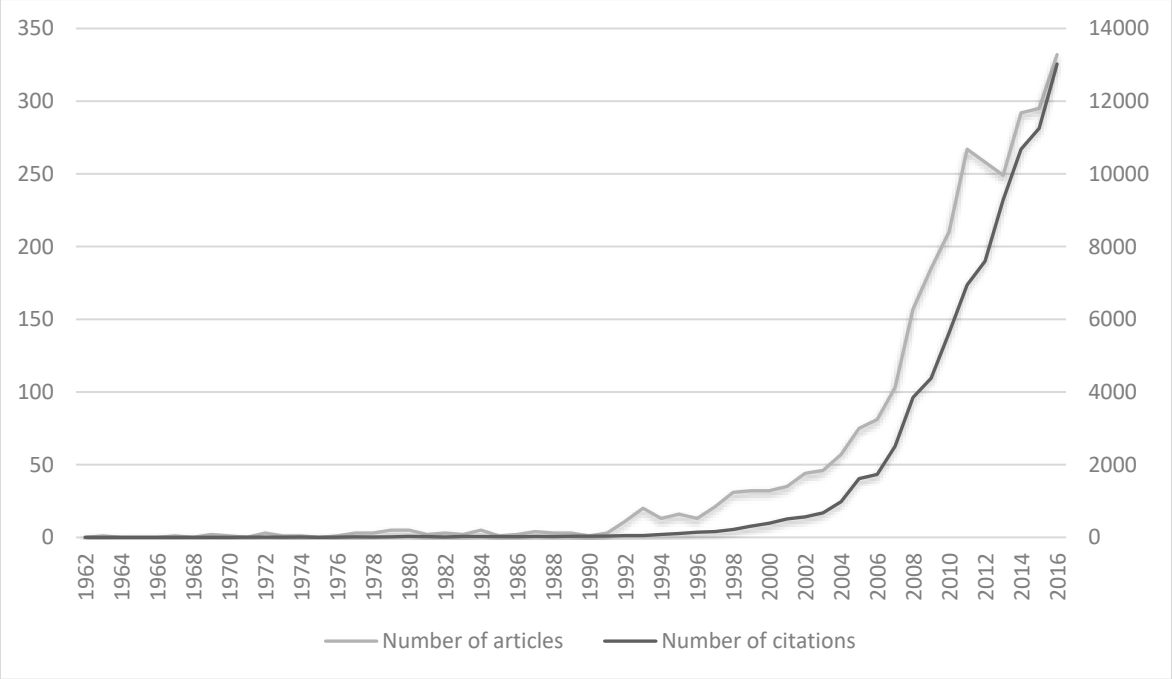
Our analysis is based on cited references, which Small (1978) identifies not only as a sign for the physical document itself, but also a symbol for a concept. Because scholars refer to older articles in order to support their notion, a citation can be seen as an expression of the importance of an article. Therefore, according to Garfield (1979), the total amount of such expressions is the most objective measure of an article's importance to current research. We use bibliographic coupling, a technique introduced by Kessler (1963), to cluster articles, authors and journals. Bibliographic coupling connects sources on the basis of the number of citations they share, meaning that the more two bibliographies overlap, the stronger their connection and the closer they are to each other (Župić & Čater, 2015). Although bibliographic coupling as a clustering technique is not as widespread as co-citation analysis, it addresses many of the latter's limitations. Most importantly, bibliographic coupling does not require new publications to accumulate, as it directly maps recent publications based on how they cite rather than older publications that are being cited (Zhao & Strotmann, 2008). As a result, bibliographic coupling is more suitable for clustering emerging and smaller subfields, such as ours. Furthermore, studies such as the ones by Small (1999) or Boyack & Klavans (2010) have shown that bibliographic coupling is more accurate in representing a research front than co-citation analysis.

We formed and visualized clusters with the VOSviewer software package, which constructs a map in three steps. In the first step, VOSviewer requires a similarity matrix as input, which it obtains from a co-occurrence matrix. To normalize the latter, it uses the proximity index, which is often referred to as the association strength. In the second step, VOSviewer constructs a map based on the similarity matrix obtained in the first step. Basically, it locates items with a higher degree of similarity closer to each other by minimizing the weighted sum of the squared Euclidean distances between all pairs of items. In the final step, VOSviewer applies three transformations, namely translation , rotation and reflection, in order to produce consistent results (for a more detailed discussion on the VOSviewer sofware package, consult van Eck & Waltman (2010)).

1.3 Results

The strand of research concerning the economics subjective well-being is still relatively young. It started expanding in the second half of the 1990s, when the first studies on the determinants of subjective well-being started to emerge, and accelerated after the global financial crisis in 2008. Figure 1.1 shows that in the last eight years the number of articles in the studied field more than doubled: from 157 articles in 2008 to 332 articles in 2016. Furthermore, the number of citations increased even more, from 3,851 citations in 2008 to 13,023 citations in 2016. We divide this section into two parts. In the first part, we follow the development and dynamics of the field, and in the second part, we provide a systematic overview of the most important articles, authors, journals, organizations and countries in the economics of subjective well-being research.

Figure 1.1: The number of articles and the number of citations per year on the economics of subjective well-being



1.3.1 The (r)evolution of the economics of subjective well-being

To understand the development and dynamics of the scientific field, we divided articles into different time periods. The first period consists of articles published from 1915 to 1996, while the rest of the articles are divided into four-year periods ranging from 1997 until 2016. Such a division of articles is motivated by the small number of articles published in the first period, before the symposium published by the *Economic Journal* in 1997. This is shown in Table 1.2, which also reveals that the period with the most articles is the one from 2013 to 2016. The period from 2005 to 2008 has the biggest sum of citations and the highest h-index, while the period from 1997 to 2000 has the highest average number of citations per item.

Table 1.2: The number of articles, sum of citations, average citations per article and h-index for the studied periods

Period	1915–1996	1997–2000	2001–2004	2005–2008	2009–2012	2013–2016	Total
Results found	137	116	182	416	920	1168	2,939
Sum of Cit.	8,855	14,366	19,406	24,090	18,842	5,721	91,280
Average Cit.	64.6	123.8	106.6	57.9	20.5	4.9	31.1
h-index	46	56	74	84	63	29	135

The initial period from 1915 until 1996 can be considered as a basis period for all the research conducted afterwards. It is marked by articles on the relation between income and happiness, such as the ones written by Easterlin (1974; 1995), and the establishment of the Easterlin paradox, a concept that suggests that an increase in average income does not lead to an increase in average well-being. This concept was later studied and criticized numerous times. Furthermore, articles analyzed job satisfaction and life satisfaction, as well as the relationship between the two (Adams, King, & King, 1996; Judge & Watanabe, 1993; Tait, Padgett, & Baldwin, 1989) and the role of positive affect in different organizational contexts (Isen & Baron, 1991; Staw & Barsade, 1993). This strand of literature remained strong in the period from 1997 to 2000 (Edwards & Rothbard, 2000; Judge, Locke, Durham, & Kluger, 1998; Kossek & Ozeki, 1998; Tepper, 2000), while articles on the income-happiness relation were not as prominent. However, research still focused on the effect of economic performance and unemployment on happiness (Oswald, 1997; Winkelmann & Winkelmann, 1998). Furthermore, a strand of literature analyzing the effect of emotions in marketing and consumer decision-making gained prominence (Bagozzi, Gopinath, & Nyer, 1999; Shiv & Fedorikhin, 1999).

The period from 2001 to 2004 is marked by some of the most cited articles in the economics of subjective well-being research. Studies were conducted on how different economic indicators, such as income, inequality, unemployment, inflation etc., affect happiness (Alesina, Di Tella, & MacCulloch, 2004; Blanchflower & Oswald, 2004; Di Tella, MacCulloch, & Oswald, 2001; Easterlin, 2001). Research on the effect of income on subjective well-being remained particularly strong in the subsequent period (Clark, Frijters, & Shields, 2008; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Stevenson & Wolfers, 2008). In the period from 2005 to 2008, articles also studied the role of affect in different organizational contexts (Amabile, Barsade, Mueller, & Staw, 2005; Baron, 2008) and the work-family conflict (Ford, Heinen, & Langkamer, 2007; Judge, Ilies, & Scott, 2006). In the last two periods after the crisis in 2008, researchers started focusing even more on topics beyond GDP, such as genuine progress, sustainable development and economic freedom (Fleurbaey, 2009; Hall & Lawson, 2014; Kubiszewski et al., 2013), while also expanding the literature on topics such as the role of subjective well-being in consumption behavior, entrepreneurship and different organizational contexts (Alba & Williams, 2013; Hülsheger, Alberts, Feinholdt, & Lang, 2013; Nambisan & Baron, 2013).

The development of the economics of subjective well-being can also be traced by the most important keywords used in the articles. Figures 1.2 and 1.3 present the most important keywords before the crisis in 2008 and after the crisis, as the beginning of the crisis marks an important structural break in this strand of research. Keywords that appeared at least three times are presented. Furthermore, the four keywords that were used as search terms, namely "subjective well-being", "happiness", "life satisfaction" and "positive affect", were excluded from the analysis. The figures reveal a big increase in the number of keywords, which indicates both an increase in the number of articles and a broadening of the scientific field. Some of the most important topics remained the same even after the crisis and can be characterized by the following keywords: "income", "satisfaction", "unemployment", "performance", "model", "job satisfaction", "behavior", etc. On the other hand, numerous new topics emerged that were previously not studied or were analyzed only briefly. A closer look even reveals a new cluster of articles, colored purple in Figure 1.3, which consists of keywords that are mostly used in studies by ecological economists. These results indicate a bright future for the economics of subjective well-being, mainly due to its multidisciplinary nature, advances in data availability and new methodological findings. We believe that there is still scope for research on the predictors of subjective well-being, as well as the interactions among them. More importantly, however, scholars should embrace the availability of longitudinal datasets and use more sophisticated methodologies to determine the direction of causality, due to biunivocal causality and endogeneity being particularly severe in subjective well-being studies (Becchetti & Pelloni, 2013). By determining the correct direction of causality, the importance of subjective well-being studies for policy implications would increase, as policy measures may only have an effective impact on subjective well-being drivers in the case of direct causality.

Figure 1.2: Most important keywords in the economics of subjective well-being research before the global financial crisis in 2008

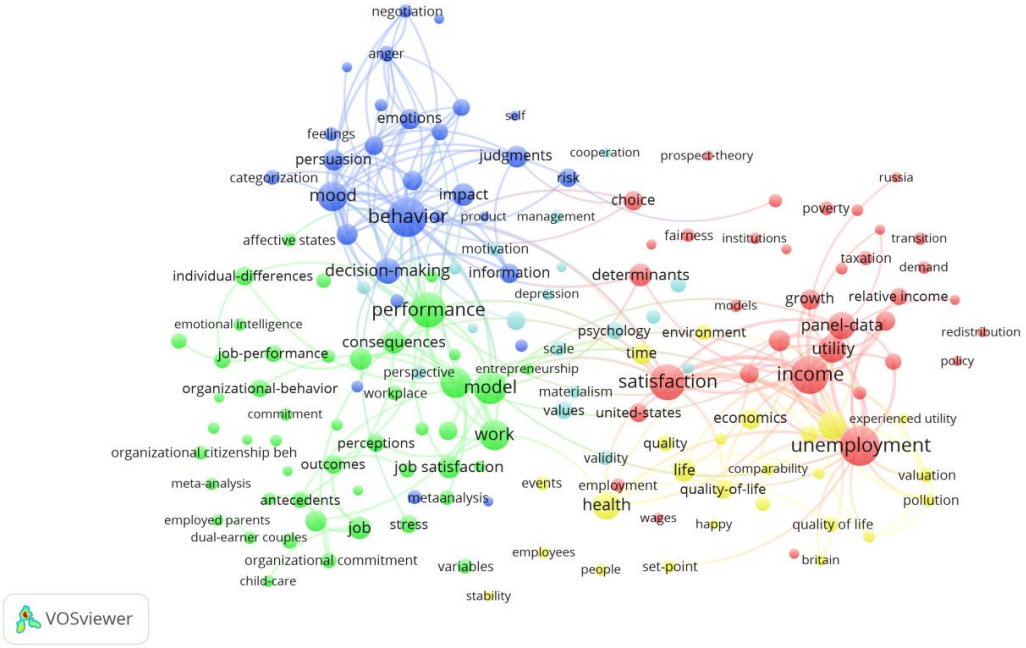
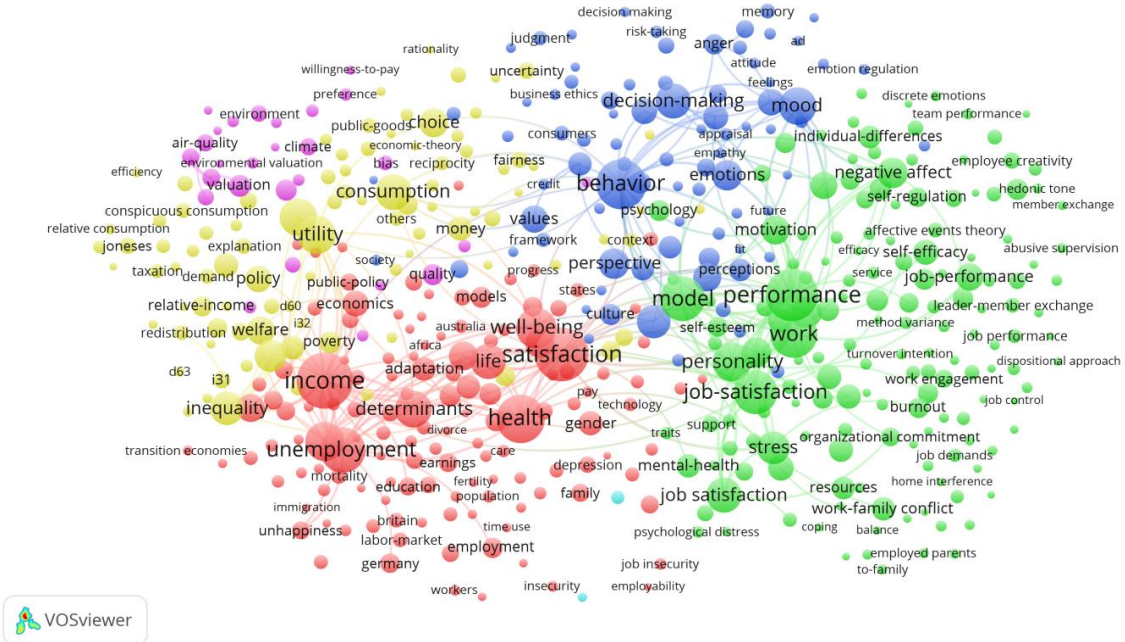


Figure 1.3: Most important keywords in the economics of subjective well-being research after the global financial crisis in 2008

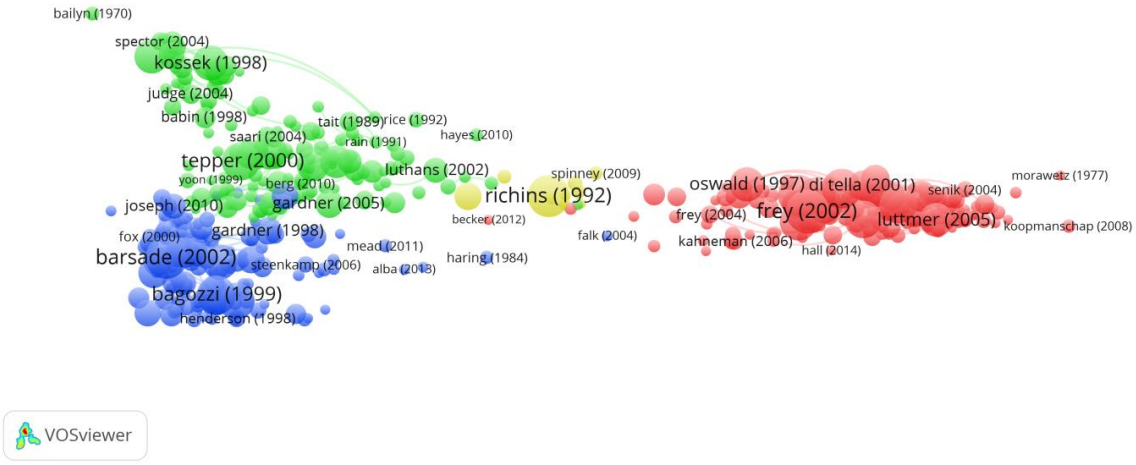


1.3.2 A systematic overview of the field

1.3.2.1 Articles

In order to understand which articles are the most important in the economics of subjective well-being research, and which topics they are concerned with, we used bibliographic coupling to obtain clusters of articles based on the references they share. Figure 1.4 shows that we can distinguish between three big and one small cluster of articles. The red cluster mainly represents articles that are concerned with the effect of income on subjective well-being, macroeconomics and happiness, as well as review articles on happiness economics. Furthermore, the cluster contains articles on the measurement and development of subjective well-being, and the interpretation and maximization of utility. The green cluster of articles is concerned with topics that concern the dynamics of job satisfaction and life satisfaction. It also contains articles that deal with organizational behavior. The blue cluster contains articles that deal with the role of positive affect in different contexts, such as decision-making, risk-taking or consumer behavior. It furthermore contains articles that deal with the effect of emotions on different outcomes. The smaller yellow cluster of articles concerns the connection between materialism and subjective well-being. The links between the articles indicate the 200 strongest connections among them. We observe that the connection between the blue and green cluster is relatively strong, while the connections between the remaining clusters are substantially less profound.

Figure 1.4: Clusters of articles in the economics of subjective well-being research



The article with the most citations in the red cluster, as well as overall, is "What Can Economists Learn from Happiness Research" by Frey & Stutzer (2002) with 925 citations. The article reviews happiness research, which provides new insights on issues analyzed in economics, especially the effect of income on happiness. It is followed by Easterlin's (1995) article "Will raising incomes of all increase the happiness of all" with 866 citations.

The article argues that raising the income of all does not increase the happiness of all, due to an increase in material norms on which judgments of well-being are based on. The third article with the most citations in the red cluster is "Well-being over time in Britain and the USA" by Blanchflower & Oswald (2004) with 790 citations, which reflects on the happiness of Americans and the British over time. On average, the article with the most citations per year in the red cluster is "Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox" by Clark, Frijters & Shields (2008) with 69.6 citations per year, which also takes under scrutiny the income-happiness relation. It is followed by a review article by Dolan, Peasgood, & White (2008) titled "Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being" with 63.3 citations per year, and the already mentioned article by Frey & Stutzer (2002) with 60.3 citations per year.

The article with the most citations in the green cluster of articles is only the seventh overall with 746 citations. In his article "Consequences of Abusive Supervision", Tepper (2000) studies, among other things, the effect of abusive supervision on job and life satisfaction. The second article with the most citations in the green cluster is "Five-Factor Model of Personality and Job Satisfaction: A Meta-Analysis" by Judge et al. (2002) with 621 citations, which reports the results of a meta-analysis linking traits from the five-factor model of personality to job satisfaction. The third article, with 620 citations, is also a meta-analysis article, written by Kossek & Ozeki (1998) and titled "Work-Family Conflict, Policies, and The Job-Life Satisfaction Relationship: A Review and Directions for Organizational Behavior-Human Resources Research" – it studies, among other things, the job-life satisfaction relation. The article with the most citations by Tepper (2000) is also the one with the most citations per year with 41.4 citations. It is followed by the already mentioned article by Judge et al. (2002) with 38.8 citations per year and the article titled "The core self-evaluations scale: Development of a measure" by Judge, Erez, Bono & Thoresen (2003) with 35.5 citations per year. The article reports the results of different studies that tested the validity of the Core Self-Evaluation Scale (CSES).

In the blue cluster, the article with the most citations is "The Ripple Effect: Emotional Contagion and Its Influence on Group Behavior" by Barsade (2002) with 890 citations, which studies the transfer of moods among people in a group and its influence on working group dynamics. It is followed by the article titled "The role of emotions in marketing" by Bagozzi, Gopinath & Nyer (1999), which has 752 citations and analyzes primarily the role of emotions as markers, mediators and moderators in consumer responses. The third article with the most citations in the blue cluster is "Heart and Mind in Conflict: the Interplay of Affect and Cognition in Consumer Decision Making" by Shiv & Fedorikhin (1999) with 666 citations. The article studies, among other things, the role of positive affect in consumer decision-making. The article with the most citations per year is the one by Barsade (2002) with 55.6 citations. It is followed by the already presented article by Bagozzi et al. (1999) with 39.6 citations per year and the article by Amabile et al. (2005)

titled “Affect and Creativity at Work”, which studies the relation between affect and creativity at work and is on average cited 35.2 times per year.

There are only two articles in the smaller yellow cluster that make the list of the 50 most cited articles on subjective well-being in the field of economics, which is shown in Table 1.3. They are both concerned with materialism. The first article, namely “A Consumer Values Orientation for Materialism and Its Measurement – Scale Development and Validation” by Richins & Dawson (1992), which has 903 citations and 34.7 citations per year, concerns the development of a values-oriented materialism scale with three components – acquisition centrality, acquisition as the pursuit of happiness, and possession-defined success. The second article, “Materialism and Well-Being: A Conflicting Values Perspective” by Burroughs & Rindfleisch (2002), which has 377 citations and 23.6 citations per year, concerns the relation between materialism and important life values.

To check whether the presented results are robust to self-citations, we provide information on the share of self-citations in Table 1.3, where we define self-citations as citations when an author cites himself. These results are to a certain extent biased, because articles with more authors are expected to have a greater number of self-citations. Still, the results reveal that self-citations do not significantly change the research landscape and represent on average only 3 percent of all citations.

Table 1.3: 50 most cited articles in the economics of subjective well-being research

Authors	Article	Journal	Year	Citations	R^2	Cit./year	R	Self-cit.[3]	R
Frey, BS; Stutzer, A	What can economists learn from happiness research?	*Journal of Economic Literature*	2002	965	*1*	60.31	*3*	4.4	*17*
Richins, ML; Dawson, S	A consumer values orientation for materialism and its measurement - scale development and validation	*Journal of Consumer Research*	1992	903	*2*	34.73	*19*	1.0	*40*
Barsade, SG	The ripple effect: Emotional contagion and its influence on group behavior	*Administrative Science Quarterly*	2002	890	*3*	55.62	*6*	0.8	*44*
Easterlin, RA	Will raising the incomes of all increase the happiness of all	*Journal of Economic Behavior & Organization*	1995	866	*4*	37.65	*14*	0.5	*49*
Blanchflower, DG; Oswald, AJ	Well-being over time in Britain and the USA	*Journal of Public Economics*	2004	790	*5*	56.43	*5*	3.7	*23*
Bagozzi, RP; Gopinath, M; Nyer, PU	The role of emotions in marketing	*Journal of The Academy of Marketing Science*	1999	752	*6*	39.58	*11*	0.8	*43*
Tepper, BJ	Consequences of abusive supervision	*Academy of Management Journal*	2000	746	*7*	41.44	*9*	2.1	*30*
Kahneman, D; Krueger, AB	Developments in the measurement of subjective well-being	*Journal of Economic Perspectives*	2006	712	*8*	59.33	*4*	1.1	*38*
Easterlin, RA	Income and happiness: Towards a unified theory	*Economic Journal*	2001	703	*9*	41.35	*10*	0.7	*45*
Clark, AE.; Frijters, P; Shields, MA	Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles	*Journal of Economic Literature*	2008	696	*10*	69.60	*1*	4.5	*16*
Blanchflower, DG; Oswald, AJ	What makes an entrepreneur?	*Journal of Labor Economics*	1998	696	*11*	34.80	*18*	0.9	*42*
Shiv, B; Fedorikhin, A	Heart and mind in conflict: The interplay of affect and cognition in consumer decision making	*Journal of Consumer Research*	1999	666	*12*	35.05	*17*	1.4	*34*
Dolan, P; Peasgood, T; White, M	Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being	*Journal of Economic Psychology*	2008	633	*13*	63.30	*2*	4.6	*15*

(table continues)

[2] *R* stands for the rank of the article, author, journal or organization in all the tables in the article.

[3] Self-cit. represents the share of self-citations in all citations in all the tables in the article (%).

(continued)

Judge, TA; Heller, D; Mount, MK	Five-factor model of personality and job satisfaction: A meta-analysis	*Journal of Applied Psychology*	2002	621	*14*	38.81	*13*	4.0	*19*
Kossek, EE; Ozeki, C	Work-family conflict, policies, and the job-life satisfaction relationship: A review and directions for organizational behavior human resources research	*Journal of Applied Psychology*	1998	620	*15*	31.00	*21*	2.4	*29*
Jones, GR; George, JM	The experience and evolution of trust: Implications for cooperation and teamwork	*Academy of Management Review*	1998	610	*16*	30.50	*23*	0.5	*48*
Oswald, AJ	Happiness and economic performance	*Economic Journal*	1997	597	*17*	28.43	*29*	4.0	*20*
Ferrer-i-Carbonell, A; Frijters, P	How important is methodology for the estimates of the determinants of happiness?	*Economic Journal*	2004	585	*18*	41.79	*8*	2.9	*26*
Edwards, JR; Rothbard, NP	Mechanisms linking work and family: Clarifying the relationship between work and family constructs	*Academy of Management Review*	2000	585	*19*	32.50	*20*	1.2	*36*
Luttmer, EFP	Neighbors as negatives: Relative earnings and well-being	*Quarterly Journal of Economics*	2005	563	*20*	43.31	*7*	0.0	*50*
Judge, TA; Locke, EA; Durham, CC; Kluger, AN	Dispositional effects on job and life satisfaction: The role of core evaluations	*Journal of Applied Psychology*	1998	534	*21*	26.70	*31*	6.7	*3*
Judge, TA; Erez, A; Bono, JE; Thoresen, CJ	The core self-evaluations scale: Development of a measure	*Personnel Psychology*	2003	533	*22*	35.53	*15*	5.1	*9*
Winkelmann, L; Winkelmann, R	Why are the unemployed so unhappy? Evidence from panel data	*Economica*	1998	494	*23*	24.70	*38*	0.6	*47*
Di Tella, R; MacCulloch, RJ; Oswald, AJ	Preferences over inflation and unemployment: Evidence from surveys of happiness	*American Economic Review*	2001	469	*24*	27.59	*30*	0.6	*46*
George, JM	Emotions and leadership: The role of emotional intelligence	*Human Relations*	2000	469	*25*	26.06	*34*	6.0	*5*
Amabile, TM; Barsade, SG; Mueller, JS; Staw, BM	Affect and creativity at work	*Administrative Science Quarterly*	2005	458	*26*	35.23	*16*	2.6	*28*
Pugh, SD	Service with a smile: Emotional contagion in the service encounter	*Academy of Management Journal*	2001	449	*27*	26.41	*32*	1.3	*35*
Frey, BS; Stutzer, A	Happiness, economy and institutions	*Economic Journal*	2000	424	*28*	23.56	*40*	5.7	*6*
Alesina, A; Di Tella, R; MacCulloch, R	Inequality and happiness: Are Europeans and Americans different?	*Journal of Public Economics*	2004	419	*29*	29.93	*25*	1.0	*41*

(table continues)

(continued)

Judge, TA; Ilies, R	Relationship of personality to performance motivation: A meta-analytic review	*Journal of Applied Psychology*	2002	406	*30*	25.38	*35*	3.7	*22*
Gardner, WL; Avolio, BJ; Luthans, F; May, DR; Walumbwa, F	Can you see the real me? A self-based model of authentic leader and follower development	*Leadership Quarterly*	2005	398	*31*	30.62	*22*	10.6	*1*
Oliver, RL; Rust, RT; Varki, S	Customer delight: Foundations, findings, and managerial insight	*Journal of Retailing*	1997	385	*32*	18.33	*46*	1.0	*39*
Burroughs, JE; Rindfleisch, A	Materialism and well-being: A conflicting values perspective	*Journal of Consumer Research*	2002	377	*33*	23.56	*41*	3.4	*24*
Di Tella, R; MacCulloch, RJ; Oswald, AJ	The macroeconomics of happiness	*Review of Economics and Statistics*	2003	371	*34*	24.73	*36*	4.6	*14*
Gardner, WL; Avolio, BJ	The charismatic relationship: A dramaturgical perspective	*Academy of Management Review*	1998	368	*35*	18.40	*45*	5.4	*8*
Helliwell, JF	How's life? Combining individual and national variables to explain subjective well-being	*Economic Modelling*	2003	365	*36*	24.33	*39*	1.4	*33*
Carnevale, PJD; Isen, AM	The influence of positive affect and visual access on the discovery of the integrative solutions in bilateral negotiation	*Organizational Behavior and Human Decision Processes*	1986	348	*37*	10.88	*50*	4.9	*11*
Law, KS; Wong, CS; Song, LJ	The construct and criterion validity of emotional intelligence and its potential utility for management studies	*Journal of Applied Psychology*	2004	346	*38*	24.71	*37*	4.6	*13*
Ferrer-i-Carbonell, A	Income and well-being: an empirical analysis of the comparison income effect	*Journal of Public Economics*	2005	340	*39*	26.15	*33*	1.5	*32*
Adams, GA; King, LA; King, DW	Relationships of job and family involvement, family social support, and work-family conflict with job and life satisfaction	*Journal of Applied Psychology*	1996	339	*40*	15.41	*47*	1.2	*37*
Ford, MT.; Heinen, BA.; Langkamer, KL	Work and family satisfaction and conflict: A meta-analysis of cross-domain relations	*Journal of Applied Psychology*	2007	332	*41*	30.18	*24*	1.5	*31*
Luthans, F	Positive organizational behavior: Developing and managing psychological strengths	*Academy of Management Executive*	2002	322	*42*	20.12	*43*	9.6	*2*

(table continues)

(continued)

Joseph, DL.; Newman, DA	Emotional Intelligence: An Integrative Meta-Analysis and Cascading Model	*Journal of Applied Psychology*	2010	316	*43*	39.50	*12*	4.1	*18*
Isen, AM; Baron, RA	Positive affect as a factor in organizational-behavior	*Research in Organizational Behavior*	1991	300	*44*	11.11	*49*	4.0	*21*
George, JM; Zhou, J	Understanding when bad moods foster creativity and good ones don't: The role of context and clarity of feelings	*Journal of Applied Psychology*	2002	299	*45*	18.69	*44*	4.7	*12*
Baron, RA	The role of affect in the entrepreneurial process	*Academy of Management Review*	2008	296	*46*	29.60	*26*	6.4	*4*
Staw, BM; Barsade, SG	Affect and managerial performance - a test of the sadder-but-wiser vs happier-and-smarter hypotheses	*Administrative Science Quarterly*	1993	294	*47*	11.76	*48*	3.4	*25*
Judge, TA; Bono, JE; Erez, A; Locke, EA	Core self-evaluations and job and life satisfaction: The role of self-concordance and goal attainment	*Journal of Applied Psychology*	2005	292	*48*	22.46	*42*	5.5	*7*
Deaton, A	Income, health, and well-being around the world: Evidence from the Gallup World Poll	*Journal of Economic Perspectives*	2008	289	*49*	28.90	*27*	2.8	*27*
Grant, AM	Does intrinsic motivation fuel the prosocial fire? Motivational synergy in predicting persistence, performance, and productivity	*Journal of Applied Psychology*	2008	285	*50*	28.50	*28*	4.9	*10*

1.3.2.2 Authors

The most important authors can be placed into two bigger clusters, as seen in Figure 1.5, which maps all the authors with at least five articles and at least 25 citations in the economics of subjective well-being research. While the authors in the red cluster are mostly concerned with the effect of income and other macroeconomic variables on subjective well-being, the authors in the green cluster are concerned with the role of positive affect in different settings and on job satisfaction. The links between authors reveal that the two clusters are quite far apart, as the strongest connections can only be found within each cluster.

Figure 1.5: Clusters of authors in the economics of subjective well-being research

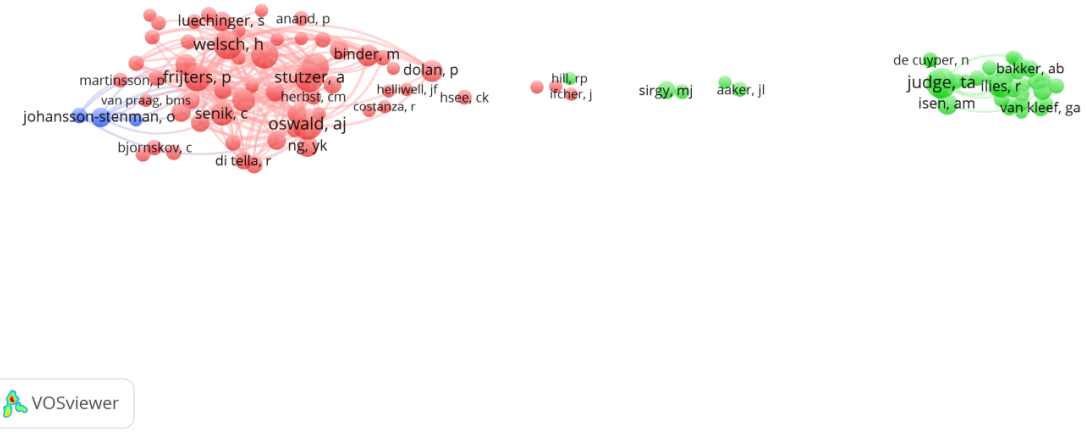


Table 1.4, which lists the 25 authors with the most articles in the economics of subjective well-being research, reveals that the author with the most articles is Timothy A. Judge with 26 articles. He is followed by Andrew J. Oswald with 25 articles, Alois Stutzer with 23 articles, and Heinz Welsch with 23 articles. Judge, Oswald and Stutzer are also the three authors with the most citations in the economics of subjective well-being research. Judge's most important work concerns job satisfaction, Oswald's research concerns primarily the relation between different macroeconomic variables and happiness, while Stutzer studies the effect of institutional factors on subjective well-being. The author with the most citations per article is Richard A. Easterlin, who devoted his research to the income-happiness relation. He is followed by David G. Blanchflower, whose research considers the income-happiness relation, as well as the relation between entrepreneurship and happiness, and the already mentioned Timothy A. Judge. Self-citations, which are in Table 1.4 defined as the total number of citations minus the citations from the authors' articles in

the set, represent on average approximately 3 percent of all citations. The only author to exceed the 10 percent share of self-citations is Martin Binder with 13.9 percent.

Table 1.4: Top 25 authors with the most published articles in the economics of subjective well-being research

Author	**Articles**	***R***	**Citations**	***R***	**Cit./article**	***R***	**Self-cit. (%)**	***R***
Judge, TA	26	*1*	4,502	*1*	173.2	*3*	1.0	*21*
Oswald, AJ	25	*2*	3,773	*2*	150.9	*5*	1.8	*14*
Stutzer, A	23	*3*	2,694	*3*	117.1	*7*	1.6	*17*
Welsch, H	23	*4*	559	*17*	24.3	*21*	7.2	*3*
Frey, BS	21	*5*	2,332	*4*	111.0	*9*	1.5	*18*
Powdthavee, N	21	*6*	509	*18*	24.2	*23*	4.4	*7*
Frijters, P	20	*7*	2,207	*5*	110.4	*10*	2.0	*10*
Senik, C	15	*8*	561	*16*	37.4	*17*	3.3	*8*
Clark, AE	14	*9*	1,467	*9*	104.8	*12*	1.3	*19*
Dolan, P	13	*10*	938	*14*	72.2	*14*	1.7	*15*
Binder, M	13	*11*	168	*24*	12.9	*24*	13.9	*1*
Isen, AM	12	*12*	2,016	*6*	168.0	*4*	0.8	*23*
Ilies, T	12	*13*	1,389	*10*	115.8	*8*	0.5	*24*
Shields, MA	12	*14*	1313	*12*	109.4	*11*	1.6	*16*
Ng, YK	12	*15*	291	*23*	24.3	*22*	5.6	*4*
Baron, RA	11	*16*	1,123	*13*	102.1	*13*	1.9	*12*
Luechinger,S	11	*17*	565	*15*	51.4	*15*	2.1	*9*
Knight, J	11	*18*	492	*19*	44.7	*16*	4.4	*6*
Johansson-Stenman, O	11	*19*	346	*21*	31.5	*19*	9.0	*2*
Easterlin, RA	10	*20*	1,879	*7*	187.9	*1*	0.4	*25*
Blanchflower, DG	10	*21*	1,845	*8*	184.5	*2*	0.9	*22*
Ferrer-I-Carbonell, A	10	*22*	1,373	*11*	137.3	*6*	1.1	*20*
Graham, C	10	*23*	364	*20*	36.4	*18*	1.9	*11*
Sonnentag, S	10	*24*	311	*22*	31.1	*20*	1.9	*13*
Smyth, R	10	*25*	118	*25*	11.8	*25*	4.8	*5*

1.3.2.3 Journals

Figure 1.6 shows a map of all the journals that published at least five articles in the economics of subjective well-being research and were cited at least 25 times. The map shows that we can clearly distinguish between two clusters of journals. A qualitative analysis of the articles published in these journals reveals that one cluster of journals is primarily concerned with topics we could label "economics", while the second cluster of journals is concerned with topics we could label "business". The leading journals in the "economics" cluster are the *Journal of Economic Psychology*, *Ecological Economics* and the *Economic Journal*, while the leading journals in the "business" cluster are the *Journal of Applied Psychology*, the *Journal of Consumer Research* and the *Journal of Organizational Behavior*. Although the links among the journals indicate little interaction between clusters, we can observe that there are some strong connections, especially between journals in the "business" cluster and the *Journal of Economic Psychology*, which can be thought of as a bridge between the two clusters.

Figure 1.6: Clusters of journals in the economics of subjective well-being research

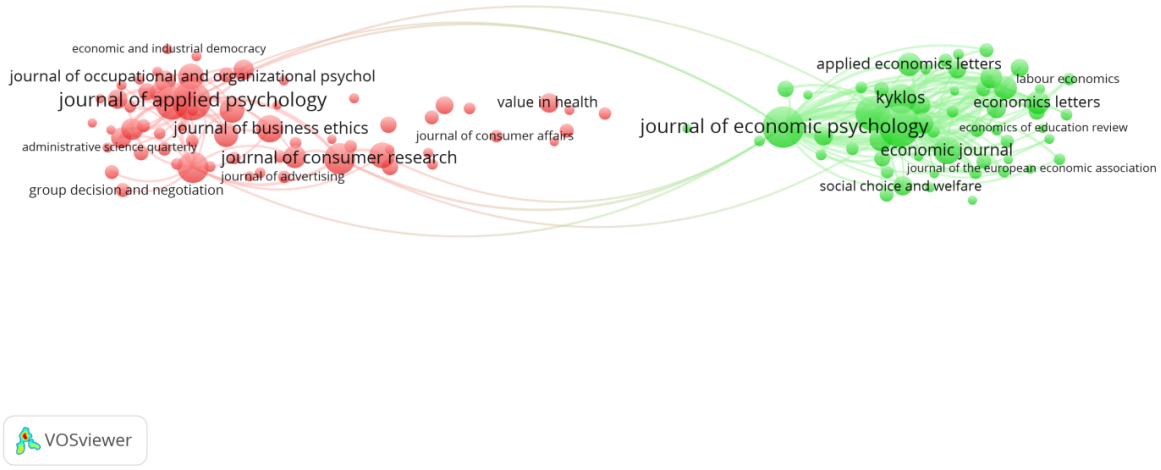


Table 1.5 shows the top 25 journals in the economics of subjective well-being research based on the number of articles published in the field. It furthermore shows the total number of citations of these articles, the average citations per article, impact factors of the journals for the last five years, as well as the share of self-citations in the impact factors of the journals in 2016. The *Journal of Economic Psychology* published 96 articles; it is followed by the *Journal of Economic Behavior & Organization* with 95 published articles and the *Journal of Applied Psychology*, which published 84 articles. The *Journal of Applied Psychology* is also the journal with the most citations. Articles on subjective well-being in the field of economics in this journal were cited 9,217 times. This is more than twice the amount of citations acquired by the second most cited journal, which is the *Journal of Consumer Research* with 4,638 citations. On average, the journal with the most citations is the *Academy of Management Journal* with 114.0 citations, followed by the *Journal of Applied Psychology* with 109.7 citations and the *Economic Journal* with 105.4 citations. A comparison of the journals based on their average impact factor over the last five years, a measure of the frequency with which the average article was cited, reveals a domination of the *Academy of Management Journal*. With an average impact factor of 11.901 over the last five years, it exceeds the second highest impact factor, which belongs to the *Journal of Applied Psychology*, by 5.011. A comparison of the impact factors with and without self-citations in 2016 reveals that, on average, the share of self-citations in the impact factors of the journals accounts for approximately 10 percent. The three journals with the largest share of self-citations in their impact factor in 2016 were the *Journal of Business Research* (30.8%), *Kyklos* (22.6%), and *Psychology & Marketing* (18.3%). The ranking of the journals based on their impact factor does not significantly change because of self-citations.

Table 1.5: Top 25 journals with the most published articles in the economics of subjective well-being research

Journal	**Articles**	***R***	**Citations**	***R***	**Cit./article**	***R***	**IF (5 years)**	***R***	**% of self-cit. (2016)**	***R***
Journal of Economic Psychology	96	*1*	2,115	*9*	22.0	*15*	2.222	*17*	10.0	*13*
Journal of Economic Behavior & Organization	95	*2*	3,471	*5*	36.5	*10*	1.732	*19*	8.7	*17*
Journal of Applied Psychology	84	*3*	9,217	*1*	109.7	*2*	6.890	*2*	12.5	*9*
Ecological Economics	66	*4*	1,906	*10*	28.9	*12*	4.055	*6*	10.1	*12*
Journal of Organizational Behavior	60	*5*	3,659	*4*	61.0	*7*	5.196	*3*	5.0	*21*
Journal of Consumer Research	56	*6*	4,638	*2*	82.8	*5*	5.159	*4*	2.9	*22*
Organizational Behavior and Human Decision Processes	54	*7*	3,353	*6*	62.1	*6*	3.955	*9*	8.9	*15*
Kyklos	50	*8*	1,065	*13*	21.3	*17*	1.157	*21*	22.6	*2*
Journal of Business Ethics	42	*9*	916	*17*	21.8	*16*	3.526	*12*	13.2	*8*
Economic Journal	41	*10*	4,321	*3*	105.4	*3*	3.859	*10*	0.5	*23*
Journal of Consumer Psychology	37	*11*	1,043	*14*	28.2	*13*	3.985	*8*	11.9	*11*
Journal of Occupational and Organizational Psychology	37	*12*	1,006	*15*	27.2	*14*	3.815	*11*	5.3	*20*
Human Relations	35	*13*	1,902	*11*	54.3	*8*	4.027	*7*	14.4	*5*
Journal of Business Research	34	*14*	1,006	*16*	29.6	*11*	4.108	*5*	30.8	*1*
Economics Letters	32	*15*	226	*23*	7.1	*23*	0.796	*24*	9.7	*14*
Applied Economics	31	*16*	237	*22*	7.6	*22*	0.810	*23*	14.4	*6*
Applied Economics Letters	31	*17*	80	*25*	2.6	*25*	0.482	*25*	12.1	*10*
Journal of Public Economics	30	*18*	2,815	*8*	93.8	*4*	2.679	*15*	5.5	*19*
Psychology & Marketing	29	*19*	590	*18*	20.3	*18*	2.634	*16*	18.3	*3*
Academy of Management Journal	28	*20*	3,192	*7*	114.0	*1*	11.901	*1*	13.9	*7*
Economica	28	*21*	1,357	*12*	48.5	*9*	1.365	*20*	0.0	*24*
Journal of Managerial Psychology	27	*22*	323	*21*	12.0	*21*	1.844	*18*	6.2	*18*
Journal of Socio-Economics	26	*23*	137	*24*	5.3	*24*	1.077	*22*	0.0	*25*
European Journal of Work and Organizational Psychology	25	*24*	329	*20*	13.2	*20*	3.159	*14*	8.7	*16*
World Development	24	*25*	409	*19*	17.0	*19*	3.354	*13*	16.6	*4*

1.3.2.4 Organizations

Table 1.6, where the 25 organizations with the most articles are presented, reveals that there is no distinct leader in the field. The two organizations with the most published articles come from Australia, namely the University of Melbourne and Monash University. They are followed by the Erasmus University and the University of Zurich, who are the only other two organizations that published at least 40 articles in the field. The organization with the most citations is the University of Warwick with 3,964 citations, it is followed by the University of Florida with 3,889 citations and Harvard University with 3,129 citations. On average, the most successful organization is Princeton University with 131.7 citations per article. The other two organizations with more than 100 citations per article are the University of Florida and the University of Warwick with 117.8 and 116.6 citations per article, respectively. On average, self-citations represent only approximately 2 percent of all citations.

Table 1.6: Top 25 organizations with the most published articles in the economics of subjective well-being research

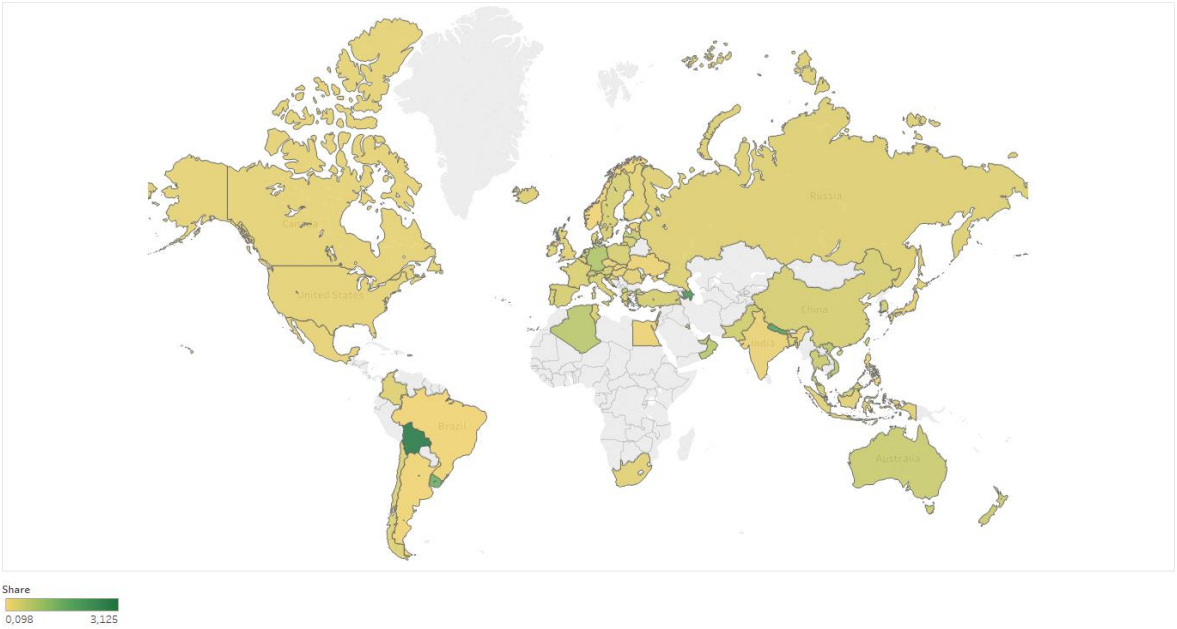
Organization	**Articles**	***R***	**Citations**	***R***	**Cit./article**	***R***	**Self-cit. (%)**	***R***
University of Melbourne	47	*1*	2,223	*9*	47.3	*15*	2.5	*6*
Monash University	47	*2*	1,142	*16*	24.3	*18*	3.3	*5*
Erasmus University	44	*3*	1,014	*18*	23.0	*19*	0.9	*14*
University of Zurich	40	*4*	2,988	*5*	74.7	*8*	2.1	*7*
Michigan State University	37	*5*	2,903	*6*	78.5	*7*	0.7	*18*
University of Amsterdam	37	*6*	2,171	*10*	58.7	*11*	1.5	*10*
Cornell University	37	*7*	1,879	*12*	50.8	*14*	1.0	*13*
Harvard University	36	*8*	3,129	*3*	86.9	*4*	0.9	*15*
IZA	35	*9*	1,123	*17*	32.1	*17*	1.2	*12*
University of Warwick	34	*10*	3,964	*1*	116.6	*3*	2.0	*8*
University of Florida	33	*11*	3,889	*2*	117.8	*2*	0.7	*20*
University of Michigan	33	*12*	2,323	*7*	70.4	*9*	0.3	*25*
University of Oxford	33	*13*	711	*20*	21.5	*21*	4.4	*4*
London School of Economics	32	*14*	534	*22*	16.7	*24*	1.4	*11*
University of Pennsylvania	28	*15*	2,243	*8*	80.1	*6*	0.7	*19*
Australian National University	28	*16*	1,467	*13*	52.4	*12*	1.6	*9*
University of Queensland	28	*17*	603	*21*	21.5	*22*	0.8	*16*
University of Southern California	26	*18*	1,360	*15*	52.3	*13*	0.6	*22*
University of Gothenburg	25	*19*	438	*24*	17.5	*23*	7.5	*2*
University of Maryland	24	*20*	2,082	*11*	86.8	*5*	0.7	*17*
Princeton University	23	*21*	3,029	*4*	131.7	*1*	0.6	*23*
University of Minnesota	23	*22*	1,426	*14*	62.0	*10*	0.3	*24*
Tilburg University	23	*23*	759	*19*	33.0	*16*	0.6	*21*
World Bank	23	*24*	510	*23*	22.2	*20*	4.6	*3*
University of Oldenburg	23	*25*	302	*25*	13.1	*25*	7.8	*1*

1.3.2.5 Countries

Our bibliographic data shows that the USA is the clear leader in the economics of subjective well-being research. In the period from 1915 to 2016, there were 1,169 articles published in the USA, followed by 354 articles published in England and 314 articles published in Germany. Only five other countries, namely Australia (218), China (189), the Netherlands (169), Canada (134) and France (106), published more than 100 articles. A historical glance at the field reveals a substantial broadening. In the period from 1915 to 1996, only seven different countries published at least two articles in the field. In the last 20 years, the number of countries that published at least two articles increased to 59. Furthermore, while in the period from 1915 to 1996 articles from the USA represented 64 percent of the field, this number decreased to 33 percent after the global financial crisis in 2008. The most important new contributor to the field is China, which published 167 of their 189 articles after 2008.

The fact that the USA is the leader in the economics of subjective well-being research in absolute terms comes as no surprise, due to its dominance in business and economics research in general. To provide information on the relative importance of subjective well-being research in the field of economics in each country, we normalized the number of published articles by the total number of publications in the business and economics research area. The results are presented in Figure 1.7 and reveal that Bolivia (3.13%), Azerbaijan (2.27%), and Nepal (2.00%) have the highest share of articles published on the economics of subjective well-being. These results obviously stem from the fact that these countries have a relatively small amount of articles published in the business and economics research area. A comparison of larger countries reveals that the USA (0.24%) and England (0.29%) publish a significantly smaller share of articles, especially compared to Germany (0.82), but also Australia (0.56%) and the Netherlands (0.58%).

Figure 1.7: Countries publishing subjective well-being research in the field of economics



1.4 Conclusion

The economics of subjective well-being is still a relatively young research field, which is experiencing significant increases on a monthly basis. By using scientometric data and cited references, we were able to provide a historical context of the field, as well as a systematic overview of the most important articles, authors, journals, organizations and countries in the economics of subjective well-being research. We were able to distinguish three bigger clusters of articles that are concerned with the effect of income on subjective well-being, the dynamics between job and life satisfaction, and the role of positive affect in different research contexts. Furthermore, we found subjective well-being emerging in new areas, such as environmental and ecological economics. Although the scope of research on the economics of subjective well-being has expanded greatly after the crisis in 2008, it is not expected to slow down in the coming years. This is due to subjective well-being becoming an important line of research in different research areas, as well as the potential for new and improved research from a theoretical, methodological and empirical standpoint.

Before concluding the article, we would like to point out some of the limitations of this study. Those are primarily concerned with the fact that we drew all our data only from the Web of Science service, which means that we could not systematically asses the selection bias or, more specifically, that we were unable to systematically check whether we included all the relevant articles in our analysis. Still, the article provides relevant information, which gives important insights not only for scholars who just started studying the research field concerning the economics of subjective well-being, but also scholars with numerous years of experience and published articles.

2 SUBJECTIVE WELL-BEING AMONG THE ELDERLY: A BIBLIOMETRIC ANALYSIS[4]

Abstract

Demographic trends have stimulated interest in empirical research on subjective well-being among the elderly. Despite the steep increase in published articles, no one has yet provided a summarized review of the scientific landscape. With this article, we aim to fill this research gap by providing a bibliometric analysis of the field. We do so by collecting a broad dataset of publication data from 1961 to 2016 found on the Web of Science webpage. By combining quantitative scientometric methods, as well as qualitative methods, we were able to provide a historic context of research on subjective well-being among the elderly and distinguish the most important articles, authors, journals, organizations and countries in the field. We found a big leap in research on subjective well-being among the elderly in the last ten years, as well as a substantial globalization of the field. Although research on subjective well-being among the elderly has clear antecedents, we expect the field to further increase and mature due to more scholars from different braches of science joining the conversation.

Keywords: subjective well-being; the elderly; happiness studies; life satisfaction; positive affect; bibliometric mapping; bibliographic coupling

JEL Classification: I31

[4] Published as Dominko, M., & Verbič, M. (2019). Subjective well-being among the elderly: A bibliometric analysis. *Quality & Quantity*, *53*(3), 1187-1207.

2.1 Introduction

In 2012, 8.0 percent of the global population was aged 65 or over. In the following three years, the proportion of the older population rose by 0.5 percentage points and reached 8.5 percent of the total population in 2015. By 2030, the number of older people is projected to reach one billion or 12.0 percent of the total population, and by 2050 older people are expected to represent 16.7 percent of the total population. One of the important characteristics of population aging to date was its uneven pace across regions and countries with different development levels. Therefore, in 2015, although only one in six people lived in a developed country, more than a third of the world population aged 65 or over resides in these countries. The two most important reasons for population aging are lower fertility rates and increased longevity. The only world region with a fertility rate above the replacement rate of 2.1 is Africa, while in more developed regions, such as Europe, the average total fertility rate reaches only 1.6 children per couple. Furthermore, the global life expectancy at birth has reached 68.6 years in 2015 and is expected to reach 76.2 years in 2050 (He, Goodkind, & Kowal, 2016).

The presented trends in population aging have stimulated research of the elderly, since the elderly are exposed to an increased risk of limitations and losses in health, social networks, as well as financial means (Pinquart & Sörensen, 2000). According to Baltes & Baltes (1986), one of the important aspects of successful aging is the maintenance of high levels of subjective well-being. This was one of the central research questions of happiness studies in the 1960s, which resulted in research into the subjective well-being of the elderly becoming one of the originators of subjective well-being or happiness studies in general. The field continued to grow in the 1990s and expanded to unprecedented highs in the period from 2007 to 2016, due to a surge of interest in subjective well-being in general, as well as demographic trends.

With our article we aim to provide a systematic overview, a historic context, as well as distinguish future trends in research on subjective well-being among the elderly. Due to a vast increase in literature on subjective well-being among the elderly, we use bibliometric methods. These allow us to provide a quantitative analysis by taking advantage of two key concepts in bibliometric methods, namely output, which we measure through the amount of publications, and impact, which we measure through the number of citations. The bibliometric analysis helps us answer questions regarding the development and characteristics of the field of subjective well-being among the elderly. Furthermore, it allows us to identify the most productive and influential articles, authors, core journals, and organizations, as well as the cooperation among them. Finally, it enables us to identify the extent of globalization of the field, leading topics, as well as potential gaps (van Nunen, Li, Reniers, & Ponnet, 2018). In order to conduct our analysis, we draw article and citation data from the Web of Science Core Collection. In the rest of the article, we first present the data and methodology used to analyze subjective well-being among the elderly. We continue by presenting the development of the studied research field, and systematically

presenting the most influential articles, authors, journals, organizations, and countries in subjective well-being among the elderly research. Finally, we conclude our article.

2.2 Data and Methodology

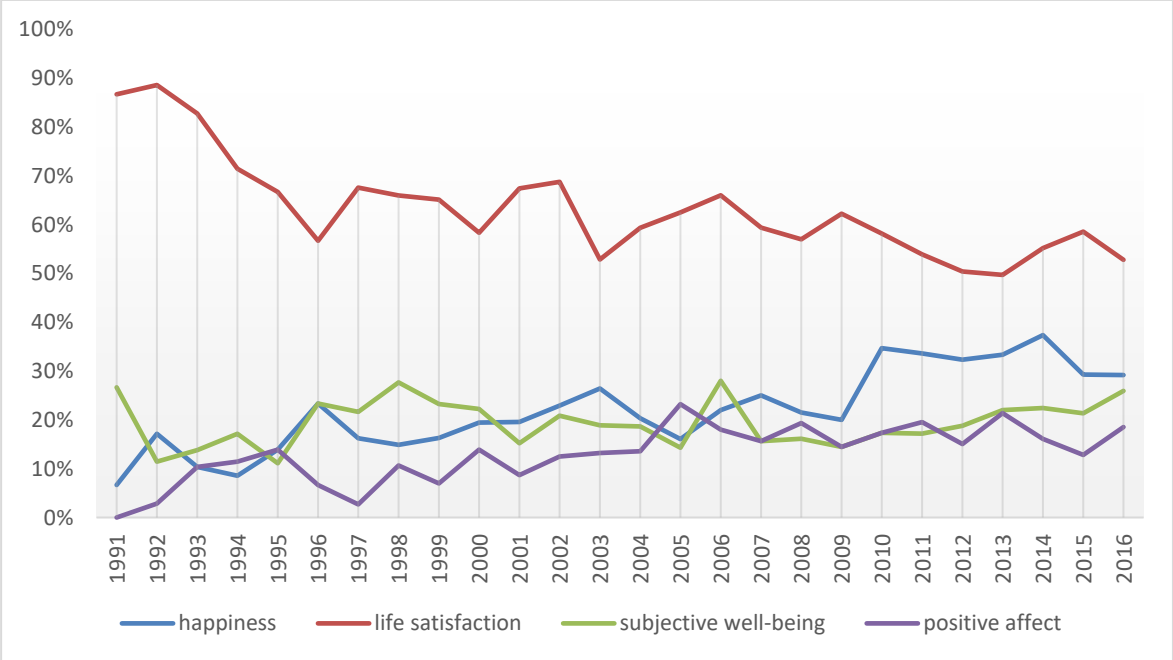
To create a broad dataset that contains research on subjective well-being among the elderly from multiple disciplinary research fields, we used the Web of Science database of articles from the following citation indexes: Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Conference Proceedings Citation Index – Science (CPCI-S), and Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH). Our Web of Science topic searches (TS) were based on the findings of Kullenberg & Nelhans (2015), who identified four core concepts in subjective well-being or happiness research in different multidisciplinary fields. Those are "happiness", which started to appear as a distinctive term already in the first half of the 20th century, "life satisfaction", which gained momentum in the 1960s, especially in gerontology, "positive affect", which was introduced as a way of understanding and measuring human happiness, and "subjective well-being", which emerged in the 1980s as a consolidation concept (Kullenberg & Nelhans, 2015).

To retrieve articles that focus specifically on the elderly we used the search terms proposed by Möller, Ansari, Ebrahim, & Khoo (2016), who, before conducting their analysis, circulated a survey to 20 researchers in physical activity and aging to find out which search terms respondents would use to retrieve articles on physical activity or aging. We therefore included the following topic searches combined with the Boolean operator OR to limit our database to the elderly: "older adult*", "pensioner*", "retiree*", "senior*", "elder*", "older person*", "older people", "aging", "aged", "mature adult*", "aging population*", and "geriatric*". To additionally refine our dataset and exclude research that focuses on different age groups, we used the following search terms combined with the Boolean operator NOT: "adolescen*", "young", "youth", "school", "kid*", "child*", "kindergarten", and "middle-aged". At this stage, we reviewed the preliminary database obtained. Our review revealed numerous articles on caregivers' subjective well-being, which we excluded. We furthermore excluded articles concerning depression. Although depressive symptoms can be considered as indicators of subjective well-being, most measures of depression do not only measure the absence of psychological well-being, but also somatic symptoms (Pinquart & Sörensen, 2000). Our final sample of 2,114 articles from 1961 to 2016 was obtained in October 2017.

In order to check whether all the identified four search terms, which are used in subjective well-being or happiness research in different multidisciplinary contexts, are also used in research on subjective well-being among the elderly, we ran additional search queries where only one of the search terms was used. The results of these queries revealed that the

term “life satisfaction” is most commonly used in research on subjective well-being among the elderly and appeared already in the beginning of the 1960s. “Happiness” emerged as a term in 1967 and continued to appear in the 1970s, while “subjective well-being” first appeared in 1982, and “positive affect” in 1992. The search terms are not used synonymously. The one with the least overlap is “life satisfaction” (16%), followed by “positive affect” (22%), “happiness” (44%), and “subjective well-being” (54%), which comes to no surprise, due to the consolidation nature of the term “subjective well-being”. In the last decade, the term “life satisfaction” is used in approximately 56 percent of articles, the term “happiness” in 30 percent of articles, the term “subjective well-being” in 19 percent of articles, and the term “positive affect” in 17 percent of articles on subjective well-being among the elderly (see Figure 2.1; note that some articles include more than one search term, which means that the sum can possibly be higher than 100 percent).

Figure 2.1: Articles per search term as a percentage of the total published articles (note that some articles include more than one search term, which means that the sum can possibly be higher than 100 percent)



To check whether we had limited our database to such an extent that some important articles on subjective well-being among the elderly were left out, we replaced the search term “subjective well-being” with the more general term “well-being”. We furthermore ran an additional search query by adding the search term “quality of life”. An analysis of the obtained results revealed that we only increased the number of articles of which the majority was not related to research on subjective well-being among the elderly. These results indicate that we were able to obtain a database of relevant articles.

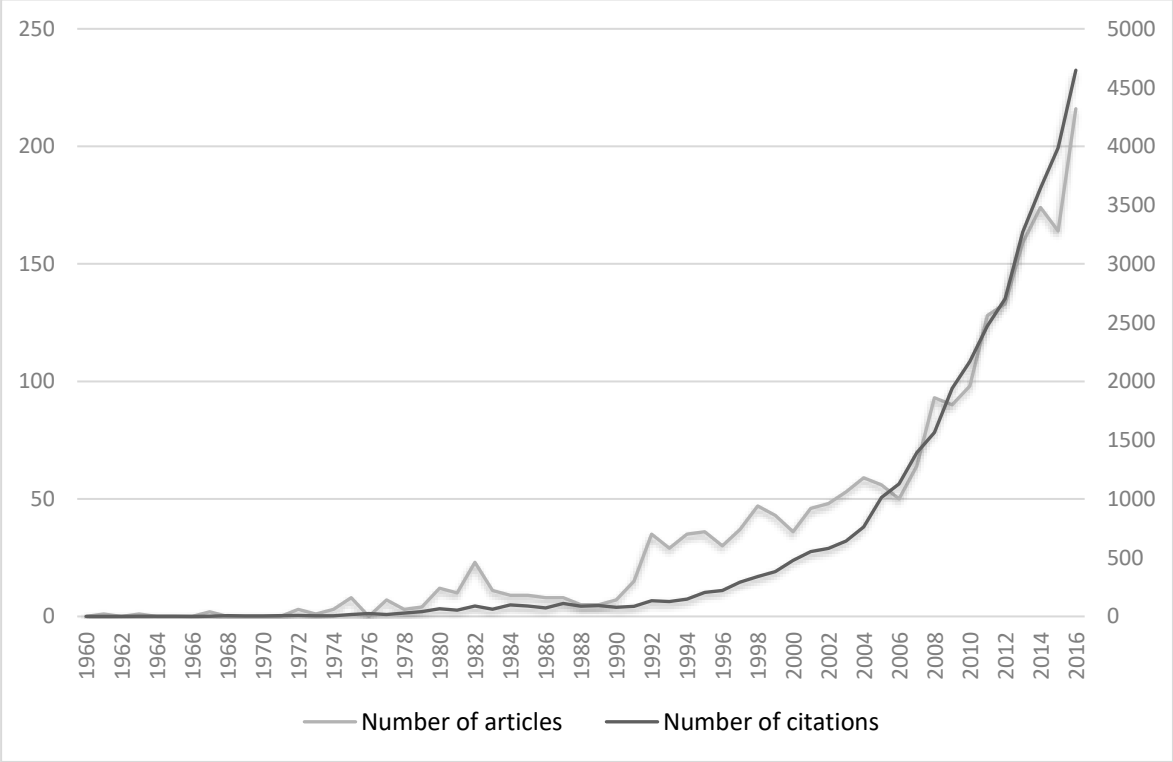
We based our analysis on cited references, which we threat as an expression of the importance of an article. To cluster articles, authors and journals we use bibliographic coupling, which was first introduced by Kessler (1963). The technique connects sources on

the basis of the number of citations they share, which means that the more two bibliographies overlap, the closer are articles found to each other (Župić & Čater, 2015). Because bibliographic coupling directly maps publications based on how they cite, it does not require publications to accumulate, and is therefore more suitable for clustering smaller and emerging subfields. One of the limitations of our bibliometric analysis is that we drew all our data from the Web of Science service, which means that we could not systematically asses the selection bias – we were unable to systematically check whether we included all the relevant articles in our analysis. Furthermore, by gathering our data from a limited number of indexes we ran the risk of omitting relevant older articles that appeared in journals not yet indexed. To minimize the effects of these limitations, we also conduct a co-citation analysis, which unlike bibliographic coupling, connects publications on the basis of how often they appear in bibliographies. A qualitative analysis of these results allows us to distinguish important highly cited publications in subjective well-being among the elderly research, which were not included in our database. We visualize clusters using VOSviewer, which first, requires a similarity matrix as an input, second, constructs a map based on the matrix, and third, applies three transformations in order to obtain consistent results. Moreover, we present maps as densities or as network visualizations, where the size of the circle indicates the amount of citations, the color indicates the cluster the publication belongs to, and the lines between the circles indicate the relative link strength (for a detailed discussion, consult van Eck & Waltman (2010)).

2.3 Results

Although research on subjective well-being among the elderly was one of the originators of subjective well-being or happiness studies in the 1960s, research in this period remained scarce. It was not until the 1990s that more and more studies on subjective well-being among the elderly started to emerge, and the period after the global financial crisis in 2008, when research on subjective well-being among the elderly started to grow exponentially. These trends can be observed in Figure 2.2, which shows the number of articles on subjective well-being among the elderly, as well as the number of citations. In the last decade, from 2007 to 2016, the number of articles grew from 64 in 2007 to 216 in 2016, which equals a growth rate of 238 percent. The number of citations in the same period grew at a similar rate and increased from 1,394 citations in 2007 to 4,648 citations in 2016, which equals a growth rate of 233 percent. In comparison, the total amount of all articles in the five researched indexes grew for 65 percent in the period from 2007 to 2016.To better grasp the field of subjective well-being among the elderly, we divide this section into two parts. In the first part we take a closer look at the development of the field, while in the second we provide a systematic overview of the most important areas, articles, authors, journals, organizations and countries in research on subjective well-being among the elderly.

Figure 2.2: The number of articles and the number of citations per year on the subjective well-being among the elderly



2.3.1 The development of research on subjective well-being among the elderly

To better understand the development of research on subjective well-being among the elderly in different time periods, we divided our dataset into one 20-year interval spanning from 1961 to 1980, two 10-year intervals from 1981 to 1990 and from 1991 to 2000, as well as two 8-year intervals from 2001 to 2008 and from 2009 to 2016. Such an irregular division of articles serves the bibliometric analysis and is motivated by the steep increase in the amount of articles published in the 1990s and in the last decade and allows us to easier spot new research contexts in which research on subjective well-being among the elderly has appeared. A comparison of the studied periods is provided in Table 2.1. It shows that the period with the most articles and articles per year is the last studied period, from 2009 to 2016, while the period with the most citations, citations per year, and average citations the one from 2001 to 2008, which also has the highest h-index, a metric that measures both, the productivity, as well as the impact of each period. More specifically, a period with an h-index of h, contains h articles that were cited h times.[5] One of the reasons for the higher number of citations in this period compared to the last is the so-called "lag effect", as citations are delayed due to the slow process of publication.

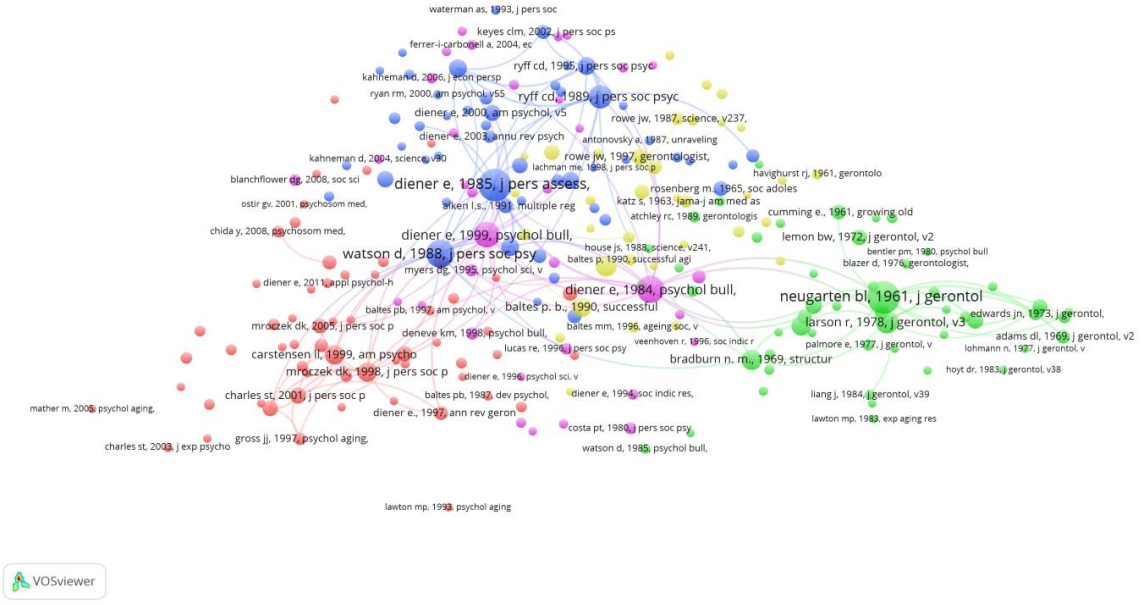
[5] The h-index is sometimes called the Hirsch index and was suggested by Jorge E. Hirsch (2005).

Table 2.1: The number of articles, sum of citations, average citations per article and h-index for the studied periods

Period	1961–1980	1981–1990	1991–2000	2001–2008	2009–2016	Total
Results found	45	95	343	469	1,162	2,114
Sum of citations	1,306	1,824	10,636	15,439	10,470	39,649
Results found per year	2.3	9.5	34.3	58.6	145.3	37.8
Sum of citations per year	65.3	182.4	1063.6	1929.9	1308.8	708.0
Average citations	29.0	19.2	31.0	32.9	9.0	18.8
h-index	15	25	55	62	42	85

One of the main concerns, especially while analyzing the initial period, is whether we included all the relevant publications in our database, due to the possibility that important publications were published in books or journals not yet indexed at the time. To mitigate this concern, we conducted a cluster analysis based on a co-citation analysis, as well as a qualitative review of the result. The analysis reveals that the 2,114 articles on subjective well-being among the elderly in our database used 57,549 unique references. The cluster analysis of those cited at least 15 times is presented in Figure 2.3. While in the blue and the purple cluster mainly key articles on subjective well-being in general prevail, contain the red and the green cluster articles concerning the subjective well-being among the elderly. The two publications that are not present in our database, but carry special relevance, not only as originators of research on subjective well-being among the elderly, but happiness studies in general, are "The Measurement of Life Satisfaction" by Neugarten, Havighurst & Tobin (1961), which establishes the "Life Satisfaction Index", an index that measures general feelings among the elderly to identify successful aging, and "The Structure of Psychological Well-Being" by Bradburn (1969), which, among other things, introduces the "Affect Balance Scale". Especially the first article remains one of the most cited works not only in research on subjective well-being among the elderly in particular, but also in research on subjective well-being in general. Other articles in the period from 1961 to 1980 analyzed different correlates of the life satisfaction of the elderly (Chatfield, 1977; K S Markides & Martin, 1979; Spreitzer & Snyder, 1974) and the role of social participation in subjective well-being among the elderly (Graney, 1975; Tobin & Neugarten, 1961; Toseland & Sykes, 1977). In the following period, from 1981 to 1990, research on the effects of social participation on the life satisfaction of the elderly remained strong, with articles focusing on the roles of intergenerational exchange (Lee & Ellithorpe, 1982), leisure (Steinkamp & Kelly, 1987), or even religion (Hunsberger, 1985). Furthermore, articles started to focus on subjective well-being among the elderly with different health conditions (Osberg, McGinnis, DeJong & Seward, 1987).

Figure 2.3: Clusters of articles on subjective well-being among the elderly based on a co-citation analysis



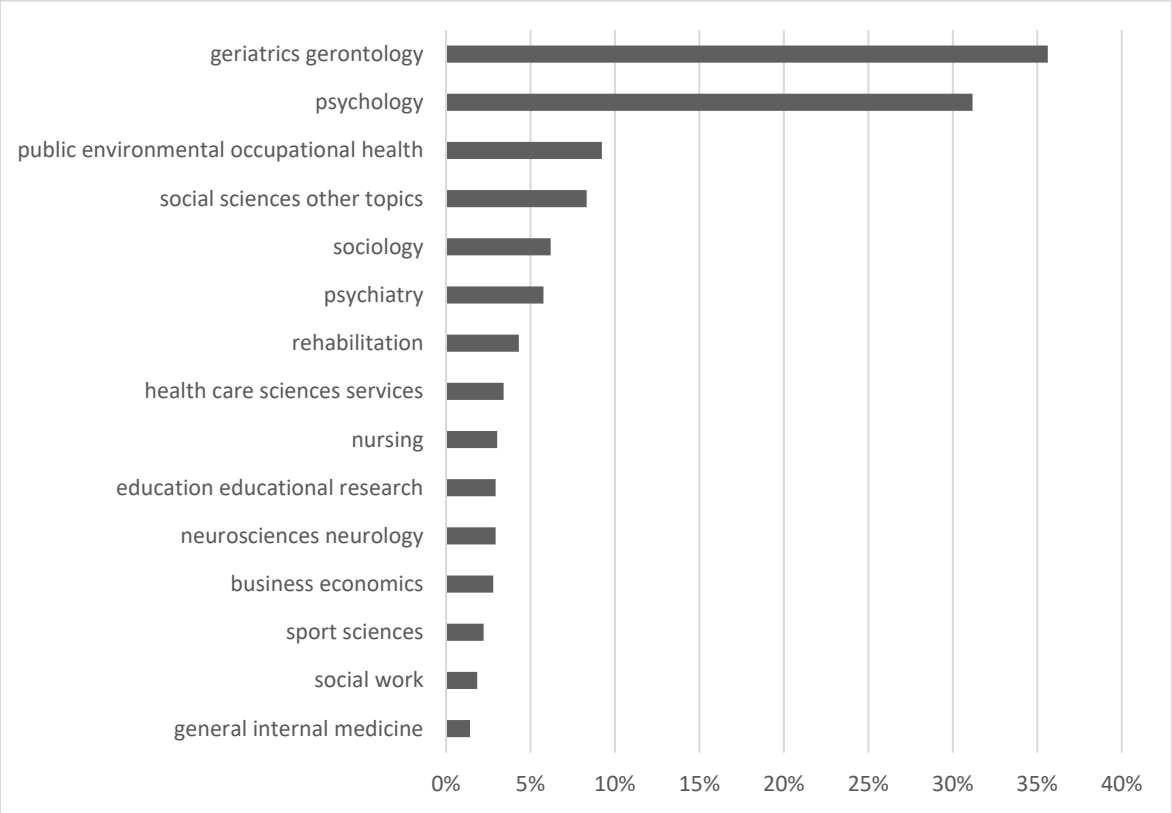
A look at the most cited articles in the period from 1991 to 2000 shows an increased interest in geriatric topics, with articles concerning topics such as chronic medical conditions (Kempen, Ormel, Brilman & Relyveld, 1997) or the decrease in vision (Brenner, Curbow, Javitt, Legro, & Sommer, 1993). Furthermore, this period is marked with the emergence of topics concerning positive affect and emotional states (Salovey, Rothman, Detweiler & Steward, 2000). In the next two periods, from 2001 to 2008 and from 2009 to 2016, all the presented topics were built upon. In addition, more and more cross-national studies started to appear (Aknin et al., 2013; Gerstorf et al., 2010).

2.3.2 A systematic overview of the field

Before providing a systematic overview, it is important to note that although the majority of research on subjective well-being among the elderly can be placed in the research area of gerontology, it has appeared in many different multidisciplinary contexts. Figure 2.4 shows the most common Web of Science research areas[6] in which articles on subjective well-being among the elderly have appeared. To no surprise, the majority of articles can be placed into the research area "geriatrics gerontology", followed by the research area "psychology". However, we can also find research on subjective well-being among the elderly in less obvious research areas, such as "business economics" or "sport sciences".

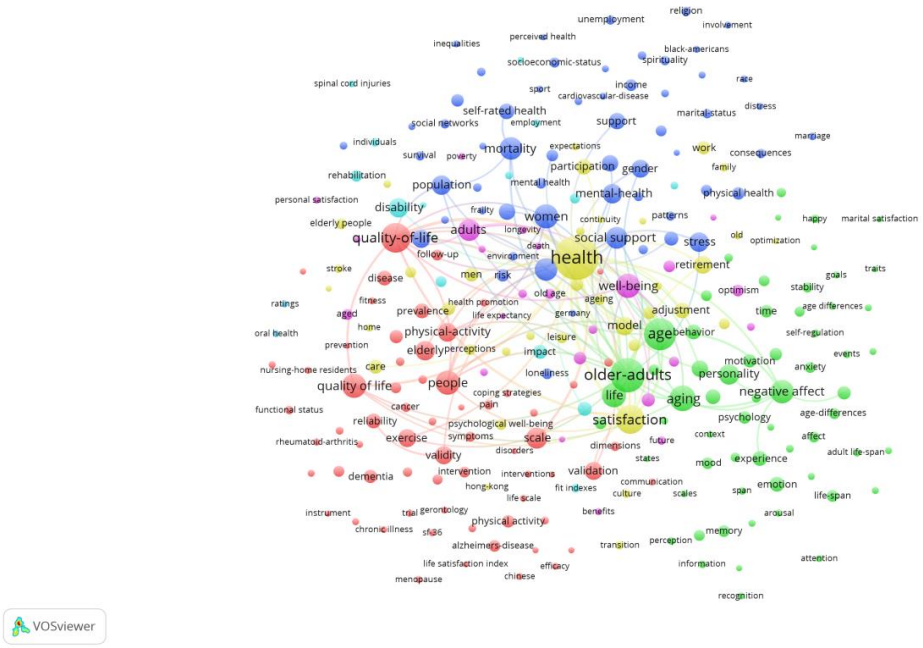
[6] 151 research areas in Web of Science constitute a subject categorization scheme and are the same across all the databases, which enables one to analyze documents from the same subject in different databases. The research areas are classified into the following broad categories: Arts Humanities, Life Sciences Biomedicine, Physical Sciences, Social Sciences, and Technology.

Figure 2.4: 15 most common research areas in research on subjective well-being among the elderly (note that some articles include more than one research area, which means that the sum can possibly be higher than 100 percent)



The multidisciplinary nature of research on subjective well-being among the elderly can also be seen in Figure 2.5, where keywords that appeared at least 10 times are presented (the four keywords that were used as search terms, namely “happiness”, “life satisfaction”, “subjective well-being”, and “positive affect”, were excluded from the analysis). The figure indicates that we can distinguish at least three distinct clusters of keywords. The red cluster contains 65 items and is characterized by keywords such as “physical-activity”, “exercise”, “prevention”, “disease”, “symptoms”, “sf-36”, etc. These indicate topics concerned with geriatrics and medicine. The green cluster contains 62 keywords concerning psychology, such as “personality”, “motivation”, “behavior”, “negative affect”, “emotion”, “mood”, etc., while the blue cluster contains 58 keywords concerning the sociological status of the elderly, such as “income”, “unemployment”, “inequalities”, “religion”, “marital-status”, “social networks”, etc.

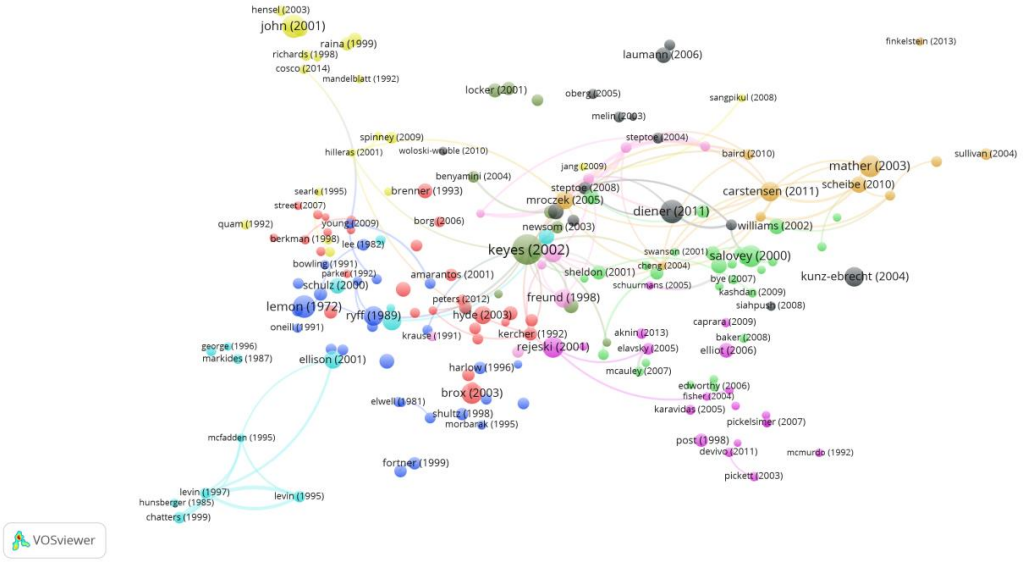
Figure 2.5: The most important keywords in research on subjective well-being among the elderly



2.3.2.1 Articles

To distinguish the most important articles in different disciplinary contexts, we used bibliographic coupling to obtain clusters of articles based on the references they share. Figure 2.6 shows that we can distinguish between multiple smaller and bigger clusters. Those are to some extent intertwined, although they do have certain specifics. The blue cluster contains articles from the initial period of research on subjective well-being among the elderly, which are mainly concerned with the relationship between age and life satisfaction, as well as the role of social interaction in subjective well-being. The light blue cluster of articles shares some similarities, as it also contains articles published before 2000, although these articles focus on the role of religion and volunteering in life satisfaction among the elderly. The red, yellow and violet clusters of articles share many topics that are concerned with the role of physical activity, injuries and health in the quality of life of the elderly. These clusters furthermore contain topics concerned with the transport mobility of the elderly, their social activities and occupations. The green and orange clusters study among other things the roles of emotions, while the smaller dark green and black clusters analyze methodological and life satisfaction measurement issues, as well as gender differences.

Figure 2.6: Clusters of articles studying subjective well-being among the elderly



A more thorough overview shows that the article with the most citations in the blue cluster is “An Exploration of the Activity Theory of Aging: Activity Types and Life Satisfaction Among In-movers to a Retirement Community” by Lemon, Bengtson & Peterson (1972) with 370 citations. The article examines the relationship between different types of social activities and subjective well-being among individuals in a retirement community. It is followed by Ryff's (1989) article “Beyond Ponce de Leon and Life Satisfaction: New Directions in Quest of Successful Ageing” with 275 citations, which reviews previous studies on successful aging and presents and alternative approach. The third article with the most citations in the blue cluster is “Correlates of life satisfaction among the aged” by Spreitzer & Snyder (1974) with 166 citations, which replicates and expands on earlier studies of the correlates of life satisfaction among the elderly. On average, the three aforementioned articles have relatively few citations per year, mainly due to their older publication dates.

In the light blue cluster, the article with the most citations is “Differential benefits of volunteering across the life course” by Van Willigen (2000) with 248 citations. The study addresses the questions whether volunteering improves the psychological well-being of the elderly and whether the experienced benefits differ from those of younger adults. It is followed by “Religious involvement, stress, and mental health: Findings from the 1995 Detroit area study” by Ellison, Boardman, Williams & Jackson, (2001) with 229 citations. The article analyzes different links between religion and mental health, such as the link between the frequency of church visits and well-being. The third most cited article, with 179 citations, also concerns the role of volunteering in the psychological well-being of the elderly. It is authored by Greenfield & Marks (2004) and is called “Formal volunteering as a protective factor for older adults' psychological well-being”. On average, the articles were cited 13.8, 13.5 and 12.8 times per year, respectively.

The red, yellow and violet clusters are to some extent specific as they contain articles not directly studying the elderly, but rather establishing different surveys in which the elderly are also included. The article with the most citations studying the elderly directly is therefore “Physical Activity and Quality of Life in Older Adults” by Rejeski & Mihalko (2001) with 319 citations, which reviews the literature on physical activity and quality of life in older adults. It is followed by the article “A measure of quality of life in early old age: the theory, development and properties of a needs satisfaction model (CASP-19)” by Hyde, Wiggins, Higgs & Blane (2003) with 236 citations, which develops a new measure of quality of life in early old age. The third article with the most citations is titled “Vision change and quality of life in the elderly. Response to cataract surgery and treatment of other chronic ocular conditions” by Brenner, Curbow, Javitt, Legro & Sommer (1993) with 166 citations. The article finds an improvement across quality of life functions due to improved visual functions. On average, the presented articles were cited 18.8, 15.7 and 6.6 times per year, respectively.

The article with the most citations in the green and orange clusters of articles is “Aging and attentional biases for emotional faces” by Mather & Carstensen (2003) with 345 citations, which examines the effect of age on the attention to and memory for faces expressing sadness, anger, and happiness. It is followed by “Emotional states and physical health” by Salovey, Rothman, Detweiler & Steward (2000), which has 344 citations and examines different mechanisms connecting pleasant feelings and good health. The third article with the most citations is “Emotional Experience Improves With Age: Evidence Based on Over 10 Years of Experience Sampling” by Carstensen et al. (2011) with 263 citations. The article studies the developmental course of emotional experience by using experience sampling. The three articles exhibit relatively high numbers of citations per year with 19.1, 18.8 and 37.6 citations, respectively.

The smaller dark green cluster and black cluster of articles contain the two articles with the highest number of citations, as well as the highest number of citations per article. The first article, “Optimizing well-being: The empirical encounter of two traditions” by Keyes, Shmotkin, & Ryff (2002), which has 644 citations and 41.5 citations per year, compares subjective well-being and psychological well-being, paying specific attention to the role of location in the life course. The second article, “Happy People Live Longer: Subjective Well-Being Contributes to Health and Longevity” by Diener & Chan (2011), which has 382 citations and 54.8 citations per year, concerns the effect of subjective well-being on health and longevity.

Table 2.2: 25 most cited articles in research on subjective well-being among the elderly[7]

Authors	Article	Journal	Year	Citations	*R*[8]	Cit./year	*R*
Keyes, CLM; Shmotkin, D; Ryff, CD	Optimizing well-being: The empirical encounter of two traditions	*Journal of Personality and Social Psychology*	2002	664	*1*	41.50	*2*
Diener, E; Chan, MY	Happy people live longer: Subjective well-being contributes to health and longevity	*Applied Psychology: Health and Well Being*	2011	382	*2*	54.57	*1*
John, U; Greiner, B; Hensel, E; Ludemann, J; Piek, M; Sauer, S; Adam, C; Born, G; Alte, D; Greiser, E; Haertel, U; Hense, HW; Haerting, J; Willich, S; Kessler, C	Study of health in Pomerania (SHIP): A health examination survey in an east German region: Objectives and design	*Sozial- Und Praventivmedicin*	2001	380	*3*	22.35	*6*
Lemon, BW; Bengtson, VL; Peterson, JA	An exploration of activity theory of aging: Activity types and life satisfaction among in-movers to a retirement community	*Journals of Gerontology*	1972	370	*4*	8.04	*34*
Whiteneck, GG; Charlifue, SW; Frankel, HL; Fraser, MH; Gardner, BP; Gerhart, KA; Krishnan, KR; Menter, RR; Nuseibeh, I; Short, DJ; Silver, JR	Mortality, morbidity, and psychosocial outcomes of persons spinal-cord injured more than 20 years ago	*Paraplegia*	1992	348	*5*	13.38	*17*
Mather, M; Carstensen, LL	Aging and attentional biases for emotional faces	*Psychological Science*	2003	345	*6*	23	*5*
Salovey, P; Rothman, AJ; Detweiler, JB; Steward, WT	Emotional states and physical health	*American Psychologist*	2000	344	*7*	19.11	*9*
Rejeski, WJ; Mihalko, SL	Physical activity and quality of life in older adults	*Journals of Gerontology: Series A*	2001	319	*8*	18.76	*10*

(table continues)

[7] The total number of citations includes only citations from the Web of Science Core Collection.

[8] *R* stands for the rank of the article, author, journal or organization in all the tables in the article.

(continued)

Brox, JI; Sorensen, R; Friis, A; Nygaard, O; Indahl, A; Keller, A; Ingebrigtsen, T; Eriksen, HR; Holm, I; Koller, AK; Riise, R; Reikeras, O	Randomized clinical trial of lumbar instrumented fusion and cognitive intervention and exercises in patients with chronic low back pain and disc degeneration	*Spine*	2003	318	*9*	21.2	*7*
Ryff, CD	Beyond Ponce de Leon and life satisfaction: New directions in quest of successful ageing	*International Journal of Behavioral Development*	1989	275	*10*	9.48	*27*
Kunz-Ebrecht, SR; Kirschbaum, C; Marmot, M; Steptoe, A	Differences in cortisol awakening response on work days and weekends in women and men from the Whitehall II cohort	*Psychoneuroendocrinology*	2004	269	*11*	19.21	*8*
Carstensen, LL; Turan, B; Scheibe, S; Ram, N; Ersner-Hershfield, H; Samanez-Larkin, GR.; Brooks, KP; Nesselroade, JR	Emotional experience improves with age: Evidence based on over 10 years of experience sampling	*Psychology and Aging*	2011	263	*12*	37.57	*3*
van Willigen, M	Differential benefits of volunteering across the life course	*Journals of Gerontology: Series B*	2000	248	*13*	13.78	*15*
Freund, AM; Baltes, PB	Selection, optimization, and compensation as strategies of life management: Correlations with subjective indicators of successful aging	*Psychology and Aging*	1998	243	*14*	12.15	*22*
Kunzmann, U; Little, TD; Smith, J	Is age-related stability of subjective well-being a paradox? Cross-sectional and longitudinal evidence from the Berlin Aging Study	*Psychology and Aging*	2000	240	*15*	13.33	*18*
Mroczek, DK; Spiro, A	Change in life satisfaction during adulthood: Findings from the veterans affairs normative aging study	*Journal of Personality and Social Psychology*	2005	236	*16*	18.15	*11*
Hyde, M; Wiggins, RD; Higgs, P; Blane, DB	A measure of quality of life in early old age: The theory, development and properties of a needs satisfaction model (CASP-19)	*Aging & Mental Health*	2003	236	*17*	15.73	*12*
Ellison, CG; Boardman, JD; Williams, DR; Jackson, JS	Religious involvement, stress, and mental health: Findings from the 1995 Detroit Area Study	*Social Forces*	2001	229	*18*	13.47	*16*
Scheibe, S; Carstensen, LL	Emotional aging: Recent findings and future trends	*Journals of Gerontology: Series B*	2010	186	*19*	23.25	*4*

(table continues)

(continued)

Zohar, D; Tzischinsky, O; Epstein, R; Lavie, P	The effects of sleep loss on medical residents' emotional reactions to work events: A cognitive-energy model	*Sleep*	2005	181	*20*	13.92	*14*
Greenfield, EA; Marks, NF	Formal volunteering as a protective factor for older adults' psychological well-being	*Journals of Gerontology: Series B*	2004	179	*21*	12.79	*20*
Williams, P; Aaker, JL	Can mixed emotions peacefully coexist?	*Journal of Consumer Research*	2002	174	*22*	10.88	*24*
Fugl-Meyer, AR; Melin, R; Fugl-Meyer, KS	Life satisfaction in 18-to 64-year-old Swedes: In relation to gender, age, partner and immigrant status	*Journal of Rehabilitation Medicine*	2002	171	*23*	10.69	*25*
Laumann, EO; Paik, A; Glasser, DB; Kang, JH; Wang, TF; Levinson, B; Moreira, ED; Nicolosi, A; Gingell, C	A cross-national study of subjective sexual well-being among older women and men: Findings from the global study of sexual attitudes and behaviors	*Archives of Sexual Behavior*	2006	169	*24*	14.08	*13*
Schulz, A; Williams, D; Israel, B; Becker, A; Parker, E; James, SA; Jackson, J	Unfair treatment, neighborhood effects, and mental health in the Detroit metropolitan area	*Journal of Health and Social Behavior*	2000	169	*25*	9.39	*28*

2.3.2.2 Authors

A glance at the density map of authors that published at least three articles and have at least 25 citations in research on subjective well-being among the elderly in Figure 2.7, reveals an even distribution of authors with no specific outliers. A more thorough review, provided in Table 2.3, shows that the author with the most articles is Denis Gerstorf with 15 articles. He is followed by Jacqui Smith and Hans-Werner Wahl with 13 published articles. All three authors come from life span developmental psychology and study the relationship between old age and subjective well-being. The author with the most citations is Carol D. Ryff with 1123 citations. She is followed by Dov Shmotkin with 838 citations and Andrew Steptoe with 685 citations. Ryff, Shmotkin and Steptoe are also the authors with the highest number of citations per article with 160.4, 76.2 and 68.5 citations, respectively. Ryff's work in subjective well-being among the elderly primarily concerns methodological aspects of accounting for life satisfaction. Shmotkin, among other things, dedicates his studies to the relationship between subjective well-being and age, while Steptoe's work on subjective well-being among the elderly studies geriatrics.

Figure 2.7: Density map of authors in research on subjective well-being among the elderly

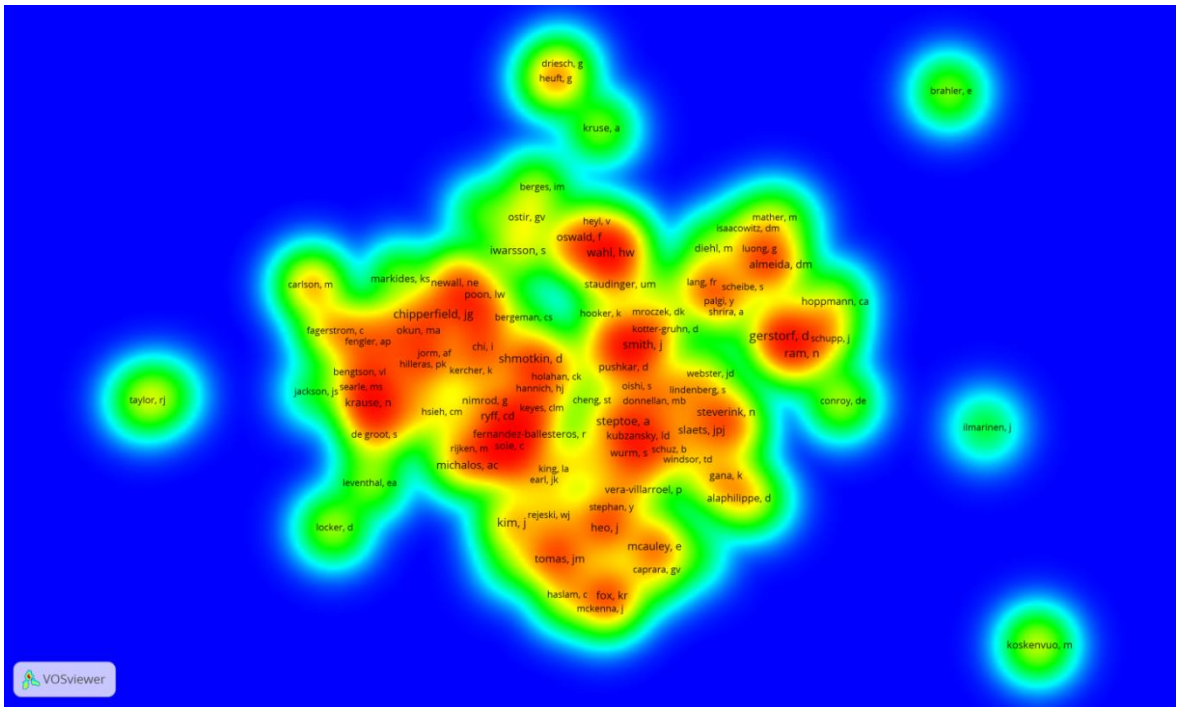


Table 2.3: Top 25 authors with the most published articles in research on subjective well-being among the elderly

Author	Articles	*R*	Citations	*R*	Cit./article	*R*
Gerstorf, D	15	*1*	466	*6*	31.1	*12*
Smith, J	13	*2*	553	*5*	42.5	*5*
Wahl, HW	13	*3*	374	*7*	28.8	*13*
Shmotkin, D	11	*4*	838	*2*	76.2	*2*
Steptoe, A	10	*5*	685	*3*	68.5	*3*
Ram, N	10	*6*	625	*4*	62.5	*4*
Spiro, A	10	*7*	360	*8*	36.0	*8*
Chipperfield, JG	10	*8*	168	*16*	16.8	*19*
Kim, J	10	*9*	49	*25*	4.9	*25*
Krause, N	9	*10*	235	*13*	26.1	*15*
Steverink, N	9	*11*	207	*15*	23.0	*17*
Martin, P	9	*12*	157	*18*	17.4	*18*
Heo, J	9	*13*	72	*23*	8.0	*24*
Schilling, O	8	*14*	304	*9*	38.0	*7*
Mcauley, E	8	*15*	279	*11*	34.9	*10*
Almeida, DM	8	*16*	89	*21*	11.1	*22*
Fox, KR	8	*17*	65	*24*	8.1	*23*
Ryff, CD	7	*18*	1123	*1*	160.4	*1*
Oswal, F	7	*19*	289	*10*	41.3	*6*
Wagner, GG	7	*20*	250	*12*	35.7	*9*
Slaets, JPJ	7	*21*	234	*14*	33.4	*11*
Michalos, AC	7	*22*	111	*20*	15.9	*20*
Tomas, JM	7	*23*	86	*22*	12.3	*21*
Ostir, GV	6	*24*	162	*17*	27.0	*14*
Pushkar, D	6	*25*	145	*19*	24.2	*16*

2.3.2.3 Journals

Research on subjective well-being among the elderly in the initial period from 1961 to 1980 was concentrated in *The Gerontologist*, *The Journals of Gerontology*[9], *The International Journal of Aging*, and the *Social Science Quarterly* journal, which were the only journals that published at least three articles on subjective well-being among the elderly. With the increase in the number of published articles, the number of journals increased as well. Figure 2.8 shows the 57 journals that published at least three articles on subjective well-being among the elderly that were cited at least 25 times in the period from 2009 to 2016. The figure reveals that *The Gerontologist*, *Psychology and Aging*, and *Social Indicators Research* were the leading journals for the studied period.

[9] The Journal of Gerontology, which started publishing in 1946, became The Journals of Gerontology in 1988. In 1995 the journal was split into two separate publications (Oxford Academic, 2017).

Figure 2.8: Density map of journals in research on subjective well-being among the elderly (2009–2016)

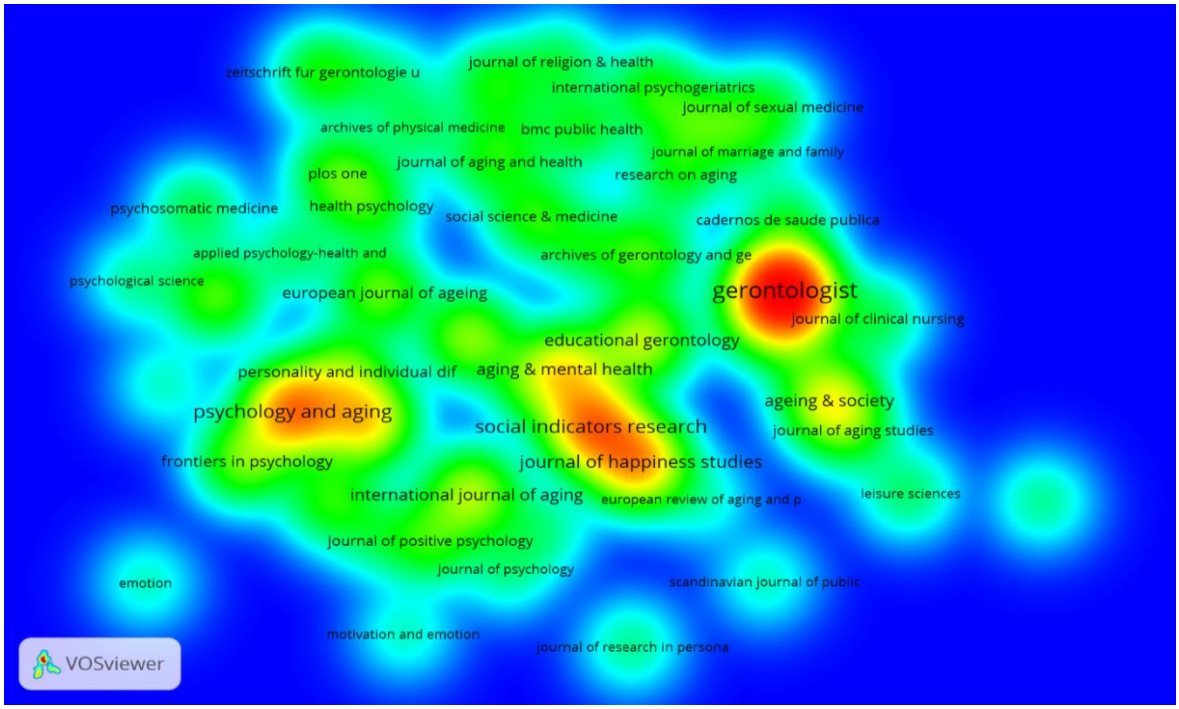


Table 2.4 shows the top 25 journals on subjective well-being among the elderly based on the number of articles. The table furthermore shows the total number of citations of these articles, average citations per article, and the impact factors of the journals for the last five years. The journal with the most published articles is *The Gerontologist* with 141 articles, followed by *The International Journal of Aging and Human Development* with 63 articles, and the *Social Indicators Research* journal with 60 published articles. It is important to note that *The Journals of Gerontology: Series B* stems from *The Journals of Gerontology*. Together they published 85 articles on subjective well-being among the elderly, which is second only to *The Gerontologist*. The journal with the most citations is *Psychology and Aging*, as articles on subjective well-being among the elderly in this journal were cited 2,333 times. It is followed by *The Journals of Gerontology: Series B* and *The Journals of Gerontology* with 1,989 and 1,811 citations, respectively. Again, if we consider these two journals as one, they account for 3,800 citations. The three journals with the most citations are also the ones with the most citations per article. On average, the journal with the most citations is *The Journals of Gerontology* with 50.3 citations, followed by *The Journals of Gerontology: Series B* with 40.6 citations and *Psychology and Aging* with 40.2 citations per article. A comparison of the journals based on their average impact factor over the last five years, which measures the frequency with which the average article was cited, shows that the average journal publishing articles on subjective well-being among the elderly exhibits an impact factor of approximately 2.500. The two journals with the highest impact factors are the *Journal of the American Geriatrics Society* (5.185) and *Health Psychology* (4.352), which are both medicine and health based. They are followed by the already mentioned *The Gerontologist* (3.928).

Table 2.4: Top 25 journals with the most publications in research on subjective well-being among the elderly

Journal	Articles	*R*	Citations	*R*	Cit./article	*R*	IF (5 years)	*R*
Gerontologist	141	*1*	987	*5*	7.0	*22*	3.928	*3*
International Journal of Aging and Human Development	63	*2*	1,106	*4*	17.6	*12*	1.103	*21*
Social Indicators Research	60	*3*	905	*6*	15.1	*15*	2.116	*15*
Psychology and Aging	58	*4*	2,333	*1*	40.2	*3*	3.843	*5*
Journals of Gerontology: Series B	49	*5*	1,989	*2*	40.6	*2*	3.878	*4*
Journals of Gerontology	36	*6*	1,811	*3*	50.3	*1*	-	-
Aging Mental Health	33	*7*	810	*7*	24.5	*8*	2.767	*9*
Journal of Happiness Studies	30	*8*	229	*18*	7.6	*21*	2.869	*8*
Educational Gerontology	30	*9*	165	*22*	5.5	*23*	0.804	*24*
Zeitschrift fur Gerontologie und Geriatrie	26	*10*	109	*24*	4.2	*25*	0.916	*23*
Canadian Journal on Aging	23	*11*	237	*17*	10.3	*19*	1.037	*22*
Ageing Society	22	*12*	288	*15*	13.1	*17*	2.087	*16*
Journal of the American Geriatrics Society	21	*13*	627	*8*	29.9	*5*	5.185	*1*
Archives of Gerontology and Geriatrics	21	*14*	376	*12*	17.9	*11*	2.155	*14*
Quality of Life Research	21	*15*	311	*14*	14.8	*16*	2.954	*7*
Research on Aging	19	*16*	514	*9*	27.1	*6*	1.617	*20*
International Journal of Psychology	17	*17*	81	*25*	4.8	*24*	1.903	*17*
Journal of Aging and Health	16	*18*	402	*11*	25.1	*7*	2.501	*10*
Personality and Individual Differences	16	*19*	183	*21*	11.4	*18*	2.400	*11*
Journal of Aging Studies	15	*20*	280	*16*	18.7	*10*	1.874	*18*
European Journal of Ageing	15	*21*	132	*23*	8.8	*20*	1.834	*19*
Social Science Medicine	14	*22*	330	*13*	23.6	*9*	3.505	*6*
Health Psychology	13	*23*	438	*10*	33.7	*4*	4.352	*2*
Disability and Rehabilitation	13	*24*	220	*19*	16.9	*13*	2.159	*13*
Journal of Health Psychology	13	*25*	201	*20*	15.5	*14*	2.395	*12*

2.3.2.4 Organizations

Table 2.5, where the 25 organizations with the most articles on the subjective well-being among the elderly are presented, reveals that the leading organization is the University of Michigan with 46 articles, followed by Penn State University with 31 articles, and the University of Illinois and the University of Toronto with 24 articles each. A further glance at the number of citations shows that the three organizations with the most citations are Stanford University with 1,427 citations, University of Michigan with 1,294 citations, and Penn State University with 1,294 citations. On average, the most successful organization is Tel Aviv University, which published 12 articles on subjective well-being among the elderly, which were on average cited 89.7 times. It is followed by Stanford University with 83.9 citations on average per article. Other organizations are trailing behind, as the third

organization with the most citations per article is the University of Wisconsin with 54.5 citations per article.

Table 2.5: Top 25 organizations with the most published articles in research on the subjective well-being among the elderly

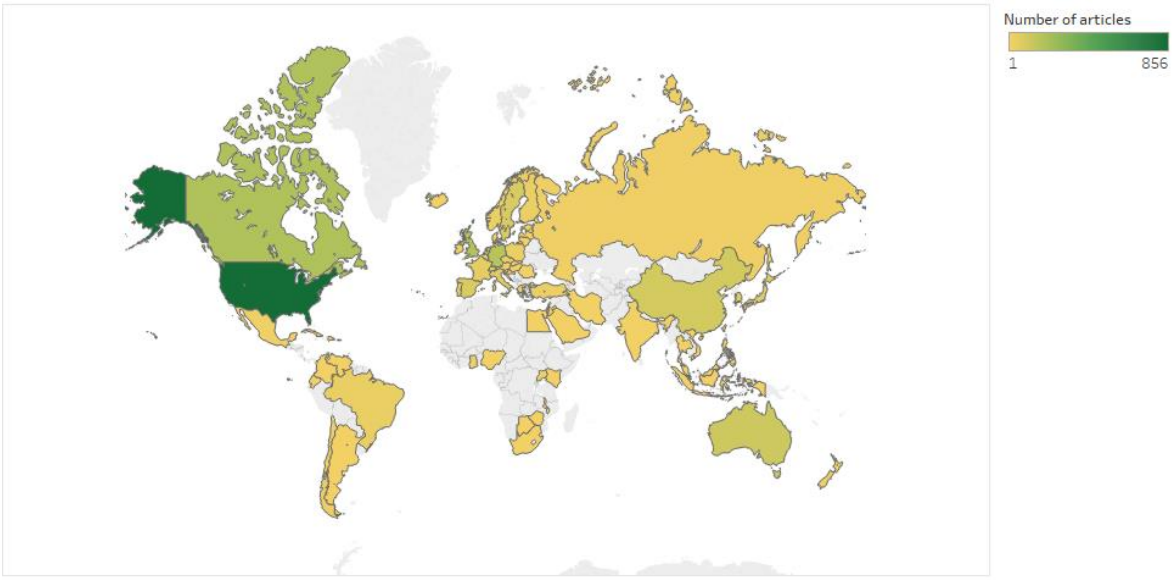
Organization	**Articles**	***R***	**Citations**	***R***	**Cit./article**	***R***
University of Michigan	46	*1*	1,294	*2*	28.1	*14*
Penn State University	31	*2*	1,206	*3*	38.9	*6*
University of Illinois	24	*3*	881	*6*	36.7	*8*
University of Toronto	24	*4*	701	*11*	29.2	*13*
University of Manitoba	23	*5*	594	*13*	25.8	*15*
University of Wisconsin	22	*6*	1,199	*4*	54.5	*3*
University of Groningen	21	*7*	708	*10*	33.7	*10*
University of Southern California	21	*8*	533	*15*	25.4	*16*
University of California	20	*9*	750	*9*	37.5	*7*
Duke University	20	*10*	649	*12*	32.5	*12*
Harvard University	20	*11*	426	*17*	21.3	*19*
UCL	19	*12*	817	*7*	43.0	*5*
Stanford University	17	*13*	1,427	*1*	83.9	*2*
Boston University	17	*14*	586	*14*	34.5	*9*
Max Planck Institute for Human Development	16	*15*	808	*8*	50.5	*4*
University of Heidelberg	16	*16*	379	*18*	23.7	*17*
University of Queensland	16	*17*	319	*20*	19.9	*21*
Karolinska Institutet	15	*18*	349	*19*	23.3	*18*
Lund University	14	*19*	460	*16*	32.9	*11*
University of British Colombia	14	*20*	229	*22*	16.4	*22*
Washington University	14	*21*	218	*23*	15.6	*23*
University of Zurich	13	*22*	270	*21*	20.8	*20*
University of Georgia	13	*23*	162	*24*	12.5	*24*
University of Valencia	13	*24*	103	*25*	7.9	*25*
Tel Aviv University	12	*25*	1,076	*5*	89.7	*1*

2.3.2.5 Countries

The clear leader in research on subjective well-being among the elderly is the USA, which published 856 articles in the period from 1961 to 2016. It is followed by Canada with 190 articles, Germany with 164, England with 138, and Australia with 111 published articles. Those are also the only countries that published at least 100 articles concerning subjective well-being among the elderly. The domination of the USA is not surprising, due to its leading role in scientific publications in general. In order to provide information on the relative importance of subjective well-being among the elderly, we normalized the number of published articles with the total number of publications in each country in the studied indexes. The results of the leading countries in absolute terms reveals that Canada (0.0087%) has the highest share of articles published in subjective well-being among the elderly research, followed by Australia (0.0083%), while in comparison the USA (0.0049%) and England (0.0038%) published a significantly smaller share of articles.

A historic glance at the field reveals a substantial broadening. While in the period from 1961 to 1980 only the USA and Canada published at least two articles on subjective well-being among the elderly, this number increased to 25 countries in the period from 2009 to 2016. Furthermore, while in the period from 1961 to 1980 articles from the USA represented 76 percent of the field, this number decreased to 34 percent in the period from 2009 to 2016. In comparison, the share of articles from the USA in the entire studied indexes amounted to 24 percent in the period from 1961 to 1980 and even increased to 27 percent in the period from 2009 to 2016. Figure 2.9 reveals that research on subjective well-being among the elderly is being conducted on all the continents (with the exception of Antarctica). Especially noticeable new contributors to the field are Asian countries, such as China, South Korea, and Taiwan.

Figure 2.9: A map of countries publishing research on subjective well-being among the elderly



2.4 Conclusion

Research on subjective well-being among the elderly has strong roots that continue to expand into numerous disciplines within numerous countries. By using bibliographic data, we were able to trace the development of the field and distinguish the most important articles, authors, journals, organizations and countries in research on subjective well-being among the elderly. We found numerous clusters of articles that indicate a multidisciplinary nature of the field and explore topics such as the relationship between life satisfaction and aging, volunteering, religion, health, physical activity, emotions, gender differences, or even methodological issues etc. Furthermore, we observed that the field is becoming more globalized, which is indicated by an increasing number of contributing organizations and especially countries. Finally, we expect the field to deeper further, rather than wider, by

scholars using new and improved methodologies, as well as taking advantage of new and improved longitudinal datasets.

The results of this paper have several important implications for the further evaluation of research on the subjective well-being among the elderly. First, in our analysis we provide important insights and considerations into the data collection and retrieval process. These will carry even more importance with the further expansion of the scientific field and the need for the retrieval of bibliographic metadata from other sources, such as Scopus and Google Scholar. Second, our analysis revealed a multidisciplinary nature of the field and clustering into diverse topics. Therefore, further evaluation should include deeper inquiries into these topics, as well as normalizations of output and impact data for a more accurate comparison. Finally, the visualizations we provided based on bibliographic coupling have important implications for research on network connections, such as subject collaborations, which are often drivers of new research frontiers. Although are analysis is not immune to limitations, which we already highlighted in the article, we were able to provide a robust data driven landscape of research on the subjective well-being among the elderly by using bibliometric methods.

3 THE EFFECT OF ECONOMIC STANDING ON SUBJECTIVE WELL-BEING IN THE CONTEXT OF DIFFERENT WELFARE STATE REGIMES[10]

Abstract

In this article, we study the causal effects of two economic standing measures on the subjective well-being of the elderly, as well as the moderating effects of distinct welfare regimes on these relationships. For our analysis, we classify countries into the following welfare regimes: Conservative, Social-democratic, Mediterranean, and Post-socialist. We address the income endogeneity issue by utilizing the panel structure of our data and instrumenting for income. Our findings show that the significance and strength of the effects of both economic standing measures on life satisfaction are moderated by the institutional context or welfare regime type, which we support by providing several robustness checks. Finally, we make a deeper inquiry into the heterogeneity of the countries classified. After controlling for endogeneity, our results indicate that the relationship between economic standing and life satisfaction is mostly driven by individual countries, which suggests caution when studying the effect of economic standing on subjective well-being.

Keywords: subjective well-being; life satisfaction; income; wealth; instrumental variable estimation; welfare

JEL classification: D31; I31; I38

[10] Published as Dominko, M., & Verbič, M. (2020). The effect of income and wealth on subjective well-being in the context of different welfare state regimes. *Journal of Happiness Studies*, 1-26.

3.1 Introduction

Subjective well-being, or how people evaluate their lives, is shaped by numerous predictors, such as demographic factors, health, social support, community context, governance, or even altruistic behavior. Nevertheless, none of these domains has captured the imagination of economists as much as economic standing, which remains the topic economists pay the most attention to in the context of subjective well-being research (Dominko & Verbič, 2018). In this article, we explore the relationship between economic standing and subjective well-being by analyzing the effects of two measures, namely income and net wealth, on subjective well-being. Although there are obvious links between these two measures, each has its own properties. While income is a flow measure tied to a certain time interval, wealth is a stock measure accumulated throughout one's entire life span. Furthermore, the distribution of income and wealth differs significantly, and the Gini coefficients on income are much lower than those on wealth (Jäntti, Sierminska, & Kerm, 2015). We study the effect of economic standing on the subjective well-being of people aged 50 and over, a group that has steered interest in economics due to the demographic trends in Europe and the United States. In old age, people are faced with an increased risk of losses in health, social networks, and financial means. Moreover, they are increasingly likely to require help (Pinquart & Sörensen, 2000). On the other hand, they have also been accumulating wealth over the entire course of their lives to serve as a safety net in case of unexpected shocks. These properties uniquely identify the elderly and clearly affect the relationship between economic standing and subjective well-being, which calls for further examinations that would also tackle the various sources of bias associated with models estimating the effect of income on subjective well-being.

In this article, we go beyond the relationship between economic standing and subjective well-being, and study how macro determinants, such as the welfare regime type, moderate this relationship. The modern welfare state has become a major fault line, with Left parties supporting its success and Right parties highlighting its alleged costs to society, which leads to scholars debating the advantages and disadvantages of welfare policies (Pacek & Radcliff, 2008). One of the questions is whether the welfare regime type can affect not only subjective well-being directly, but also the relationship between economic standing and life satisfaction, through its means of decommodification. To our knowledge, only Hochman & Skopek (2013) addressed this issue in a cross-sectional setting, and their findings suggest that the welfare regime impacts the relationship between economic standing and subjective well-being.

The aim of our study is threefold. First, we aim to estimate the causal effect of two economic standing measures on the life satisfaction of the elderly in Europe. Second, we aim to establish whether different welfare regime types have particular ways of moderating the effects of income and net wealth on the subjective well-being of the elderly. Finally,

we aim to make a deeper inquiry into the intra-country differences in distinct welfare regimes.

The rest of the article is structured as follows. In section 2, we first present the theoretical framework, where we link economic standing to subjective well-being and establish the welfare regime framework. We continue by discussing the potential sources of bias, presenting the data, as well as our empirical strategy, in section 3. After providing a descriptive overview of our dataset in section 4, we present our empirical results and the robustness check in sections 5 and 6. Finally, we address the limitations of classifying countries into welfare regimes in section 7, and conclude the article in section 8.

3.2 Theoretical framework

3.2.1 Linking economic standing to subjective well-being

Inquiries into the effect of economic standing on subjective well-being are substantial and can be classified into research on the "micro" and the "macro" level. The debate regarding the effect of income on happiness at the "macro" or national level has been ongoing since the establishment of the Easterlin paradox in 1974, which states that over time the positive effect of income on happiness disappears. The paradox has been heavily criticized, and economists (e.g. Stevenson, & Wolfers, 2008), psychologists (e.g. Diener, Tay, & Oishi, 2013), and sociologist (e.g. Veenhoven & Vergunst, 2014) have found evidence against it. Still, new evidence suggests that the debate is far from over (Easterlin, 2016). Research on the "micro" or individual level has been far more unanimous regarding the effect of income on subjective well-being. While initial research on a sample of lottery winners by Brickman, Coates, & Janoff-Bulman (1978) showed no long-term increases in subjective well-being, over time, scholars agreed upon a significant but rather small effect of income on subjective well-being in developed countries (see Diener & Biswas-Diener (2002) for a more detailed overview). With the appearance of new and improved longitudinal datasets, the debate shifted to researchers trying to establish a causal link between income and subjective well-being. In addition, methodological advances revealed that the effect of income on subjective well-being might not be as small as initially thought, due to downward biases affecting the cross-sectional estimates (Powdthavee, 2007).

Income is not the only measure of economic standing, although it dominates research on the relationship between material well-being and subjective well-being. Studies have found that different measures of socioeconomic status can lead to different outcomes and effect sizes (Christoph, 2010). A measure of economic standing that complements income is wealth. While both measures characterize an individual's economic standing, they have different properties. On the one hand, income is a flow measure, and is therefore restricted to a certain time interval. On the other hand, wealth is a stock measure, and is therefore

accumulated throughout one's entire life span. Furthermore, wealth enables one to borrow money, and consequently enhances one's investment opportunities and spending. It may also be a better indicator of one's long term consumption and standard of living. The importance of wealth is also likely to be higher in the population sample under investigation, which has retired, or is about to retire, and is therefore experiencing, or will experience, a decline in income. In their meta-analysis on the relationship between economic status and subjective well-being in developing countries, Howell & Howell (2008) found that the average effect sizes of studies using stock variables for economic standing were larger than those of studies using flow variables. However, their analysis also shows that the results were heavily influenced by two measures, and indicates that a comparison of studies which use different measures of wealth is not suitable. Two studies that used constructs for wealth similar to ours have arrived at different findings. Headey, Muffels, & Wooden (2008) found that wealth has significantly higher coefficient sizes than income in both the cross-sectional and the longitudinal setting. On the other hand, Knight, Song, & Gunatilaka (2009) found that wealth, although statistically significant, barely affects subjective well-being in comparison to income.

3.2.2 The welfare state regime framework

One of the aims of our analysis is to integrate the welfare state regime perspective, which can affect the relationship between economic standing and subjective well-being through the provision of social benefits, health care arrangements, and other measures introduced to mitigate unexpected shocks. Welfare states are shaped based on cultural, political and historical developments. In his seminal work "The three worlds of welfare capitalism," Esping-Andersen (1990) studies 18 OECD countries and identifies three welfare regime types (Conservative, Liberal, and Social-democratic). His distinction is based on decommodification, social stratification, and the private-public mix. Decommodification refers to the reliability of an individual's welfare on the market, social stratification concerns the intensity of redistribution, universality, and solidarity imposed by the state, and the private-public mix addresses the relative roles of the family, the state, the voluntary sector, and the market in welfare provisions. In the Conservative welfare regime, decommodification is moderate and the direct influence of the state is limited. The opposite is true of the Social-democratic welfare regime, which expresses the highest levels of decommodification and universal generous benefits, which do not depend on an individual's contribution. Finally, the Liberal welfare regime type is characterized by modest benefits and social insurance plans, as well as little redistribution of income (Arts & Gelissen, 2002; Bambra, 2007; Esping-Andersen, 1990; Fenger, 2007).

Esping-Andersen's approach to welfare regime typologies is not the only one – Pierson (1991), for example, identifies seven different criteria for the distinction of different welfare regime types. Furthermore, Esping-Andersen's approach has been heavily criticized on the theoretical, methodological, and empirical levels. One of the most

prominent critiques concerns the limited amount of countries taken into consideration. Scholars argue that southern and post-socialist European countries form two distinct welfare regime types that cannot be incorporated into one of the already established types. The Southern or Mediterranean welfare regime type is characterized by diverse income maintenance schemes, a healthcare system with partial coverage, and a prominent role of the family (Bambra, 2007). The Post-socialist welfare regime type, on the other hand, while being significantly heterogeneous, has characteristics from both the Conservative and the Liberal welfare regime, as well as high coverage, low benefit levels, and poor trust in state institutions (Beblavy, 2014).

The classification of countries into certain welfare regime types has its difficulties and has been subject to a fair share of criticism. The latter stems from the tradition of historical nominalism, which argues that typologies are just artificial constructs and should therefore be avoided (Ferragina & Seeleib-Kaiser, 2011). Moreover, countries are often not clearly definable and have features of more than one ideal welfare regime type (Ebbinghaus, 2012). To overcome some of the presented limitations, we conduct our analysis on countries that we can consider as prototypes, meaning that they closely relate to one of the five presented ideal types. Furthermore, we provide insights into how each of the classified countries moderates the effect of economic standing on subjective well-being. Finally, typologies are fundamentally a heuristic tool, which may provide us with a comparative view of the relationship between economic standing and subjective well-being.

3.3 Empirical framework

3.3.1 Sources of bias in the estimation of the effect of income on subjective well-being

The estimation of the effect of income on subjective well-being with micro data is associated with various sources of bias, which have already been established in the literature (Powdthavee (2010) provides a more detailed overview). First, the issue of unobserved heterogeneity can lead to the so-called “personality bias,” which positively affects the estimates. Second, the adaptation model suggests that once our “basic needs” are met, subjective well-being adapts to further increases in income. This can lead to an underestimation of the effect of income on subjective well-being if adaptation cannot be appropriately controlled for. Third, confounding factors, such as working hours or commuting, are strongly positively correlated with income, while being strongly negatively correlated with life satisfaction, which can ultimately, if not appropriately controlled for, lead to obscured estimates. Fourth, the measurement error in income leads to attenuation bias, which can lead to the income estimates being biased towards zero. Finally, the problem of simultaneity indicates that the interdependence between income and subjective well-being is not one-sided at all.

Especially in the earlier phases of research on the effect of income on subjective well-being, the vast majority of studies did not consider the income endogeneity issue, mainly due to the difficulties of performing a randomized experiment, as well as finding appropriate instruments in secondary survey data. To date, only a couple of studies have used exogenous sources of income increase, such as winning the lottery (Gardner & Oswald, 2002, 2007; Lindahl, 2005; Apouey & Clark, 2015) or institutional change (Frijters, Geishecker, Haisken-DeNew, & Shields, 2006; Frijters, Haisken-DeNew, & Shields, 2004) to mitigate the income endogeneity issue. The studies found a positive effect of income on subjective well-being, although even these studies have their limitations due to small effective sample sizes and the fact that they cannot control for time-varying omitted variables. Furthermore, to remedy the endogeneity issue scholars have applied various instrumental variables (IV) strategies. Luttmer (2005) used predicted household earnings to instrument for income and found a significant increase in the estimated coefficient compared to the baseline equation. Knight et al. (2009), who conducted a study in rural China using the father's years of education and the value of productive assets to instrument for income, found a similar increase in the coefficients compared to the ordinary least squares (OLS) estimates. Both of these studies have their limitations. While Luttmer's article does not report the IV estimates in the fixed effects panel estimation, the study of Knight et al. is cross-sectional in nature. Powdthavee (2010) proposed payslips, which can be either seen or not seen by the interviewer, as an instrumental variable for income. He also finds an increase in the IV estimates compared to the OLS estimates. To study the causal effect of income on subjective well-being, Li, Liu, Ye, & Zhang (2011) employed the Chinese Twins Survey and used sibling-reported information as an instrumental variable to account for measurement bias. Moreover, they used industry average income and industry average wage growth as instruments for income to address the potential reverse causality between income and subjective well-being. Their findings are similar to those of the before mentioned studies. Finally, Krenz (2013) used the household's chief wage earner's job status as an instrumental variable in a multi-country setting, and also found a downward bias in her initial OLS estimates.

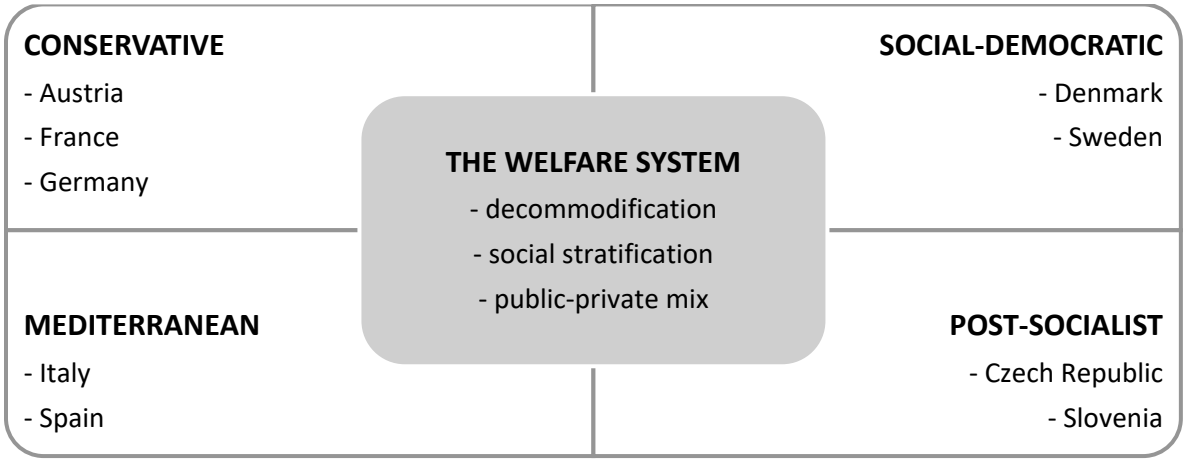
3.3.2 Data and measures

To conduct our analysis, we derived data from the Survey of Health, Ageing and Retirement in Europe (SHARE), which is a cross-national panel database of micro data on the socio-economic status, health, and social networks of individuals aged 50 or over. The survey currently covers more than 120,000 individuals in 27 European countries, as well as Israel. To date, six waves of interviews have been conducted. Due to the expanding nature of the survey with each additional wave, we limited our sample to waves four to six (conducted in 2011, 2013, and 2015), as well as to countries we could identify as "pure" welfare system countries. This limited our sample to the following countries: Austria, the Czech Republic, Denmark, France, Germany, Italy, Slovenia, Spain, and Sweden. There is

both entry into and exit from the survey, which leads to an unbalanced panel and an increasing number of interviews with each additional wave.

To classify countries into different welfare regimes, we expanded upon Esping-Andersen's (1990) typology. We used Ferragina & Seeleib-Kaiser's (2011) overview of different welfare state typologies, where they categorize groups of countries based on the consistency of their classifications, in order to identify so-called "pure countries," or countries that were more than 80 percent of the time classified into the same regime type. Additionally, we drew upon the works of Bambra (2007) to categorize countries into the Mediterranean welfare regime and the works of Fenger (2007) in order to identify countries with the Post-socialist welfare regime. Following the literature mentioned above, we categorized countries into the following welfare system types, as can be seen in Figure 3.1: Conservative (Austria, France, and Germany), Social-democratic (Denmark and Sweden), Mediterranean (Italy and Spain), and Post-socialist (the Czech Republic and Slovenia). Unfortunately, the SHARE database did not allow us to include the Liberal welfare regime into our analysis, as there is no country in the database which we could classify as a "pure" Liberal welfare type country.

Figure 3.1: The classification of countries into different welfare regimes



We measured subjective well-being, our dependent variable, as general life satisfaction on an 11-point single item scale,[11] which elicits a global evaluation of one's life and is the predominant measure of life satisfaction in subjective well-being research. Furthermore, the overall life satisfaction measure has been found to have sufficiently high reliability ratios to yield informative estimates (Krueger & Schkade, 2008). We measured the two independent variables of interest, namely income and net wealth, at the household level and used them in the logarithmic form, which has been found to be the most suitable for subjective well-being models (Layard, Nickell, & Mayraz, 2008; Sacks, Stevenson, & Wolfers, 2010). While we obtained income by aggregating all individual income

[11] The question in the survey was: "On a scale from 0 to 10, where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?"

components, we constructed the net wealth by summing up the value of bank accounts, stocks, bonds, mutual funds, and savings for long-term investments, and deducting financial liabilities.

In addition to income and wealth, subjective well-being is influenced by other characteristics.[12] We followed previous research in order to appropriately control for them. First, we controlled for other labor market outcomes, which we measured through the respondents' years of education, as well as dummy variables for unemployment and retirement. Literature on the effect of education on subjective well-being is inconsistent, although modern studies suggest a negligible effect after expectations are met (Kristoffersen, 2018). Furthermore, the effect of retirement has also been found to be minimal (Bonsang & Klein, 2011). On the other hand, unemployment negatively impacts subjective well-being, even more so in old age (Winkelmann & Winkelmann, 1998; Pultz & Teasdale, 2017). Second, we controlled for family characteristics by including dummy variables for marital status and being widowed, along with the number of the respondents' grandchildren. Following the literature, we expected marriage to positively and being widowed to negatively impact subjective well-being (Diener, Suh, Lucas, & Smith, 1999). Research on the relationship between grandparenthood and subjective well-being remains sparse and inconclusive (Mahne & Huxhold, 2015). In order to account for poor health, which has been found to have a negative impact on subjective well-being,[13] we used self-perceived health, which is measured on a scale from 1 to 5, where 1 stands for "excellent" and 5 for "poor." Additionally, we included a dummy variable indicating whether the respondent is limited in his or her daily activities. We also controlled for altruistic behavior, which we expected to have a positive effect on subjective well-being (Osumi & Yamane, 2017), by including a variable measuring the amount of times the respondent had given financial gifts of 250 euros or more. Finally, we controlled for household size and the respondent's age, which we expected to exhibit a positive effect on life satisfaction due to the U-shaped relationship between happiness and age found in the literature (Blanchflower & Oswald, 2004, 2008).

3.3.3 Empirical strategy

We began our analysis with a conventional cross-sectional estimation:

$$swb_i = \beta_0 + \beta_1 ln\,(hi_i) + \beta_2\, ln(nw_i) + \beta_3 sd + \beta_4 med + \beta_5 ps + \beta_6 sdln\,(hi_i) + \beta_7 medln\,(hi_i) + \beta_8 psln\,(hi_i) + \beta_9\, sdln(nw_i) + \beta_{10} med\, ln(nw_i) + \beta_{11}\, psln(nw_i) + X_i\gamma + \varepsilon_i,$$

[12] A fairly comprehensive overview is given in Ed Diener's collected works, which encompasses many of his papers (Diener, 2009).

[13] A meta-analysis on the relationship between health and subjective well-being was conducted already in 1984 by Okun, Stock, Haring, & Witter.

where swb_i is the self-reported measure of well-being, $ln(hi_i)$ denotes the log of household income, $ln(nw_i)$ denotes the log of household net wealth, while *sd*, *med*, and *ps* represent dummy variables for the Social-democratic, Mediterranean, and Post-socialist welfare regimes, respectively. Furthermore, to study the effect of welfare regimes on the relationship between economic standing and subjective well-being, we include interactive variables for both income ($sdln(hi_i)$, $medln(hi_i)$, $psln(hi_i)$) and net wealth ($sdln(nw_i)$, $medln(nw_i)$, $psln(nw_i)$). Finally, X_i denotes the row vector of control variables presented in section 3.2 (sex, age, age^2, years of education, married, widowed, retired, unemployed, number of grandchildren, self-perceived health, limitations with activities, and altruistic behavior).

The results of the ordinary least squares (OLS) estimation in equation (1) are exposed to potential biases as presented in section 3.1. Therefore, in our next step we made use of the longitudinal dimension of our dataset and estimated an individual fixed effects model in order to control for unobserved heterogeneity.[14] Finally, we applied the fixed effects instrumental variables method,[15] which allowed us to address not only unobserved heterogeneity but also the omitted time-varying variables bias. To instrument for income and the interactions between income and certain welfare regimes, we used the spouses' years of education and the interactive terms between the spouses' years of education and welfare regimes, which we expected to have a positive effect on household income, while not affecting the life satisfaction of the respondent. Our selection of instruments was motivated by previous findings on the relationship between the individual's and his or her partner's education, as already discussed by Becker (1973), namely that people marry based on certain characteristics, which are positively correlated with income. Because we suspected that the respondent's education might be correlated with other factors influencing his or her subjective well-being, we used the partner's years of education to prevent other factors from affecting the orthogonality condition between the instrument and the error term. We also used the lagged values of income and the interactive terms of lagged income and welfare regimes as instruments.

3.4 Descriptive statistics

A preliminary inspection of our sample revealed the possibility of potential outlier individuals. Due to the sheer size of our sample, we were unable to individually check the data. Therefore, we constructed distributions of the respondents for each welfare regime for the two variables of interest (income and net wealth), and removed the respondents in the first 0.1 percentile as well as those in the last 0.1 percentile for each variable and

[14] To choose between the random effects model and the fixed effects model we consulted the Hausman test, which rejected the null hypothesis that the difference in coefficients is not systematic.

[15] The fixed effects instrumental variables estimator performs a within 2SLS regression of $y_{it} - \bar{y}_i$ on $x_{it} - \bar{x}_i$ with the instruments $z_{it} - \bar{z}_i$.

welfare regime. The final sample for our empirical analysis contains data on 94,234 respondents for the SHARE waves four through six.

Table 3.1 provides a descriptive overview of our entire sample and the distinct welfare regime types. Respondents in the Social-democratic welfare regime report the highest mean value of general life satisfaction (8.51), followed by respondents in the Conservative (7.80), Mediterranean (7.62) and Post-socialist (7.48) welfare regimes, respectively. Furthermore, respondents in the Social-democratic welfare regime have the highest average household income (€47,001.82) and net wealth (€125,446.50), while those in the Post-socialist welfare regime place last in both categories (€13,657.06; €9,722.41). Regarding age, sex, and household size, the sample is fairly homogenous. The vast majority of respondents in the Mediterranean welfare regime are married (77.28%), while in the Conservative welfare regime this statistic is more than ten percentage points lower. The Post-socialist welfare regime has the highest share of retired respondents (71.50%), followed by the Conservative (62.69%), Social-democratic (59.17%), and Mediterranean (50.95%) welfare regime. The share of unemployed respondents is low in all four welfare regime types. Respondents in the Social-democratic welfare regime have the most years of education (12.51), as well as the highest number of grandchildren (3.17). Moreover, they perceive their health as the best (2.61) and have the lowest share of limitations with activities (39.72%). They also fare the best regarding altruistic behavior (0.73), which has the lowest mean value in the Mediterranean welfare regime type (0.34). These findings come as no surprise and are in line with our expectations.

Table 3.1: Descriptive statistic by welfare regime type

Welfare regime **Variable**	**Conser.**	**Social-dem.**	**Mediterr.**	**Post-soc.**	**ALL**
General life satisfaction (mean)	7.80	8.51	7.62	7.48	7.83
	(1.69)	*(1.42)*	*(1.69)*	*(1.78)*	*(1.70)*
Income (mean)	34,372.34	47,001.82	22,663.63	13,657.06	29,858.50
	(22,834.36)	*(27,376.42)*	*(17,992.43)*	*(12,420.19)*	*(23,954.24)*
Income (median)	28,800.00	41,111.54	18,000.01	10,575.90	23,019.74
Net wealth (mean)	47,825.64	125,446.50	21,019.66	9,722.41	48,778.28
	(81,263.02)	*(161,897.30)*	*(38,511.96)*	*(13,947.10)*	*(97,528.51)*
Net wealth (median)	17,000.00	64,582.54	6,000.00	4,397.15	12,212.41
Female (%)	56.34	54.00	54.60	57.03	55.61
Married (%)	67.16	69.96	77.28	70.50	70.80
Widowed (%)	15.16	11.13	12.99	14.93	13.81
Retired (%)	62.69	59.17	50.95	71.50	60.94
Unemployed (%)	2.07	1.49	2.95	2.25	2.20
Age (mean)	67.05	67.78	68.40	66.28	67.36
	(10.42)	*(10.16)*	*(10.59)*	*(9.30)*	*(10.23)*

(table continues)

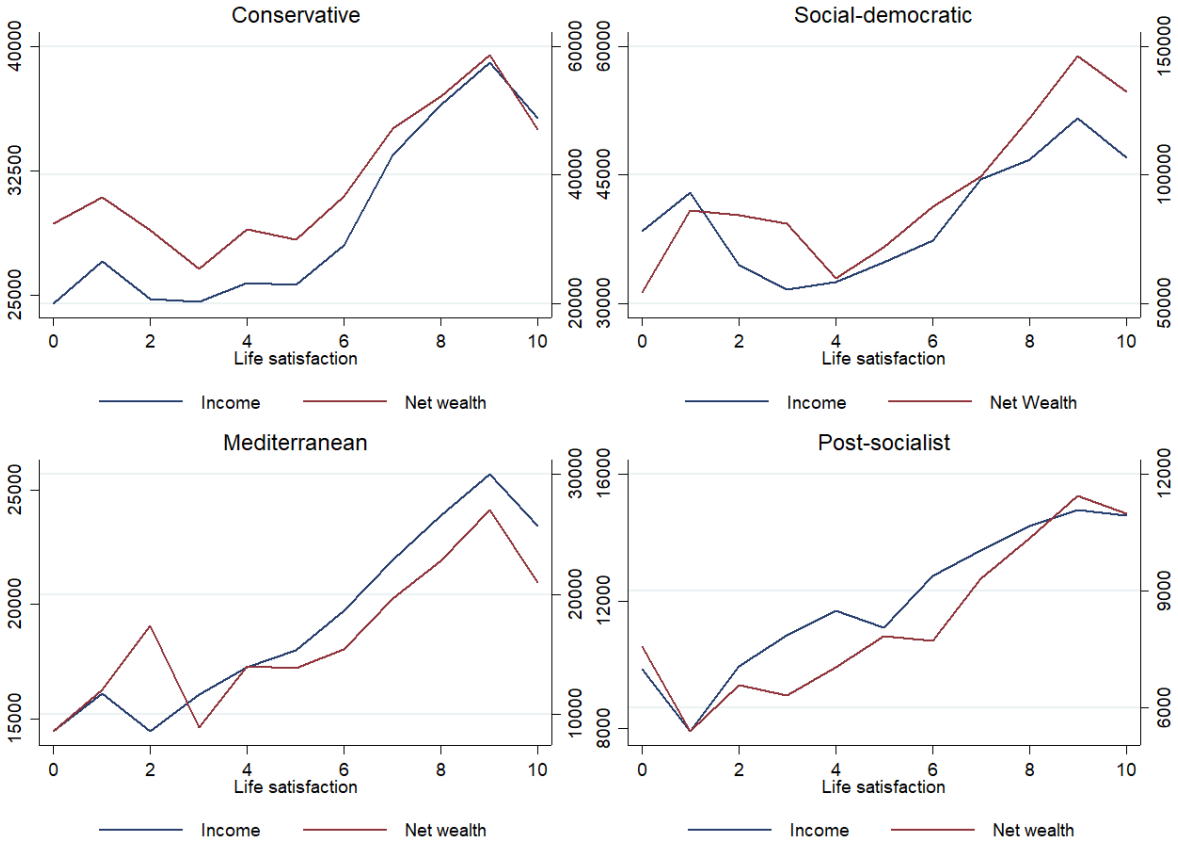
(continued)

Household size (mean)	2.01	1.92	2.38	2.21	2.12
	(0.88)	*(0.69)*	*(1.00)*	*(1.03)*	*(1.03)*
Years of education (mean)	11.11	12.51	8.77	11.90	10.98
	(4.29)	*(3.87)*	*(4.87)*	*(3.31)*	*(4.40)*
Grandchildren (mean)	2.47	3.17	2.19	2.83	2.61
	(2.90)	*(3.06)*	*(2.70)*	*(2.42)*	*(2.82)*
Self-perceived health (mean)	3.12	2.61	3.28	3.27	3.09
	(1.03)	*(1.14)*	*(1.03)*	*(1.00)*	*(1.08)*
Limitations with activities (%)	47.66	38.78	38.56	49.94	44.20
Altruistic behavior (mean)	0.59	0.73	0.34	0.54	0.55
	(0.94)	*(1.02)*	*(0.72)*	*(0.91)*	*(0.91)*
Number of observations	34,488	18,233	22,686	18,827	94,234

Note: Standard deviations are reported in parentheses.

A further examination of the relationship between subjective well-being and economic standing in different welfare regimes is presented in the four graphs in Figure 3.2. The figure indicates a positive relationship for both income and net wealth for all four welfare regime types. However, while in the Mediterranean and the Post-socialist welfare regime the average income grows somewhat linearly with life satisfaction, this is not the case in the Conservative and Social-democratic welfare regimes. In the Conservative welfare regime, the average income starts growing at life satisfaction levels above five. Furthermore, in the Social-democratic welfare regime, after an initial rise, the average income starts falling and significantly recovers only when the life satisfaction level reaches four. Another interesting observation is that the average values for both income and net wealth peak when general life satisfaction equals nine for all four welfare regimes types under investigation. The findings in the descriptive data provide us with valuable information regarding the differences between welfare regime types and are instructive for our regression analysis.

Figure 3.2: Average income and net wealth at different life satisfaction levels by welfare regime type



Note: The left y-axis represents the average income at different life satisfaction levels and the right y-axis shows the average net wealth at different life satisfaction levels; household income and net wealth are reported in euros.

3.5 Empirical results

In Table 3.2 we report the estimates for our baseline ordinary least squares model (OLS baseline), the ordinary least squares model with included dummy and interactive variables (OLS), the standard fixed effects model (FE), and the fixed effects model with instrumented income (IVFE). The baseline results indicate that both income and net wealth have a statistically significant positive effect on life satisfaction, although the coefficient for income (0.143) is almost three times as large as the one for net wealth (0.056). The results for our control variables reveal positive but rather modest effects of age, retirement, the number of grandchildren, and household size on life satisfaction in older age. The results also show higher levels of life satisfaction for women and married respondents, and lower levels of life satisfaction for the unemployed. Furthermore, while education has a negligible negative effect, altruistic behavior positively affects life satisfaction. Both variables indicating the poor health of the respondents have strong statistically negative effects on life satisfaction. These results are in line with previous findings on the

determinants of subjective well-being (see e.g. Diener et al. (1999) and Dolan, Peasgood, & White (2008) for an overview).

After including dummy and interactive variables for individual welfare regimes, the effect size of income remains the same, while the effect size of net wealth decreases to 0.0381. Other control variables remain stable. Especially noticeable is the large positive impact the Social-democratic welfare regime has on life satisfaction in comparison to the Conservative welfare regime. Furthermore, the Mediterranean welfare regime also elicits a positive effect on life satisfaction. A closer look at the included interactive variables reveals that in the Social-democratic (−0.181), Mediterranean (−0.079), and Post-socialist (−0.038) welfare regime types, income has a significantly smaller effect on life satisfaction than in the Conservative welfare regime. The results also show that it is only in the Social-democratic welfare regime type that net wealth has a statistically significantly smaller effect on life satisfaction (−0.033).

The FE results, where we control for unobserved heterogeneity, reveal significant differences in comparison to the OLS results. Especially noticeable is the decrease in the effect size of income (0.063), which is consistent with the findings about positive personality biases in the relationship between income and subjective well-being. The coefficient for net wealth, on the other hand, remains fairly stable. Interestingly, both the effect of education and the effect of retirement disappear in the FE estimation, while the effect sizes of marriage, unemployment, self-perceived health, limitations with activities, and altruistic behavior significantly decrease. On the other hand, the coefficients for age and household size increase, while the coefficient for the number of grandchildren turns negative. The interactive variables show significantly smaller effect sizes of income in the Social-democratic (−0.085), Mediterranean (−0.058), and Post-socialist (−0.054) welfare regimes. In comparison to the OLS results, not only the Social-democratic (−0.028) but also the Post-socialist (−0.022) welfare regime negatively affects the relationship between net wealth and life satisfaction.

To address both unobserved heterogeneity and the omitted time-varying bias, we applied the IVFE approach, where we instrumented for income. The estimates exhibit an income effect (0.269) that is almost twice as large as the one obtained in the OLS estimates, which indicates a negative overall bias and is consistent with the results found by Luttmer (2005), Knight et al. (2009), Powdthavee (2010), and Krenz (2013). Other coefficients remain consistent with those from the FE estimates, with the exception of marriage, which does not exhibit statistical significance in the IVFE estimates. The interactive dummies once more reveal a significantly smaller effect of income in all of the remaining three welfare regimes, namely the Social-democratic (−0.300), the Mediterranean (−0.290), and the Post-socialist regime (−0.250). Furthermore, the interactive dummies for wealth confirm a significantly smaller effect of net wealth in the Social-democratic (−0.034) and Post-socialist (−0.022) welfare regimes.

Table 3.2: OLS, FE and IVFE estimates of the effect of economic standing on life satisfaction in different welfare regime types

Model	**OLS**	**OLS**	**FE**	**IVFE**
Variables	(baseline)			
Income (ln)	0.143***	0.148***	0.063***	0.269**
	(0.006)	*(0.014)*	*(0.022)*	*(0.133)*
Net wealth (ln)	0.056***	0.0381***	0.0372***	0.034***
	(0.002)	*(0.004)*	*(0.007)*	*(0.008)*
Age	0.034***	0.038***	0.158***	0.148***
	(0.006)	*(0.006)*	*(0.024)*	*(0.027)*
Age2	-0.000***	-0.000***	-0.001***	-0.001***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Female	0.021**	0.018*	-	-
	(0.011)	*(0.011)*		
Married	0.264***	0.304***	0.169**	0.018
	(0.016)	*(0.016)*	*(0.082)*	*(0.102)*
Widowed	-0.015	0.020	-0.081	-0.187
	(0.020)	*(0.020)*	*(0.010)*	*(0.176)*
Retired	0.071***	0.084***	0.042	0.0244
	(0.014)	*(0.014)*	*(0.028)*	*(0.030)*
Unemployed	-0.322***	-0.339***	-0.238***	-0.205***
	(0.035)	*(0.035)*	*(0.058)*	*(0.058)*
Grandchildren	0.022***	0.016***	-0.016**	-0.009
	(0.002)	*(0.002)*	*(0.007)*	*(0.007)*
Household size	0.013**	0.035***	0.057***	0.023
	(0.007)	*(0.007)*	*(0.020)*	*(0.021)*
Years of education	-0.004***	-0.005***	0.004	0.002
	(0.001)	*(0.001)*	*(0.007)*	*(0.008)*
Self-perceived health	-0.506***	-0.483***	-0.219***	-0.196***
	(0.006)	*(0.006)*	*(0.010)*	*(0.010)*
Limitations with activities	-0.155***	-0.175***	-0.088***	-0.083***
	(0.012)	*(0.012)*	*(0.017)*	*(0.018)*
Altruistic behavior	0.062***	0.067***	0.016**	0.017**
	(0.006)	*(0.006)*	*(0.007)*	*(0.008)*
Social-democratic	-	2.593***	-	-
		(0.236)		
Mediterranean	-	0.674***	-	-
		(0.163)		
Post-socialist	-	0.278	-	-
		(0.183)		
Social-democratic (income)	-	-0.181***	-0.085**	-0.300**
		(0.024)	*(0.035)*	*(0.138)*
Mediterranean (income)	-	-0.079***	-0.058**	-0.290**
		(0.017)	*(0.028)*	*(0.134)*
Post-socialist (income)	-	-0.038**	-0.054*	-0.250*
		(0.019)	*(0.032)*	*(0.135)*
Social-democratic (wealth)	-	-0.033***	-0.028**	-0.034*
		(0.009)	*(0.014)*	*(0.018)*

(table continues)

(continued)

Mediterranean (wealth)	-	0.008	-0.010	-0.007
		(0.006)	*(0.010)*	*(0.011)*
Post-socialist (wealth)	-	0.002	-0.029***	-0.022*
		(0.007)	*(0.011)*	*(0.012)*
Constant	5.775***	5.656***	2.073**	-
	(0.227)	*(0.255)*	*(0.836)*	
Observations	94,234	94,234	94,234	54,302
R-squared	0.168	0.175	0.021	

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

In order to provide more intuitive results on the relationship between economic standing and life satisfaction in the four welfare regimes under study, we conducted postestimation tests to establish whether the combined effect of income and the interactive terms, as well as that of net wealth and the interactive terms, for each welfare regime, significantly differs from zero. The results, which are provided in Table 3.3, show that in the OLS estimates income significantly affects life satisfaction in the Conservative (0.148), Post-socialist (0.110), and Mediterranean (0.069) welfare regimes. However, after including the panel and instrumental variables dimensions, the positive effect of income in the Mediterranean and Post-socialist welfare regimes disappears. The effect of net wealth in the OLS estimates significantly differs from zero in the Mediterranean (0.046), Post-socialist (0.040), and Conservative (0.038) welfare regimes. After controlling for unobserved heterogeneity, the effect disappears in the Post-socialist welfare regime and decreases in the Mediterranean welfare regime (0.027), while it remains stable in the Conservative welfare regime (0.037). The IVFE setting does not significantly change the results obtained from the FE model. The differences in the effect of income on life satisfaction between the OLS and the FE estimates are also presented in Figure 3.3, where we plot predictive margins at different values of Income (ln), with 95 percent confidence intervals. The figure clearly demonstrates a positive effect of income on life satisfaction in the Mediterranean and Post-socialist welfare regimes in the OLS model, which disappears after controlling for unobserved heterogeneity in the FE model.

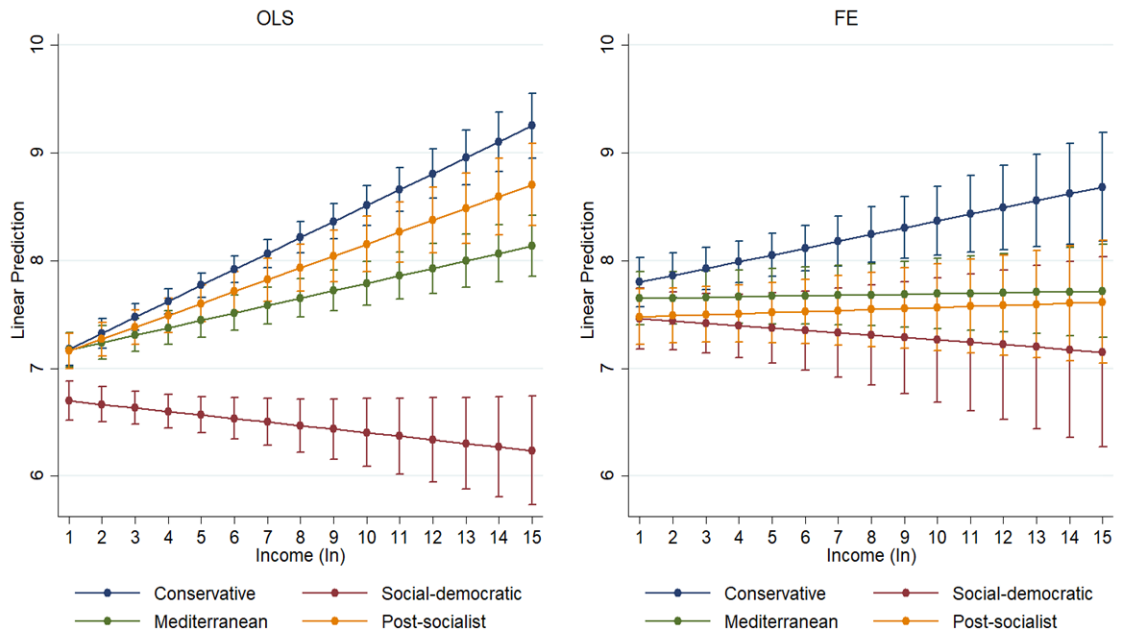
The presented results reveal the extent to which the institutional context can affect the relationship between economic standing and subjective well-being through its means of decommodification and social stratification. Two examples of mechanisms influencing this relationship are the degree of universalism, which is the highest in the Social-democratic welfare regime, and negatively affects the relationship between income and subjective well-being, and the extent of social benefits provisions. Those effect the amount of accumulated net wealth required to maintain a certain level of subjective well-being. This might help explain the positive effect of net wealth on subjective well-being in the Mediterranean welfare regime, which has a rather weak social security system and relies heavily on the extended family.

Table 3.3: The sum of the Income (ln) and Net wealth (ln) coefficients and the interaction terms for all four welfare regime types, using OLS, FE, and IVFE estimates

Model	**OLS**	**FE**	**IVFE**
Welfare regime			
		Income (ln)	
Conservative	0.148***	0.063***	0.269**
	(0.014)	*(0.022)*	*(0.133)*
Social-democratic	-0.033	-0.022	-0.031
	(0.021)	*(0.033)*	*(0.039)*
Mediterranean	0.069***	0.005	-0.021
	(0.010)	*(0.015)*	*(0.016)*
Post-socialist	0.110***	0.010	0.019
	(0.014)	*(0.020)*	*(0.023)*
		Net wealth (ln)	
Conservative	0.038***	0.037***	0.034***
	(0.004)	*(0.007)*	*(0.008)*
Social-democratic	0.005	0.009	0.001
	(0.008)	*(0.014)*	*(0.016)*
Mediterranean	0.046***	0.027***	0.028***
	(0.004)	*(0.006)*	*(0.007)*
Post-socialist	0.040***	0.008	0.013
	(0.005)	*(0.008)*	*(0.008)*

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

Figure 3.3: Predictive margins of Income (ln) with 95 percent confidence intervals (OLS and FE)



The question remains whether our instruments allow for consistent estimation. To address this issue, we provide test statistics for the consistency of our instruments in Table 3.4. These help us answer the questions regarding the correlation of our instruments with the endogenous regressor, the identification of the equation, and the validity of our instruments. The Kleibergen-Paap Wald F statistic yields 191.276, which suggests that we can reject the null hypothesis of weak instruments. Furthermore, the Kleibergen-Paap LM statistic is statistically significant, meaning that the model is identified. The Hansen J test for overidentifying restrictions is statistically insignificant, which means that we cannot reject the null hypothesis that the effects identified by different instruments are different. Finally, the Anderson-Rubin Wald test is statistically insignificant, which means that we have satisfied the overidentifying restrictions, as we cannot reject the null hypothesis regarding the coefficients of the endogenous regressors in the structural equation being jointly equal to zero. The presented results suggest that we can be reasonably confident in the instruments for income in our subjective well-being equation.

Table 3.4: Consistency checks for the IVFE estimates

1.Weak identification test	**test statistic**	**p-value**
Kleibergen-Paap Wald rank F statistic	191.276	*(0.000)*
2. Underidentification test		
Kleibergen-Paap rank LM statistic	520.692	*(0.000)*
3. Overidentification test		
Hansen J statistic	0.047	*(0.828)*
4. Weak-instrument robust inference		
Anderson-Rubin Wald test	2.010	*(0.134)*

3.6 Robustness checks

To extend and strengthen our findings, we conducted several robustness checks. First, we carried out an estimation of our baseline model on four subsamples, each representing one welfare regime type. In Table 3.5 we report the OLS and FE estimates for each subsample. We do not report IVFE estimates, as we were unable to find consistent instruments for each of the four presented subsamples, which prevents us from comparing the results. The OLS estimates show that income has a statistically significant positive effect on life satisfaction in all four welfare regimes under study, and that the effect size is the largest in the Conservative welfare regime (0.171), followed by the Post-socialist (0.099), Mediterranean (0.046), and Social-democratic (0.043) welfare regimes, respectively. They also show that net wealth has a positive effect on life satisfaction in all four welfare regimes, although the differences in the effect sizes are significantly smaller in comparison to the income effect. The FE estimates, however, reveal that the effect of income is considerably smaller in the Conservative welfare regime (0.065), while not being statistically significant in the remaining three welfare regime types. Moreover, they show that the effect of net wealth remains statistically significant in the Conservative (0.037) and

Mediterranean (0.027) welfare regimes, while this is not the case for the Social-democratic and Post-socialist welfare regimes. The presented results support the findings from our initial regression analysis that the institutional context moderates the relationship between economic standing and subjective well-being.

Table 3.5: OLS and FE estimates of the effect of economic standing on life satisfaction in different welfare regime types

Model	**OLS**	**OLS**	**OLS**	**OLS**	**FE**	**FE**	**FE**	**FE**
Welfare regime	**Conservative**	**Social-democratic**	**Mediterranean**	**Post-socialist**	**Conservative**	**Social-democratic**	**Mediterranean**	**Post-socialist**
Income (ln)	0.171***	0.043**	0.046***	0.099***	0.065***	-0.014	-0.002	0.018
	(0.015)	*(0.021)*	*(0.011)*	*(0.016)*	*(0.021)*	*(0.027)*	*(0.017)*	*(0.022)*
Net wealth (ln)	0.039***	0.028***	0.040***	0.032***	0.037***	0.008	0.027***	0.007
	(0.004)	*(0.007)*	*(0.004)*	*(0.006)*	*(0.006)*	*(0.011)*	*(0.007)*	*(0.008)*
Age	0.056***	0.053***	0.044***	-0.015	0.111***	0.217***	0.121**	0.202***
	(0.010)	*(0.013)*	*(0.012)*	*(0.018)*	*(0.034)*	*(0.042)*	*(0.053)*	*(0.060)*
Age2	-0.000***	-0.000***	-0.000***	0.000	-0.001***	-0.002***	-0.001**	-0.001***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Female	0.034*	0.091***	-0.052**	0.009	-	-	-	-
	(0.018)	*(0.020)*	*(0.023)*	*(0.026)*				
Married	0.239***	0.233***	0.344***	0.412***	0.124	-0.121	0.538**	0.428*
	(0.026)	*(0.029)*	*(0.038)*	*(0.038)*	*(0.119)*	*(0.125)*	*(0.228)*	*(0.259)*
Widowed	0.042	0.070*	-0.065	0.080*	0.047	-0.286*	0.124	0.110
	(0.032)	*(0.040)*	*(0.048)*	*(0.048)*	*(0.141)*	*(0.149)*	*(0.242)*	*(0.284)*
Retired	0.061**	0.063**	0.071***	0.046	0.085**	0.054	-0.009	0.007
	(0.024)	*(0.031)*	*(0.027)*	*(0.038)*	*(0.041)*	*(0.046)*	*(0.057)*	*(0.068)*
Unemployed	-0.449***	-0.309***	-0.367***	-0.198**	-0.149*	-0.322***	-0.371***	-0.132
	(0.060)	*(0.082)*	*(0.064)*	*(0.085)*	*(0.089)*	*(0.110)*	*(0.107)*	*(0.126)*
Grandchildren	0.008**	0.031***	0.010**	0.030***	0.014	-0.021**	-0.039***	-0.037**
	(0.003)	*(0.004)*	*(0.004)*	*(0.006)*	*(0.011)*	*(0.012)*	*(0.013)*	*(0.018)*
Household size	0.031***	0.079***	0.056***	-0.001	0.080**	0.044	0.076**	-0.000
	(0.012)	*(0.019)*	*(0.012)*	*(0.013)*	*(0.031)*	*(0.043)*	*(0.038)*	*(0.037)*
Years of education	-0.023***	-0.011***	0.006***	0.024***	0.000	-0.004	0.012	0.010
	(0.002)	*(0.003)*	*(0.002)*	*(0.004)*	*(0.009)*	*(0.013)*	*(0.013)*	*(0.040)*
Self-perceived health	-0.571***	-0.375***	-0.463***	-0.454***	-0.250***	-0.126***	-0.285***	-0.180***
	(0.010)	*(0.011)*	*(0.013)*	*(0.015)*	*(0.015)*	*(0.016)*	*(0.020)*	*(0.023)*

(table continues)

(continued)

Limitations with activities	-0.068***	-0.137***	-0.237***	-0.287***	-0.030	-0.073**	-0.098**	-0.168***
	(0.020)	*(0.025)*	*(0.027)*	*(0.029)*	*(0.026)*	*(0.031)*	*(0.039)*	*(0.038)*
Altruistic behavior	0.109***	0.031***	0.048***	0.029**	0.009	0.030**	0.007	0.020
	(0.009)	*(0.010)*	*(0.015)*	*(0.014)*	*(0.012)*	*(0.013)*	*(0.023)*	*(0.018)*
Constant	5.163***	6.368***	6.297***	7.416***	3.060**	1.355	3.600*	-0.220
	(0.389)	*(0.486)*	*(0.443)*	*(0.616)*	*(1.212)*	*(1.504)*	*(1.892)*	*(2.079)*
Observations	34,488	18,233	22,686	18,827	34,488	18,233	22,686	18,827
R-squared	0.165	0.131	0.141	0.119	0.024	0.015	0.032	0.016

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively

Second, we conducted further regression analyses, in which we extended our initial model by including two additional control variables, namely home ownership and inequality, which might possibly influence the relationships between the two economic standing measures under study and subjective well-being. We defined home ownership as the value of one's main home residence and used it in the logarithmic form. To measure economic inequality, we used the Gini coefficient of equivalized disposable income, which we obtained from Eurostat (EU-SILC survey) for the years 2011, 2013, and 2015 (the years in which interviews for the waves 4, 5, and 6 were conducted, respectively). The OLS, FE, and IVFE estimates presented in Table 3.6 reveal that the two additional control variables do not significantly change the effect income and net wealth have on subjective well-being. Furthermore, the results show that the value of one's home significantly affects subjective well-being in the OLS estimates; however, after controlling for unobserved heterogeneity and the omitted time-varying bias, the effect disappears. More interesting are the observations we can make on the effect of income inequality on subjective well-being. Whereas the results show a negative effect of inequality on subjective well-being in the cross-sectional estimates, in the longitudinal setting, the effect of inequality on subjective well-being is statistically significant and positive. These results are in line with Hirschman & Rothschild's (1973) tunnel effect hypothesis, which suggests that subjective well-being increases with inequality when inequality is low, but after inequality reaches a certain threshold, subjective well-being starts to decrease. Wang, Pan, & Luo (2014) used survey data from China to determine the threshold, which they found to be 0.405. This is well above the Gini coefficient in our sample, which is approximately 0.29, and helps explain the obtained result.

Table 3.6: OLS, FE and IVFE estimates of the effect of economic standing on life satisfaction in different welfare regime types – home ownership and inequality

Model	**OLS**	**OLS**	**FE**	**IVFE**
Variables	(baseline)			
Income (ln)	0.146***	0.137***	0.061***	0.271**
	(0.006)	*(0.014)*	*(0.022)*	*(0.133)*
Net wealth (ln)	0.055***	0.053***	0.037***	0.034***
	(0.002)	*(0.004)*	*(0.007)*	*(0.008)*
Age	0.037***	0.031***	0.159***	0.153***
	(0.006)	*(0.006)*	*(0.023)*	*(0.027)*
Age2	-0.000***	-0.000***	-0.001***	-0.001***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Female	0.018*	0.015		
	(0.011)	*(0.011)*		
Married	0.268***	0.315***	0.170**	0.020
	(0.016)	*(0.016)*	*(0.082)*	*(0.102)*
Widowed	-0.014	0.027	-0.080	-0.192
	(0.020)	*(0.020)*	*(0.093)*	*(0.176)*
Retired	0.032**	0.062***	0.042	0.024
	(0.014)	*(0.014)*	*(0.026)*	*(0.030)*

(table continues)

(continued)

Unemployed	-0.316***	-0.325***	-0.234***	-0.202***
	(0.035)	*(0.035)*	*(0.053)*	*(0.057)*
Grandchildren	0.019***	0.019***	-0.016**	-0.008
	(0.002)	*(0.002)*	*(0.006)*	*(0.007)*
Household size	0.018***	0.032***	0.057***	0.023
	(0.007)	*(0.007)*	*(0.018)*	*(0.021)*
Years of education	-0.008***	0.001	0.004	0.001
	(0.001)	*(0.001)*	*(0.006)*	*(0.008)*
Self-perceived health	-0.494***	-0.467***	-0.219***	-0.195***
	(0.006)	*(0.006)*	*(0.009)*	*(0.010)*
Limitations with activities	-0.176***	-0.185***	-0.090***	-0.085***
	(0.012)	*(0.012)*	*(0.016)*	*(0.018)*
Altruistic behavior	0.053***	0.051***	0.017**	0.018**
	(0.006)	*(0.006)*	*(0.008)*	*(0.008)*
Home ownership (ln)	0.093***	0.046***	0.025	0.000
	(0.008)	*(0.008)*	*(0.014)*	*(0.016)*
Inequality	-0.026***	-0.147***	0.060***	0.073***
	(0.002)	*(0.005)*	*(0.013)*	*(0.015)*
Social-democratic		2.425***		
		(0.235)		
Mediterranean		1.540***		
		(0.166)		
Post-socialist		-0.203		
		(0.183)		
Social-democratic (income)		-0.188***	-0.066*	-0.283**
		(0.024)	*(0.040)*	*(0.138)*
Mediterranean (income)		-0.083***	-0.053**	-0.289**
		(0.017)	*(0.026)*	*(0.134)*
Post-socialist (income)		-0.047**	-0.048	-0.248*
		(0.019)	*(0.029)*	*(0.135)*
Social-democratic (wealth)		-0.046***	-0.029*	-0.034*
		(0.009)	*(0.015)*	*(0.018)*
Mediterranean (wealth)		-0.014**	-0.010	-0.006
		(0.006)	*(0.009)*	*(0.011)*
Post-socialist (wealth)		-0.006	-0.029***	-0.021*
		(0.007)	*(0.010)*	*(0.012)*
Constant	6.366***	9.970***	0.278	-0.025
	(0.230)	*(0.299)*	*(0.881)*	*(1.133)*
Observations	94,234	94,234	94,234	54,302
R-squared	0.170	0.182	0.021	

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

Third, since our initial model included only countries which we could, in accordance with the literature, classify as "pure countries" in order to mitigate the issues related to classifying countries into certain welfare regimes, the set of countries we could include was limited. To address this matter, we performed a robustness check which included additional countries that we classified into the so-called Hybrid welfare regime. The countries we included were Belgium, Luxembourg, the Netherlands, and Switzerland. The results presented in Table 3.7 show that in general the results remain the same.

Nonetheless, there are certain differences. Most notable is that in the FE and IVFE estimates, the effect of income in the Post-socialist welfare regime is not statistically significantly different than the one in the Conservative welfare regime. Regarding the Hybrid welfare regime, the results reveal that the respondents are in general more satisfied with their life than those in the Conservative welfare regime. Furthermore, the effect of income is significantly smaller in the OLS estimates (-0.073), but not in the FE and IVFE estimates. Lastly, the effect of net wealth is statistically significantly smaller in the Hybrid welfare regime than in the Conservative welfare regime in both the FE (-0.030) and IVFE (-0.039) estimates.

Table 3.7: OLS, FE and IVFE estimates of the effect of economic standing on life satisfaction in different welfare regime types – the Hybrid welfare regime

Model	**OLS**	**OLS**	**FE**	**IVFE**
Variables	**(baseline)**			
Income (ln)	0.135***	0.175***	0.063***	0.212*
	(0.005)	*(0.013)*	*(0.020)*	*(0.125)*
Net wealth (ln)	0.054***	0.039***	0.037***	0.036***
	(0.002)	*(0.004)*	*(0.006)*	*(0.008)*
Age	0.033***	0.037***	0.136***	0.135***
	(0.005)	*(0.005)*	*(0.018)*	*(0.022)*
Age2	-0.001***	-0.000***	-0.001***	-0.001***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Female	0.021**	0.019**		
	(0.009)	*(0.009)*		
Married	0.280***	0.302***	0.142**	-0.001
	(0.013)	*(0.013)*	*(0.066)*	*(0.081)*
Widowed	-0.009	0.017	-0.085	-0.140
	(0.017)	*(0.017)*	*(0.075)*	*(0.139)*
Retired	0.052***	0.054***	0.036*	0.023
	(0.011)	*(0.011)*	*(0.020)*	*(0.023)*
Unemployed	-0.326***	-0.335***	-0.221***	-0.177***
	(0.029)	*(0.029)*	*(0.044)*	*(0.048)*
Grandchildren	0.020***	0.014***	-0.014***	-0.008
	(0.002)	*(0.002)*	*(0.005)*	*(0.006)*
Household size	0.009*	0.027***	0.041***	-0.001
	(0.005)	*(0.006)*	*(0.015)*	*(0.017)*
Years of education	-0.006***	-0.008***	0.003	0.001
	(0.001)	*(0.001)*	*(0.005)*	*(0.006)*
Self-perceived health	-0.483***	-0.465***	-0.203***	-0.184***
	(0.005)	*(0.005)*	*(0.008)*	*(0.008)*
Limitations with activities	-0.148***	-0.163***	-0.070***	-0.071***
	(0.010)	*(0.010)*	*(0.013)*	*(0.015)*
Altruistic behavior	0.052***	0.052***	0.012*	0.011
	(0.005)	*(0.005)*	*(0.006)*	*(0.007)*
Social-democratic		2.491***		
		(0.223)		
Mediterranean		0.780***		
		(0.157)		

(table continues)

(continued)

Post-socialist		0.416**		
		(0.175)		
Hybrid		0.724***		
		(0.158)		
Social-democratic (income)		-0.178***	-0.085**	-0.270*
		(0.023)	*(0.037)*	*(0.156)*
Mediterranean (income)		-0.092***	-0.054**	-0.238*
		(0.016)	*(0.025)*	*(0.135)*
Post-socialist (income)		-0.051***	-0.045	-0.200
		(0.018)	*(0.028)*	*(0.131)*
Hybrid (income)		-0.073***	-0.030	-0.169
		(0.016)	*(0.025)*	*(0.140)*
Social-democratic (wealth)		-0.026***	-0.025*	-0.032*
		(0.008)	*(0.014)*	*(0.017)*
Mediterranean (wealth)		0.010	-0.009	-0.008
		(0.006)	*(0.008)*	*(0.010)*
Post-socialist (wealth)		0.005	-0.027***	-0.020*
		(0.006)	*(0.009)*	*(0.011)*
Hybrid (wealth)		0.005	-0.030***	-0.039***
		(0.006)	*(0.009)*	*(0.011)*
Constant	5.791***	5.330***	2.933***	3.242***
	(0.184)	*(0.217)*	*(0.632)*	*(0.791)*
Observations	127,250	127,250	127,250	93,961
R-squared	0.167	0.174	0.019	

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

Finally, to address the collinear relationship between income and net wealth and the possible ramifications this relationship might have on our initial results, we provided additional estimates in which we excluded one of the two economic standing measures and the underlying interactive variables for each. The results, which are provided in the appendix, show no significant changes in the estimates, thus confirming our results.

3.7 A country comparison

As discussed, the classification of countries into welfare regimes has its limitations, as the vast majority of countries possess features from more than one welfare regime type. To address this limitation and examine the heterogeneity of countries in each of the studied welfare regimes in greater detail, we conducted an analysis of the countries under study without classifying them. We used the same model specification as before, and included dummy variables and interactive variables for each country classified into the Social-democratic, Mediterranean, and Post-socialist welfare regimes (as in our initial model, we compared them with countries in the Conservative welfare regime). The OLS, FE, and IVFE estimates are reported in Table 3.8.

The OLS results reveal that Swedish, Danish, Spanish, and Italian respondents exhibit higher levels of life satisfaction, while this is not the case for Czech and Slovenian respondents. Moreover, the strength of the effect in countries within the same welfare regime is relatively similar. The interactive variables for income display the biggest negative effect of income in Social-democratic countries, namely Sweden (−0.212) and Denmark (−0.145), followed by Mediterranean countries, namely Italy (−0.087) and Spain (−0.070). Regarding the Post-socialist countries, only the Czech Republic (−0.042) exhibits a statistically significantly lower effect of income on life satisfaction. Both Social-democratic countries have a smaller effect of wealth on life satisfaction compared to countries in the Conservative welfare regime, while the two Mediterranean countries exhibit no significant difference. Interestingly, the effect of wealth is larger in the Czech Republic (0.026) but smaller in Slovenia (−0.016) compared to countries in the Conservative welfare regime. In the longitudinal setting, the results change significantly, and only Sweden (−0.168), Italy (−0.090), and the Czech Republic (−0.076) exhibit a statistically significantly lower effect of income. Furthermore, the negative effect of net wealth disappears in Sweden and the Czech Republic, while in Italy the effect becomes statistically significant (−0.027). The IVFE results tell a similar story, where only one of the countries classified into a certain welfare regime exhibits statistically significantly different effects of income and wealth on life satisfaction. The exemptions are Italy (−0.325) and Spain (−0.267), both of which display lower effect sizes of income.

The presented findings show that countries in the Social-democratic and Mediterranean welfare regimes are fairly homogenous regarding their effect on life satisfaction, as well as their moderating effect on the relationship between income and life satisfaction as well as the relationship between net wealth and life satisfaction in the OLS estimation. However, after allowing for unobserved heterogeneity and instrumenting for income, the results change significantly, with the results of our initial estimates being driven primarily by the specifics of individual countries.

Table 3.8: OLS, FE and IVFE estimates of the effect of economic standing on life satisfaction in different countries

Model	**OLS**	**FE**	**IVFE**
Variables			
Income (ln)	0.150***	0.063***	0.269**
	(0.014)	*(0.022)*	*(0.133)*
Net wealth (ln)	0.038***	0.037***	0.034***
	(0.004)	*(0.007)*	*(0.008)*
Age	0.039***	0.158***	0.149***
	(0.006)	*(0.023)*	*(0.027)*
Age2	-0.000***	-0.001***	-0.001***
	(0.000)	*(0.000)*	*(0.000)*

(table continues)

(continued)

Female	0.019*	-	-
	(0.011)		
Married	0.300***	0.167**	0.019
	(0.016)	*(0.082)*	*(0.102)*
Widowed	0.015	-0.081	-0.184
	(0.020)	*(0.093)*	*(0.176)*
Retired	0.089***	0.043*	0.025
	(0.014)	*(0.026)*	*(0.030)*
Unemployed	-0.339***	-0.239***	-0.208***
	(0.035)	*(0.053)*	*(0.057)*
Grandchildren	0.015***	-0.016**	-0.009
	(0.002)	*(0.006)*	*(0.007)*
Household size	0.036***	0.057***	0.023
	(0.007)	*(0.018)*	*(0.021)*
Years of education	-0.006***	0.004	0.002
	(0.001)	*(0.006)*	*(0.008)*
Self-perceived health	-0.482***	-0.219***	-0.196***
	(0.006)	*(0.009)*	*(0.010)*
Limitations with activities	-0.175***	-0.088***	-0.083***
	(0.012)	*(0.016)*	*(0.018)*
Altruistic behavior	0.067***	0.016**	0.017**
	(0.006)	*(0.008)*	*(0.008)*
Denmark	2.414***	-	-
	(0.311)		
Sweden	2.729***	-	-
	(0.304)		
Italy	0.680***	-	-
	(0.196)		
Spain	0.607***	-	-
	(0.190)		
Czech Republic	0.130	-	-
	(0.218)		
Slovenia	0.299	-	-
	(0.240)		
Denmark (income)	-0.145***	0.015	-0.223
	(0.032)	*(0.054)*	*(0.144)*
Sweden (income)	-0.212***	-0.168***	-0.367***
	(0.031)	*(0.050)*	*(0.142)*
Italy (income)	-0.087***	-0.090***	-0.325**
	(0.020)	*(0.031)*	*(0.135)*
Spain (income)	-0.070***	-0.036	-0.267**
	(0.020)	*(0.029)*	*(0.135)*
Czech Republic (income)	-0.042*	-0.076**	-0.284**
	(0.024)	*(0.033)*	*(0.136)*
Slovenia (income)	-0.029	-0.021	-0.201
	(0.025)	*(0.039)*	*(0.138)*

(table continues)

(continued)

Denmark (wealth)	-0.045***	-0.045**	-0.039*
	(0.011)	*(0.020)*	*(0.023)*
Sweden (wealth)	-0.021*	-0.009	-0.027
	(0.013)	*(0.021)*	*(0.025)*
Italy (wealth)	0.013	-0.027**	-0.018
	(0.009)	*(0.013)*	*(0.015)*
Spain (wealth)	0.007	-0.004	-0.002
	(0.007)	*(0.010)*	*(0.012)*
Czech Republic (wealth)	0.026***	-0.015	-0.004
	(0.010)	*(0.014)*	*(0.017)*
Slovenia (wealth)	-0.016**	-0.037***	-0.030**
	(0.008)	*(0.012)*	*(0.013)*
Constant	5.570***	2.054***	-
	(0.255)	*(0.793)*	
Observations	94,234	94,234	54,302
R-squared	0.176	0.021	

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

3.8 Conclusion

With our analysis, we were able to contribute to contemporary subjective well-being research on several levels. First, we found that both measures of economic standing, namely income and net wealth, have a positive effect on the subjective well-being of individuals aged 50 or over, although the effect size, and even significance, is strongly impacted by the institutional context and the state which provides for social support. Second, by addressing potential biases we found the overall direction of bias to be negative, which is consistent with previous findings and supports the notion that income is positively correlated with variables, such as for example working hours, which negatively affect subjective well-being. Furthermore, these findings suggest caution when interpreting previous cross-sectional studies. Third, our findings show severe differences, especially between the Conservative and the Social-democratic welfare regime, in the effect of economic standing measures on life satisfaction in old age. These results show that the welfare state is linked to subjective well-being through its instruments of decommodification and stratification. Finally, by exploring the problem of classifying countries into certain welfare regimes we found, especially in the longitudinal and IV setting, that countries are heterogeneous in their moderating of the effect of income and net wealth on life satisfaction. These results suggest caution when studying the relationship between economic standing and subjective well-being across multiple countries. It furthermore suggests that the effects of income and wealth, especially the size of the effect, cannot be generalized across multiple countries with different institutional settings, or across different groups of individuals.

The limitations we discussed throughout the article should motivate much needed future research on this topic. First, the analysis would greatly benefit from the inclusion of the Liberal welfare regime, which has its distinct features and represents Anglo-Saxon countries. Second, the SHARE database is expanding with each additional wave. Unfortunately, to include all the countries of interest we had to limit the time period under investigation to only three waves (waves four through six). An expanded time dimension would therefore increase the reliability of our findings. Finally, finding consistent instruments in secondary survey data is difficult. Although we found our instrumental variables to be consistent, an alternative IV strategy would be valuable, as the use of lagged income is open to objection due to the adaptation argument. Still, our analysis provides valuable insights for future debate on the relationship between economic standing and subjective well-being in old age, as well as the role of welfare policy in improving one's subjective well-being.

4 THE EFFECT OF SUBJECTIVE WELL-BEING ON CONSUMPTION BEHAVIOR

Abstract

This article studies the causal effect of subjective well-being on the consumption behavior of individuals aged 50 and above using data from the English Longitudinal Study of Ageing (ELSA). In order to establish a causal link between subjective well-being and six distinct types of consumption (food consumed at home, food consumed outside of home, spending on clothing, leisure consumption, monthly rent, and utility consumption), it exploits the longitudinal dimension of the dataset and instruments for subjective well-being. The results suggest that subjective well-being positively affects spending on food outside of home and leisure activities, which both share several properties of hedonic goods. The results are supported by previous studies, which found an increased sociability of individuals with higher levels of subjective well-being. The article found no statistically significant effect of subjective well-being on food consumed at home, spending on clothing, monthly rent, and utility consumption, which share several properties of utilitarian goods.

Keywords: consumption; subjective well-being; happiness; economic behavior

JEL classification: D03; D12; E21; I31; J14

4.1 Introduction

Since the demise of classical economics from the late 18th century and the rise of neoclassical economics, affect and the emotions that govern human behavior have been neglected by standard economic theory due to its "objectivist" position, whereby utility is inferred from one's behavior (or revealed preferences) (Frey & Stutzer, 2002). Although this positivistic view is still predominant in economics, numerous scholars have raised concerns regarding preferences often not being an adequate gauge for determining well-being. As a result, self-reported measures of utility are gaining ground as important sources of information on well-being (Dolan, Peasgood, & White, 2008).

Most economists studying subjective well-being have focused on the effects of different macroeconomic factors on subjective well-being. Lately, however, more and more scholars are addressing the reverse causality issue. They found that subjective well-being has several objective benefits (see De Neve, Diener, Tay, & Xuereb (2013) for a thorough overview). Furthermore, they found that people with higher levels of subjective well-being tend to behave differently (Frank, 1999). (Lyubomirsky, King, & Diener, 2005) provide a thorough overview of cross-sectional, longitudinal, and experimental literature examining the potential favorable outcomes of subjective well-being. Their overview of experimental studies provides strong evidence that positive affect raises sociability, activity, altruism, liking of self and others, effective conflict resolution skills, as well as original thinking. With this article, we aim to add to the literature and answer an empirically challenging question: Does subjective well-being affect spending on different types of products? To do so, we utilized data from the English Longitudinal Study of Ageing (from now on ELSA) of individuals aged 50 and above.

To offer several practical implications for the providers of products, marketers, and even policy-makers, we want to establish a causal link between subjective well-being and the consumption of different types of products, rather than a mere correlation. Using data on the subjective well-being of people aged 50 and above as measured by the Satisfaction With Life Scale (from now on SWLS) and data on monthly household consumption comprising six types of consumption, we place the analysis into a longitudinal setting to control for unobserved heterogeneity. Furthermore, to appropriately address endogeneity issues and establish causality we instrument for subjective well-being. To our knowledge, the only scholar who instrumented subjective well-being in this context is Guven (2012), who opted for sunshine as the instrument of choice.

The remainder of the article is organized as follows. Section 2 provides an overview of the literature exploring the dynamic relationship between subjective well-being and consumption behavior. Section 3 presents the theoretical framework the article uses to study the effect of subjective well-being on consumption. Section 4 presents the data used,

as well as the empirical strategy, while section 5 provides a descriptive overview of the dataset. Finally, section 6 presents the empirical results and section 7 concludes the article.

4.2 The dynamic relationship between subjective well-being and consumption behavior

Literature on the determinants of subjective well-being suggests a U-shaped relationship between age and subjective well-being, higher levels of subjective well-being among women, a positive effect of marriage, a small positive effect of education, and mixed effects of having children. Furthermore, studies have found a strong relationship between health and subjective well-being, a positive effect of income, and a negative effect of unemployment (see Dolan et al. (2008) for a thorough overview).

Especially initial research on the effect of consumption on subjective well-being often used income as a proxy for consumption expenditures. Although income certainly affects the level of consumer spending, these two measures are far from being identical. First, several empirical studies suggest that households in lower income groups often spend more than they earn. Second, especially in households with higher levels of income not all of the income is spent on consumption. Finally, using income as a proxy measure of consumption does not allow for the distinction of different types of spending, such as spending on utilitarian products on the one hand and hedonic products on the other (Noll & Weick, 2015). While there is a large body of literature studying the effect of income on subjective well-being, far less attention is given to the relationship between consumption and subjective well-being. Headey, Muffels, & Wooden (2008) studied the effects of income, wealth, and consumption on subjective well-being and found that consumption is at least as important to subjective well-being as income. Furthermore, DeLeire & Kalil (2010) used data from the Health and Retirement Study (HRS) and found that the only consumption component that positively affects subjective well-being is leisure consumption. Noll & Weick (2015) found that subjective well-being is driven by expenditures on clothing and leisure rather than food and housing, which can be considered more demand-driven. Finally, Wang, Cheng, & Smyth (2019) found, among other things, that relative deprivation of visible consumption negatively affects subjective well-being. This short overview of the literature on the effect of consumer spending on subjective well-being suggests a positive effect of spending on subjective well-being, although the literature would benefit by further research that would more thoroughly address some of the related research questions.

One of the first economists to address the reverse causality issue in subjective well-being research was Kenny (1999), who analyzed the relationship between growth and happiness in ten wealthy countries and found weak support for reverse causation. Over the last 20 years, this branch of literature on subjective well-being has seen a significant expansion

(Dominko & Verbič, 2019). Psychologists have shown that higher levels of subjective well-being significantly affect human behavior. Among other things, they have shown that subjective well-being positively affects engagement in social and leisure activities (e. g. Isen (1999) or Schaller & Cialdini (1990) provide experimental evidence). These findings imply higher spending on products associated with these activities. Scholars who addressed the effect of emotions on spending have mostly focused on short-term mood effects and found that these influence decisions on spending.

Only a few studies have analyzed the direct effect of subjective well-being on consumer spending. Zhong & Mitchell (2012) use the British Household Panel Survey (BHPS) to test a theoretical model in which long-term subjective well-being influences spending on hedonic products. By applying a fixed effects model, they found that subjective well-being positively affects spending on leisure products through the mediating effects of positive interpretations and a broadened set of activities. They argue that people with higher levels of happiness are more likely to participate in leisure activities and are more social, energetic, and active in general, as shown by Csikszentmihalyi (1999), Lucas (2001) and Lyubomirsky et al. (2005). Guven (2012) studies the causal effect of subjective well-being on consumption and spending by instrumenting happiness with sunshine. Using data from the Dutch Household Survey, he found that happiness decreases spending. Furthermore, he found that happier people tend to take more time to make decisions, have more control over their expenditures, and are in general more concerned about the future than the present. He suggests that people with higher levels of subjective well-being can have different discount rates, as found by Ifcher & Zarghamee (2011), and therefore choose to spend less today and more in the future. Moreover, he argues that happier people expect lower prices in the future, which lowers their consumption. Both articles have their limitations. Zhong & Mitchell focus exclusively on spending on leisure, which might not be generalizable to other categories of hedonic and non-hedonic products. On the other hand, Guven's empirical strategy is more focused on the respondents' savings behavior, from which he draws conclusions about their consumption.

4.3 Theoretical framework

To model the effect of subjective well-being on consumption behavior, we build upon the findings of Hermalin & Isen (2008), who modelled the effect of positive affect on economic decision making by utilizing the following dynamic:

$$a_t = U(x_t, a_{t-1}), \quad (1)$$

where affect (a_t) is determined by current decisions (x_t) as well as affect in the previous period (a_{t-1}). Although subjective well-being is a long-term concept compared to affect, we follow a similar observation, namely: subjective well-being in period $t-1$ affects

preferences, which determine decisions, which in turn affect subjective well-being in period t. This dynamic carries on into subsequent periods and has the ability to explain various aspects of human behavior.

Let us assume that an individual is endowed with Y amount of a good, which he consumes over a finite number of periods T. Furthermore, let c_t denote consumption in period t, swb_{t-1} subjective well-being in period $t-1$, and U_t the utility function at time t. It follows that the individual maximizes

$$\sum_{t=1}^{T} \omega^t \, U_t(c_t, swb_{t-1}), \text{ (2)}$$

which is subject to

$$Y \geq \sum_{t=1}^{T} \omega^t \, c_t, \text{ (3)}$$

where ω^t is the weight he assigns to utility, which can accord with traditional models of discounting, hyperbolic discounting, or other appropriate specifications (we assume a constant decay rate of the unconsumed part of the good, which equals the individual's constant discount rate). The first order conditions are the following:

$$(\omega^t + \sum_{\tau=t+1}^{T} \omega^\tau \prod_{\sigma=t+1}^{\tau} \frac{\partial U_\sigma(c_\sigma^*, swb_{\sigma-1})}{\partial swb}) \frac{\partial U_t(c_t^*, swb_{t-1})}{\partial c} - \lambda\omega^t = 0, \text{ (4)}$$

where λ is the Lagrange multiplier. Let us now define the following:

$$F_t = \sum_{\tau=t+1}^{T} \omega^{\tau-1} \prod_{\sigma=t+1}^{\tau} \frac{\partial U_\sigma(c_\sigma^*, swb_{\sigma-1})}{\partial swb}, \text{ (5)}$$

which allows us to express equation (4) as

$$(1 + F_t) \frac{\partial U_t}{\partial c} - \lambda = 0, \text{ (6)}$$

where we suppress arguments for the sake of convenience. If we assume a diminishing marginal utility of consumption, it follows that the bigger the impact of subjective well-being on future utility in period t, the greater the consumption in period t. However, there is a second potential effect, namely the effect of subjective well-being on the size of $\frac{\partial U_t}{\partial c}$. If an increase in subjective well-being in the first period raises the marginal utility of consumption in that period, then the individual will postpone their consumption to the period in which subjective well-being is expected to be large, as they will get the most for their money. Or as Hermalin & Isen put it: "All else equal, if being happy raises the marginal enjoyment of consumption, then, essentially, decision makers should not save for rainy days, but rather save on rainy days."

We can illustrate the presented effects with an example. Let us assume that $U(c, swb) = (1 + \alpha swb)\ln(c), \alpha \geq 0, \omega = 1,$ and $T = 2$. Furthermore, let us assume that $1 + \alpha swb_0 > 0$, and that Y is large enough that $1 + \alpha swb_1 > 0$ if the individual plays optimally. From equation (4) it follows that

$$\frac{1+\alpha swb_0}{c_1}(1 + \alpha \ln(c_2)) - \lambda = 0, (7)$$

and

$$\frac{1+\alpha swb_1}{c_2} - \lambda = 0. (8)$$

We can observe that when $\alpha > 0$, the marginal return to consumption is greater in the first period, which leads to more spending in the first period. Furthermore, we can also observe the role of swb. If $swb_0 > 0$, consumption remains greater in the first period, while consumption is greater in the second period if $swb_0 < 0$. In the case of $swb_0 = 0$, consumption remains the same in both periods.

4.4 Data and methods

To conduct our analysis, we utilize data from ELSA, a longitudinal survey of representative English people aged 50 and above, which is funded by the National Institute of Aging in the United States and a consortium of United Kingdom government departments (Marmot et al., 2017). ELSA was initially launched in 2002 and is conducted on a biennial basis. So far, eight waves of data on the respondents' health, financial standing, social security, etc. have been gathered. Our sample covers waves two through seven from 2004/05 up until 2014/15. Due to missing data on the subjective well-being of the respondents, the first wave is not included in our analysis.

To measure subjective well-being, our independent variable of interest, we use the SWLS, developed by Diener, Emmons, Larsen, & Griffin (1985). The scale, which is heavily used in the literature, consists of the following five statements:

1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

The respondent evaluates each of the statements on a 1–7 scale, where 1 stands for "strongly disagree" and 7 stands for "strongly agree." Scores between 5 and 9 indicate

extreme dissatisfaction with life; scores between 10 and 14 indicate dissatisfaction with life; scores between 15 and 19 indicate slightly below average satisfaction with life; scores between 20 and 24 indicate average life satisfaction; scores between 25 and 29 indicate satisfaction with life; and scores between 30 and 35 indicate very high satisfaction with life. Several studies have examined the scale's reliability and construct validity, finding that SWSL is a useful single-factor measure of global satisfaction with life (e.g. Corrigan et al., 2013; Esnaola, Benito, Antonio-Agirre, Sarasa, & Freeman (2017)).

We identify six different types of consumption, namely food consumed at home, food consumed outside of home, spending on clothing, leisure consumption, monthly rent, and utility consumption, as well as overall consumption. Consumption of food at home represents the typical monthly amount of food consumed at home by the household and is measured by the following question: "Now thinking about your household's weekly food bills, approximately how much do you usually spend in total on food and groceries (pet food, alcohol, and cigarettes are excluded)?" Consumption of food outside of home stands for the monthly amount of food a household consumes outside of their home. The respondent is asked: "Approximately how much do you usually spend in a week in total on takeaways and food consumed out of the home?" Spending on clothing represents the monthly amount a household spends on clothing. It is measured by the following question: "Thinking of the last four weeks, approximately how much did you or a member of this household spend on clothes, including outerwear, underwear, footwear and accessories?" Leisure consumption represents the monthly amount spent by the household on leisure activities, other than eating out. The respondent is asked: "Again, thinking of the last four weeks, approximately how much did you or a member of this household spend on leisure activities of the kind listed on this card?" The respondent is then shown a card that lists several activities and subscriptions (unfortunately, ELSA did not cover leisure consumption in the third wave of data acquisition). Rent stands for the monthly amount spent by the household on rent, while utility consumption represents the monthly amount spent by the household on utilities and fuel. The respondents are asked how much the household spent on average in the summer and in the winter on the following types of utilities and fuels: electricity, gas, coal, paraffin, oil, wood, and other. The amounts for summer and winter are then averaged. Total monthly consumption is constructed by summing all the above types of consumption. All the values for all types of consumption provided by the respondents are adjusted and provided as a monthly equivalent by ELSA.

Because of the well-established reverse causality concern in the relationship between subjective well-being and consumption, we cannot consider the residual's distribution to be independent. Therefore, instrumental variables are used to mitigate this issue and establish causality. We assume that subjective well-being is our only endogenous regressor and that the set of excluded and included instruments are $Z = [Z_1 Z_2]$. Then, the instrumental variable (IV) estimator of β can be written as:

$$\hat{\beta}_{IV} = [X'Z(Z'Z)^{-1}Z'X]^{-1}X'Z(Z'Z)^{-1}Z'y. \quad (9)$$

To control for time-invariant confounding we utilize the panel structure of our dataset and estimated a fixed effects regression with instrumental variables.[16] We include following control variables in our model: age, age squared, gender, whether the respondent is coupled with another individual, education status (tertiary education), retirement status, unemployment status, unemployment status of the spouse, number of children, number of children living in the household, household size, self-perceived health (measured on a scale from 1 to 5), total household wealth[17], and total household income (annual).[18] Household wealth, household income, and all six types of consumption expenditures are provided as logarithms.

One of, if not the most challenging task in establishing causality in subjective well-being equations is to find instrumental variables which influence economic decision making only through their effect on subjective well-being. As previously mentioned, only Guven (2012) used an instrumental variables strategy in a similar context, using sunshine as an instrument for happiness. Furthermore, there are only a handful of studies that instrumented subjective well-being in other settings, including Kyriopoulos, Athanasakis, & Kyriopoulos (2018), who used mattering and social trust as an instrument for happiness in order to establish a causal link between happiness and health, and Ivlevs (2014), who used parental education and whether the respondents' parents were killed in World War 2 as instruments to establish a causal relationship between happiness and emigration decisions. In our analysis we use two dummy variables indicating the quality of sleep. Evidence suggests that sleep affects subjective well-being as a vital aspect of human functioning. Shin & Kim (2018) found that sleep quality predicts life satisfaction and that the relationship is partly mediated by zero-sum beliefs about happiness. Furthermore,(Lemola, Ledermann, & Friedman (2013) found that the variability in sleep duration is associated with lower levels of subjective well-being. The first dummy variable we use is thus whether the respondents' sleep was restless, and our second dummy variable is whether the respondents could "get going," both of which, we argue, heavily influence the respondents' evaluation of their sleep. Moreover, we argue that the effect of the instrumental variables on the six types of consumption is transmitted through their effect on subjective well-being. A preliminary inspection of the pairwise correlation coefficient

[16] The fixed effects instrumental variables estimator performs a within 2SLS regression of $y_{it} - \bar{y}_i$ on $x_{it} - \bar{x}_i$ with the instruments $z_{it} - \bar{z}_i$.

[17] Total family wealth is constructed as the sum of the following wealth components: (net value of primary residence + net value of business + net value of non-housing financial wealth + net value of secondary home).

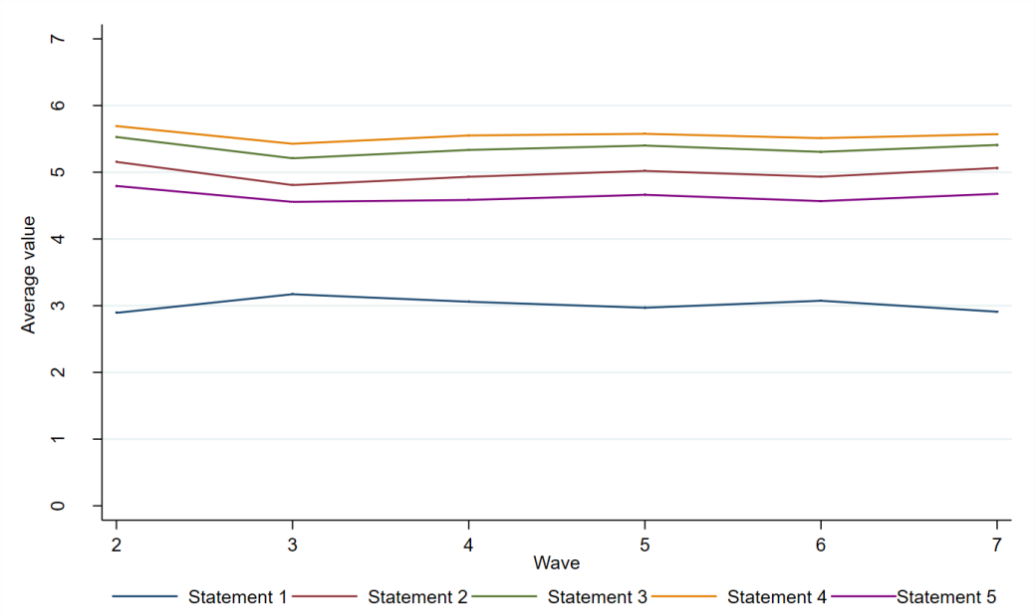
[18] Total family income is constructed as the sum of the following income components: (employment earnings + employment earning spouse + capital income + income from employer/private pension and annuity + income from employer/private pension and annuity spouse + public pensions + public pensions spouse + other government transfers + other government transfers spouse + other regular payments + other regular payments spouse).

to check the exclusion restriction reveals promising properties of the instruments, as the correlation between subjective well-being and the first and second instrumental variables is 20 and 26 percent, respectively, while the average correlation between the six types of consumption and the first and second instrument is 3 percent and 6 percent, respectively.

4.5 Descriptive statistics

A descriptive overview of our dataset, which covers between 7,790 respondents in wave 7 to 8,972 respondents in wave 4, reveals that the majority of respondents are satisfied with their lives. Approximately 50 percent of respondents report subjective well-being values between 25 and 29, which indicates satisfaction with life. 33 percent of respondents report subjective well-being values between 20 and 24, while 12 percent of respondents report subjective well-being values between 15 and 19, which indicates average life satisfaction and slightly below average life satisfaction, respectively. Less than 4 percent of respondents are extremely dissatisfied with life, while only 1 percent of respondents are highly satisfied with their lives. These results suggest an uneven distribution with only a handful of respondents being extremely dissatisfied or satisfied with life. A closer examination of the five statements that constitute the SWLS scale is reported in Figure 4.1, which presents the average values for each statement. The first statement ("In most ways my life is close to my ideal") has by far the lowest mean value, followed by the fifth ("If I could live my life over, I would change almost nothing"), second ("The conditions of my life are excellent"), third ("I am satisfied with my life"), and fourth statements ("So far I have gotten the important things I want in life"). The figure also indicates small variability among the waves.

Figure 4.1: Average values for the five statements constituting SWLS



The average household spends approximately 72 nominal pounds on food consumed at home monthly. Furthermore, it spends approximately 54 nominal pounds on food consumed outside of their home, 79 pounds on clothing, 65 pounds for leisure activities, 2182 pounds on rent, and 97 pounds on utilities and fuel (the average and median values for the six types of consumption by wave are provided in the appendices). Figure 4.2 provides the average monthly household consumption of food consumed inside and outside home, clothing, leisure activities, and utilities at different levels of subjective well-being (spending on rent is missing due to the high average consumption, which makes the figure less apparent). It reveals that, on average, spending increases with higher levels of subjective well-being, although there are distinct differences among the six types of consumption. Especially interesting is the comparison of respondents who are on average dissatisfied with their lives (i.e., have a subjective well-being score below 20) with those who are satisfied (and have a subjective well-being score above 24). On average, satisfied respondents spend 7 percent more on utilities and 16 percent more on food consumed at home than dissatisfied respondents. The differences become staggering for the remaining four types of consumption. While satisfied respondents spend 71 percent less on rent, they spend 53 percent more on clothing, 65 percent more on leisure activities, and 72 percent more on food consumed outside of their home than dissatisfied respondents. These results indicate a possible causal effect of subjective well-being on the consumption of specific types of products, although the relationship is certainly confounded by wealth and household income.

Figure 4.2: Average consumption at different levels of subjective well-being (in British Pounds)

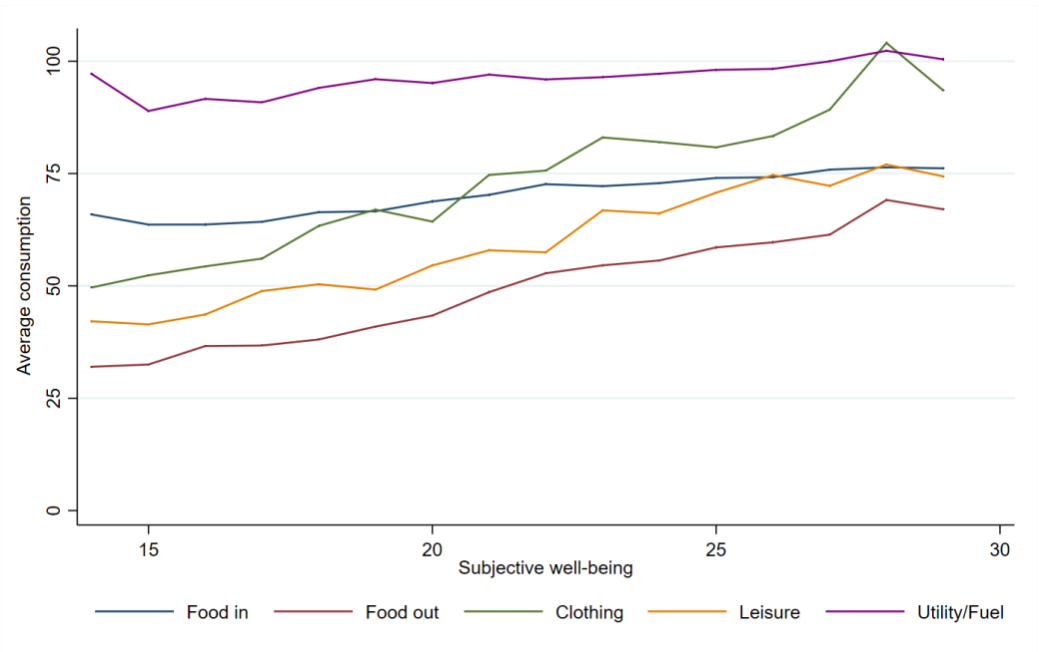


Table 4.1 provides the remaining descriptive statistics. It reveals that the average respondent is 65 years old and living in a two-person household. More than 55 percent of respondents are female, 70 percent are coupled, and 53 percent are retired. Due to the characteristics of the sample, which is comprised of individuals aged 50 and above, less than 1 percent of respondents and their spouses unemployed. Almost 18 percent of respondents have tertiary education. Furthermore, the average respondent has 1 child and evaluates his or her health with 3.26 on a scale from 1 to 5. Both the average household wealth and the average household income have seen a steep increase throughout the waves. While in the second wave the average household wealth was 277,712 British Pounds and the average monthly household income 21,549 British Pounds, in the seventh wave both increased to 423,458 British Pounds and 29,735 British Pounds, respectively. Both median household wealth and median monthly household income are lower than their respective average values.

Table 4.1: Descriptive statistics by wave

Wave **Variable**	**Wave 2**	**Wave 3**	**Wave 4**	**Wave 5**	**Wave 6**	**Wave 7**	**Total**
Subj. well-being (mean)	24.06	23.17	23.46	23.63	23.39	23.63	23.55
	(3.95)	*(4.10)*	*(3.92)*	*(3.98)*	*(3.99)*	*(3.92)*	*(3.99)*
Age (mean)	64.90	64.04	64.66	66.10	66.11	66.88	65.45
	(9.99)	*(10.58)*	*(9.69)*	*(9.30)*	*(9.57)*	*(9.58)*	*(9.83)*
Female (%)	56.08	55.73	55.62	55.75	55.46	55.47	55.68
Coupled (%)	69.18	68.82	70.33	69.41	70.42	69.82	69.68
Retired (%)	50.11	47.89	50.95	56.06	57.14	59.31	53.59
Unemployed (%)	0.73	0.78	1.20	1.06	1.09	0.87	0.97
Unemployed spouse (%)	0.45	0.50	0.75	0.68	0.67	0.46	0.59
Tertiary education (%)	14.69	17.31	18.18	18.59	18.51	18.98	17.65
Children (mean)	0.96	1.06	1.05	1.04	1.05	1.04	1.03
	(0.99)	*(1.03)*	*(1.04)*	*(1.03)*	*(1.04)*	*(1.04)*	*(1.03)*
Children in household (mean)	0.23	0.27	0.28	0.25	0.26	0.26	0.26
	(0.42)	*(0.44)*	*(0.45)*	*(0.43)*	*(0.44)*	*(0.44)*	*(0.44)*
Household size (mean)	2.05	2.14	2.08	2.03	2.07	2.05	2.07
	(0.86)	*(0.95)*	*(0.87)*	*(0.84)*	*(0.87)*	*(0.83)*	*(0.87)*
Self-perc. health (mean)	3.25	-	3.27	3.26	3.24	3.26	3.26
	(1.11)	-	*(1.09)*	*(1.10)*	*(1.10)*	*(1.08)*	*(1.10)*
Household wealth (mean)	277,712	315,391	342,068	344,372	379,092	423,458	347,040
	392,903	*534,433*	*568,115*	*471,365*	*686,445*	*787,601*	*588,644*
Household wealth (p50)	200,556	224,000	232,000	240,000	248,737	272,045	234,372
Household income (mean)	21,569	23,759	26,048	26,706	29,481	29,735	26,251
	(19,942)	*(20,699)*	*(21,385)*	*(25,172)*	*(33,918)*	*(22,358)*	*(24,664)*
Household income (p50)	17,342	19,094	21,098	21,184	23,685	25,051	21,113
Number of observations	7932	7929	8972	8656	8605	7790	49,884

Note: Standard errors are reported in parentheses.

4.6 Empirical results

The fixed effects estimates and the fixed effects instrumental variables estimates are reported in Table 4.2. Let us first assess the control variables. It comes as no surprise that household size has a positive effect on all types of spending apart from rent, which is somewhat unique, as larger households tend to live in a home they own. Interestingly, age has a significant effect on spending, especially on leisure activities and clothing. Higher age is associated with lower spending, although the effects are practically negligible. Furthermore, in the fixed effects instrumental variables estimates, being unemployed negatively affects spending on clothing, while having a positive effect on spending on rent. If the respondent's spouse is unemployed, spending on food consumed at home, clothing, and leisure is statistically significantly lower. Having children negatively affects spending on clothing and has a small positive effect on spending on rent and utilities. Self-perceived health has no significant effect on any type of consumption in the fixed effects instrumental variables estimates. On the other hand, wealth positively affects spending on clothing, food consumed outside and inside of home, and utility, while having a negative effect on spending on rent. In contrast, income only positively affects spending on both types of food and utilities.

A comparison of the fixed effects estimates of the effect of subjective well-being on different types of consumption reveals substantial differences among the equations. Subjective well-being does not affect food consumed inside of the respondents' homes and monthly rent. On the other hand, it exhibits a statistically significant positive effect on clothing (0.029), food consumed outside of the respondents' homes (0.015), and leisure activities (0.012), while having a small but statistically significant negative effect on utility spending (-0.005). After instrumenting for subjective well-being, the results change rather significantly. The effect of subjective well-being on food consumed at home and monthly rent remains statistically insignificant. Furthermore, the effect on spending on clothing, which was the strongest in the fixed effects estimates, does not exhibit statistical significance in the fixed effects instrumental variables estimates. The effect on utility consumption is also not significant. On the other hand, both positive effects on food consumed outside of the respondents' homes (0.111) and leisure activities (0.206) increased significantly. These results, which are robust to clustering standard errors by individuals and the inclusion of wave dummies, suggest downward bias in the fixed effects estimates. We compared the discrepancies between the fixed effects estimates and the instrumental variables estimates with the ones obtained by Guven (2012). Whereas in our model equations we study the effect of subjective well-being on consumption, Guven studies the effect of subjective well-being, which he measures with a 5-point single item scale, on savings behavior. He provides three model specifications with the following three dependent variables: "whether or not saved money recently"; "amount of money saved recently"; and "saving money does not make sense." Similar to our results, he finds an increase in the subjective well-being coefficients in the instrumental variables estimates

compared to the ordinary least squares estimates in all three model specifications. The coefficients increase from 0.05 to 0.45, from 0.04 to 1.10, and from -0.09 to -1.01, respectively.

Both food consumed outside of home and leisure activities share multiple properties and could both be characterized as hedonic products, which we define as "the ones whose consumption is characterized by an affective and sensory experience of aesthetic or sensual pleasure" (Hirschman & Holbrook, 1982). On the other hand, food consumed at home, clothing, rent, and utility products share several characteristics of utilitarian products, which we define as "the ones whose consumption is motivated mainly by the desire to fill a basic need or accomplish a functional task" (Strahilevitz & Myers, 1998). Our results support the findings of Zhong & Mitchell (2012), who attribute the positive effect of subjective well-being on the consumption of hedonic products to the behavioral effect of subjective well-being, such as increased sociability, which leads to people with higher levels of subjective well-being to be more engaged in social and leisure activities, such as going out for dinner, sporting events, going to the cinema, etc., as found by previous research (see Lyubomirsky et al. (2005) for a thorough overview). However, contrary to Zhong & Mitchell, we used an instrumental variables strategy in order to account for reverse causality issues and other potential sources of bias. Furthermore, while their study focuses its attention only on spending on leisure, we provide estimates for six distinct types of consumption.

Table 4.2: FE and IVFE estimates of the effect of subjective well-being on six types of consumption

Model	**FE**	**IVFE**	**FE**	**IVFE**	**FE**	**IVFE**	**FE**	**IVFE**	**FE**	**IVFE**	**FE**	**IVFE**
Variables	**Food in**	**Food in**	**Food out**	**Food out**	**Clothing**	**Clothing**	**Leisure**	**Leisure**	**Rent**	**Rent**	**Utility**	**Utility**
Subj. well-being	0.001	-0.005	0.015***	0.111**	0.029***	0.089	0.012**	0.206***	-0.002	0.000	-0.005***	-0.019
	(0.001)	(0.015)	(0.004)	(0.051)	(0.006)	(0.079)	(0.005)	(0.069)	(0.003)	(0.038)	(0.001)	(0.020)
Age	0.021***	0.021***	0.090***	0.081***	0.146***	0.140***	0.254***	0.235***	0.045***	0.045***	0.041***	0.042***
	(0.006)	(0.006)	(0.020)	(0.021)	(0.033)	(0.034)	(0.027)	(0.029)	(0.016)	(0.016)	(0.008)	(0.008)
Age^2	0.000	0.000	-0.001***	-0.001**	-0.001***	-0.001***	-0.002***	-0.002***	-0.000***	-0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Coupled	0.150***	0.153***	0.047	0.009	0.101	0.077	-0.005	-0.079	-0.022	-0.023	0.065***	0.072***
	(0.015)	(0.017)	(0.051)	(0.056)	(0.082)	(0.088)	(0.067)	(0.075)	(0.039)	(0.042)	(0.021)	(0.022)
Retired	-0.012	-0.011	-0.054*	-0.072**	0.055	0.043	0.014	-0.024	0.013	0.013	-0.039***	-0.033***
	(0.009)	(0.009)	(0.029)	(0.031)	(0.046)	(0.048)	(0.038)	(0.042)	(0.022)	(0.023)	(0.011)	(0.012)
Unemployed	-0.027	-0.031	-0.001	0.054	-0.374**	-0.342*	-0.314**	-0.198	0.194**	0.196**	0.005	-0.004
	(0.032)	(0.034)	(0.109)	(0.115)	(0.173)	(0.179)	(0.143)	(0.155)	(0.083)	(0.086)	(0.042)	(0.044)
Unemp. spouse	-0.067*	-0.068*	0.093	0.108	-0.362*	-0.354*	-0.367**	-0.335**	0.110	0.110	-0.064	-0.066
	(0.036)	(0.036)	(0.122)	(0.124)	(0.194)	(0.195)	(0.160)	(0.168)	(0.093)	(0.094)	(0.046)	(0.047)
Children	0.003	0.002	-0.014	-0.005	-0.112***	-0.105**	0.027	0.048	0.035*	0.036*	0.026***	0.025**
	(0.008)	(0.008)	(0.026)	(0.027)	(0.041)	(0.043)	(0.034)	(0.036)	(0.020)	(0.020)	(0.010)	(0.010)
Children in HH	-0.003	-0.005	-0.009	0.016	0.023	0.039	0.033	0.085	0.024	0.025	0.066***	0.063***
	(0.013)	(0.014)	(0.045)	(0.048)	(0.072)	(0.075)	(0.059)	(0.065)	(0.035)	(0.036)	(0.017)	(0.018)
Household size	0.195***	0.196***	0.145***	0.131***	0.276***	0.268***	0.174***	0.146***	-0.026	-0.027	0.051***	0.053***
	(0.008)	(0.008)	(0.026)	(0.028)	(0.041)	(0.043)	(0.034)	(0.037)	(0.020)	(0.020)	(0.010)	(0.011)
Self-perceived health	-0.001	0.001	0.021	-0.011	0.039*	0.019	0.038**	-0.027	-0.017*	-0.018	-0.009*	-0.005
	(0.004)	(0.006)	(0.013)	(0.022)	(0.021)	(0.033)	(0.017)	(0.029)	(0.010)	(0.016)	(0.005)	(0.008)
Wealth (ln)	0.009***	0.010***	0.057***	0.049***	0.057***	0.052**	0.025	0.009	-0.099***	-0.099***	0.015***	0.016***
	(0.004)	(0.004)	(0.012)	(0.013)	(0.019)	(0.020)	(0.016)	(0.018)	(0.010)	(0.010)	(0.005)	(0.005)
Income (ln)	0.018***	0.019***	0.093***	0.084***	0.015	0.009	-0.009	-0.026	-0.017	-0.017	0.021***	0.022***
	(0.005)	(0.005)	(0.016)	(0.017)	(0.025)	(0.026)	(0.020)	(0.022)	(0.012)	(0.012)	(0.006)	(0.006)
Constant	1.825***	-	-2.967***	-	-3.874***	-	-6.969***	-	0.294	-	0.716**	-
	(0.215)		(0.716)		(1.142)		(0.944)		(0.551)		(0.279)	
Observations	26,888	24,170	27,158	24,455	27,049	24,329	27,184	24,472	27,176	24,474	25,121	22,364
R-squared	0.051	-	0.054	-	0.083	-	0.016	-	0.270	-	0.057	-

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

The major concern in an instrumental variables framework is the validity of the instruments, meaning that the instruments must be relevant (correlated with the endogenous independent variable) and exogenous (uncorrelated with the error term in the outcome equation). Table 4.3 presents several test statistics regarding the consistency of our instruments for each of the six estimated equations. The Cragg-Donald Wald F statistic, which tests for the presence of weak instruments, yields values ranging from 38.825 for the utility equation to 47.204 for the clothing equation. The presented values suggest that we can reject the null hypothesis of weak instruments following the findings of Staiger & Stock (1997), who show that an F statistic higher than 10 rejects the presence of weak instruments. The Anderson canonical correlation statistics reveal that all six equations are identified. Finally, the Sargan statistics for the equations for food consumed inside, food consumed outside, clothing, leisure, and rent are statistically insignificant, which means that we cannot reject the null hypothesis that the effects identified by different instruments are different. Unfortunately, the Sargan statistic for the utility equation is statistically significant, which means that the effects identified by different instruments are different. Furthermore, regrettably, attempts to provide consistent instruments in the utility equation failed to bear fruit. Nonetheless, the presented results inspire confidence that the instruments for subjective well-being are in general valid in five of the six equations under study.

Table 4.3: Consistency checks for the IVFE estimates

Consumption type		**Food in**	**Food Out**	**Clothing**	**Leisure**	**Rent**	**Utility**
1.Weak identification test							
Cragg-Donald Wald F stat.	**test**	44.370	45.027	47.204	45.980	46.581	38.825
	p-value	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
2. Underidentification test							
Anderson canon. LM stat.	**test**	88.370	89.668	93.979	91.557	92.747	77.342
	p-value	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
3. Overidentification test							
Sargan statistic	**test**	0.398	1.252	0.596	1.419	0.963	6.774
	p-value	*(0.528)*	*(0.263)*	*(0.440)*	*(0.234)*	*(0.327)*	*(0.009)*

4.7 Conclusion

By exploiting data from ELSA, we have studied the effect of subjective well-being on six different types of consumption (food consumed at home, food consumed outside of home, spending on clothing, leisure consumption, monthly rent, and utility consumption). To establish causality, rather than correlation, we utilized the panel structure of our database and instrumented individual subjective well-being with two variables indicating the quality of sleep. The findings show that subjective well-being positively affects the consumption of food outside of the respondents' homes and the consumption of leisure activities. On the other hand, the regression estimates show no statistically significant effect of subjective well-being on the remaining four types of consumption. These results do not support the

findings of Guven (2012), who found that people with higher levels of subjective well-being tend to spend less and save more, but are rather in line with the findings of Zhong & Mitchell (2012), who found a positive effect of subjective well-being on the consumption of hedonic products due to the increased sociability of individuals with higher levels of subjective well-being.

As all research articles, this one has its limitations, which will hopefully kindle much needed future research. First, our study is limited to six distinct types of spending. Although we were able to cover both utilitarian and hedonic products, our results may not be generalizable to other categories of products, such as for example luxury goods or products such as education, which promote long-term goals. Second, we studied the relationship between subjective well-being and consumption on individual- and household-level data, respectively, due to the limitations of ELSA. Therefore, a closer examination of the relationship based only on individual-level data is needed. Finally, the study is limited to individuals living in England, which may imply certain cultural specifics that may not apply to individuals living in other countries or on different continents. Thus, the field would certainly benefit from a multicountry study that would address this issue.

Nevertheless, the results of our analysis provide several practical implications. By establishing the role of subjective well-being in generating demand for specific products, better demand predictions can be made by the providers of those products. Furthermore, there are several implications for marketers. For example, our analysis revealed a positive effect of subjective well-being on the consumption of leisure activities. This finding suggests that marketers should target individuals with higher levels of subjective well-being, who have established characteristics, which marketers should utilize when promoting their products. Finally, the findings of our article provide important policy implications, as a good understanding of the relationship between subjective well-being and consumption can help design specific tax policies, as well as policies that enhance the residents' subjective well-being, which finally leads to several economic benefits.

5 SUBJECTIVE QUALITY OF LIFE AND STOCK MARKET PARTICIPATION OF THE ELDERLY: A STRUCTURAL EQUATION MODELLING APPROACH[19]

Abstract

Using the data from the Survey of Health, Aging and Retirement in Europe (SHARE), we study the relationship between four quality of life domains (Control, Autonomy, Pleasure, and Self-realization) and the stock market participation of the elderly in 13 European countries. We first assess the psychometric properties of the CASP-12 scale used in SHARE and then propose a structural equation model wherein quality of life affects stock market participation indirectly through its effect on trust and risk behavior. We find that risk preference has a greater effect on stock market participation than trust. Furthermore, our results indicate a consistent positive effect of the Self-realization domain and a negative effect of the Pleasure domain on stock market participation. Finally, the empirical results suggest that the joint Control and Autonomy domain can have both a positive and a negative effect on stock market participation, depending on the country.

Keywords: quality of life; older people; stock market participation; structural equation modelling; psychometric properties

JEL classification: G11; I00; I31; J14

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5.1 Introduction

Numerous scholars have studied the determinants of stock market participation and quality of life (e.g. Fagereng, Gottlieb, & Guiso, 2017; Hong, Kubik, & Stein, 2004; Martinez-Martin et al., 2012; Phillips, 2006). However, to our knowledge, no one has yet analyzed how different domains of quality of life affect stock market participation. To study this relationship, we utilize the CASP-12 scale of quality of life from the Survey of Health, Aging and Retirement in Europe (hereinafter SHARE). The scale, which identifies four quality of life domains, namely the Control, Autonomy, Pleasure, and Self-realization domain, allows us to study how different aspects of quality of life affect stock market participation. We focus our analysis on people aged 50 and above, who are usually advised to reduce risky investments, although such a generalized focus on risk avoidance may be inappropriate for those elderly with longer life spans and those with financial goals extending beyond their lifetimes (Kim, Hanna, Chatterjee, & Lindamood, 2012).

We investigate the effect of quality of life on stock market participation using structural equation modelling (SEM), which Ullman (2006) describes as statistical techniques that allow the researcher to examine a set of relations between one or more independent variables, and one or more dependent variables. SEM encompasses a measurement model and a structural model, and it allows us to study unobserved or latent concepts such as the four quality of life domains.

The aim of our article is twofold. First, we aim to analyze not just the relationship between the quality of life and the stock market participation of the elderly, but also the relationship between the different quality of life domains and stock market participation. To do so, we first assess the psychometric properties of the CASP-12 scale used in SHARE in order to establish whether the scale is a reliable and good measure of quality of life. Second, by placing our analysis into a multi-country setting, we aim to explore the cross-cultural robustness of the obtained results.

The article is structured as follows: After this introductory section, we first present the relevant literature in Section 2, where we define quality of life as it is used in our article, present the CASP-12 scale used in SHARE, and outline previous studies on the relationship between subjective measures of well-being and stock market participation. In Section 3 we describe the data and methods used in our analysis, and in Section 4 we provide the empirical results of the measurement and the structural model. We elucidate the conclusions we have reached in Section 5.

5.2 Relevant literature

5.2.1 Defining quality of life

A glance at the Web of Science database of scientific articles reveals that quality of life is a term heavily used in several fields, including gerontology, psychology, sociology, and the health sciences. It emerged as a scientific concept in the 1960s and can be most commonly found in medical databases, followed by those in psychology and the social sciences. Opinions regarding its exact scientific definition remain poles apart, and a precise and shared definition seems a long way off as found by numerous scholars (e.g. Birren & Dieckmann, 1991; Fayers & Machin, 2007; Fowlie & Berkeley, 1987; Nussbaum & Sen, 1993). Broadly speaking, an individual's quality of life contains both objective and subjective factors. Nevertheless, current studies mostly assess quality of life as a subjective concept, due to the majority of empirical definitions and measurement devices being reduced to the subject's own evaluation of certain domains (Fernández-Ballesteros, 2011). Such is the case in our article, as our measurement device (CASP-12) contains verbally reported subjective appraisals of 12 items forming four domains.

5.2.2 The CASP-12 scale used in SHARE

The CASP-12 scale used in SHARE (Börsch-Supan et al., 2008) is a modification of the CASP-12 scale proposed by Wiggins, Netuveli, Hyde, Higgs, & Blane (2008), who improved the measurement properties of the original CASP-19 scale developed by Higgs, Hyde, Wiggins, & Blane (2003). The goal of the original scale, as well as its successors, is threefold. First, to derive a definition of quality of life within a well-defined theoretical framework. Second, to construct a quality of life measure which does not use its determinants as indicators. And third, to construct a measure which would rely on fundamental principles and therefore allow for a meaningful comparison between individuals (Higgs et al., 2003). In order to fulfill these goals, Higgs et al. (2003) draw upon Maslow's book *Toward a psychology of being*, first published in 1962. Maslow's "needs theory" argues that all individuals have an inner motivation for fulfilling a basic set of needs, which are universal and thus allow for a meaningful comparison. Based on this theoretical framework, Higgs et al. (2003) identify four domains of needs, namely Control, Autonomy, Pleasure, and Self-realization (the first letters of these domains form the acronym CASP). Control is defined as the ability to intervene in one's life and environment, while Autonomy refers to the individual's right to live without the unwanted interference of others (Patrick, Skinner, & Connell, 1993). Pleasure and Self-realization, which are according to Higgs et al. (2003) new features of individuals born after the Second World War, refer to the pursuit of enjoyable activities and the fulfillment of oneself, respectively (Borrat-Besson, Ryser, & Gonçalves, 2015; Giddens, 1990; Turner, 1995). The presented domains are not hierarchically organized and are treated as equal and inseparable.

The CASP-19 scale has been used in several surveys, including the British Household Panel Study (BHPS), the U.S. Health and Retirements Study (HRS), and the Korean Longitudinal Study of Ageing (KLoSA). Moreover, several articles have assessed its psychometric properties, usually finding a questionable internal consistency of the Control and especially Autonomy domains. Furthermore, both Wiggins et al. (2008) and Sim, Bartlam, & Bernard (2011) found that the factor structure of the scale does not follow the prediction of the theory. Based on these findings, Wiggins et al. (2008) proposed a new CASP scale with only 12 items and three domains, combining the Control and Autonomy domains. A slightly different version has been implemented in SHARE. To date, only a few studies have tested the psychometric properties of the CASP-12 scale used in SHARE. Borrat-Besson et al. (2015) tested the psychometric properties of the CASP-12 scale in over 16 countries on people aged 50 and over. They concluded that none of the three theoretical models fit the data and proposed a ten-item and two-factor model, although they did not test the three-factor model proposed by Wiggins et al. (2008). On the other hand, Pérez-Rojo, Martín, Noriega, & López (2018) found the model proposed by Wiggins et al. (2008) to be a good fit in the case of Spanish community-dwelling non-institutionalized people aged 60 and above.

The SHARE version of the CASP-12 scale is translated into several languages. It consists of 12 items grouped into four domains, as presented in Table 5.1. Each item is answered on a four-point Likert scale, where 1 = never and 4 = often. Some items are reverse-coded and the sum of the items ranges from 12 to 48. Higher scores indicate a better quality of life (12–35 = low quality of life; 35–37 = moderate quality of life; 37–39 = high quality of life; 39–41 = very high quality of life). A descriptive overview of the 12 items is reported in the appendices. Item 8 (3.59) has the highest average score, followed by items 7 (3.45) and 9 (3.40), all of which belong to the Pleasure domain. Items 1 (2.68), 6 (2.71), and 2 (2.92) have the lowest average score.

Table 5.1: The list of CASP-12 items used in SHARE, categorized by domains

Domain	Item	Statement
Control	1	How often do you think your age prevents you from doing the things you would like to do?
	2	How often do you feel that what happens to you is out of your control?
	3	How often do you feel left out of things?
Autonomy	4	How often do you think that you can do the things that you want to do?
	5	How often do you think that family responsibilities prevent you from doing what you want to do?
	6	How often do you think that shortage of money stops you from doing the things you want to do?
Pleasure	7	How often do you look forward to each day?
	8	How often do you feel that your life has meaning?
	9	How often, on balance, do you look back on your life with a sense of happiness?

(table continues)

(continued

Self-realization	10	How often do you feel full of energy these days?
	11	How often do you feel that life is full of opportunities?
	12	How often do you feel that the future looks good for you?

Note: Items 1, 2, 3, 5, and 6 are reverse-coded for the analyses.

5.2.3 Subjective well-being and stock market participation

Subjective well-being and economics have a long tradition, originating from the seminal work of Richard A. Easterlin in 1974. Although the majority of studies focus on the determinants of subjective well-being, recently, more and more studies are addressing the reverse effect of subjective well-being and find that happiness might have an important influence on several economic decisions (e.g. De Neve, Diener, Tay, & Xuereb, 2013; Lyubomirsky, King, & Diener, 2005). Still, research on the effect of subjective well-being on stock market participation remains scarce. In fact, to our knowledge only Rao, Mei, & Zhu (2016) studied the direct effect of happiness on stock market participation. Using data from the China Household Finance Survey, they found that happiness positively affects the decision of households to invest in stocks, as well the share of assets invested in stocks. Furthermore, they analyzed three potential underlying channels, namely risk preference, optimism and trust, and found that happiness affects the share of assets invested in stocks through its effect on trust rather than risk preference or optimism.

In our analysis we focus on two possible underlying channels through which quality of life might affect the stock market participation of the elderly: risk preference and trust. The relationship between risk preference and stock market participation is documented by several studies (e.g. Lee, Rosenthal, Veld, & Veld-Merkoulova, 2015). On the other hand, the mechanisms underlying the relationship between trust and stock market participation are less straightforward. Guiso, Sapienza, & Zingales (2008) attribute the connection between trust and stock market participation to the ultimate trust intensive nature of financial contracts. Furthermore, McDonald & Sandada (2018) highlight the role of trust in the way financial institutions present themselves to their clients. Consequently, trust, in the context of stock market participation, plays the role of the subjective probability individuals attribute to being cheated.

There is a substantial body of literature regarding the effect of subjective well-being on risk preference. The vast majority of studies focus on the causal effect of short-term happiness on risk preference, with findings being far from unanimous. There are two competing psychological theories. The Affect Infusion Model suggests that positive moods increase risk-seeking behavior, due to selective attention and priming, which leads to different constructions of subjective probabilities (Forgas 1995; Rusting & Larsen 1995). People in good mood thus focus on positive cues in the environment, while those in bad mood shift their attention to the negative. The Mood Maintenance Hypothesis, on the other hand, proposes a negative relationship between positive moods and risk-seeking behavior

(Isen & Patrick 1983). Contrary to the Affect Infusion Model, people in good mood want to remain in this state and are therefore not willing to take upon any additional risks that could potentially shift their mood, while those in bad mood are less cautious, as they aspire to shift their mood (Grable & Roszkowski 2008).

The Affect Infusion Model (e. g. Chou, Lee, & Ho, 2007; Deldin & Levin, 1986; Hu, Wang, Pang, Xu, & Guo, 2015; Yuen & Lee, 2003) and the Mood Maintenance Hypothesis (e.g. Lin, Yen, & Chuang, 2006; Mittal & Ross, 1998; Nygren, Isen, Taylor, & Dulin, 1996; Raghunathan & Pham, 1999) both enjoy empirical support from various scholars. More recently, however, scholars have found more evidence supporting the Affects Infusion Model (Campos-Vazquez & Cuilty, 2014; Schulreich et al., 2014; Stanton et al., 2014; Treffers, Koellinger, & Picot, 2016). A consistent finding among competing theories is that positive moods positively affect overconfidence. While the relationship between short-term happiness and risk preference has been thoroughly examined, research on the relationship between long-term happiness and risk preference is far scarcer. Delis & Mylonidis (2015) found that people with higher levels of subjective well-being are more risk-averse, while, quite the contrary, Martin et al. (2002) found that children with higher levels of subjective well-being grew into more risk-taking adults. The presented literature overview suggests that the debate regarding the effect of subjective well-being on risk preference is far from over. Regarding the effect of subjective well-being on trust, findings are far more unified, and the vast majority of studies found a positive effect of subjective well-being on trust (e.g. (Bjørnskov, 2006; Dunn & Schweitzer, 2005; Helliwell, Huang, & Wang, 2014; Hudson, 2006; Jovanović, 2016; Mislin, Williams, & Shaughnessy, 2015; Oshio, 2017). There are only a few studies that found no significant effect of subjective well-being on trust (Capra, 2004; Lei & Lu, 2014).

5.3 Data and methods

5.3.1 Data

We derived the data for our analysis from the fifth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE), conducted in 2013 (Börsch-Supan et al., 2013). SHARE is a cross-national panel database of micro data on the socioeconomic status, health, and social networks of individuals aged 50 or over. The survey has been conducted on a biannual basis since 2004 and currently covers more than 120,000 individuals. Our sample consists of 38,908 individuals from the following 13 countries: Austria, Germany, Sweden, the Netherlands, Spain, Italy, France, Denmark, Switzerland, Belgium, the Czech Republic, Slovenia, and Estonia (we did not include Luxembourg and Israel in our analysis due to a significantly smaller sample and because we focus our attention on European countries, respectively). The sample statistics provided in Table 5.2 show that the average

age of the respondents is 67, and that the majority is female (57.07%) and retired (57.24%) (the sample statistics for each individual country are provided in the appendices).

We measured direct stock market participation with the question: "Do you currently have any money in stocks or shares (listed or unlisted on the stock market)?" The sample statistics show that only 12.45% of the respondents' own stocks. A closer examination reveals that there are big differences between the countries under study. The two Scandinavian countries, Sweden (39.78%) and Denmark (32.09%), have by far the biggest share of respondents owning stocks. They are followed by Switzerland (22.33%), Belgium (15.40%), and Germany (12.01%). In none of the other countries under study does the share of respondents owning stocks exceed 10%. Trust is measured on an 11-point single item scale and can be more specifically be characterized as "trust in people", as it does not cover trust in the government or institutions.[20] On average, respondents are the most trusting in Denmark (7.59) and Sweden (6.90), followed by those in the Netherlands (6.55) and Switzerland (6.41). On the other hand, respondents are the least trusting in France (5.14) and Germany (5.36). Risk behavior is measured on a 4-point single item scale, where 1 stands for "not willing to take any financial risks" and 4 stands for "take substantial financial risks expecting to earn substantial returns."[21] Respondents from Sweden (1.67) and Denmark (1.65) are on average the least risk-averse, while those from Spain (1.11) and Estonia (1.11) are the most risk-averse.

Table 5.2: Sample statistics

Female (%)	57.07
Retired (%)	57.24
Age (mean)	67.10
	(10.21)
Years of education (mean)	11.62
	(4.34)
Shareholders (%)	12.45
Trust (mean)	5.96
	(2.35)
Risk (mean)	1.31
	(0.58)
Number of observations	38,908

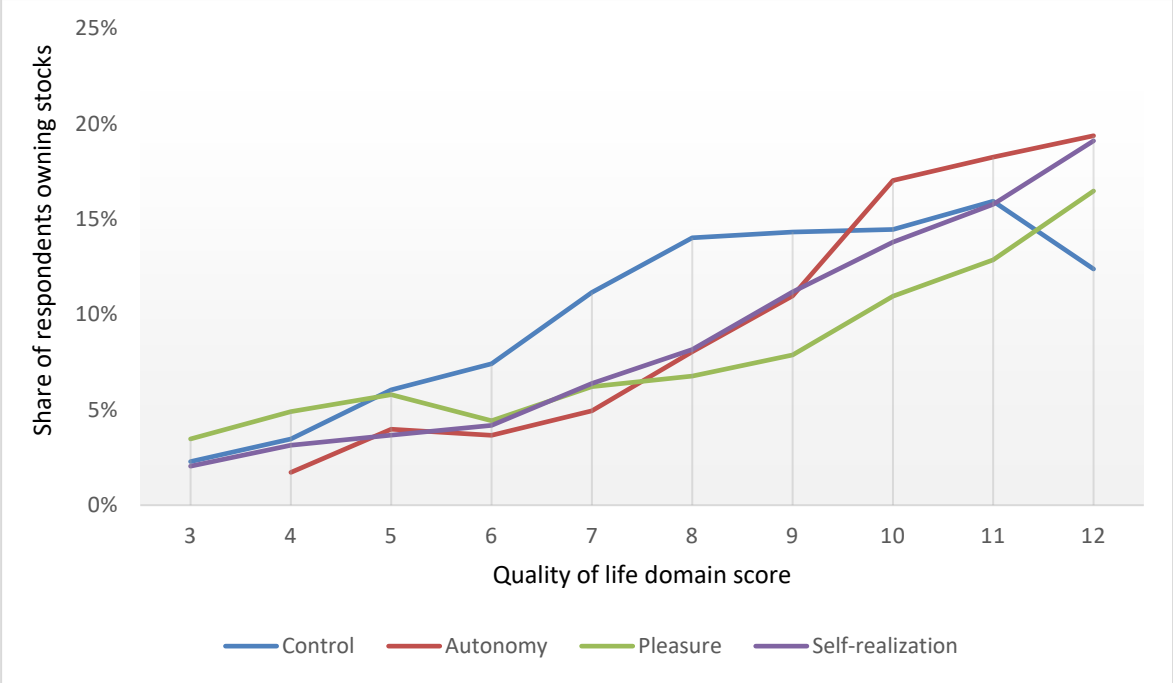
Note: Standard errors are reported in parentheses.

[20] The question in the survey was: "Finally, I would now like to ask a question about how you view other people. Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people? Not looking at card {SHOWCARD_ID} anymore, please tell me on a scale from 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted."

[21] The question in the survey was: "Please look at card {SHOWCARD_ID}. When people invest their savings they can choose between assets that give low return with little risk to lose money, for instance a bank account or a safe bond, or assets with a high return but also a higher risk of losing, for instance stocks and shares. Which of the statements on the card comes closest to the amount of financial risk that you are willing to take when you save or make investments?"

A further examination of the relationships between the four quality of life domains and stock market participation is presented in Figure 5.1. The figure shows the share of respondents participating in the stock market at different levels of the Control, Autonomy, Pleasure, and Self-realization domains. It reveals that individuals reaching higher levels in all four domains are on average more likely to own stocks. Furthermore, we analyzed the relationships between the four quality of life domains and trust, as well as risk-taking behavior. The findings are unified, showing that individuals reaching higher levels in all four domains are on average more trusting and less risk-averse.

Figure 5.1: Average stock market participation at different levels of the four quality of life domains



5.3.2 Methods

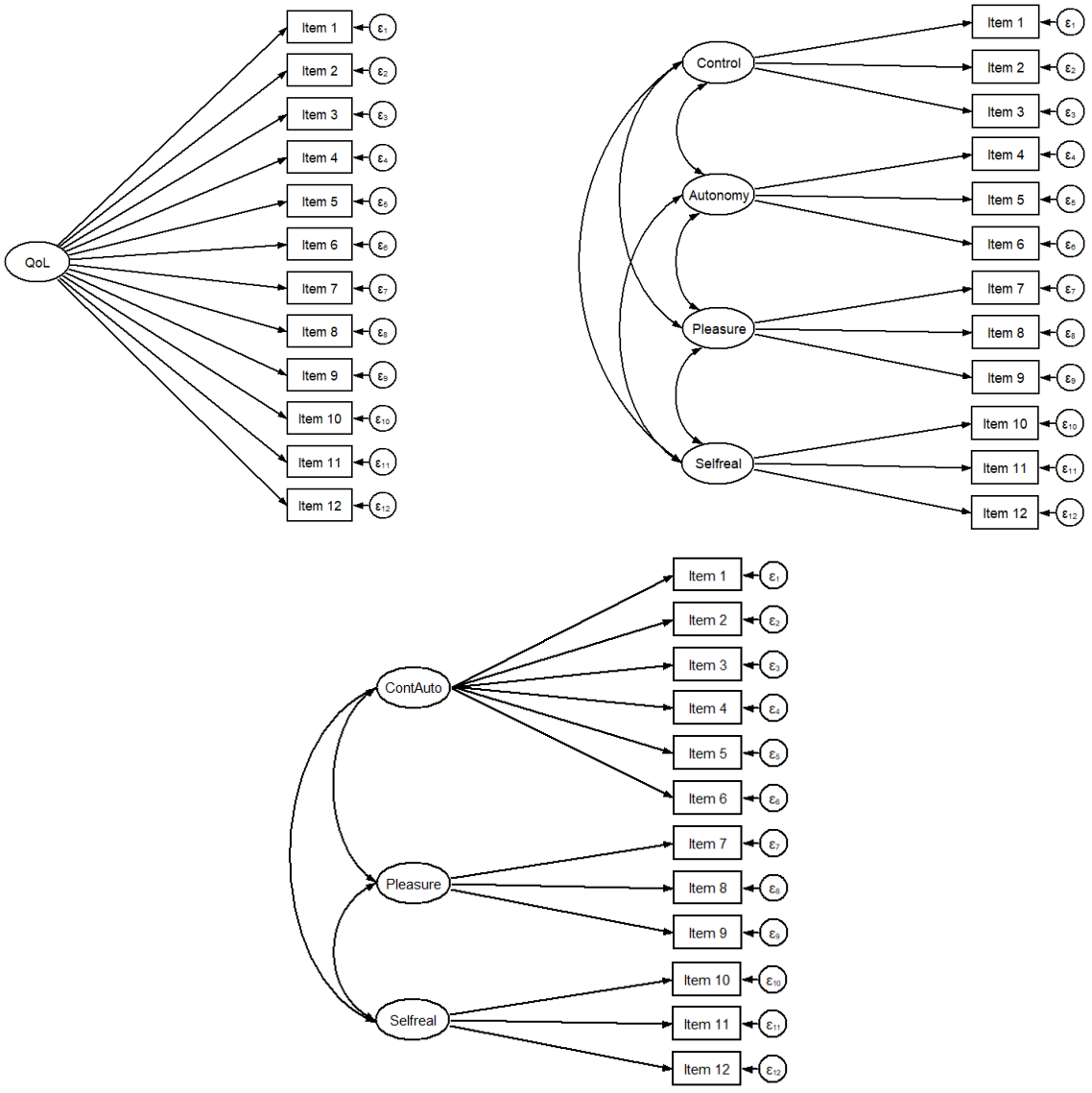
We conducted all analyses separately by country. In the measurement model, we first assessed internal consistency for each of the four domains with the ordinal Cronbach's alpha coefficient. Second, we conducted a confirmatory factor analysis to examine the factor structure of the CASP-12 scale used in SHARE. We tested the following first-order models, presented in figures 5.2:

1. Model 1: The single domain model, where all 12 items load to a single latent variable indicating quality of life.
2. Model 2: The four-domain model, where the first three items load to the Control domain, the second three items load to the Autonomy domain, the third three items load to the Pleasure domain, and the fourth three items load to the Self-realization domain. The four latent domains are allowed to correlate with one another.

3. Model 3: The three-domain model, where the first six items load to the joint Control and Autonomy domain, while the rest remains the same as in Model 2.

In the structural model, after assessing the psychometric properties of the CASP-12 scale, we analyzed the effect of quality of life domains on the stock market participation of the elderly through their effects on risk aversion and trust using the robust weighted least square mean and variance adjusted estimator (WLSMV), which is suitable for categorical data (Brown, 2006; Muthén & Muthén, 1998-2012).

Figure 5.2: The single domain model, four-domain model, and three-domain model



5.4 Empirical results

5.4.1 The measurement model

5.4.1.1 Reliability analysis

To assess the consistency among multiple items of a domain, we report Cronbach's alpha coefficients for each country and domain in Table 5.3. The coefficients can range between zero and one, with higher values indicating better reliability or internal consistency. We follow Hair, Black, Babin, & Anderson (2014) who state that although the generally agreed upon limit for Cronbach's alpha is 0.7, it can decrease to 0.6 in exploratory research, especially if the number of items is small. The results reveal that internal consistency varies from one domain to another. The reliability coefficient for the Control domain is on average acceptable (0.66), and in most countries it exceeds the cut-off value of 0.60. Only the Netherlands and Denmark score lower than 0.60, which implies low internal consistency. The Cronbach's alpha coefficient for the Autonomy domain is on average unacceptably low (0.26), and none of the countries under study top the cut-off value. The reliability coefficient for the Pleasure domain is on average satisfactory (0.65), although it is very low in the Netherlands, Italy, and Belgium, indicating low internal consistency. The Self-realization domain exhibits the highest average Cronbach's alpha coefficient (0.79), and all the countries under study exceed the cut-off value of 0.60. The combined Control and Autonomy domain displays acceptable average internal consistency (0.61), although Sweden, the Netherlands, and Denmark score lower than 0.60. A closer examination of the correlation matrix reveals that the low internal consistency of the Autonomy domain is principally due to the low correlation between items 4 and 5.

Table 5.3: Cronbach's alpha coefficients for each domain by country

Country	Control	Autonomy	Pleasure	Self-realization	Control & Autonomy
Austria	0.65	0.22	0.74	0.83	0.63
Germany	0.63	0.24	0.70	0.78	0.61
Sweden	0.60	0.25	0.61	0.79	0.59
Netherlands	0.54	0.27	0.56	0.81	0.57
Spain	0.73	0.23	0.74	0.80	0.64
Italy	0.78	0.37	0.48	0.80	0.68
France	0.69	0.26	0.70	0.78	0.62
Denmark	0.58	0.27	0.69	0.82	0.58
Switzerland	0.64	0.22	0.68	0.77	0.61
Belgium	0.65	0.37	0.56	0.76	0.65
Czech Republic	0.73	0.18	0.62	0.75	0.60
Slovenia	0.66	0.20	0.71	0.82	0.60
Estonia	0.72	0.33	0.66	0.81	0.68
Mean	0.66	0.26	0.65	0.79	0.61
SD	0.06	0.06	0.08	0.02	0.04

5.4.1.2 CFA analyses of the models

To evaluate the factor structure of the models presented in Section 3.2, we used three fit measures, namely the Comparative Fit Index (CFI), the Trucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA). Both CFI and TLI compare the fit of the model with a more restricted model. While the TLI favors simpler models, this is not the case for CFI. Values above 0.95 indicate good fit and values above 0.90 indicate acceptable fit. The RMSEA, similar as the TLI, favors parsimonious models and tells us to what degree the model fits the populations' covariance matrix (Byrne, 1998). Values lower than 0.06 indicate good model fit, while values below 0.08 indicate adequate model fit (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996). We follow Borrat-Besson et al. (2015) and consider it to be a good model fit if all three fit indices are good according to the presented criteria, an acceptable model fit if one of the indices is bad, and an unacceptable model fit if two or more fit indices are bad.

The fit indices of the three models under study are presented in Table 5.4. In general, model fit is not perfect, although there are severe differences between the models. Model 1 in general does not fit the data well at all, as the CFI, TLI and RMSEA values for all of the countries under study are not acceptable. In comparison, Model 2 has a significantly improved fit. The results for Model 3 are similar to those for Model 2, although the fit is on average somewhat worse, especially the RMSEA, and unacceptable for Italy.

Table 5.4: Fit indices of the three models under study, by country

Country	**Model 1**			**Model 2**			**Model 3**		
	CFI	***TLI***	***RMSEA***	***CFI***	***TLI***	***RMSEA***	***CFI***	***TLI***	***RMSEA***
Austria	0.937	0.923	0.101	0.971	0.960	0.073	0.966	0.956	0.077
Germany	0.909	0.889	0.102	0.953	0.935	0.078	0.944	0.928	0.082
Sweden	0.894	0.871	0.109	0.930	0.904	0.094	0.926	0.905	0.094
Netherlands	0.890	0.865	0.103	0.943	0.921	0.079	0.935	0.915	0.080
Spain	0.902	0.88	0.144	0.959	0.943	0.099	0.953	0.939	0.103
Italy	0.823	0.783	0.168	0.910	0.876	0.127	0.899	0.869	0.131
France	0.892	0.868	0.122	0.955	0.939	0.083	0.939	0.921	0.094
Denmark	0.906	0.885	0.111	0.936	0.911	0.097	0.932	0.912	0.097
Switzerland	0.895	0.871	0.099	0.954	0.937	0.070	0.952	0.938	0.069
Belgium	0.869	0.840	0.113	0.940	0.918	0.081	0.930	0.909	0.085
Czech Republic	0.801	0.756	0.155	0.949	0.930	0.083	0.927	0.905	0.097
Slovenia	0.931	0.916	0.104	0.978	0.970	0.062	0.974	0.967	0.066
Estonia	0.835	0.798	0.149	0.956	0.939	0.082	0.951	0.936	0.084

In order to further explore the sources of bad fit, we provide average Spearman correlation coefficients for the 12 items in Table 5.5, which, according to theory, should more strongly correlate with their own domains than with others. Furthermore, we follow Kline's (1993) criterion that the item correlation with its respective domain should not be lower than 0.30. The results show that all items in the Control, Pleasure, and Self-realization domains

exhibit strong correlations with their respective domains, which exceed those of others. For the Autonomy domain, however, the results are more problematic. First, all three items have low correlations with the Autonomy domain, all significantly lower than the cut-off criterion proposed by Kline (1990). Second, items 4 and 5 have the lowest and second lowest correlation coefficient, respectively, for the Autonomy domain among all 12 items and should rather be assigned to the Self-realization or the Control domain.

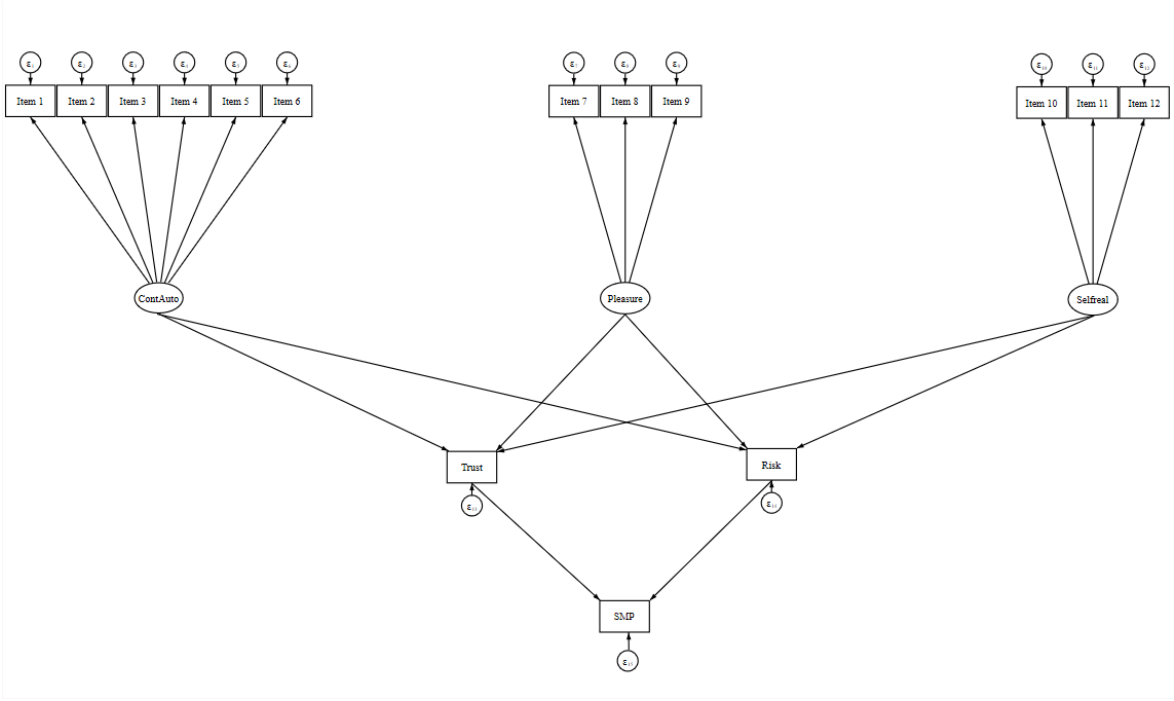
Table 5.5: Spearman correlations between items and domains

Item	**Domain**			
	Control	***Autonomy***	***Pleasure***	***Self-realization***
1	**0.389**	0.200	0.204	0.347
2	**0.461**	0.219	0.214	0.292
3	**0.430**	0.233	0.260	0.312
4	0.231	**0.119**	0.276	0.372
5	0.178	**0.124**	0.069	0.046
6	0.243	**0.208**	0.190	0.262
7	0.206	0.170	**0.396**	0.365
8	0.276	0.187	**0.452**	0.465
9	0.196	0.177	**0.360**	0.379
10	0.341	0.200	0.373	**0.540**
11	0.293	0.228	0.409	**0.594**
12	0.318	0.251	0.426	**0.585**

5.4.2 The structural model

Our hypothesized structural equation model is presented in Figure 5.3. Although from the three models presented in Section 3.2, Model 2 showed better model fit than Model 3, we finally decided to build upon Model 3 due to the Autonomy domain' s inadequate internal consistency. As described above, in the model, the joined Control and Autonomy, Pleasure, and Self-realization domains indirectly affect stock market participation through their effect on trust and risk behavior.

Figure 5.3: The structural equation model for the effect of quality of life on stock market participation



The fit indices for each individual country reported in Table 5.6 show a good model fit for Austria and Slovenia, as well as an acceptable model fit for the rest of the countries apart from Italy, as expected. Table 5.6 also reports standardized direct and indirect effects. The results show that risk preference is positively related to stock market participation in all the countries under study. The standardized path coefficients range from 0.221 in Slovenia to 0.507 in the Czech Republic. Trust, on the other hand, is positively related to stock market participation only in Germany, Sweden, Spain, France, Denmark, Switzerland, and Belgium. Furthermore, the path coefficients are significantly smaller and range from 0.066 in Spain to 0.151 in France.

The indirect effects of the joint Control and Autonomy, Pleasure, and Self-realization domains show that the Self-realization domain consistently positively affects stock market participation in all the countries under study apart from Spain, Switzerland, and Slovenia. The standardized coefficient sizes are on average significantly larger than those from the other domains and range from 0.087 in Sweden to 0.356 in the Netherlands. The Pleasure domain has a statistically significant negative effect on stock market participation in Austria, Germany, the Netherlands, France, Belgium, the Czech Republic, and Estonia. The sizes of the coefficients range from −0.058 in the Czech Republic to −0.269 in Germany. The Pleasure domain has no effect on stock market participation in Sweden, Spain, Denmark, Switzerland, and Slovenia. Conversely, it has a positive effect in Italy, where the model fit is bad. The effect of the joint Control and Autonomy domain is not as consistent as the effects of the Pleasure and especially the Self-realization domain. It positively affects stock market participation in Spain, Italy, Switzerland, with path

coefficients ranging from 0.050 in Italy to 0.105 in Spain, while having a negative effect in the Netherlands, France, Denmark, and the Czech Republic, with path coefficients ranging from −0.056 in the Czech Republic to −0.147 in the Netherlands. Taking into consideration the effects of all three quality of life domains, the only country where none of the domains has any statistically significant relationship with stock market participation is Slovenia. Furthermore, the absolute significant quality of life effect on stock market participation is positive in all the other countries under study.

The dissemination of indirect effects is reported in Table 7. The specific indirect effects show that the vast majority of the effects of the three domains under study on stock market participation are transmitted through the effect on risk behavior. On the other hand, the effects on trust are rare and small. There are only two exceptions where the effect of quality of life is mediated exclusively through trust. Those are the effect of the Pleasure domain in Sweden and the effect of the Self-realization domain in Switzerland, although even these effects are barely significant and small.

An explanation for the presented results can be found in the items for each of the four domains. Respondents with high Self-realization levels tend to be energetic and optimistic. Most importantly, they also have an optimistic outlook for the future, which is an important property when investing in stocks. On the other hand, although they look forward to each day, individuals reaching higher levels in the Pleasure domain are in general happy with their life without being inclined to take upon any additional risk, such as investing in stocks. The varying relationship between the joint Control and Autonomy domain and stock market participation indicates that the cultural and institutional context, such as for example the development of the financial system, may play an important part in moderating the relationship. In general, the results show that while overall quality of life positively affects the stock market participation of the elderly, the different domains can have opposing effects.

Table 5.6: Direct and indirect effects on stock market participation by country

Country	**Austria**	**Germany**	**Sweden**	**Nether-lands**	**Spain**	**Italy**	**France**	**Denmark**	**Switzer-land**	**Belgium**	**Czech Republic**	**Slovenia**	**Estonia**
Direct effect													
Risk	0.432***	0.430***	0.373***	0.467***	0.437***	0.456***	0.346***	0.321***	0.448***	0.388***	0.507***	0.221***	0.413***
	(0.025)	*(0.022)*	*(0.020)*	*(0.022)*	*(0.023)*	*(0.032)*	*(0.026)*	*(0.026)*	*(0.024)*	*(0.016)*	*(0.040)*	*(0.039)*	*(0.067)*
Trust	0.024	0.135***	0.064***	0.048	0.066*	0.059	0.151***	0.114***	0.070**	0.146***	0.057	0.057	0.084
	(0.039)	*(0.028)*	*(0.026)*	*(0.037)*	*(0.034)*	*(0.042)*	*(0.034)*	*(0.027)*	*(0.031)*	*(0.029)*	*(0.046)*	*(0.043)*	*(0.065)*
Indirect effect													
Control-Autonomy	-0.010	-0.020	-0.023	-0.147***	0.105***	0.050**	-0.084***	-0.065***	0.053**	-0.020	-0.056***	-0.005	0.003
	(0.032)	*(0.026)*	*(0.023)*	*(0.040)*	*(0.027)*	*(0.022)*	*(0.021)*	*(0.021)*	*(0.026)*	*(0.019)*	*(0.019)*	*(0.022)*	*(0.022)*
Pleasure	-0.142***	-0.269***	0.024	-0.175***	-0.064	0.087**	-0.090**	-0.056	-0.005	-0.106***	-0.058*	0.001	-0.080**
	(0.050)	*(0.045)*	*(0.028)*	*(0.052)*	*(0.040)*	*(0.038)*	*(0.042)*	*(0.041)*	*(0.060)*	*(0.040)*	*(0.033)*	*(0.026)*	*(0.036)*
Self-realization	0.248***	0.425***	0.087**	0.356***	0.095	0.159***	0.292***	0.207***	0.081	0.242***	0.207***	0.050	0.226***
	(0.061)	*(0.051)*	*(0.036)*	*(0.072)*	*(0.040)*	*(0.039)*	*(0.050)*	*(0.045)*	*(0.060)*	*(0.044)*	*(0.039)*	*(0.035)*	*(0.049)*
Fit indices													
CFI	0.970	0.946	0.929	0.931	0.960	0.912	0.942	0.929	0.946	0.928	0.930	0.970	0.953
TLI	0.961	0.930	0.909	0.911	0.950	0.887	0.925	0.909	0.930	0.907	0.910	0.961	0.940
RMSEA	0.059	0.067	0.076	0.069	0.078	0.101	0.076	0.081	0.061	0.072	0.077	0.058	0.067
N	2930	3651	2975	2713	3755	2818	3002	2681	2082	3759	3339	2001	3609

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

Table 5.7: Specific effects on risk behavior and trust by country

Country	**Austria**	**Germany**	**Sweden**	**Nether-lands**	**Spain**	**Italy**	**France**	**Denmark**	**Switzer-land**	**Belgium**	**Czech Republic**	**Slovenia**	**Estonia**
Risk													
Control-Autonomy	-0.009	-0.025	-0.023	-0.144***	0.101***	0.045**	-0.078***	-0.052***	0.055**	-0.031*	-0.055***	-0.007	-0.003
	(0.032)	*(0.025)*	*(0.022)*	*(0.040)*	*(0.027)*	*(0.021)*	*(0.020)*	*(0.020)*	*(0.025)*	*(0.018)*	*(0.019)*	*(0.022)*	*(0.021)*
Pleasure	-0.141***	-0.250***	0.009	-0.177***	-0.056	0.072**	-0.104***	-0.075*	-0.004	-0.118***	-0.061*	-0.012	-0.101***
	(0.049)	*(0.044)*	*(0.027)*	*(0.052)*	*(0.040)*	*(0.036)*	*(0.039)*	*(0.039)*	*(0.059)*	*(0.038)*	*(0.033)*	*(0.024)*	*(0.032)*
Self-realization	0.242***	0.375***	0.085**	0.343***	0.095**	0.135***	0.255***	0.183***	0.064	0.217***	0.196***	0.048	0.226***
	(0.060)	*(0.050)*	*(0.035)*	*(0.070)*	*(0.040)*	*(0.035)*	*(0.048)*	*(0.044)*	*(0.059)*	*(0.043)*	*(0.038)*	*(0.034)*	*(0.049)*
Trust													
Control-Autonomy	-0.002	0.005	-0.000	0.002	0.003	0.006	-0.006	-0.013**	-0.002	0.011**	-0.001	0.002	0.006
	(0.003)	*(0.005)*	*(0.003)*	*(0.003)*	*(0.003)*	*(0.004)*	*(0.006)*	*(0.006)*	*(0.003)*	*(0.005)*	*(0.002)*	*(0.004)*	*(0.005)*
Pleasure	-0.000	-0.019**	0.015**	0.002	-0.008	0.015	0.013	0.018	-0.000	0.012	0.003	0.012	0.020
	(0.002)	*(0.009)*	*(0.007)*	*(0.003)*	*(0.005)*	*(0.011)*	*(0.011)*	*(0.012)*	*(0.007)*	*(0.010)*	*(0.003)*	*(0.010)*	*(0.016)*
Self-realization	0.007	0.050***	0.003	0.013	0.017*	0.024	0.037***	0.025*	0.016*	0.024**	0.011	0.002	0.000
	(0.011)	*(0.013)*	*(0.005)*	*(0.010)*	*(0.010)*	*(0.017)*	*(0.014)*	*(0.013)*	*(0.010)*	*(0.011)*	*(0.009)*	*(0.005)*	*(0.004)*

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

5.5 Conclusion

By using the SHARE database, our article examines the relationship between four quality of life domains and the stock market participation of the elderly, as well as the psychometric properties of the CASP-12 scale in a multi-country setting. To some degree, the results confirm the findings of Perez-Rojo et al. (2018) that the CASP-12 scale can be used as a multidimensional tool for assessing the quality of life of the elderly, and that the three-factor model is more appropriate than the four-factor model due to the low internal consistency of the autonomy domain. However, unlike Perez-Rojo et al. (2018), we also tested the psychometric properties of the CASP-12 scale on multiple countries, and our results show that while model fit is acceptable, it is not perfect – in some countries, in fact, it is even inadequate – and could therefore be improved.

Second, the results of the structural equation model suggest that overall quality of life positively affects stock market participation, which is in line with the findings in the subjective well-being literature. However, while Rao et al. (2014) found that happiness affects stock market participation through its effect on trust rather than risk preference, our results suggest the opposite. We found that quality of life affects stock market participation through its positive effect on risk-seeking behavior, thus supporting the Affect Infusion Model, which propagates a positive relationship between subjective well-being and risk-seeking behavior. Regarding the four quality of life domains, our results indicate that stock market participation is consistently positively affected by the Self-realization domain. Contrary to the Self-realization domain, the Pleasure domain has a significant negative relationship with stock market participation in seven countries under study. Finally, the effect of the joint Control and Autonomy domain is the least consistent and exhibits both positive and negative coefficient values, depending on the country.

Our study has several limitations, which will hopefully motivate much needed future research into the relationship between subjective quality of life and stock market participation. First, the cross-sectional nature of our analysis does not allow us to draw any final conclusions regarding the causal relationship between quality of life and stock market participation. Therefore, scholars should embrace the longitudinal design of several surveys and provide more reliable insights into the issues of causality. Second, because of missing data, our study is limited to exploring only the effect of quality of life on whether individuals own any stocks. It remains unknown whether quality of life has any significant effect on the share of savings people invest in stocks. Finally, future studies should more adequately consider the effect of demographic factors, such as for example age and gender, as well as the economic status, as our analysis focuses on the general relationship between the four quality of life domains and stock market participation.

Despite the limitations described above, this is the first study that analyzes the relationship between different aspects of quality of life and stock market participation in later life in

several European countries, thus providing important insights, which may explain the differences in one's portfolio allocation. Furthermore, by providing empirical evidence that higher levels of subjective quality of life have a positive impact on stock market participation, the study offers a new perspective for examining regional financial development, broader stock market participation, and market efficiency. Finally, the study has important practical implications due to providing a better understanding of the relationships between different quality of life domains and the mediating role of risk preference and trust, which can help make and improve policies to promote stock market participation.

CONCLUDING REMARKS

This doctoral dissertation aims to provide insights into several economic issues regarding the subjective well-being of the elderly population. It provides answers to several research questions in five research articles pertaining to the following four research topics: The economics of subjective well-being and subjective well-being among the elderly: A bibliometric overview; The effect of economic standing on subjective well-being in the context of different welfare state regimes; The effect of subjective well-being on consumer spending; and Subjective quality of life and stock market participation of the elderly. A summary of the findings and an assessment of the contribution to the field of knowledge is provided in the form of answers to the research questions asked in the beginning of the thesis.

- *Research question 1:* What is the current state of research in the research fields of the economics of subjective well-being and subjective well-being among the elderly?

Overall, the economics of subjective well-being is still a relatively young research field, which started expanding in the second half of the 1990s, when the first studies on the determinants of subjective well-being started to emerge, and accelerated after the global financial crisis in 2008. In the last decade the field has been characterized by the following keywords: "income," "satisfaction," "unemployment," "performance," "model," "job satisfaction," "behavior," etc. Furthermore, numerous new topics are emerging that are broadening the field into several new directions. Research on subjective well-being among the elderly experienced an increase in the number of published articles of 238%, as well as an increase in the number of citations of 233%, in the period from 2007 to 2016. It appears in several multidisciplinary contexts and is characterized by at least three distinct clusters of keywords. The first cluster indicates topics concerning geriatrics and medicine and is characterized by keywords such as "physical activity," "exercise," "prevention," "disease," "symptoms," "sf-36," etc. The second cluster contains keywords concerning psychology, such as "personality," "motivation," "behavior," "negative affect," "emotion," "mood," etc. Finally, the third cluster contains keywords that concern the sociological status of the elderly, such as "income," "unemployment," "inequalities," "religion," "marital-status," "social networks," etc.

- *Research question 2:* How have the respective fields developed over the years and where are they heading in the future?

Empirical subjective well-being research has been linked to economics already in Richard A. Easterlin's seminal 1974 work "Does economic growth improve the human lot? Some empirical evidence." Since the millennium, studies have been conducted on how different economic indicators, such as income, inequality, unemployment, inflation, etc., affect happiness. Furthermore, studies have been conducted on the role of affect in different

organizational contexts and the work-family conflict. After the crisis in 2008, researchers started focusing even more on topics beyond GDP, such as genuine progress, sustainable development and economic freedom, while also expanding the literature on topics such as the role of subjective well-being in consumption behavior, entrepreneurship and different organizational contexts. Research on the subjective well-being of the elderly is one of the originators of subjective well-being research in general. The most cited articles since the millennium concern topics such as chronic medical conditions and the decrease of vision, as well as topics concerning positive affect and emotional states. Both fields are expected to grow in the coming years due to subjective well-being becoming an important line of research in different research areas, as well as the potential for new and improved research from a theoretical, methodological and empirical standpoint.

- *Research question 3:* What are the most important articles, authors, journals, organizations and countries researching the economics of subjective well-being and subjective well-being among the elderly?

Articles on the economics of subjective well-being are clustered into three big and one small cluster. The most prolific author is Timothy A. Judge with 26 articles. He is followed by Andrew J. Oswald with 25 articles, Alois Stutzer with 23 articles, and Heinz Welsch with 23 articles. Judge, Oswald and Stutzer are also the three authors with the most citations in the economics of subjective well-being research. The top journals can be grouped into two clusters, where one cluster of journals is primarily concerned with topics that could be labeled "economics," while the second cluster of journals is concerned with topics we could label "business." The leading journals in the "economics" cluster are the *Journal of Economic Psychology*, *Ecological Economics*, and the *Economic Journal*, while the leading journals in the "business" cluster are the *Journal of Applied Psychology*, the *Journal of Consumer Research*, and the *Journal of Organizational Behavior*. With 1,169 published articles in the economics of subjective well-being, USA is the clear leader in the field. The most prolific authors in the research field of subjective well-being among the elderly are Denis Gerstorf with 15 articles, Jacqui Smith with 13 articles, and Hans-Werner Wahl with 13 articles. All three authors come from lifespan developmental psychology and study the relationship between old age and subjective well-being. The author with the most citations is Carol D. Ryff with 1123 citations. The journal with the most published articles is *The Gerontologist* with 141 articles, followed by *The International Journal of Aging and Human Development* with 63 articles, and the *Social Indicators Research* journal with 60 published articles. As in the economics of subjective well-being, the USA dominate the research field with 856 published articles.

- *Research question 4:* How do two different economic standing measures (income and net wealth) affect the subjective well-being of people aged 50 and above?

To study the effect of income and wealth on the subjective well-being of the elderly, the thesis uses data from the Survey of Health, Aging and Retirement in Europe (SHARE). The results of the analysis reveal that the effect depends on the estimated model, as well as the welfare regime. In the ordinary least squares estimates income significantly affects life satisfaction in the Conservative (0.148), Post-socialist (0.110), and Mediterranean (0.069) welfare regimes. However, after including the panel and instrumental variables dimensions, the positive effect of income in the Mediterranean and Post-socialist welfare regimes disappears. The effect of net wealth in the ordinary least squares estimates significantly differs from zero in the Mediterranean (0.046), Post-socialist (0.040), and Conservative (0.038) welfare regimes. After controlling for unobserved heterogeneity, the effect disappears in the Post-socialist welfare regime and decreases in the Mediterranean welfare regime (0.027), while it remains stable in the Conservative welfare regime (0.037). The fixed effects instrumental variables setting does not significantly change the results obtained from the fixed effects model.

- *Research question 5:* How do potential biases affect the cross-sectional estimates of the effect of income on subjective well-being?

The estimation of the effect of income on subjective well-being with micro data is associated with various potential sources of bias, such as personality bias, adaptation bias, attenuation bias, simultaneity bias, and confounding factors affecting income and subjective well-being. To assess whether these biases affect the cross-sectional estimates, the thesis first estimates the standard fixed effects model. The results reveal significant differences in comparison to the OLS results. Especially noticeable is the decrease in the effect size of income, which is consistent with findings on positive personality biases in the relationship between income and subjective well-being. The thesis then instruments for income with the spouse's years of education and the lag of income, and estimates a fixed effects instrumental variables model. The estimates exhibit an income effect that is almost twice as large as the one obtained in the OLS estimates, which indicates a negative overall bias and is consistent with the results found by Luttmer (2005), Knight et al. (2009), Powdthavee (2010), and Krenz (2013).

- *Research question 6:* Is the relationship between economic standing and subjective well-being moderated by the welfare regime?

As shown in the answer to Research question 4, welfare regimes in fact do moderate the relationship between economic standing and subjective well-being. The findings reveal severe differences among the welfare regimes, especially after controlling for unobserved heterogeneity and omitted time-varying bias. Especially notable are the differences

between the Conservative welfare regime and the Social-democratic welfare regimes, which shows that the welfare regime really is linked to subjective well-being through its instruments of decommodification and stratification. The classification of countries into certain welfare regime types has its difficulties and has been subject to a fair share of criticism. The thesis therefore offers additional estimates, wherein countries are not grouped into specific welfare regimes. The findings show that countries in the Social-democratic and Mediterranean welfare regimes are fairly homogenous regarding their effect on life satisfaction, as well as their moderating effect on the relationship between income and life satisfaction and the relationship between net wealth and life satisfaction in the OLS estimation. However, after allowing for unobserved heterogeneity and instrumenting for income, the results change significantly, with the results of our initial estimates being driven primarily by the specifics of individual countries. These results suggest caution when studying the relationship between economic standing and subjective well-being across multiple countries. It furthermore suggests that the effects of income and wealth, especially the size of the effect, cannot be generalized across multiple countries with different institutional settings, or across different groups of individuals.

- *Research question 7:* Does subjective well-being affect the consumption behavior of individuals aged 50 and above?

The thesis uses data from the English Longitudinal Study of Ageing (ELSA) to assess the effect of subjective well-being on the consumption behavior of individuals aged 50 and above. To establish causality, rather than correlation, the thesis utilizes the panel structure of the database and instruments subjective well-being with two variables indicating the quality of sleep and whether the respondent could "get going." The findings show that subjective well-being positively affects the consumption of food outside of the respondents' homes and spending on leisure activities. On the other hand, the regression estimates show no statistically significant effect of subjective well-being on the remaining four types of consumption.

- *Research question 8:* Does the effect of subjective well-being differ among different types of consumption?

As shown in the answer to Research question 7, subjective well-being statistically significantly affects only spending on food consumed outside of the respondents' homes and spending on leisure activities. Both share several properties of hedonic products, such as sensation seeking and emotional arousal. The results therefore confirm the findings of Zhong & Mitchell (2012), who attribute the positive effect of subjective well-being on the consumption of hedonic products to the behavioral effects of subjective well-being, such as increased sociability, which leads to people with higher levels of subjective well-being to be more engaged in leisure and social activities, such as going out for dinner, sporting events, going to the cinema, etc.

- *Research question 9:* How does controlling for reverse causality with instrumental variables affect the estimates?

A comparison of the fixed effects estimates of the effect of subjective well-being on different types of consumption reveals that there are substantial differences among the equations. Subjective well-being does not affect food consumed inside of the respondents' homes and monthly rent. On the other hand, it does exhibit a statistically significant positive effect on clothing (0.029), food consumed outside of the respondents' homes (0.015), and leisure activities (0.012), while having a small but statistically significant negative effect on utility spending (-0.005). After instrumenting for subjective well-being, the results change rather significantly. The effect of subjective well-being on food consumed at home and monthly rent remains statistically insignificant. The effect on clothing, however, which was the strongest in the fixed effects estimates, does not exhibit any statistical significance in the fixed effects instrumental variables estimates. The effect on utility consumption is also not significant, but both the positive effect on food consumed outside of the respondents' homes (0.111) and the positive effect on leisure activities (0.206) increased significantly. These results suggest downward bias in the fixed effects estimates.

- *Research question 10:* How do different subjective quality of life domains affect the stock market participation of the elderly in different European countries?

To study whether the four identified quality of life domains, namely Control, Autonomy, Pleasure, and Self-realization, affect the stock market participation of people aged 50 and above, the thesis once again exploits data from the Survey of Health, Aging and Retirement in Europe (SHARE). It hypothesizes a structural equation model, wherein the effect is transmitted through the effects on risk behavior and trust. The indirect effects of the joint Control and Autonomy, Pleasure, and Self-realization domains show that the Self-realization domain consistently positively affects stock market participation in all the countries under study apart from Spain, Switzerland, and Slovenia. The Pleasure domain has a statistically significant negative effect on stock market participation in Austria, Germany, the Netherlands, France, Belgium, the Czech Republic, and Estonia. The Pleasure domain has no effect on stock market participation in Sweden, Spain, Denmark, Switzerland, and Slovenia. Conversely, it has a positive effect in Italy, where the model fit is bad. The effect of the joint Control and Autonomy domain is not as consistent as the effects of the Pleasure and especially the Self-realization domain. It positively affects stock market participation in Spain, Italy, and Switzerland, while having a negative effect in the Netherlands, France, Denmark, and the Czech Republic. Taking into consideration the effects of all three quality of life domains, the only country where none of the domains has any statistically significant relationship with stock market participation is Slovenia.

- *Research question 11:* Is the effect of subjective quality of life on stock market participation transmitted through the effect on risk behavior or trust?

As discussed in the answer to Research question 10, the thesis hypothesizes a structural equation model, where the effect of the four quality of life domains is transmitted through the effects on risk behavior and trust. It finds that quality of life affects stock market participation through its effect on risk-seeking behavior rather than trust, which does not support the findings of Rao et al. (2014). Furthermore, it provides evidence supporting the Affect Infusion Model, which, contrary to the Mood Maintenance Hypothesis, propagates a positive relationship between subjective well-being and risk-seeking behavior.

- *Research question 12:* Is the CASP-12 scale a good measure of the quality of life?

The CASP-12 scale used in the Survey of Health, Aging and Retirement in Europe (SHARE) is a modification of the CASP-12 scale proposed by Wiggins, Netuveli, Hyde, Higgs, & Blane (2008). The thesis tests the psychometric properties of the CASP-12 scale by first assessing its internal consistency and then examining the factor structure. It tests a single domain model, a four-domain model, and a three-domain model. To some degree, the results confirm the findings of Perez-Rojo et al. (2018) that the CASP-12 scale can be used as a multidimensional tool for assessing the quality of life of the elderly, and that the three-factor model is more appropriate than the four-factor model due to the low internal consistency of the autonomy domain. However, unlike Perez-Rojo et al. (2018), the dissertation tests the psychometric properties of the CASP-12 scale on multiple countries, and the results show that while model fit is acceptable, it is not perfect – in some countries, in fact, it is even inadequate – and could therefore be improved.

Although the dissertation provides several new findings regarding the subjective well-being of the elderly population, it is not immune to a handful of limitations. First, the thesis draws all the bibliographic data for the conducted bibliometric analyses from the Web of Science database, which means that it is unable to systematically assess the possible selection bias. Second, the analysis of the effect of economic standing on subjective well-being in different welfare regimes would greatly benefit from the inclusion of the Liberal welfare regime, as well as from an extended panel. Third, the study of the effect of subjective well-being on consumption behavior is limited to six types of spending. The results may therefore not be generalizable to other categories of products. Furthermore, the analysis combines individual and household data and is limited to individuals living in England, which may imply certain cultural specifics that may not apply to individuals living in other countries. Fourth, the cross-sectional nature of the study on the relationship between subjective quality of life and the stock market participation of the elderly does not allow drawing any conclusions on the respective causal relationship. Moreover, it remains unknown whether their quality of life has any significant effect on the share of savings people invest in stocks.

Despite the presented limitations, which will hopefully guide much needed future research, the thesis provides several practical implications. First, with the first systematic quantitative overviews of the ever-growing research fields of the economics of subjective well-being and subjective well-being among the elderly, the dissertation provides important information for the increasing number of young scholars studying subjective well-being, as well as scholars with multiple years of experience and published articles in the field. Second, by establishing a causal link between economic standing and subjective well-being and providing an institutional context, the thesis provides new evidence on the potential biases that influence the studied relationship, as well as on the role of the welfare state in moderating this relationship. These findings have important implications for policy-makers on how to use welfare state policies to improve personal and societal subjective well-being. Third, by establishing a causal link between subjective well-being and the consumption of several types of products, the thesis provides important implications for the providers of these products. Furthermore, there are several implications for marketers regarding who to target. Moreover, the findings provide important policy implications, as a good understanding of the relationship between subjective well-being and consumption can help design specific tax policies, as well policies that enhance the residents' subjective well-being, which may finally lead to several economic benefits. Finally, by analyzing the relationship between four quality of life domains and subjective well-being, the doctoral dissertation provides not only insights that may explain the differences in one's portfolio allocation, but also new evidence on the psychometric properties of the CASP-12 scale, which might be valuable to several scholars who use this measure to assess the people's own evaluation of their quality of life.

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APPENDICES

Appendix A1: Chapter 3

Table A1: Descriptive statistics for individual countries in the sample

Country Variable	Austria	France	Germany	Denmark	Sweden	Italy	Spain	Czech Republic	Slovenia
General life satisfaction (mean)	8.26	7.34	7.85	8.62	8.41	7.67	7.58	7.50	7.46
	(1.63)	*(1.64)*	*(1.68)*	*(1.37)*	*(1.47)*	*(1.66)*	*(1.71)*	*(1.80)*	*(1.75)*
Income (mean)	32,029.61	34,843.12	36,416.82	47,356.51	46,663.29	26,034.44	20,062.54	10,987.88	18,514.12
	(20,156.55)	*(23,647.76)*	*(24,361.71)*	*(27,471.48)*	*(27,282.56)*	*(19,618.73)*	*(16,156.09)*	*(7,519.84)*	*(17,191.33)*
Income (median)	27,850.00	28,911.33	30,050.00	41,365.66	40,970.81	21,000.00	15,702.89	9,806.27	14,084.60
Net wealth (mean)	29,027.84	56,871.50	57,805.17	144,072.00	107,669.50	22,815.63	19,633.80	11,397.32	6,674.59
	(54,749.98)	*(93,313.10)*	*(86,462.65)*	*(186,353.40)*	*(132,051.20)*	*(38,662.97)*	*(38,339.07)*	*(14,439.91)*	*(12,437.72)*
Net wealth (median)	9,700.00	20,631.61	25,000.00	69,053.37	60,119.61	8,062.85	4,758.75	6,196.13	1,552.13
Female (%)	57.86	57.36	53.13	54.15	53.94	55.05	54.93	59.06	56.96
Married (%)	61.75	63.75	73.98	69.59	67.72	77.18	75.86	64.43	71.02
Widowed (%)	16.16	16.88	10.97	11.46	10.59	12.48	13.80	18.72	15.98
Retired (%)	66.25	62.05	52.74	47.85	66.06	51.25	44.99	72.80	69.54
Unemployed (%)	2.00	2.70	3.20	2.39	1.12	2.76	5.16	2.21	4.22
Age (mean)	67.29	67.59	66.11	65.63	69.83	67.17	69.35	65.74	67.25
	(9.98)	*(11.07)*	*(10.03)*	*(10.46)*	*(9.41)*	*(9.89)*	*(11.00)*	*(8.86)*	*(9.99)*
Household size (mean)	1.98	1.98	2.08	1.99	1.85	2.42	2.36	2.14	2.34
	(0.95)	*(0.88)*	*(0.79)*	*(0.76)*	*(0.60)*	*(1.01)*	*(0.99)*	*(0.97)*	*(1.11)*
Years of education (mean)	9.22	11.48	12.77	13.45	11.61	8.95	8.63	12.53	10.74
	(4.61)	*(3.81)*	*(3.59)*	*(3.52)*	*(3.97)*	*(4.48)*	*(5.15)*	*(3.07)*	*(3.42)*
Grandchildren (mean)	2.37	2.94	2.00	2.91	3.43	1.89	2.43	2.96	2.58
	(2.78)	*(3.24)*	*(2.47)*	*(3.05)*	*(3.05)*	*(2.48)*	*(2.84)*	*(2.43)*	*(2.39)*
Self-perceived health (mean)	2.95	3.21	3.21	2.49	2.73	3.21	3.34	3.28	3.27
	(1.05)	*(1.03)*	*(0.98)*	*(1.14)*	*(1.13)*	*(1.04)*	*(1.02)*	*(0.99)*	*(1.01)*

(table continues)

(continued)

Limitations with activities (%)	47.51	45.05	52.93	36.99	42.38	41.17	39.38	54.98	49.19
Altruistic behavior (mean)	0.68	0.44	0.68	0.77	0.69	0.55	0.17	0.63	0.37
	(1.01)	*(0.81)*	*(0.97)*	*(1.05)*	*(0.99)*	*(0.87)*	*(0.51)*	*(0.98)*	*(0.72)*
Number of observations	11,551	12,603	10,334	8,904	9,329	9,881	12,805	12,150	6,677

Note: Standard errors are reported in parentheses

Appendix A2: Chapter 3

Table A2: OLS, FE and IVFE estimates of the effect of economic standing on life satisfaction in different welfare regime types - robustness checks

Model	**OLS**	**OLS**	**FE**	**IVFE**	**OLS**	**OLS**	**FE**
Variables	(baseline)				(baseline)		
Income (ln)	0.189***	0.181***	0.072***	0.270**	-	-	-
	(0.006)	*(0.013)*	*(0.022)*	*(0.133)*			
Net wealth (ln)	-	-	-	-	0.073***	0.052***	0.039***
					(0.002)	*(0.004)*	*(0.007)*
Age	0.036***	0.039***	0.158***	0.148***	0.030***	0.035***	0.157***
	(0.006)	*(0.006)*	*(0.023)*	*(0.027)*	*(0.006)*	*(0.006)*	*(0.023)*
Age2	-0.000***	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.001***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Female	0.019*	0.017	-	-	0.012	0.014	-
	(0.011)	*(0.011)*			*(0.011)*	*(0.012)*	
Married	0.277***	0.316***	0.172**	0.021	0.307***	0.337***	0.175**
	(0.016)	*(0.016)*	*(0.082)*	*(0.102)*	*(0.016)*	*(0.016)*	*(0.082)*
Widowed	-0.018	0.021	-0.077	-0.183	-0.033	0.016	-0.082
	(0.020)	*(0.020)*	*(0.093)*	*(0.176)*	*(0.020)*	*(0.020)*	*(0.093)*
Retired	0.062***	0.084***	0.043*	0.024	0.067***	0.094***	0.044*
	(0.014)	*(0.014)*	*(0.026)*	*(0.030)*	*(0.014)*	*(0.014)*	*(0.026)*
Unemployed	-0.348***	-0.359***	-0.237***	-0.203***	-0.364***	-0.364***	-0.240***
	(0.035)	*(0.035)*	*(0.053)*	*(0.057)*	*(0.035)*	*(0.035)*	*(0.053)*
Grandchildren	0.021***	0.014***	-0.016**	-0.009	0.022***	0.015***	-0.016**
	(0.002)	*(0.002)*	*(0.006)*	*(0.007)*	*(0.002)*	*(0.002)*	*(0.006)*
Household size	0.001	0.031***	0.058***	0.023	0.017***	0.043***	0.059***
	(0.007)	*(0.007)*	*(0.018)*	*(0.021)*	*(0.007)*	*(0.007)*	*(0.018)*
Years of education	0.001	-0.002	0.004	0.002	-0.002	-0.003**	0.004
	(0.001)	*(0.001)*	*(0.006)*	*(0.008)*	*(0.001)*	*(0.001)*	*(0.006)*

(table continues)

(continued)

Self-perceived health	-0.519***	-0.486***	-0.220***	-0.196***	-0.520***	-0.487***	-0.219***
	(0.006)	*(0.006)*	*(0.009)*	*(0.010)*	*(0.006)*	*(0.006)*	*(0.009)*
Limitations with activities	-0.155***	-0.178***	-0.088***	-0.083***	-0.151***	-0.178***	-0.088***
	(0.012)	*(0.012)*	*(0.016)*	*(0.018)*	*(0.012)*	*(0.012)*	*(0.016)*
Altruistic behavior	0.080***	0.077***	0.019**	0.020**	0.073***	0.074***	0.017**
	(0.006)	*(0.006)*	*(0.008)*	*(0.008)*	*(0.006)*	*(0.006)*	*(0.008)*
Social-democratic	-	2.712***	-	-	-	0.975***	-
		(0.236)				*(0.088)*	
Mediterranean	-	0.881***	-	-	-	-0.074	-
		(0.163)				*(0.053)*	
Post-socialist	-	0.532***	-	-	-	-0.105*	-
		(0.181)				*(0.056)*	
Social-democratic (income)	-	-0.223***	-0.092**	-0.300**	-	-	-
		(0.022)	*(0.040)*	*(0.138)*			
Mediterranean (income)	-	-0.095***	-0.063**	-0.287**	-	-	-
		(0.016)	*(0.026)*	*(0.134)*			
Post-socialist (income)	-	-0.066***	-0.061**	-0.248*	-	-	-
		(0.019)	*(0.029)*	*(0.135)*			
Social-democratic (wealth)	-	-	-	-	-	-0.058***	-0.030*
						(0.008)	*(0.015)*
Mediterranean (wealth)	-	-	-	-	-	-0.002	-0.011
						(0.006)	*(0.009)*
Post-socialist (wealth)	-	-	-	-	-	-0.010	-0.031***
						(0.006)	*(0.010)*
Constant	5.738***	5.619***	2.192***	-	7.168***	7.092***	2.317***
	(0.227)	*(0.255)*	*(0.794)*		*(0.219)*	*(0.220)*	*(0.784)*
Observations	94,234	94,234	94,234	54,302	94,234	94,234	94,234
R-squared	0.163	0.173	0.020		0.164	0.173	0.021

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

Appendix A3: Chapter 4

Table A3: Average and median values for the six types of consumption by wave

Wave Variable	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Total
Food in (mean)	59.19	63.48	69.79	77.19	81.40	81.19	72.17
	(31.09)	*(33.12)*	*(38.76)*	*(54.29)*	*(56.91)*	*(56.84)*	*(47.38)*
Food in (p50)	50.00	60.00	60.00	65.00	70.00	70.00	60.00
Food out (mean)	42.61	47.89	50.86	55.08	61.11	68.79	54.38
	(64.73)	*(69.80)*	*(72.13)*	*(72.68)*	*(82.26)*	*(96.80)*	*(77.43)*
Food out (p50)	20.00	25.00	30.00	30.00	40.00	40.00	30.00
Clothing (mean)	70.13	83.06	75.55	77.61	82.20	86.97	79.16
	(135.49)	*(146.49)*	*(139.68)*	*(142.39)*	*(154.06)*	*(181.12)*	*(150.34)*
Clothing (p50)	25.00	37.00	30.00	30.00	39.00	40.00	30.00
Leisure (mean)	60.25	-	62.86	63.28	67.92	72.34	65.25
	(184.28)	-	*(153.73)*	*(146.53)*	*(141.12)*	*(135.39)*	*(153.01)*
Leisure (p50)	20.00		25.00	30.00	35.00	42.00	30.00
Rent (mean)	2,382.66	2,660.31	2,577.15	1,641.43	1,598.98	2,283.62	2,182.29
	(30,046)	*(31,030)*	*(31,622)*	*(24,253)*	*(24,218)*	*(29,772)*	*(28,603)*
Rent (median)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Utility/fuel (mean)	60.98	81.24	98.76	106.30	115.88	118.49	97.24
	(37.35)	*(52.02)*	*(60.08)*	*(60.43)*	*(67.15)*	*(64.12)*	*(61.22)*
Utility/fuel (p50)	53.33	70.00	86.00	94.00	100.00	106.00	85.00
Total (mean)	2,874.30	3,005.58	3,164.13	2,380.64	2,339.48	2,913.85	2,775.77
	(30,088)	*(30,330)*	*(31,466)*	*(25,082)*	*(24,564)*	*(29,150)*	*(28,537)*
Total (p50)	434.84	459.07	549.62	581.52	635.35	646.48	547.62

Note: Standard errors are reported in parentheses.

Appendix A4: Chapter 5

Table A4: Item analysis, by country

Country	Item											
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***
Austria	2.80	3.26	3.66	3.24	3.35	2.92	3.70	3.69	3.48	3.21	3.26	3.29
	(1.06)	*(0.93)*	*(0.69)*	*(0.98)*	*(0.92)*	*(1.08)*	*(0.60)*	*(0.62)*	*(0.70)*	*(0.85)*	*(0.81)*	*(0.82)*
Germany	2.80	2.96	3.49	3.25	3.16	2.76	3.73	3.70	3.46	3.24	3.18	3.16
	(1.01)	*(1.00)*	*(0.82)*	*(0.91)*	*(0.95)*	*(1.10)*	*(0.59)*	*(0.64)*	*(0.73)*	*(0.81)*	*(0.86)*	*(0.88)*
Sweden	2.90	2.80	3.24	3.62	3.24	3.11	3.65	3.73	3.41	3.22	3.33	3.35
	(0.96)	*(0.88)*	*(0.79)*	*(0.68)*	*(0.85)*	*(0.95)*	*(0.62)*	*(0.57)*	*(0.69)*	*(0.79)*	*(0.75)*	*(0.74)*
Netherlands	2.98	2.97	3.56	3.56	3.29	3.26	3.41	3.77	3.57	3.35	3.47	3.43
	(0.99)	*(0.97)*	*(0.75)*	*(0.77)*	*(0.91)*	*(1.00)*	*(0.93)*	*(0.60)*	*(0.68)*	*(0.80)*	*(0.76)*	*(0.77)*
Spain	2.55	2.92	3.28	2.98	3.07	2.45	3.30	3.40	3.25	3.01	2.78	2.66
	(1.08)	*(1.00)*	*(0.90)*	*(0.94)*	*(0.99)*	*(1.08)*	*(0.84)*	*(0.79)*	*(0.83)*	*(0.92)*	*(0.88)*	*(0.93)*
Italy	2.42	2.70	3.02	2.79	2.73	2.34	2.30	3.39	3.27	2.94	2.83	2.77
	(1.09)	*(1.05)*	*(1.05)*	*(0.99)*	*(1.08)*	*(1.11)*	*(1.08)*	*(0.84)*	*(0.83)*	*(0.94)*	*(0.92)*	*(0.91)*
France	2.55	2.88	3.14	3.38	3.26	2.61	3.56	3.50	3.44	3.21	3.22	3.00
	(1.05)	*(0.98)*	*(0.96)*	*(0.84)*	*(0.97)*	*(1.12)*	*(0.73)*	*(0.78)*	*(0.76)*	*(0.87)*	*(0.85)*	*(0.92)*
Denmark	2.97	3.04	3.51	3.63	3.27	3.21	3.78	3.78	3.75	3.34	3.47	3.49
	(0.96)	*(0.84)*	*(0.71)*	*(0.70)*	*(0.82)*	*(0.92)*	*(0.52)*	*(0.54)*	*(0.52)*	*(0.79)*	*(0.74)*	*(0.73)*
Switzerland	2.83	3.19	3.39	3.48	3.21	3.07	3.78	3.78	3.59	3.43	3.52	3.52
	(0.96)	*(0.81)*	*(0.76)*	*(0.83)*	*(0.89)*	*(0.98)*	*(0.52)*	*(0.52)*	*(0.63)*	*(0.72)*	*(0.67)*	*(0.67)*
Belgium	2.62	2.68	3.33	3.36	3.10	2.89	3.10	3.53	3.34	3.26	3.26	3.12
	(1.04)	*(1.01)*	*(0.90)*	*(0.86)*	*(0.99)*	*(1.09)*	*(1.06)*	*(0.77)*	*(0.86)*	*(0.84)*	*(0.83)*	*(0.91)*
Czech Republic	2.37	2.71	2.63	2.99	3.17	2.34	3.60	3.50	3.17	2.99	2.80	2.78
	(1.01)	*(0.99)*	*(1.01)*	*(0.91)*	*(0.97)*	*(1.08)*	*(0.65)*	*(0.70)*	*(0.77)*	*(0.82)*	*(0.87)*	*(0.86)*
Slovenia	2.73	3.30	3.67	3.29	3.49	2.49	3.68	3.63	3.38	3.20	3.22	3.08
	(1.14)	*(0.95)*	*(0.71)*	*(0.92)*	*(0.87)*	*(1.17)*	*(0.58)*	*(0.65)*	*(0.74)*	*(0.86)*	*(0.81)*	*(0.87)*

(table continues)

(continued)

Estonia	2.53	2.82	3.08	3.06	3.35	2.00	3.34	3.36	3.24	2.91	2.69	2.61
	(1.11)	*(1.00)*	*(1.01)*	*(0.92)*	*(0.91)*	*(1.04)*	*(0.84)*	*(0.82)*	*(0.79)*	*(0.91)*	*(0.97)*	*(0.98)*
Total	2.68	2.92	3.29	3.27	3.19	2.71	3.45	3.59	3.40	3.17	3.13	3.07
	(1.05)	*(0.98)*	*(0.91)*	*(0.91)*	*(0.96)*	*(1.13)*	*(0.86)*	*(0.71)*	*(0.77)*	*(0.86)*	*(0.88)*	*(0.91)*

Note: Standard errors are reported in parentheses; ***, **, and * denote statistically significant values at 1, 5, and 10 percent, respectively.

Appendix A5: Chapter 5

Table A5: Descriptive statistics for individual countries in the sample

Country	Austria	Germany	Sweden	Nether-lands	Spain	Italy	France	Denmark	Switzerland	Belgium	Czech Republic	Slovenia	Estonia
Female (%)	61.33	51.14	51.29	53.00	56.48	55.68	59.13	49.50	52.83	53.84	66.85	58.37	69.08
Retired (%)	69.15	48.51	61.92	47.88	44.39	53.12	66.79	48.38	50.72	50.28	73.91	70.16	63.18
Age (mean)	67.60	64.95	68.20	66.33	68.40	67.23	68.15	65.36	67.24	66.03	66.95	67.03	68.73
	(9.95)	*(10.30)*	*(9.42)*	*(9.96)*	*(10.94)*	*(10.01)*	*(10.62)*	*(10.21)*	*(10.00)*	*(10.78)*	*(9.35)*	*(10.10)*	*(9.80)*
Years of education (mean)	7.23	12.52	11.62	11.75	10.08	9.68	10.83	13.03	9.10	12.83	12.03	10.25	12.44
	(4.92)	*(3.89)*	*(4.19)*	*(3.79)*	*(5.14)*	*(4.78)*	*(4.45)*	*(3.81)*	*(5.01)*	*(4.00)*	*(3.33)*	*(3.72)*	*(3.60)*
Shareholders (%)	6.40	12.01	39.78	9.60	4.29	4.04	10.06	32.09	22.33	15.40	4.07	8.01	1.69
Trust (mean)	6.03	5.36	6.90	6.55	5.41	5.46	5.14	7.59	6.41	5.55	5.64	5.53	6.41
	(2.18)	*(2.41)*	*(2.20)*	*(1.77)*	*(2.29)*	*(2.47)*	*(2.37)*	*(1.95)*	*(2.12)*	*(2.35)*	*(2.32)*	*(2.19)*	*(2.29)*
Risk (mean)	1.25	1.29	1.67	1.28	1.11	1.25	1.31	1.65	1.32	1.31	1.33	1.16	1.11
	(0.52)	*(0.53)*	*(0.74)*	*(0.53)*	*(0.39)*	*(0.55)*	*(0.55)*	*(0.77)*	*(0.52)*	*(0.58)*	*(0.58)*	*(0.41)*	*(0.40)*
Number of observations	2,921	3,597	2,939	2,678	3,709	2,799	2,962	2,655	2,033	3,682	3,339	1,985	3,609

Note: Standard errors are reported in parentheses.

Appendix B: Razširjeni povzetek disertacije v slovenskem jeziku

Subjektivna blaginja zajema široko skupino pojavov, ki vključujejo človekove čustvene odzive, zadovoljstvo s posameznimi domenami življenja in globalne presoje življenja (Diener, Suh, Lucas, & Smith, 1999). Kot taka predstavlja krovni izraz za vse načine, s katerimi ocenjujemo svoje življenje. Njen pomen je poudarjen že v delih Benthama (1776) in Milla (1863), ki skleneta, da bi morala družba stremeti k največji sreči za največje število ljudi. Skozi leta je postala subjektivna blaginja pomembna raziskovalna tema v različnih raziskovalnih kontekstih in v različnih disciplinah, kot so psihologija, sociologija in ekonomija. Naraščajoč pomen raziskav s področja subjektivne blaginje je razviden iz vse večjega števila nacionalnih in nadnacionalnih raziskav, ki merijo subjektivno blaginjo, kot tudi iz vprašanj oblikovanja politik, ki so se znašla v javni razpravi. V doktorski disertaciji preučujemo ekonomska vprašanja v zvezi s subjektivno blaginjo starejšega prebivalstva, ki postaja vse bolj zanimiv predmet ekonomskih raziskav zaradi demografskih trendov v Evropi in Združenih državah Amerike. Ti trendi so spodbudili razpravo o socioekonomskem vplivu staranja prebivalstva, zlasti v luči zadnje finančne krize.

Z doktorsko disertacijo želimo odgovoriti na sledeča raziskovalna vprašanja, ki jih lahko razvrstimo vzdolž štirih dimenzij:

- Dimenzija 1
- *Raziskovalno vprašanje 1:* Kakšno je trenutno stanje raziskav na raziskovalnih področjih ekonomije subjektivne blaginje in subjektivne blaginje starejših?
- *Raziskovalno vprašanje 2:* Kako sta se posamezni področji razvijali in kam sta namenjeni v prihodnosti?
- *Raziskovalno vprašanje 3:* Kateri so najpomembnejši članki, avtorji, revije, organizacije in države, ki raziskujejo ekonomijo subjektivne blaginje in subjektivno blaginjo starejših?

- Dimenzija 2
- *Raziskovalno vprašanje 4:* Kako dve različni merili ekonomskega položaja (dohodek in neto premoženje) vplivata na subjektivno blaginjo ljudi, starih 50 let in več?
- *Raziskovalno vprašanje 5:* Kako potencialni viri pristranskosti vplivajo na presečne ocene učinka dohodka na subjektivno blaginjo?
- *Raziskovalno vprašanje 6:* Ali različni sistemi socialne ureditve vplivajo na razmerje med ekonomskim položajem in subjektivno blaginjo?

- Dimenzija 3
- *Raziskovalno vprašanje 7:* Ali subjektivna blaginja vpliva na potrošnjo posameznikov, starih 50 let ali več?

- *Raziskovalno vprašanje 8:* Ali je učinek subjektivne blaginje na potrošnjo odvisen od tipa potrošnje?
- *Raziskovalno vprašanje 9:* Kako kontroliranje za obratno vzročnost s pomočjo instrumentalnih spremenljivk vpliva na ocene?

- Dimenzija 4
- *Raziskovalno vprašanje 10:* Kako različne domene subjektivne kakovosti življenja vplivajo na udeležbo starejših na trgu vrednostnih papirjev v različnih evropskih državah?
- *Raziskovalno vprašanje 11:* Ali se učinek subjektivne kakovosti življenja na udeležbo starejših na trgu vrednostnih papirjev prenaša prek učinka na tvegano vedenje ali učinka na zaupanje?
- *Raziskovalno vprašanje 12:* Ali lestvica CASP-12 dobro meri človekovo kakovost življenja?

Vsaka dimenzija raziskovalnih vprašanj tvori eno od naslednjih štirih raziskovalnih tem: Ekonomija subjektivne blaginje in subjektivne blaginje med starejšimi: bibliometrični pregled; Vpliv ekonomskega položaja na subjektivno blaginjo v okviru različnih sistemov socialne ureditve; Vpliv subjektivne blaginje na potrošnjo; in Subjektivna kakovost življenja in udeležba starejših na trgu vrednostnih papirjev. V doktorski disertaciji so te štiri teme predstavljene v obliki petih znanstvenih člankov, in sicer:

- 1. članek: Ekonomija subjektivne blaginje: bibliometrična analiza;
- 2. članek: Subjektivna blaginja starejših: bibliometrična analiza;
- 3. članek: Vpliv dohodka in premoženja na subjektivno blaginjo v različnih sistemih socialne ureditve;
- 4. članek: Vpliv subjektivne blaginje potrošnjo;
- 5. članek: Subjektivna kakovost življenja in udeležba starejših na trgu vrednostnih papirjev: pristop modeliranja strukturnih enačb.

Da bi odgovorili na zastavljena vprašanja, smo ubrali več metodoloških pristopov. Za obe bibliometrični analizi smo preverili pogostost citiranja, ki je po Garfieldu (1979) najbolj objektivno merilo pomembnosti članka. Za grozdenje člankov, avtorjev in revij smo uporabili tehniko bibliografskega povezovanja, s katero smo povezali vire na podlagi števila istih referenc. Opravili smo tudi analizo socitiranja, s katero smo povezali vire glede na to, kako pogosto so citirani skupaj, in naslovili nekatere pomanjkljivosti tehnike bibliografskega povezovanja. V disertaciji smo zaradi potencialnih pristranskosti, ki bi lahko vplivale na oceno z metodo najmanjših kvadratov, uporabili longitudinalno dimenzijo nabora podatkov in instrumentirali dohodek ter tako kontrolirali za modelsko endogenost. Podobni strategiji smo sledili pri analizi učinka subjektivne blaginje na različne vrste potrošnje. Uporabili smo tudi modeliranje strukturnih enačb, in sicer za

oceno razmerja med različnimi domenami subjektivne kakovosti življenja in udeležbo starejših na trgu vrednostnih papirjev.

Ekonomija subjektivne blaginje in subjektivne blaginje med starejšimi: bibliometrični pregled

V prvem in drugem članku podajamo temeljit sistematičen pregled raziskav s področja ekonomije subjektivne blaginje in subjektivne blaginje starejših. Z uporabo bibliometričnih metod podajamo dragocene informacije o najpomembnejših člankih, avtorjih, revijah, organizacijah in državah z omenjenih področij. Prav tako odgovorimo na pomembna vprašanja v zvezi z razvojem obeh znanstvenih področij in obstoju znanstvenih vrzeli.

Kljub temu da so bile empirične raziskave subjektivne blaginje povezane z ekonomijo že v delu Richarda A. Easterlina iz leta 1974, ekonomija subjektivne blaginje še zmeraj velja za razmeroma mlado raziskovalno področje. Širiti se je začelo v drugi polovici devetdesetih let prejšnjega stoletja, ko so se pojavile prve študije o determinantah subjektivne blaginje, število raziskav pa je strmo naraslo po izbruhu globalne finančne krize v letu 2008. Pregled raziskovalnega področja razkriva, da so ga v zadnjem desetletju zaznamovale ključne besede, kot so »dohodek«, »zadovoljstvo«, »brezposelnost«, »uspešnost«, »model«, »zadovoljstvo z delom«, »vedenje« ipd., pri čemer se pojavljajo številne nove teme, ki področje širijo v več novih smeri. Članke s področja ekonomije subjektivne blaginje lahko razvrstimo v tri velike in eno majhno skupino. Avtor z največ članki je Timothy A. Judge s 26 članki. Sledijo mu Andrew J. Oswald s 25 članki, Alois Stutzer s 23 članki in Heinz Welsch s prav tako 23 članki. Judge, Oswald in Stutzer so tudi trije avtorji z največ citati z raziskovalnega področja ekonomije subjektivne blaginje. Najboljše revije lahko razvrstimo v dva sklopa, pri čemer prva skupina revij obravnava predvsem teme, ki bi jih lahko označili z besedo »ekonomija«, druga skupina revij pa teme, ki bi jih lahko označili kot »poslovanje«. Vodilne revije v sklopu »ekonomija« so *Journal of Economic Psychology, Ecological Economics* in *The Economic Journal,* medtem ko so vodilne revije v sklopu »poslovanje« *Journal of Applied Psychology, Journal of Consumer Research* in *Journal of Organizational Behavior*. S 1169 objavljenimi članki s področja ekonomije subjektivne blaginje so ZDA vodilna sila na tem področju.

Raziskave na področju subjektivne blaginje starejših so se v obdobju od leta 2007 do leta 2016 okrepile, kar je razvidno iz povečanega števila objavljenih člankov, ki je naraslo za 238 %, povečalo pa se je tudi število citatov, in sicer za 233 %. Raziskave se pojavljajo v različnih multidisciplinarnih kontekstih in zanje so značilne vsaj tri različne skupine ključnih besed. Prvi sklop obsega teme, ki zadevajo geriatrijo in medicino, zanje pa so značilne ključne besede, kot so »telesna aktivnost«, »vadba«, »preprečevanje«, »bolezen«, »simptomi«, »SF-36« ipd. Drugi sklop vsebuje ključne besede v zvezi s psihologijo, kot so »osebnost«, »motivacija«, »vedenje«, »negativni učinek«, »čustva«, »razpoloženje« ipd.

Tretji sklop raziskav zajema ključne besede, ki jih lahko povežemo s socioekonomskim statusom starejših, kot so »dohodek«, »brezposelnost«, »neenakost«, »vera«, »zakonski status«, »socialna omrežja« ipd. Najbolj produktivni avtorji na področju raziskovanja subjektivne blaginje starejših so Denis Gerstorf s 15 članki, Jacqui Smith s 13 članki in Hans-Werner Wahl s prav tako 13 članki. Vsi trije avtorji izhajajo iz področja razvojne psihologije. Avtor z največ citati je Carol D. Ryff s 1123 citati. Revija z največ objavljenimi članki je *The Gerontologist* s 141 prispevki, sledijo ji *International Journal of Aging and Human Development* s 63 članki in *Social Indicators Research Journal* s 60 objavljenimi članki. Tako kot na področju ekonomije subjektivne blaginje tudi na tem raziskovalnem področju prevladujejo ZDA s 856 objavljenimi članki.

Vpliv ekonomskega položaja na subjektivno blaginjo v okviru različnih sistemov socialne ureditve

V tretjem članku obravnavamo temo, ki ji ekonomisti v okviru raziskav subjektivne blaginje posvečajo največ pozornosti, in sicer vplivu ekonomskega položaja na subjektivno blaginjo. Za izvedbo analize smo uporabili podatke iz Raziskave o zdravju, procesu staranja in upokojevanja v Evropi (SHARE), ki so nam omogočili preučitev vpliva ekonomskega položaja na subjektivno blaginjo v različnih sistemih socialne ureditve.

Ocenjevanje učinka dohodka na subjektivno blaginjo je povezano z različnimi viri pristranskosti (gl. Powdthavee (2010) za podrobnejši pregled). Raziskovalci vprašanje endogenosti rešujejo z uporabo različnih strategij ocenjevanja z instrumentalnimi spremenljivkami. Luttmer (2005), na primer, je kot instrumentalno spremenljivko za dohodek uporabil pričakovani gospodinjski dohodek, Knight idr. (2009) so kot instrumentalni spremenljivki za dohodek v okviru svoje raziskave subjektivne blaginje na kitajskem podeželju uporabili število let izobrazbe očeta in produktivna sredstva, različne strategije pa so uporabili tudi Powdthavee (2010) , Li, Liu, Ye, & Zhang (2011) in Krenz (2013). Vsem je skupno to, da so odkrili večje učinke dohodka na subjektivno blaginjo v ocenah z instrumentalnimi spremenljivkami kot v ocenah z metodo najmanjših kvadratov. V svoji analizi smo kot instrument uporabili število let izobrazbe partnerja. Ta izbor instrumenta je bil motiviran s predhodnimi ugotovitvami o odnosu med posameznikovo in partnerjevo izobrazbo, o katerem je govoril že Becker (1973), in sicer da se ljudje poročijo na podlagi nekaterih značilnosti, ki so pozitivno povezane z dohodkom. Kot instrumente smo uporabili tudi odložene vrednosti dohodka.

Da bi odgovorili na vprašanje, ali sistemi socialne ureditve moderirajo razmerje med ekonomskim položajem in subjektivno blaginjo, smo uporabili in razširili Esping-Andersenovo (1990) tipologijo. Uporabili smo pregled različnih tipologij sistemov socialne ureditve po Ferraginu & Seeleib-Kaiserju (2011), ki sta razvrstila skupine držav na podlagi doslednosti njihovih klasifikacij, da bi opredelili t. i. »čiste države« ali države, ki so bile več kot 80 odstotkov časa razvrščene v isto vrsto socialne ureditve. Poleg tega smo se oprli

na dela Bambra (2007), s pomočjo katerih smo opredelili države s sredozemskim sistemom socialne ureditve, in dela Fengerja (2007), s katerimi smo identificirali države s postsocialističnim sistemom socialne ureditve. Na podlagi zgoraj omenjene literature smo države razvrstili v naslednje sisteme socialne ureditve: konservativni (Avstrija, Nemčija in Francija), sredozemski (Italija in Španija), postsocialistični (Češka republika in Slovenija) in socialdemokratski (Danska in Švedska). Na žalost nam podatkovna baza SHARE ni omogočila vključitve liberalnega sistema socialne ureditve v analizo.

Ocene z metodo najmanjših kvadratov so pokazale, da dohodek znatno vpliva na subjektivno blaginjo v konservativni, postsocialistični in sredozemski socialni ureditvi, pri čemer pa po oceni na podlagi panelnih podatkov ter vključitvi instrumentalnih spremenljivk pozitivni učinek dohodka v sredozemskem in postsocialističnem sistemu socialne ureditve izgine. Učinek neto bogastva v ocenah z metodo najmanjših kvadratov se statistično značilen in pozitiven v sredozemskem, postsocialističnem in konservativnem sistemu socialne ureditve. Ko kontroliramo za neopazovano heterogenost, učinek v postsocialističnem sistemu socialne ureditve izgine, v sredozemskem sistemu socialne ureditve se zmanjša, v konservativnem sistemu socialne ureditve pa ostane stabilen.

Razvrstitev držav v različne sisteme socialne ureditve ima svoje pomanjkljivosti, saj velika večina držav izkazuje značilnosti več vrst sistemov socialne ureditve. Da bi naslovili to omejitev in podrobneje preučili heterogenost držav v vsakem od preučenih sistemov socialne ureditve, smo izvedli analizo preiskovanih držav, ne da bi jih razvrstili v posamezne skupine. Uporabili smo isto specifikacijo modela kot prej, vključili neprave in interaktivne spremenljivke za vsako državo, uvrščeno v socialdemokratski, sredozemski in postsocialistični sistem socialne ureditve, ter jih, tako kot v prvotnem modelu, primerjali z državami s konservativnim sistemom socialne ureditve. Rezultati kažejo, da je treba biti pri preučevanju razmerja med gospodarskim položajem in subjektivno blaginjo v več državah previden. Rezultati kažejo tudi, da učinkov dohodka in premoženja, še zlasti pa velikosti učinka, ni mogoče posplošiti na več držav z različnimi institucionalnimi okviri oz. na različne skupine posameznikov.

S preučevanjem vpliva dohodka in premoženja na subjektivno blaginjo ter obravnavanjem v literaturi pogostokrat zanemarjenega vprašanja endogenosti pomembno prispevamo k obstoječi literaturi, saj smo prvi, ki smo to naredili skupaj z analizo vplivov različnih sistemov socialne ureditve.

Učinek subjektivne blaginje na potrošnjo

V četrtem članku obrnemo vprašanje in preučujemo subjektivno blaginjo kot vzrok. Z uporabo podatkov iz Angleške longitudinalne študije o staranju (ELSA) posameznikov, starih 50 let in več, želimo vzpostaviti vzročno povezavo med subjektivno blaginjo in

šestimi različnimi vrstami potrošnje (hrana, ki jo porabimo doma, hrana, ki jo porabimo izven doma, oblačila, prostočasne dejavnosti, mesečna najemnina in komunalna poraba).

Ekonomisti, ki preučujejo subjektivno blaginjo, so bili v preteklosti večinoma osredotočeni na ocenjevanje učinkov različnih makroekonomskih dejavnikov na subjektivno blaginjo, v zadnjem času pa se vse več strokovnjakov loteva vprašanja povratne vzročnosti. Ugotovili so, da subjektivna blaginja prinaša več objektivnih koristi (gl. De Neve, Diener, Tay, & Xuereb (2013) za podroben pregled). Prav tako so ugotovili, da se ljudje z višjo stopnjo subjektivne blaginje obnašajo drugače (Frank, 1999). Lyubomirsky, King, & Diener (2005) ponujajo temeljit pregled študij, ki preučujejo možne ugodne izide subjektivne blaginje. Njihov pregled eksperimentalnih študij daje močne dokaze o tem, da subjektivna blaginja povečuje družabnost, aktivnost, altruizem, všečnost sebe in drugih, učinkovite sposobnosti reševanja konfliktov in izvirno razmišljanje.

Za ustrezno reševanje vprašanj v zvezi z endogenostjo in vzpostavljanje vzročnosti smo uporabili metodo instrumentalnih spremenljivk in instrumentirali subjektivno blaginjo. Edini strokovnjak, ki je to doslej storil v tem kontekstu, Guven (2012), je kot instrument za subjektivno blaginjo uporabil število sončnih dni. V svoji analizi smo uporabili dve nepravi spremenljivki, ki se navezujeta na kakovost spanja. Podatki kažejo, da spanje vpliva na subjektivno blaginjo kot ključni vidik človekovega delovanja. Shin & Kim (2018) sta ugotovila, da kakovost spanja napoveduje zadovoljstvo v življenju in da je razmerje delno posredovano z ničelnimi prepričanji o sreči. Poleg tega so Lemola, Ledermann, & Friedman (2013) ugotovili, da je spremenljivost trajanja spanja povezana z nižjimi stopnjami subjektivne blaginje.

Primerjava ocen vpliva subjektivne blaginje na različne tipe potrošnje z metodo fiksnih učinkov razkriva bistvene razlike med enačbami. Subjektivna blaginja ne vpliva na hrano, zaužito v domovih anketirancev, in na mesečno najemnino. Po drugi strani pa izkazuje statistično pomemben pozitiven učinek na oblačila, hrano, porabljeno zunaj doma anketirancev, in prostočasne dejavnosti. Hkrati ima majhen, vendar statistično pomemben negativen učinek na porabo komunalnih storitev. Ko instrumentiramo za subjektivno blaginjo, se rezultati precej spremenijo. Vpliv subjektivne blaginje na hrano, porabljeno doma, in mesečno najemnino ostaja statistično neznačilen. Poleg tega učinek na porabo za oblačila, ki je bil v ocenah z metodo fiksnih učinkov najmočnejši, v ocenah instrumentalnih spremenljivk s fiksnimi učinki ne kaže statističnega pomena. Tudi učinek na porabo komunalnih storitev ni značilno pomemben. Po drugi strani so se pozitivni učinki na hrano, zaužito zunaj domov anketirancev, in prostočasne aktivnosti pomembno povečali. Ti rezultati kažejo na pristranskost ocen z metodo fiksnih učinkov.

Hrana, zaužita zunaj doma, in prostočasne aktivnosti si delijo več lastnosti in jih lahko opredelimo kot hedonične proizvode, torej tiste, katerih uživanje je povezano z afektivnim in čutnim doživljanjem estetskega ali čutnega užitka (Hirschman & Holbrook, 1982). Po

drugi strani imajo hrana, zaužita doma, oblačila, najemnina in komunalni pripomočki več značilnosti utilitarnih izdelkov, ki jih opredeljujemo kot tiste, katerih porabo motivira predvsem želja po zapolnitvi osnovne potrebe ali opravljanju funkcionalne naloge (Strahilevitz & Myers, 1998). Naši rezultati podpirajo ugotovitve Zhonga & Mitchella (2012), ki pozitiven učinek subjektivne blaginje na uživanje hedoničnih izdelkov pripisujeta učinku subjektivne blaginje na vedenje, na primer povečani družabnosti. V primerjavi s študijo Zhonga & Mitchella smo v analizi kontrolirali za obratno vzročnost, prav tako pa smo analizirali tudi vpliv subjektivne blaginje na več različnih vrst potrošnje.

Subjektivna kakovost življenja in udeležba starejših na trgu vrednostnih papirjev

V zadnjem članku analiziramo razmerja med različnimi domenami kakovosti življenja (to so Nadzor, Avtonomija, Užitek in Samouresničevanje) in udeležbo starejših na trgu vrednostnih papirjev. V ta namen smo uporabili podatke iz Raziskave o zdravju, procesu staranja in upokojevanja v Evropi (SHARE) in predpostavili model strukturnih enačb, v katerem se učinek štirih domen na udeležbo na trgu vrednostnih papirjev prenaša prek učinkov na tvegano vedenje in zaupanje. Cilj našega članka je dvojen. Najprej želimo analizirati ne le razmerje med kakovostjo življenja in udeležbo starejših na trgu z vrednostnimi papirji ampak tudi razmerje med različnimi domenami kakovosti življenja in udeležbo na trgu z vrednostnimi papirji. V ta namen smo najprej ocenili psihometrične lastnosti lestvice CASP-12, uporabljeni v podatkovni bazi SHARE, da bi ugotovili, ali je lestvica dobro merilo kakovosti življenja, z analizo več držav pa smo želeli raziskati medkulturno robustnost dobljenih rezultatov.

Vse analize smo izvedli ločeno, po posameznih državah. Najprej smo ocenili notranjo skladnost za vsako od štirih domen, nato pa smo opravili faktorsko analizo za pregled faktorske strukture lestvice CASP-12. Testirali smo naslednje modele prvega reda:

1. Model 1: Model ene domene, pri katerem se vseh 12 elementov naloži v eno latentno spremenljivko, ki kaže na kakovost življenja.
2. Model 2: Model štirih domen, pri katerem se prvi trije elementi naložijo v domeno Nadzor, drugi trije elementi se naložijo v domeno Avtonomija, tretji trije elementi se naložijo v domeno Užitek in četrti trije elementi se naložijo v domeno Samouresničevanje.
3. Model 3: Model treh domen, pri katerem se prvih šest elementov naloži v skupno domeno Nadzor in avtonomija, ostali pa ostanejo enaki kot v modelu 2.

V strukturnem modelu smo po oceni psihometričnih lastnosti lestvice CASP-12 analizirali učinek različnih domen kakovosti življenja na udeležbo starejših na trgu z vrednostnimi papirji, posredovan prek učinka na tvegano vedenje in zaupanje.

Rezultati razkrivajo, da se notranja skladnost od ene do druge domene razlikuje in vendar v večini držav presega mejno vrednost 0,60. Notranja skladnost je problematična predvsem v domeni Avtonomija. Podrobnejša preučitev korelacijske matrike razkriva, da je nizka notranja skladnost domene Avtonomija predvsem posledica nizke korelacije med točkama 4 in 5. Poleg tega faktorska analiza kaže, da prileganje vseh treh modelov ni popolno. Najboljše se obnese model 3, ki ga uporabimo za analizo učinkov domen na udeležbo na trgu vrednostnih papirjev.

Rezultati kažejo, da je tveganje pozitivno povezano z udeležbo na trgu vrednostnih papirjev v vseh preučevanih državah. Po drugi strani je zaupanje pozitivno povezano z udeležbo na trgu vrednostnih papirjev le v Nemčiji, na Švedskem, v Španiji, Franciji, na Danskem, v Švici in Belgiji. Poleg tega so smerni koeficienti bistveno manjši. Posredni učinki združene domene Nadzor in avtonomija ter domen Užitek in Samouresničevanje kažejo, da ima domena Samouresničevanje stalen pozitiven vpliv na udeležbo na trgu z vrednostnimi papirji v vseh preučevanih državah z izjemo Španije, Švice in Slovenije. Prav tako so standardizirane vrednosti koeficientov domene Samouresničevanje v povprečju bistveno večje od koeficientov drugih domen. Domena Užitek ima statistično značilen negativen učinek na udeležbo na trgu z vrednostnimi papirji v Avstriji, Nemčiji, na Nizozemskem, v Franciji, Belgiji, na Češkem in v Estoniji, ne izkazuje vpliva na udeležbo na trgu z vrednostnimi papirji na Švedskem, v Španiji, na Danskem, v Švici in Sloveniji ter ima pozitiven učinek v Italiji, kjer je prileganje modela slabo. Učinek združene domene Nadzor in avtonomija ni tako dosleden, kot to velja za učinek domene Užitek in zlasti domene Samouresničevanje. Pozitivno vpliva na udeležbo na trgu z vrednostnimi papirji v Španiji, Italiji in Švici, medtem ko je njen vpliv negativen na Nizozemskem, v Franciji, na Danskem in na Češkem. Glede na učinke vseh treh domen kakovosti življenja je Slovenija edina država, v kateri nobena od omenjenih domen nima statistično pomembnega razmerja z udeležbo na trgu z vrednostnimi papirji. Absolutni vpliv kakovosti življenja na udeležbo na trgu z vrednostnimi papirji je v vseh drugih preučevanih državah pozitiven. Razčlenitev neposrednih učinkov kaže, da se velika večina učinkov treh domen kakovosti življenja na udeležbo na trgu z vrednostnimi papirji prenaša prek učinka na tvegano vedenje, statistično značilni učinki na zaupanje pa so redki in majhni.

Čeprav disertacija ponuja več novih spoznanj o subjektivni blaginji starejše populacije, ima nekaj pomanjkljivosti. Prvič, disertacija črpa vse bibliografske podatke za bibliometrični analizi s spletnega mesta Web of Science, kar pomeni, da ni mogoče sistematično oceniti možne pristranske izbire. Drugič, analiza učinka ekonomskega položaja na subjektivno blaginjo v različnih sistemih socialne ureditve bi imela veliko koristi od vključitve liberalnega sistema in obsežnejše časovne dimenzije podatkov. Tretjič, študija vpliva subjektivne blaginje na potrošnjo je omejena na šest vrst potrošnje, ki jih morda ni mogoče posplošiti na ostale kategorije izdelkov. Prav tako analiza združuje podatke o posameznikih in gospodinjstvih in je omejena na posameznike, ki živijo v Angliji, kar implicira nekatere kulturne posebnosti, ki ne veljajo za posameznike v drugih državah.

Četrtič, presečna narava študije o razmerju med subjektivno blaginjo in udeležbo starejših na trgu vrednostnih papirjev ne omogoča sklepanja o vzročnem učinku.

Disertacija ima kljub predstavljenim omejitvam več praktičnih implikacij. Vsebuje prvi sistematični in kvantitativni pregled rastočih raziskovalnih področij ekonomije subjektivne blaginje in subjektivne blaginje med starejšimi, ki daje pomembne informacije tako vse večjemu številu mlajših raziskovalcev, ki preučujejo subjektivno blaginjo, kot tudi znanstvenikom z večletnimi izkušnjami in številnimi objavljenimi članki na tem področju. Z vzpostavitvijo vzročne povezave med ekonomskim položajem in subjektivno blaginjo v različnih sistemih socialne ureditve prinaša nove dokaze o potencialnih pristranskostih, ki vplivajo na preučevani odnos, ter o vlogi sistema socialne ureditve pri posredovanju tega odnosa. Predstavljene ugotovitve imajo pomembne implikacije za oblikovalce politik glede učinka sistema socialne ureditve na posameznikovo in družbeno subjektivno blaginjo. Disertacija z analizo vzročne povezave med subjektivno blaginjo in potrošnjo različnih vrst izdelkov zagotavlja pomembne podatke ponudnikom teh izdelkov ter tržnikom in oblikovalcem politik, saj lahko dobro razumevanje razmerja med subjektivno blaginjo in potrošnjo pomaga oblikovati tako ukrepe na področju davkov kot tudi ukrepe, ki krepijo subjektivno blaginjo, to pa lahko privede do številnih ekonomskih koristi. Doktorska disertacija poleg tega z analizo razmerja med subjektivno blaginjo in štirimi področji kakovosti življenja ponuja dragocen vpogled v problematiko, ki bi lahko pomagal pri razlagi razlik v posameznikovih portfeljih vrednostnih papirjev, in ne nazadnje podaja nove dokaze o psihometričnih lastnostih lestvice CASP-12, kar bi lahko bilo koristno za raziskovalce, ki jo uporabljajo pri svojem delu.