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Drivers of Savings in Swiss households: Which role does well-being play?

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Management Summary

The importance of savings and its underlying drivers have received growing attention in the literature over the years. On the one hand, savings are crucial for ensuring sufficient retirement income while, on the other hand, also acting as a buffer and protection against unforeseen financial shortfalls. Consequently, having savings increases the standard of living within households, individuals, and the economy. Therefore, understanding the various drivers of savings is of general interest to both government and policymakers. As such, the government is eager to ensure that its citizens' well-being and savings remain both stable and reasonably high. To date, several drivers of savings have been researched, which have mainly focused on demographic, geographic, economic, and psychographic variables. However, there is limited research on the role of well-being for being a driver of savings.

The aim of this thesis was to provide further insight on the different drivers of savings in Swiss households, and the role that well-being plays using data from the 2018 wave of the Swiss Household Panel. Thus, complementing the existing literature, an overview of the different variables influencing savings is given, with a special focus on well-being.

For this purpose, a comprehensive literature review was conducted to provide a clear foundation outlining the different drivers for savings. The respective drivers were then classified into the following categories: demographic, geographic, economic, psychographic, and well-being. From these, only three categories (demographic, geographic, and well-being) were further used to conduct the empirical analysis. The corresponding data was processed and analyzed through linear regression analysis and a quantile regression analysis. For both analyses, the program software RStudio (version 1.4.1106) was used.

The findings of this thesis are partially in line with existing literature. For instance, it was found that variables such as age, gender, number of children, income, and culture had a significant influence on savings. *Civil status*, *education*, and *working status* were only partially significant because certain dummy variables belonging to those drivers were insignificant. Moreover, the results verified that the well-being variables such as

satisfaction with life and joy have a significant positive effect on savings. Whereas anger, sadness, worry, perceived stress, and depression all significantly negatively influenced savings. However, out of all well-being variables, satisfaction with life had the strongest impact of all on savings.

Overall, it can be concluded that well-being variables have a significant impact on savings. Although the different drivers of savings have been investigated extensively, little research is available on the different well-being variables and their influence on savings. Therefore, further research should be done for more insight into the different effects of well-being and savings.

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List of Abbreviations

AWB	Affective well-being (joy, anger, sadness, worry, perceived stress, and depression)
BHPS	British Household Panel Study
CHF	Swiss Franc
CWB	Cognitive well-being (satisfaction with life)
DHS	DNB (De Nederlandsche Bank) Household Survey
EU-15	The 15 Member States are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom
FS	Flourishing Scale
FTR	Future time reference
PWB	Psychological well-being
RQ	Research question
SCF	Survey of Consumer Finances
SHP	Swiss Household Panel
SPWB	Scales of Psychological Well-being
SWB	Subjective well-being

1 Introduction

In principle, savings are considered an essential tool when it comes to reducing risks. One reason for this is that it is impossible to predict or determine the actual financial resources needed in the future. Given that this is impossible, it is therefore often inevitable to save for future unknowns.

When looking at the savings rate of Swiss households in figure 1, it can be seen that it has been relatively constant over the past 20 years, ranging between 15% to 20% since the financial crisis. However, at a closer glance, it becomes apparent that the uncertainties in the financial markets resulting from the financial crisis or the current pandemic significantly impact the savings. For this reason, it is essential to understand the different drivers of savings that lead to a decline or an increase.

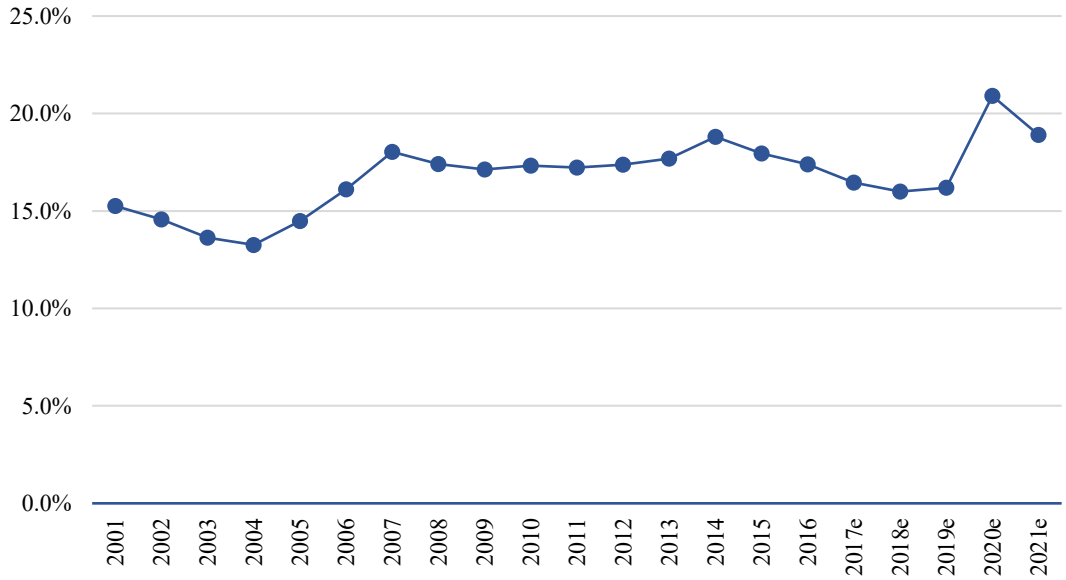

Figure 1 Household savings (Source: OECD (2021a) | The figure includes projected data (indicated by "e") for the savings rate of Swiss households as a percentage of disposable household income.)

Over the years, empirical studies on the different drivers of savings have steadily increased and found that savings are driven, for instance, by income (Harris, Loundes, & Webster, 2002; Huggett & Ventura, 2000), employment (Bande & Riveiro, 2013), uncertainty (Bouyon, 2016; Kostakis, 2012), personality (Asebedo, Seay, Wilmarth, & Archuleta, 2017; Nyhus & Webley, 2001), or well-being (Guven, 2012).

Savings are seen, among other things, as a means to secure an adequate income at retirement (Demery & Duck, 2006; Yuh & Hanna, 2010). Furthermore, savings serve as

a financial buffer and protection against unforeseen financial shortages and shocks (bouyon). Overall, savings is a good way to improve household and individual living standards (Lee, Park, & Montalto, 2000).

1.1 Scope of Thesis

This thesis aims to shed more light on the different drivers of savings in Swiss households and the role well-being plays using data from the 2018 wave of the Swiss Household Panel (SHP). Thus, adding to the existing literature, this thesis attempts to outline the different variables that drive savings, with special emphasis placed on the well-being variables.

Following the definition given by Diener, Suh, Lucas, and Smith (1999), this thesis focuses solely on subjective well-being (SWB), which is composed of an individual's affective (negative and positive emotions) and cognitive (life satisfaction) evaluation.

Further, the detailed definition and meaning behind savings are beyond the scope of this thesis and therefore only briefly addressed. The savings variables in this thesis are based on self-reported values and are not calculated as in other studies (Curtis, Lugauer, & Mark, 2015; Nyhus & Webley, 2001). In addition, all participants of the SHP are analyzed independently. Consequently, the savings of a single person are considered and not the aggregated savings of the entire household.

1.2 Research Gap

Despite the considerable amount of existing literature examining the different drivers of savings, only a fraction of these studies considers well-being variables. Consequently, the empirical evidence regarding the impact of well-being on saving remains reasonably scarce (Guven, 2012; Martin & Hill, 2015). Furthermore, there has been no research conducted in Switzerland using the SHP data to examine whether there is a relationship between well-being and saving.

1.3 Research Question

Based on the afore-mentioned research gap and objective the goal of the thesis is to answer and analyze the following research question (RQ):

RQ: *What are the drivers of savings in Swiss households, and which role does well-being play?*

1.4 Relevance

This thesis focuses exclusively on data collected by the SHP during the 2018 wave. Accordingly, the results drawn should not be treated as universally valid. Nonetheless, it provides valuable insights into the different drivers of savings and the role well-being plays. In addition to that, this thesis complements the already existing literature in both economic and psychological fields. Furthermore, the findings are believed to be of general interest to government and policymakers (Guven, 2012; Harris et al., 2002; van Rooij, Lusardi, & Alessie, 2012). The government is eager to ensure that its citizens' level of well-being and savings is consistent and relatively high (van Rooij et al., 2012). Where households lack sufficient savings, the effects are often incisive not only on a personal level of well-being but also for the government (van Rooij et al., 2012). Households with little savings often do not have sufficient reserves and are more prone to needing support from the government (Harris et al., 2002; van Rooij et al., 2012).

Consequently, low household savings result in potentially negative implications for society as a whole as well as for economic growth. Accordingly, governments are found to have an underlying interest in understanding the different drivers of savings their households and citizens (Guven, 2012; Harris et al., 2002). Moreover, knowing the drivers is also fundamental when considering planning and supporting savings incentives such as formulating policies (Guven, 2012; Harris et al., 2002). Therefore, it stands to reason that the government will try to stimulate the appropriate drivers, which will then influence savings.

1.5 Methodology

This section provides a brief overview of the methodology (see section 3.4) applied in this thesis. First, a thorough literature analysis was performed to provide a solid basis on the various drivers of savings. Thereby, the respective drivers were categorized

into demographic, geographic, economic, psychographic, and well-being variables. Then in a second step, based on the established literature, the different sets of questions from the SHP required for answering the RQ were identified. Based on the available data from the SHP, only the demographic, geographic, and well-being variables were considered for the empirical analysis, with special emphasis placed on the well-being variables. Subsequently, the corresponding data was processed and analyzed using the program software RStudio (Version 1.4.1106). To this end, two different regression analyses were conducted in order to address the RQ. The first method applied was a linear regression, and the second method used was a quantile regression analysis. Although two different principles applied in the analyses, they both sought to analyze the significant variables that influence savings behavior.

1.6 Structure of Thesis

This paper is organized as follows. First, in sections 2.1 and 2.2, a brief definition of saving and the main existing theories are outlined. Following this, an extensive literature review on the different drivers of savings, categorized into demographic, geographic, economic, psychographic, and well-being variables, is provided in section 2.3. In sections 3.1 and 3.2 of the empirical analysis, the description of the data and relevant variables analyzed is given. Section 3.3 shows the sample characteristics. Next, section 3.4 outlines the applied methodology. In section 4, the results of the empirical analysis are reported and elaborated. Lastly, the concluding remarks and limitations of the thesis are given in section 5.

2 Literature Review

To better understand the various explanations for saving behavior, this section starts with a short definition of savings, followed by a brief overview of the most recognized theories. After that, the most prominent variables identified in the existing literature as drivers for savings are presented. For this purpose, the different variables are categorized into the following groups: demographic, geographic, economic, psychographic, and well-being. Whereby the emphasis lies on well-being and its role on savings.

2.1 Definition of Saving

Household saving "…*is defined as household net disposable income plus the adjustment for the change in pension entitlements less household final consumption expenditure…*" (OECD, 2021b)

The literature shows that the definition of saving is not clear-cut, and researchers therefore often determine and calculate it differently (see Brounen, Koedijk, & Pownall, 2016; Curtis et al., 2015; Nyhus & Webley, 2001; Rha, Montalto, & Hanna, 2006; Yuh & Hanna, 2010). One reason is related to the nature of the data they use.

For instance, Yuh and Hanna (2010) considered households' self-reported expenditures and savings to determine savings. In contrast, Curtis et al. (2015) did not use self-reported values. Instead, they computed the household savings rate ("household saving divided by household income") using data from the China Statistical Yearbook (Curtis et al., 2015, p. 61). Furthermore, there are also differences among researchers regarding their interpretation and definition of saving. According to Brounen et al. (2016), saving is generally a conscious decision and willingness to compromise current well-being in favor of a specific outcome in the future. A similar view is shared by Asebedo et al. (2019), who explains that saving should be thought of as rational behavior.

Wachtel (1977), on the other hand, argues that saving arises from three different circumstances. Namely, from an increase in financial assets, decreased net liabilities, and increased long-lived assets.

2.2 Theories of Saving

There are three fundamental theories of consumption and saving behavior in the literature: the permanent income hypothesis (Friedman, 1957), the life cycle hypothesis (Ando & Modigliani, 1963; Modigliani, 1986), and the precautionary savings theory (Deaton, 1989). All aim to understand and explain the income, consumption, and saving behavior of individuals.

2.2.1 Permanent Income Hypothesis

Milton Friedman's (1957) permanent income hypothesis focuses on expected future income. Thus, permanent income can be described as the long-term income expectation that determines an individual's savings and consumption behavior (Aguiar & Hurst, 2008; Friedman, 1957; Meghir, 2004). Moreover, changes in consumer behavior are not predictable, according to the hypothesis, because they are based on individual expectations (Friedman, 1957). Consequently, it can be concluded that households that expect their income to increase over time have little or no incentive to increase their savings (Ireland, 1995; Meghir, 2004). Moreover, it is found that households only save if their current income is larger than their expected permanent income, in order to protect against future income decreases (Ireland, 1995).

2.2.2 Life Cycle Hypothesis

The life cycle hypothesis, which Modigliani and Brumberg (1954, as cited in Rha et al., 2006, p. 3) initially developed, is frequently used to define individual households' aggregate consumption and saving behavior. The life cycle theory is a future-oriented theory on saving, which believes that people determine how much to consume and save by comparing the current and future needs and opportunities (Ando & Modigliani, 1963; Rha et al., 2006). Moreover, the life cycle hypothesis can be explained in three phases. During the first phase of the life cycle, savings are often negative in young adulthood. In a second phase, savings then increases and turns positive because of gainful activities. Lastly, in the third phase of the life cycle, saving decreases due to retirement (Lee et al., 2000; Modigliani, 1988).

2.2.3 Precautionary Savings Theory

An additional rationale for personal saving motives is the decision of individuals to save for precautionary reasons, which can be considered an enhancement of the life cycle model (Lusardi, 1998). Throughout the life cycle, various risk factors that are often difficult to prevent, such as loss of income due to health problems or unemployment, and other unexpected life circumstances affect households (Bouyon, 2016; Deaton, 1989; Levenko, 2020; Mody, Ohnsorge, & Sandri, 2012). Therefore, it can be concluded that as income uncertainty and liquidity constraints increase, the need to amass precautionary saving also becomes more important (Deaton, 1989; Mody et al., 2012). Consequently, on the one hand, it is important to identify risk aversion so that the extent of precautionary saving can be understood (Mody et al., 2012). On the other hand, it is also necessary to recognize how household consumption and savings behavior changes when uncertainty about future income increases (Deaton, 1989; Lusardi, 1998; Mody et al., 2012).

2.3 Drivers of Saving

Empirical studies on savings have grown steadily in recent years. Studies have focused on individual countries as well as several countries together. A common interest behind all these studies is to investigate the drivers of savings and their influence. This section outlines the various drivers of savings found in the literature. Nonetheless, these presented variables are by no means exhaustive, and several other drivers may also influence savings.

2.3.1 Demographic Variables

Numerous studies have investigated the influence of demographic variables on savings (see Curtis et al., 2015; Davis & Schumm, 1987; Demery & Duck, 2006; Doker, Turkmen, & Emsen, 2016; Lera-López, 2014; Lugauer, Ni, & Yin, 2019; Yuh & Hanna, 2010). The consensus among researchers has shown that demographic variables such as age, gender, civil status, number of children, education, income, and employment have a decisive influence on savings (Alessie, Angelini, & van Santen, 2013; Curtis et al., 2015; Davis & Schumm, 1987; Harris et al., 2002; Yuh & Hanna, 2010).

2.3.1.1 Age

Given the increasing aging population across numerous countries, there is growing interest in understanding the relationship between the population age structure and savings (Demery & Duck, 2006; Fernández-López, Otero, Vivel, & Rodeiro, 2010). Several researchers found a link between savings and age (Brounen et al., 2016; Harris et al., 2002; Lee et al., 2000; Lugauer et al., 2019).

For instance, Demery and Duck (2006) used data from the United Kingdom Family Expenditure Survey from 1969 to 1998 in order to investigate the correlation between savings and age structure. They concluded that people of working age tend to accumulate savings that peak at 50. A noticeable drop then follows this peak in the savings rate around retirement age, which further implies that the probability of more people saving in retirement becomes less significant (Demery & Duck, 2006).

Unlike Demery and Duck (2006), Fernández-López et al. (2010) investigated various factors that influence savings at retirement across eight European countries. According to the life cycle hypothesis approach, they showed that age positively influences retirement savings. Additionally, Fernández-López et al. (2010) indicated that the prospect of saving for retirement increases with age before it peaks around the mid-to-late 40s. Similar to Fernández-López et al. (2010), Demery and Duck (2006) also suggested a correlation between individual savings and the life cycle model after adjusting for retirement income.

According to Yuh and Hanna (2010), the likelihood of saving is highest in households where respondents are between 50 and 59 years old, thereafter the calculated probability of saving tends to decrease. In line with the other researchers, Yuh and Hanna (2010) argued that age is a crucial variable in the life cycle model. Furthermore, they point out that age is linked to saving in the standard life cycle model since there is a typical pattern of first rising and then declining income over the life cycle (Yuh & Hanna, 2010).

The study by Brounen et al. (2016) likewise finds that the propensity to save on a personal level tends to decline with increasing age. In contrast, the inclination to save is significantly higher among the younger households, suggesting a non-linear relationship that levels off around 60 before it starts to become positive (Brounen et al., 2016). An apparent explanation is that younger respondents typically have a longer time horizon, giving them the highest probability of realizing future returns (Brounen et al., 2016).

Alongside this, Brounen et al.(2016) explained that generation effects could also justify the shift in the age trend at around 60.

2.3.1.2 Gender

In recent years, gender issues related to economic and individual well-being have gained increasing attention. Several studies found that men and women differ in their risk-taking and saving behavior in this context (Fisher, 2010; Fisher, Hayhoe, & Lown, 2015; Pan & Statman, 2010).

Although Sundén and Surette (1998) agreed that there is evidence of gender differences in investment decisions, they argued that differing individual or household characteristics could not fully explain these changes. Further, the researchers conclude that gender is not the sole determinant of investment decisions (Sundén & Surette, 1998). Instead, they found that gender, together with civil status, are the most likely drivers of investment decisions (Sundén & Surette, 1998).

Fisher (2010) examined the differences in personal savings behavior between men and women for single-person households using data from the Survey of Consumer Finances (SCF) in 2007. In her study, she investigated the extent to which gender alone leads to disparities in saving behavior and whether there are any differences in saving-related factors for women and men (Fisher, 2010). In doing so, Fisher (2010) found that women tend to save less than men. In addition, the results showed that risk tolerance influences whether or not men and women save (Fisher, 2010). She further concluded that women with a low risk tolerance save considerably less often, both in the short term and regularly, while this was not found to be the case for men. Hence, the findings suggest that a low risk tolerance for women has a negative effect on the probability of saving (Fisher, 2010).

In a similar study, Fisher et al. (2015) researched gender differences regarding the saving behavior of low- to middle-income households. For this purpose, they used data from the SCF in 2010 alongside the online NC1172 data set. The NC1172 data was obtained from a national sample of low to medium-income households with an income up to $80,000 in December 2010 (Fisher et al., 2015). For this reason, Fisher et al. (2015) also capped the household income in the SCF sample at $80,000. Again, similar to other studies, the researchers concluded a meaningful difference between men's and women's savings behavior and that women have a higher risk aversion than men (Fisher et al.,

2015). Likewise, the authors Pan and Statman (2010) showed that men are less risk-averse than to women. Moreover, they found that younger participants are less likely to be risk-averse than slightly older participants.

2.3.1.3 Civil Status

A common observation drawn from previous empirical literature is that civil status impacts saving behavior (Juster, Lupton, Smith, & Stafford, 2006; Kan & Laurie, 2010; Schmidt & Sevak, 2006). However, the results found are not always congruent.

For instance, Browning and Lusardi (1996) showed that married couples have the highest wealth levels based on data from the United States, whereas single-parent households have the lowest. Juster et al. (2006) found a negative effect on wealth caused by divorce or separation of households. Although, the negative effect on wealth can be explained by the fact that the family's assets are often divided in the event of separation, meaning that part of the wealth will be withdrawn (Juster et al., 2006).

In line with those findings, using data from the U.S. Panel Study of Income Dynamics from 2001, Schmid and Sevak (2006) concluded that the distribution of wealth differs greatly between households of married couples and singles.

Similarly, Yuh and Hanna (2010) show that households of married couples have a higher probability of savings than non-married female households. According to Yuh and Hanna (2010), this effect can be explained because married people may have higher savings goals compared to unmarried people. Another explanation is that married couples' time preferences are more future-oriented than other household groups (Yuh & Hanna, 2010). Contrarily Faridi et al. (2010) found that marital status, thus being married, is negatively related to household savings in Pakistan. However, their findings suggest that this correlation indeed only holds when the head of the family is solely responsible for the household's finances. Faridi et al. (2010) argued that household saving is higher where the spouse is actively engaged in economic work.

Kan and Laurie's (2010) examined data from the British Household Panel Study (BHPS) to investigate how married and cohabiting households manage certain financial aspects within the household. In doing so, they concluded that savings are usually shared between the partners. Whereas investments are held independently by each spouse (Kan & Laurie, 2010). Moreover, the researchers showed that cohabiting couples generally have a lower chance than married couples to hold all types of assets and debts jointly.

Further, cohabiting couples reported having commonly more debt. Reasons for this may reflect, on the one hand, their lower commitment to the relationship or their level of independence within the relationship (Kan & Laurie, 2010). Another explanation may be that those who choose to cohabit share different views on how finances should be managed within a relationship (Kan & Laurie, 2010). Kostakis (2012), on the other hand, found that the savings of married consumers are neither higher nor positively influenced by marriage.

2.3.1.4 Number of Children

A considerable amount of literature has examined the impact that the number of children within a household has on saving (Curtis et al., 2015; Davies, 1988; Harris et al., 2002; Lee et al., 2000; Lugauer et al., 2019).

For instance, Alessie and Lusardi's (1997) empirical analysis also found, drawing on data from the Dutch National Bank Household Survey (DHS), that savings are lower for households with children. One of the main reasons behind these findings is the increase in expenditures mostly linked to education costs, such as universities (Harris et al., 2002; Lee et al., 2000). However, this applies especially to countries where there are no or only limited financial subsidies from the state, and private households have to bear the entire cost of education themselves (Lee et al., 2000). Consequently, saving becomes increasingly challenging.

Davies (1988) introduced the effects of household size on the life cycle model and found that aggregate savings rates decline when the family is larger. Similar to Davies (1988), Lee et al. (2000) examined the effect of family life cycle stages on household savings. Their results suggest that households appear to postpone their savings until their children become financially independent. Moreover, Lee et al. (2000) conclude that households with dependent children tend to spend more money than they earn. In other words, households with dependent children save less than households without children.

Harris et al. (2002) examined several household characteristics thought to impact household saving significantly. The study obtained data from Australian households from August 1994 to February 1999 with a total sample size of 17,585 persons over the age of 18 (Harris et al., 2002).

Echoing previous researchers, Harris et al. (2002) concluded that a negative effect on the likelihood of saving is particularly evident for households with children.

Accordingly, they emphasized that an increase in the number of children living in a household lead to higher saving difficulties. Despite this, they stated that households of three children, for example, were not significantly worse off in comparison to households with one child. Further, Harris et al. (2002) argued that similar effects on aggregate saving would emerge over time, as seen in various industrialized countries. Namely, a fall in fertility rates to the extent that there will be considerably fewer households with a high number of children (Harris et al., 2002).

A notable example of this is China, a country where families traditionally rely heavily on their children to take the responsibility of supporting and caring for both parents in retirement (Curtis et al., 2015). However, given the one-child policy, there has been a significant decline in the number of children in China as well as fewer people working in the future (Curtis et al., 2015; Lugauer et al., 2019). In other words, it has become more and more relevant for the current working population to save intensively, as they will receive significantly less support from their family as well as lower pension at retirement in the future (Curtis et al., 2015).

Curtis et al. (2015) highlighted in their research how demographic changes affect household savings and show the importance of personal savings for people in retirement. Moreover, they show that due to the introduced one-child policy in China, there is a significant decrease in family size. Given the decreasing household size, it can be seen that households in China generally require a lower share of their income and therefore are able to save more (Curtis et al., 2015). Although the one-child policy has changed into a two-child policy, the strict birth control imposed by the state resulted over time in not only a decline in the birth rate, selective abortions of girls, millions of unregistered children but also in an increasingly over-aged Chinese population (Bundeszentrale für politische Bildung | bpb, 2020).

The research conducted by Lugauer et al. (2019) provides additional insights into household saving behavior in China regarding family size. In particular, they showed that households with children around the age of 16 to 25 tend to have lower savings rates. Furthermore, they found that households in urban areas have higher savings rates resulting from a lower ratio of educational expenses to income. Lugauer et al. (2019) conclude that having an additional child reduces households' savings rate in urban areas to a greater extent than in rural areas. Curtis et al. (2015) and Lugauer et al. (2019) both state that the household size has a reasonably significant impact on household saving. Overall, the studies are consistent and reach the same conclusion that a reduction in

household size positively affects saving and wealth. That is, households without children tend to save more (Alessie & Lusardi, 1997; Harris et al., 2002; Lee et al., 2000). However, Curtis et al. (2015) mentioned, significant population decline comes with new challenges such as an aging population.

2.3.1.5 Education and Financial Literacy

Previous research has examined the relationship between education and savings (Brounen et al., 2016; Furnham & Cheng, 2019; Kostakis, 2012; Lugauer et al., 2019).

Fernández-López et al. (2010) implied that access to financial knowledge might be a more influential factor in empirical studies on financial decisions to investigate than educational attainment. In line with Fernández-López et al. (2010), Lee et al. (2000) suggest that educational programs on financial management would be beneficial for increasing the savings rate of U.S. households.

Van Rooij et al. (2012) showed a significant influence of financial knowledge on net wealth based on the DHS. Their findings provide evidence that those with a higher level of financial literacy are more likely to invest in the stock market and realize profits (van Rooij et al., 2012). Reasons for this are that a higher level of financial knowledge reduces the cost of information and lowers the barriers to participation in the stock market (van Rooij et al., 2012). Besides, financial literacy is found to have a beneficial impact on saving for retirement (Fernández-López et al., 2010; van Rooij et al., 2012). In this regard, Van Rooij et al. (2012) point out that financial literacy positively affects retirement and financial plans, consequently influencing saving. Overall, they concluded that financial literacy influences household wealth and savings and is shown to be an effective determinant of household saving behavior.

Likewise, Brounen et al. (2016) examined data from the DHS to investigate the propensity to save as well as stock market activity. In the initial step, they analyzed the variation of financial activity and responsibility using a baseline model containing a set of variables previously tested in other literature on financial planning (Brounen et al., 2016). Their results showed that the tendency to save appears to be high among the financially literate, suggesting that people with a higher level of financial understanding have a greater readiness to take appropriate steps to meet their financial needs in the future. In the second step, Brounen et al. (2016) extended the basic model and tested the effects of other variables. To do this, they also considered variables relating to education

and parental influence. Finally, Brounen et al. (2016) examined the extent to which personality is connected to both financial planning and decision-making. Their results showed that individuals with a significantly higher likelihood of saving for future needs were more interested, up-to-date, and well-read in finance-related topics (Brounen et al., 2016). Consequently, a person's level of interest tends to be of greater importance in justifying savings behavior than educational attainment and numeracy skills (Brounen et al., 2016).

Using data from the China Household Finance Survey, Lugauer et al. (2019) were able to show that households with a high level of education tend to save more. As a measure of education, they used the number of years a household head went to school. By doing so, the researchers concluded that household heads who received a longer school education generally displayed a higher savings aptitude (Lugauer et al., 2019). Similar to the findings of Lugauer et al. (2019), Furnham and Cheng (2019), Kostakis (2012, p. 263), Lee et al. (2000), and Alessie and Lusardi (1997) found that high education positively affects savings.

Furnham and Cheng (2019) tested the effects of family social background, intelligence during childhood, education, profession, and personality traits on saving and investing in adulthood. To do so, Furnham and Cheng (2019) used data from the National Child Development Study conducted in the United Kingdom in 1958. The results showed that the purely subjective assessment of the financial situation proves to be an essential indicator for saving and investing (Furnham & Cheng, 2019). However, this indicator is closely followed by education and occupational attainment (Furnham & Cheng, 2019).

2.3.1.6 Income

The level of income is also considered to be a significant determinant in relation to households' savings. Previous studies on household savings found that high-income levels have a positive impact on the likelihood of accumulating savings (Fernández-López et al., 2010; Harris et al., 2002; Huggett & Ventura, 2000; Lee et al., 2000). For instance, Harris et al. (2002) show that having a higher or lower average income relative to one's occupational group affects the probability of falling into a particular savings group. Thus, Australian households with a lower income compared to those with a relatively high income from the same occupational group were found to have a 15%

higher likelihood of getting into debt, depleting savings, or struggling to make ends meet (Harris et al., 2002).

Huggett and Ventura (2000) applied the life cycle model to examine the reasons why high-income households in the United States tend to save more than low-income households. In doing so, they observed that households whose income level before retirement was consistently high have a higher savings rate compared to households whose income level was consistently low. Huggett and Ventura (2000) mentioned that this development is related to U.S. Social Security contributions, which is only a small part of income for high-income earners. However, it is a much larger share of income for low-income earners (Huggett & Ventura, 2000). As a result, low-income households tend to have fewer savings than high-income households (Huggett & Ventura, 2000).

According to Fernández-López et al. (2010), income is a determining factor in saving for retirement. Moreover, they found that the likelihood of saving for retirement increases with higher income (Fernández-López et al., 2010).

Fisher (2010) conducted using SCF data from 2007 to examine gender differences in saving behavior and focused on single-person households. Interestingly, the results showed that income has no significant effect on the probability of short-term or regular savings (Fisher, 2010). In a comparable study, Fisher et al. (2015) analyzed a few years later savings differences between genders in low- to moderate-income households, with online data from the national sample NC1172 and data of single households collected from the SCF in 2010. Consistent with the studies highlighted above, a significant and positive relationship between income and probability of saving was observed across both datasets for men and women (Fisher et al., 2015).

2.3.1.7 Working Status

Researchers agree that the employment status has a meaningful indirect effect on the savings rate (Alessie & Lusardi, 1997; Bouyon, 2016; Fernández-López et al., 2010; Kan & Laurie, 2010). Alessie and Lusardi (1997) argued, the consensus is that unemployment status negatively impacts savings. Whereas Kan and Laurie (2010) further elaborated on employment status, being unemployed is generally related to a lower likelihood of having savings and investments and debts.

Similarly, Fernández-López et al. (2010) confirmed that the ability to save for retirement is indirectly determined by employment status concerning retirement.

Additionally, they argued a significant and positive relationship between income level and employment status in general. Along with Fernández-López et al. (2010), the researchers Bande and Riveiro (2013) confirmed a strong correlation between occupational, income and saving uncertainty.

Consistent with the findings of Bande and Riveiro (2013), Bouyon (2016) found that with rising unemployment, uncertainty about future income increases. Accordingly, it is necessary to accumulate sufficient savings during employment in order to protect oneself against possible future job losses (Bouyon, 2016; Fisher et al., 2015). At the same time, those out of a job are reducing their savings to maintain the same standard of living (Bouyon, 2016). Furthermore, Bouyon's (2016) analysis supports the findings that rising unemployment magnifies the risk of lower future earnings and thus increases the individual worker's current savings. Bouyon (2016) also showed that unemployment appears to be a strong, albeit not always a constant influencing factor for the household saving rate in EU-15 countries. Reflecting precautionary saving and, to a weaker extent, saving for retirement (Bouyon, 2016). Whereas Alessie and Lusardi (1997) showed in their study that the savings of households tend to be lower when the household head is unemployed.

Kostakis (2012) research explored the influencing factors on consumers' saving behavior using cross-sectional data from the Greek Island Crete. As part of his study, Kostakis (2012) found that the self-employed and employed persons with a high position in the public sector showed a negative relationship with the total amount of savings. Thus, he concluded that public sector workers had lower savings in contrast to other occupational groups (Kostakis, 2012).

Fisher et al. (2015) concluded that unemployment is a significantly greater risk for single individuals than individuals with a cohabiting partner. Similar to Fisher et al. (2015), Kan and Laurie (2010) analyzed gender differences. However, they focused on cohabiting and married couples concerning their saving, investing, and borrowing behavior. In doing so, Kan and Laurie (2010) showed that females working part-time generally had less debt than those working full-time. In addition, both females and males whose partners were in full-time employment appeared to have more savings than those with a partner who was not employed (Kan & Laurie, 2010).In this sense, Kan and Laurie (2010) conclude that the likelihood of holding savings is related to both the partner's and one's own employment status. However, a more pronounced relationship with one's own employment status exists (Kan & Laurie, 2010).

2.3.2 Geographic Variables

Although a number of studies show that culture is an essential determinant of household behavior, the relationship between culture and household saving behavior remains somewhat inconclusive (see Breuer & Salzmann, 2012; Carroll, Rhee, & Rhee, 1994; Guin, 2017). For this reason, it is expected that the relationship between culture and household saving behavior will be further investigated in future studies.

2.3.2.1 Culture and Language

Using Canadian household data Carroll et al., (1994) examined the relationship between culture and household saving behavior. The authors compared the saving behavior of immigrants coming from several different countries to Canada (Carroll et al., 1994). In contrast to other researchers, their results showed that the immigrants saving behavior do not differ in a meaningful way from Canadian citizens. Carroll et al., (1994) could not find any evidence supporting the notion that cultural factors can explain differences in savings rates across different cultural groups. However, they concede that their results may be due to some data constraints. Contrarily, Breuer and Salzmann (2012) concluded, using cross-national data, that culture significantly influences household financial behavior. Thus, indicating that culture is a crucial element in household behavior and should be taken into account (Breuer & Salzmann, 2012).

According to the definition by Guiso, Sapienza, and Zingales (2006), culture refers to passing on common values and perceptions shared by ethnic, religious, and social groups from one generation to another in a similar way.

Based on the definition from Guiso et al. (2006), Eugster, Lalive, Steinhauer, and Zweimüller (2011) examined whether social groups have different demands for social insurance using data from the SHP. Given the existing cultural diversity within Switzerland, the authors were able to investigate the role of culture in explaining the demand for redistributive social insurance (Eugster et al., 2011). To do so, they analyzed cultural differences based on the behavior of the different language groups present in Switzerland. From the results of Eugster et al. (2011), it emerged that the French, Italian, and Romansh speakers (compared with German-speaking respondents) considered diligence less worthwhile. Furthermore, the French and Italian-speaking part believes itself to have less autonomy and personal power (Eugster et al., 2011). Both Chen (2013)

and Sutter et al. (2015) found that language results in either long-term or short-term orientation. Hence, explaining to some extent also the findings of Eugster et al. (2011).

Chen (2013) used a cross-national framework to analyze the extent to which languages with strong and weak future time reference (FTR) influence investment behavior. In contrast, Sutter et al. (2015) used data from German- and Italian-speaking children from South Tyrol. Turning to language, Chen (2013) finds that individuals with a strong FTR language like English, French, and Italian tend to make less forward-looking choices such as saving for retirement. Contrarily, those with a weak FTR language, such as German, are more likely to save (Chen, 2013; Sutter et al., 2015).

Guin (2017) examined the impact of culture on the saving behavior of Swiss households using data from the SHP during the 2003-2014 waves. In line with existing research (see Chen, 2013; Eugster et al., 2011; West & Graham, 2004), analyzed the different social groups in the various language regions of Switzerland to identify changes in household savings decisions. In doing so, Guin (2017) confined his study to German- and French-speaking households. The results showed that the tendency to save is higher among German-speaking than French-speaking, confirming to a certain extent that language influences the saving behavior of households (Guin, 2017). Nevertheless, Chen (2013) acknowledges the possibility that language might not be the cause but instead reflects more profound differences that influence savings behavior.

2.3.3 Economic Variables

Economic variables such as inflation and interest rates, and their related implications arising from shocks and crises, have also been studied in the existing literature regarding their impact on savings.

2.3.3.1 Inflation

Due to differing results in the literature, the impact of inflation on savings formation remains to some extent ambiguous (see Bouyon, 2016; Corsetti, Schmidt-Hebbel, & Webb, 1992; Hussein & Thirlwall, 1999; Juster & Wachtel, 1972; Wachtel, 1977). For example, Corsetti et al. (1992) used data from 10 countries to analyze household savings in developing countries. For nine of these countries, the corresponding data was taken from the U.N. System of National Accounts. For the last remaining country, data was obtained from the Statistical Yearbook of the Republic of China

(Corsetti et al., 1992). In their research, Corsetti et al. (1992) argued that inflation appeared to have a negative although not significant effect on household saving in developing countries. Moreover, Corsetti et al. (1992) argue that one reason for their results may be the insufficient number of high inflation countries in their sample. Other reasons mentioned are that savings can either be inhibited or boosted by the uncertainty of future asset (Corsetti et al., 1992). Therefore, depending on whether the substitution effect causes it due to the lower real rate of return or the precautionary savings motive (Corsetti et al., 1992).

Wachtel (1977) examined in his study the connection between inflation, uncertainty, and saving behavior in the United States. In this context, he pointed to a number of consequences that inflation could have on consumer behavior. Among these, most are found to increase saving, whereas few decrease it (Wachtel, 1977). According to Wachtel (1977, p. 560), the following effects belong to this group: the money illusion, intertemporal substitution, uncertainty, and indirect effects.

For example, as Wachtel (1977) and Bouyon (2016) noted, the money illusion effect occurs when a rise in nominal income is incorrectly interpreted as an increase in real income. Consequently, households consume more, which ultimately reduces their savings (Bouyon, 2016; Wachtel, 1977). However, Wachtel (1977) added that the money illusion effect generally disappears as inflation accelerates. The intertemporal effect refers to an anticipated price increase, leading consumers to purchase products or services earlier than usual (Wachtel, 1977). Hence, leading to an increase in consumption and a decrease in saving (Pickersgill, 1976; Wachtel, 1977). Nevertheless, Wachtel (1977) stated that the intertemporal effect occurs very seldom, particularly in a stable economy. He further argued that inflation could also indirectly influence saving behavior. More specifically, through its impact on other saving determinants such as real interest rates (Corsetti et al., 1992; Wachtel, 1977).

Regarding the uncertainty effect, Bande and Riveiro (2013), Corsetti et al. (1992), and Wachtel (1977) concluded that rising inflation heightens uncertainty. Consumers are found to have difficulties forecasting price developments, showing that the inflation rate is strongly associated with uncertainty (Wachtel, 1977). Consequently, leading to a growing demand for savings and a decrease in consumption (Bande & Riveiro, 2013; Wachtel, 1977). This is also due to rising uncertainty concerning future returns on real assets and income level (Corsetti et al., 1992; Wachtel, 1977). Further, economic instability often picks up as inflation rises (Corsetti et al., 1992). Nonetheless, Wachtel

(1977) commented that the relationship between inflation and saving is not to be overemphasized. Although, he stressed that the uncertainty effect appears to be the most relevant explanation for the link between saving and inflation (Wachtel, 1977). In contrast, Bouyon (2016) stated that households hardly consider inflation when making consumption and saving decisions. Levenko (2020) found that inflation has no significant impact on the saving rates of households.

2.3.3.2 Interest Rates

Numerous researchers have examined the impact of interest rates on household savings, though with mixed results (see Bouyon, 2016; Corsetti et al., 1992; Harris et al., 2002; Wachtel, 1977).

Corsetti et al. (1992) found that the domestic real interest rate has a predominantly negative, albeit insignificant and minor effect on the household saving rates considered in their research. Additionally, they found that real interest rates in the examined countries do not incentivize saving (Corsetti et al., 1992). One possible reason Corsetti et al. (1992) raised was that liquidity shortfalls could constrain intertemporal consumption decisions. Another point mentioned by several authors was that the substitution and income effects often cancel each other out (Bouyon, 2016; Corsetti et al., 1992; Wachtel, 1977). However, Wachtel (1977) emphasized that the fundamental impact of interest rate changes on household saving is often challenging to evaluate.

Using data from an Australian household panel, Harris et al. (2002) showed that the interest rate level only had a minor or no effect on households' propensity to save. Harris et al. (2002) findings were dependent on the absolute level of the respondents' income. In addition, the researchers continued that a shift in interest rates is thought to likely impact the asset allocation or portfolio choices of those who are saving (Harris et al., 2002). As a next step, Harris et al. (2002) also examined the effects of an increase in the interest rate from 1 to 10 percent on the saving rate. Consistent with their first results, Harris et al. (2002) showed that although the interest rate was increased from 1 to 10 percent, there are no significant changes in the household's propensity to save. Likewise, Bouyon (2016), found that households from the EU-15 often pay little attention to the interest rates when making consumption and savings decisions.

2.3.3.3 Uncertainty

In general, there are several different forms of uncertainty such as income (Bande & Riveiro, 2013; Corsetti et al., 1992; Fisher et al., 2015), unemployment (Bande & Riveiro, 2013; Levenko, 2020), such as inflation and interest rates (Bande & Riveiro, 2013; Corsetti et al., 1992; Wachtel, 1977). As partially mentioned in the employment, inflation and interest rates section above, the effect of uncertainty has been found to impact household saving behavior (Bande & Riveiro, 2013; Corsetti et al., 1992; Wachtel, 1977; Yuh & Hanna, 2010).

For example, Corsetti et al. (1992) stated that uncertainty concerning future earnings and returns on assets increases as inflation rises. In this context, uncertainties concerning future wealth and assets can either constrain saving behavior due to the substitution effect or increase saving behavior through precautionary motives (Corsetti et al., 1992). Thus, making it at times difficult to predict how households will react to the various uncertainties and change their saving behavior accordingly.

Guariglia (2001) analyzed savings behavior in the United Kingdom using the BHPS panel data from 1991 to 1998, surveying a sample of 10,000 individuals annually. Thereby several different measures of income variations were constructed to estimate uncertainty, which were then used as proxies. In doing so, Guariglia (2001) showed that the different measures of uncertainty significantly influence the saving decisions of households, indicating a significant precautionary dimension in savings behavior (Guariglia, 2001; Kostakis, 2012). Furthermore, those participants who expected their financial situation to deteriorate in the coming year were more inclined to save money, according to the findings (Guariglia, 2001; Kostakis, 2012). Therefore, being consistent with the life cycle hypothesis (Guariglia, 2001).

Whereas, Rha, Montalto, and Hanna (2006) found, in contradiction to the life cycle model, that households expecting a rise in their household income in the future exhibited a higher probability of saving compared to households that did not expect an increase of their income.

Fisher et al. (2015) examined differences in saving behavior for low- to moderate-income households across gender using data from the SCF and the NC1172 dataset from 2010. Analogous to Rha, Montalto, and Hanna (2006), Fisher et al. (2015) found in the SCF sample that both women and men are significantly less likely to save when income uncertainty is present. On the other hand, based on the NC1172 dataset, income

uncertainty was related to a lower probability of saving for men though not for women. However, Fisher et al. (2015) continued that their findings could be due to the relatively small sample size in the NC1172 dataset, indicating that further research needs to be done.

Yuh and Hanna (2010) and Kostakis (2012), in line with Guariglia's (2001) research, similarly showed that those households which are uncertain of their future income were more inclined to save. Additionally, Yuh and Hanna (2010) noted that households who were feeling optimistic about their income increasing at a higher rate than inflation were less prone to save.

Research by Kostakis (2012) also highlighted that consumers save to protect themselves from uncertainty. Kostakis (2012) and Guariglia (2001) also noted other uncertainty factors apart from income. Such as health, default or longevity risk which also have a significant impact on consumers' saving behavior.

Bande and Reviero (2013) examined the impact of uncertainty on Spanish households' saving and consumption behavior in 17 different regions from 1980 to 2007. Consistent with previous studies, they found evidence that uncertainty concerning future income is crucial for private saving rates. Nevertheless, Bande and Reviero (2013) emphasized that for Spanish regions, the unemployment rates are considered the most suitable measure of uncertainty. Finally, Bande and Reviero (2013) and Bouyon (2016) found that when income uncertainty is elevated and persistent over time, households are more likely to increase their precautionary savings, leading to a decline in their consumption expenditures.

In this context, Bouyon (2016) further argued that the income uncertainties caused by the financial crisis led many households across the EU-15 to replace their debts for savings in order to be able to save more from their disposable household income. In addition, increasing unemployment rates lead to greater uncertainty about future income, prompting workers to put money aside as a precaution against potential future job losses (Bouyon, 2016).

In a recently published paper, Levenko (2020) examined the relationship between household saving rates and uncertainty as possible drivers of precautionary saving behavior. To this end, panel data from 22 European countries between 1996 and 2017, based on yearly aggregated data at a national level was used. In the study, Levenko (2020) showed that household savings rates tend to be relatively stable and depend primarily on two main determinants. Namely, on the one hand, on the income growth and on the other hand on the uncertainty about employment income along with precautionary saving

motives. Moreover, Levenko (2020) provided a valuable contribution to help understand the slow recovery seen in Europe during the aftermath of the financial crisis in 2008-2009.

2.3.4 Psychographic Variables

Personality traits have been extensively studied in the psychological literature to date and are receiving increasing attention in economic literature. Thereby, researchers have concluded that certain personality traits have a significant influence on people's economic decisions.

2.3.4.1 Personality

Several studies focused on the relationship such as influence personality traits have on savings behavior see (Asebedo et al., 2019; Brown & Taylor, 2014; Donnelly, Iyer, & Howell, 2012; Nyhus & Webley, 2001). The most widely used and empirically substantiated personality model is the *Big Five* theory, also known as the *Five Forces* or *OCEAN* model (Asebedo et al., 2019; Novikova, 2013). The model includes five different dimensions that describe a person's personality.

Figure 2 gives a short overview of the dimension from the *Big Five* and its different facets:

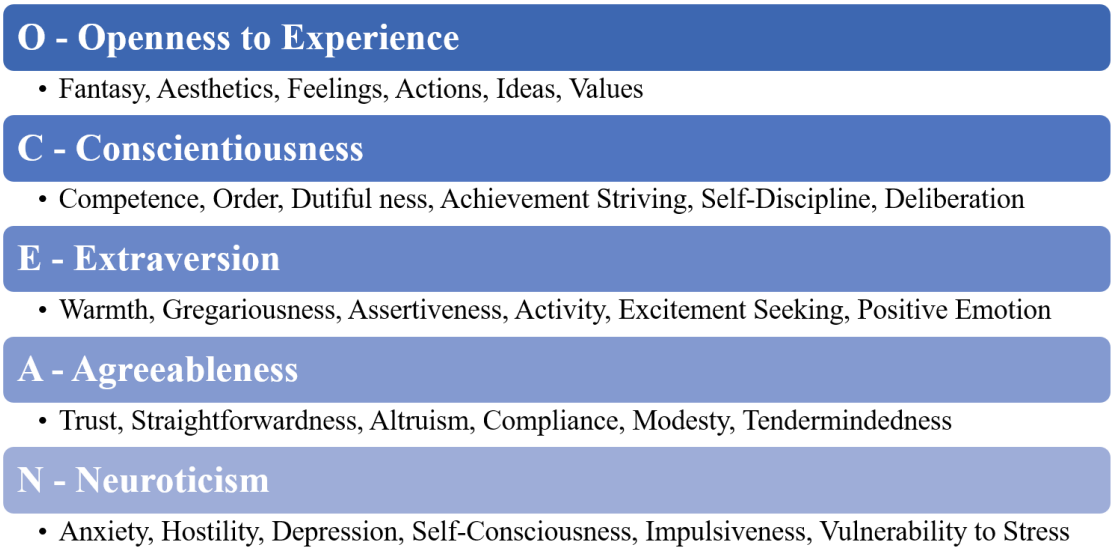

Figure 2 Big Five (Source: Paul T. Costa, Jr. and Robert R. McCrae (1992), as cited in Novikova, 2013 pp. 1-2))

Using Dutch household data collected from two waves in 1996-1997, Nyhus and Webley (2001) analyzed to which extent personality influences saving and debt behavior. The researchers examined households with couples using the same approach as they used to analyze single households. Rather than taking just one household member or the couple's average personality scores, Nyhus and Webley (2001) examined households with couples independently of one another. In addition, Nyhus and Webley (2001) considered the savings and debt values at a given point in time and grouped the various assets prior to summing them up into six categories that they felt were psychologically alike. Nyhus and Webley (2001) concluded that conscientiousness had no meaningful impact on saving behavior. Further, they showed that both emotional stability and introversion positively affected savings behavior, thereby decreasing debt financing. However, emotional stability was the only significant variable in their model concerning household saving behavior. Conversely, the researchers observed that autonomy and agreeableness are negatively correlated with saving and more prone to household debt. Therefore, Nyhus and Webley (2001) concluded that distinct personality traits are reliable indicators of households' saving and borrowing behavior.

Brown and Taylor (2014) examined the relationship and influence between household finances and personality traits using data from the BHPS for their empirical analysis. To distinguish personality traits and reach more profound insights into the factors influencing household finances Brown and Taylor (2014) adopted the *Big Five* taxonomy (i.e., openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism). Similar to Nyhus and Webley (2001), their study analyzed two different samples, one consisting of households with couples and the other with singles (Brown & Taylor, 2014). In doing so, Brown and Taylor (2014) also found that household assets and debts could be explained to some extent by personality traits. Again, differences in results between couples and singles were found Brown and Taylor (2014) and, Nyhus and Webley (2001). One explanation given by Brown and Taylor (2014) for these differences is that the proportion of male household heads in their couples' sample was significantly higher, than the sample with singles. Unlike Nyhus and Webley (2001), they classified financial assets into the following five categories: national savings certificates, national savings, building society and insurance bonds; premium bonds; unit and investment trusts; personal equity plans; and shares. Nevertheless, Brown and Taylor (2014) concluded that apart from holding shares, there was no link between these different financial assets and personality traits. Moreover, their results revealed that extraversion

positively correlated with the amount of unsecured debt held. However, it correlates negatively with the accumulation of financial assets and savings among couples (Brown & Taylor, 2014). Whereas, openness to experience for both samples indicated the highest probability of having credit card debt. Overall, Brown and Taylor (2014) showed that personality traits such as extraversion and openness to experience have a reasonably significant impact on household finances regarding the amount of debt and assets held. Whereas those who are cautious and conscientious in handling their money incur less debt.

Donnelly et al. (2012) also addressed the *Big Five* personality traits where they examined the various links between money management, material values, and financial well-being using four different studies to answer their question. Echoing Brown and Taylor (2014), they found that conscientiousness has a positive effect on money management. In this regard, Donnelly et al. (2012) argued that people with positive conscientiousness exhibit better money management due to being more future-oriented and having a positive financial attitude. Additionally, increased savings, lower liabilities, and reduced compulsive buying are significantly associated with money management (Donnelly et al., 2012). Finally, in line with the conclusions of Nyhus and Webley (2001), neuroticism (emotional instability) showed a negative relationship with money management (Asebedo et al., 2019; Donnelly et al., 2012).

Drawing on data from the United States Health and Retirement Study of 1,380 adults aged 50 to 70 years from 2008 to 2012, Asebedo et al. (2019) examined the extent which personality traits influence savings behavior. In this context, Asebedo et al. (2019) established a relationship between personality traits and savings behavior to gain better insight into how the psychological composition of older individuals is related to their savings behavior. The results showed that saving behavior can be indirectly influenced by personality traits. Similar to Brown and Taylor (2014), Asebedo et al. (2019) also concluded that openness to experience weakens saving behavior. Besides, they also found a positive effect of conscientiousness on saving behavior despite its indirect influence. Conversely to Brown and Taylor (2014), Asebedo et al. (2019) noted that the personality trait extraversion positively influences saving behavior.

2.3.5 Well-being Variables

On a general note, a high level of personal well-being is one of the most desirable goals in life for almost all people (Frey & Stutzer, 2002). However, defining and understanding well-being is not as straightforward as it might appear. Over the past decade, the concept of well-being has received considerable attention in academia. In particular, psychologists, sociologists, and economists have made substantial contributions to research that have led to advances in the general understanding of its definition and measurement of well-being (Clark & Senik, 2011; Diener, 1984; Easterlin, 2001; Frey & Stutzer, 2002; Ryff, 1989; Ryff & Keyes, 1995).

Despite the different definitions, life satisfaction and happiness are found to be highly correlated and follow very similar patterns (Clark & Senik, 2011). Therefore, explaining why a majority of authors use the terms happiness, well-being, and life satisfaction synonymously in their studies (Easterlin, 2001; Frey & Stutzer, 2002; Guven, 2012; Martin & Hill, 2015; Senik, 2014). Overall, looking at the literature shows that there is neither a clear nor a definite consensus on the definition of well-being and that the notion as such is rather complex (Ryan & Deci, 2001; Samman, 2007).

In order to understand the relationship between subjective well-being and saving, it is necessary to outline the fundamental definition of well-being. A deeper investigation and assessment of well-being is beyond the scope of this thesis. Consequently, this chapter will merely provide a broad overview of the main aspects of well-being. Though, the emphasis is placed on SWB, which is the primary focus of this thesis.

2.3.5.1 Definition of Well-Being

There are two principal perspectives in research on well-being (Clark & Senik, 2011; Ryan & Deci, 2001; Samman, 2007):

- **Subjective well-being** (i.e., hedonic approach) focuses on an individual's overall level of well-being and measures it in terms of negative and positive emotions and quality of life.
- **Psychological well-being** (i.e., eudaimonic approach) looks at how well people function and focuses on self-realization and meaning.

Subjective Well-Being (SWB):

The underlying concept of SWB is crucial to understand the links between saving and life satisfaction. Although descriptions differ, SWB is defined according to Diener, Lucas, and Oishi (2002) "*...as a person's cognitive and affective evaluations of his or her life*" (p. 63). Consequently, SWB can be divided into cognitive well-being (CWB) and affective well-being (AWB) categories (Diener et al., 2002, 1999), which both are typically determined through self-assessments.

The *Satisfaction with Life Scale* is often used to measure the CWB (Diener, Emmons, Larsen, & Griffin, 1985). As a result, individuals are asked to evaluate their overall lives to determine life satisfaction (Diener et al., 1985). Life satisfaction refers to individuals' respective quality of life and contentment with their work, relationships and family, health, finances, and other relevant factors (Diener et al., 1999). Affect encompasses personal perceptions and experiences of positive and negative moods, respectively emotions (Diener et al., 2002; Diener, Sapyta, & Suh, 1998; Diener et al., 1999). Thereby, the positive and negative affect are assessed with the *Scale of Positive and Negative Experiences* (Diener et al., 2010). A positive or pleasant affect refers to an individual's emotional state characterized by joy, elation, affection, and happiness (Diener et al., 1999, 2010; Headey & Wooden, 2004) An individual's predisposition to have an emotional state defined by sadness, anxiety, worry, depression, stress, or anger refers to negative or unpleasant affect (Diener et al., 1999; Headey & Wooden, 2004; Rucker & Petty, 2004).

Psychological well-being (PWB):

The eudaimonic perspective assumes that not all needs and outcomes that a person values will necessarily lead to overall well-being when met (Ryan & Deci, 2001). Thereby PWB looks at well-being regarding how well people function and focuses on personal growth, self-realization, and meaning (Clark & Senik, 2011; Ryan & Deci, 2001).

For assessing PWB, the *Scales of Psychological Well-being* (SPWB), which is a six-dimension model comprising of self-acceptance, positive relationships with others, autonomy, environmental mastery, purpose in life, and personal growth, has proven itself as a governing concept (Ryff, 1989, p. 1072; Ryff & Keyes, 1995). Another concept for assessing PWB is the so-called *Flourishing Scale* (FS) (Diener et al., 2010). The FS is composed of eight items that, similar to the SPWB, define essential aspects of the respondent's self-perceived success in critical areas, including social relationships, self-

esteem, meaning and purpose in life, and optimism (Diener et al., 2010; Ed Diener, n.d. "Flourishing Scale (FS)").

Figure 3 provides a holistic and basic overview of the different concepts of well-being described above:

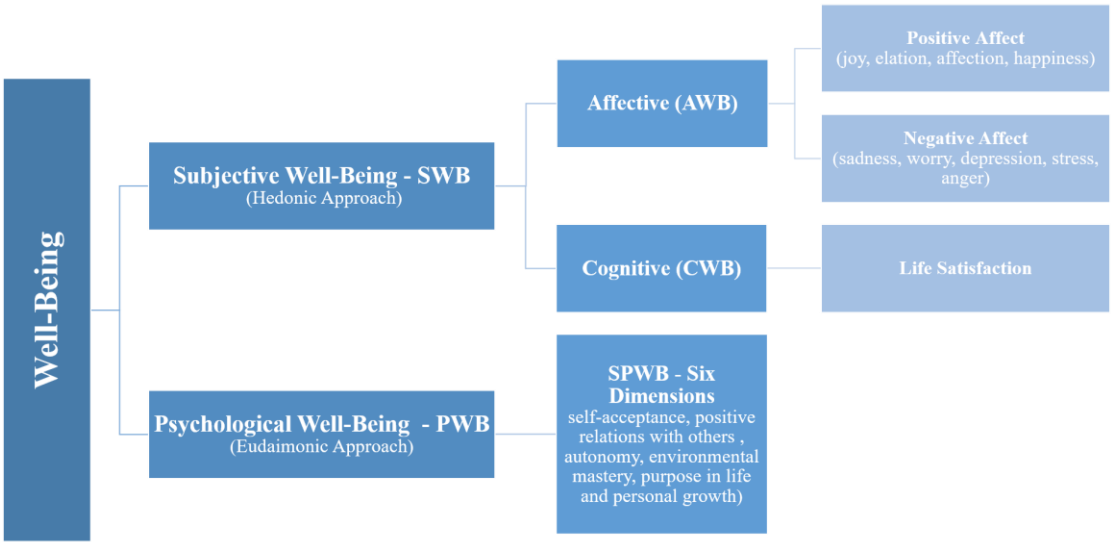

Figure 3 Holistic overview of well-being

2.3.5.2 Well-being

Research on SWB has found that happiness has an impact on consumption and savings behavior (Guven, 2012; Mogilner, Aaker, & Kamvar, 2012).

Lyubomirsky, King, and Diener (2005) for example, indicated that happier people with positive emotions, so-called affect, tend to perform better at work, earn higher wages, have more stable health, higher willpower and self-control, and a stronger sense of self-efficacy than less happy individuals. Based on these findings, it can be concluded that positive emotions enable individuals to achieve greater financial success by making them resistant to excessive spending, which encourages saving.

Neukam and Hershey (2003) found evidence supporting this view. They examined a sample in the United States using self-assessments for two different studies to capture and assess the respective motives for retirement saving. To this end, they analyzed the differences between fear-based and goal-based planning motives concerning retirement savings. Accordingly, Neukam and Hershey (2003) showed that the saving behavior of individuals with strong financial goals depends on the extent of their financial fear,

indicating that higher levels of fear inhibit positive saving behavior. On the other hand, individuals with strong financial goals and low levels of fear had the highest savings. Moreover, Neukam and Hershey (2003) found a link between a high planning drive and low savings behavior during times with more financial worries. However, financial fear and worry did not affect the pre-retiree's savings when low planning drive and low financial goal (motivational factors) were absent. Thereby, Neukam and Hershey (2003) concluded that those worried and fearful about their financial future are more likely to have difficulties saving for it. Consequently, negative emotions influence saving behavior (Neukam & Hershey, 2003).

In contrast, Nenkov, MacInnis, and Morrin (2009) examined how emotions such as hope and hopelessness affect retirement planning. Their results show that when individuals' strong hopefulness on the probability of achieving a secure retirement is confronted with a threat, they are more committed to taking action to achieve that goal. Conversely, a threat to their strong hope or wish to achieve a secure retirement causes them to seek more information and take greater risks to maintain their goals (Nenkov et al., 2009).

Although Cryder et al. (2008) did not examine savings, they observed that emotions such as sadness impact individuals' purchase decisions. To determine the participants' sadness, they used an average score composed of the respective questions about feeling blue, sad, and depressed. The questions were asked to the participants after completing a purchase task in the study. From this, Cryder et al. (2008) concluded that sad people show higher purchasing behavior. Hence, indicating that people save less when feeling sad.

The study conducted by Guven (2012) investigated whether self-reported well-being (life satisfaction and happiness) influences a person's consumption and savings behavior. For this purpose, Guven (2012) used two different data sources. One source used was the European Climate Assessment Dataset, from which data on sunlight was extracted. The second source used was data from the DHS with a panel of 4500 individuals (Guven, 2012). The study considered the unforeseen daily change of sunshine as a measure of happiness. Using the information of the DHS along with weather data, Guven (2012) calculates the amount of sunshine experienced on a given day. Thereby happiness is used as a function of weather conditions over the past ten days. The DHS captures happiness with the following question: "All in all, to what extent do you consider yourself a happy person?". The responses resulting from this question were then recoded

in categorical variables with scores ranging from 1 - 5, where the order is respectively "very unhappy", "unhappy", "neither happy nor unhappy", "happy", and "very happy" (Guven, 2012, p. 704). The dependent variables used in this study are savings and consumption behavior, which are reported either as binary variables, such as whether or not the person saved money in the previous two weeks or as continuous variables, such as the amount of money spent in a month (Guven, 2012).

Based on the findings of the conducted research, Guven (2012) found that unexpected changes in sunshine positively influence people's happiness. Besides, the study showed that happier people manage their consumption with greater control and discipline while taking more time for making decisions. Additionally, he showed that happiness has a positive effect on individuals saving behavior. Moreover, Guven (2012) observed that happier people consider the future over the present and tend to be more optimistic about their personal and economic prospects. Consequently, showing that happier people are more likely to save (Guven, 2012).

While Guven (2012) analyzed how well-being affected consumption and saving behavior, Martin and Hill (2015) are more concerned with the opposite effect. They investigated the impact of personal saving behavior, financial satisfaction, and household poverty on well-being. Therefore, to examine this relationship, they took a global sample of individual households from 38 different countries across all poverty and development levels (Martin & Hill, 2015). The authors used respondents' subjective assessments about their overall happiness and life satisfaction as a means to measure well-being. The participants reported their level of happiness according to a 4-point scale, whereas a 10-point scale measured life satisfaction. Martin and Hill (2015) combined the two questions into one score to measure well-being. To determine the savings, they created a binary question regarding whether a household saved or not saved money over the year. In doing so, Martin and Hill (2015) concluded that increasing social poverty decreases well-being. Moreover, they found that, especially in a high-poverty society, savings greatly improves well-being. However, this result becomes statistically insignificant for low-poverty and very low poverty households (Martin & Hill, 2015).

3 Empirical Analysis

This chapter describes the data basis of the empirical analysis and its methodology. First, the data source is presented, and the data collection process is outlined. Then, the variables used for the empirical analysis are presented. On this basis, the characteristics of the final sample are shown. Finally, the methodology of the empirical analysis is explained in detail.

3.1 Data

The paper is based on the SHP, a longitudinal study in which all household members of a random sample of private households in Switzerland are interviewed. The panel was first conducted in 1999, and the data collection is done on an annual basis. The data used for this research was derived from the wave 2018 of the SHP, which consists of 6,030 households comprising 13,752 individuals. The data collected by the SHP is characterized by its ability to examine both the psychological and economic aspects of household financial behavior. Furthermore, the SHP aims, on the one hand, to observe social changes and, on the other hand, changes in the living conditions of the Swiss population (Tillmann et al., 2016). In this research, the following two questionnaire types from the SHP are used:

- First, the *Individual Questionnaire*, in which each household member is asked individually about their characteristics and details, for example, age, gender, language, civil status, education, working status, income, savings, and questions to their well-being.
- Second, the *Household Questionnaire*, which contains general information about the household and is answered by only one household member. For example, in this questionnaire, questions were asked such as household constellation, number of children in the household, housing, and household tasks.

3.2 Variables

For this thesis, only the demographic, geographic, and well-being variables listed in this chapter are considered for answering the RQ. Therefore, the variables used in this thesis are all responses from the individual questionnaire, except for the question about

the number of children in the household, which is taken from the household questionnaire. In the following sections, the used variables are described in detail in terms of how they were defined and how they were prepared for the empirical analysis. At the end of the section, there is a summary table of all variables used.

3.2.1 Savings

In this survey, the dependent variable saving is defined as the self-reported saving amount of the different individuals in the household. In the SHP, the participants were asked the following question. "*On average, how much money can you put aside per reference period, including third pillar savings?*". The participants had the following choice of reference periods: per month, per year, or a one-off payment.

In the empirical analysis, the savings amount is defined for a reference period per month. Therefore, the saving amounts provided for a reference period of one year were divided by 12. This thesis focuses on continuous saving and does not include participants who chose the one-off payment as the reference period in the SHP.

3.2.2 Demographic Variables

For the empirical analysis, the demographic variables considered were *age* in the year of the survey, *gender*, *civil status*, *number of children* in the household, *education*, *income* per month, and *working status*.

The minimum *age* of the sample data is 16, as only individuals, 16 years of age or older answered the questionnaire about the amount of their savings. The variable *gender* was included in the empirical analysis as a dummy variable, using men as the reference category. *Civil status* is a constructed variable in the SHP, and participants were divided into seven categories based on the information they provided. In the SHP, the categories single (never married), married, separated, divorced, widowed, registered partnership, and dissolved partnership were considered. The dummy variable single was chosen as the reference category in the empirical analysis for the civil status. The data for the *number of children* in the household are taken from the household questionnaire. Children were defined as persons between 0 and 17 years of old.

In order to determine the participants' *education*, the constructed answers from the SHP on their highest level of education achieved were used. This question includes the in table 1 listed 16 answer options. For the empirical model, only the educational

levels of compulsory education, upper-secondary level, and tertiary level were considered. Therefore, the answer options were grouped into the three levels of education based on the Swiss educational level (Figure 4). The reference category used in the empirical analysis for the educational level was: upper-secondary level.

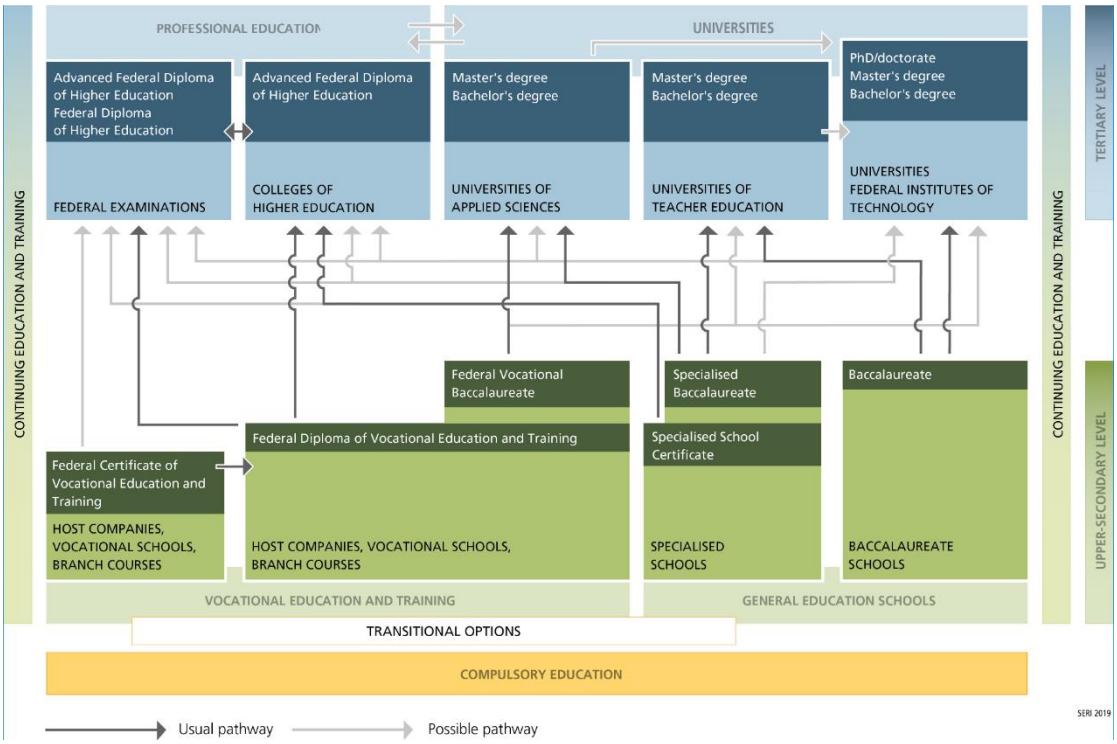

Figure 4 Swiss education system (Schweizerische Eidgenossenschaft, 2019)

The mapping of the response options for the empirical analyses can be seen in table 1:

Table 1 Educational levels

Compulsory education	Upper-secondary level	Tertiary level
Incomplete compulsory school	General training school	Vocational high school with master certificate, federal certificate
Compulsory school	Apprenticeship (CFC, EFZ)	Technical or vocational school
Elementary vocational training	Full-time vocational school	Vocational high school ETS, HTL etc.
Domestic science course, 1 year school of commerce	Vocational maturity	University of teacher education HEP, PH
	Teacher training college	University of applied sciences HES, FH
	Bachelor/maturity (high school)	University, academic high school, EPF, ETH
		PhD

For the variable *income*, the constructed yearly total personal gross income of the SHP was used. Since savings have been considered per month in the empirical analysis, income is also considered per month. For this reason, the data from the SHP were divided by 12. *Working status* was recorded by the following three possible categories: active occupied, unemployed, and not in the labor force in the SHP. The dummy variable active occupied was used as the reference category for the empirical analysis.

3.2.3 Geographic Variables

The geographical variable considered in the empirical analysis was language. The language of the participants was determined based on the questionnaire language chosen by the respondents. A selection could be made between the following languages: French, German, and Italian. German was used as the reference category for the empirical analysis.

3.2.4 Well-being Variables

In order to define what role well-being plays as a driver of savings in Swiss households, various variables can be used to represent well-being according to the literature. Based on the available data from the SHP, this thesis analyzed the SWB as defined by Diener et al. (Diener et al., 1999) and thus does not consider PWB. Consequently, for the CWB the variable *satisfaction with life in general* was used from the SHP, and for the AWB the variables *joy*, *anger*, *sadness*, *worry*, *perceived stress*, and *depression*.

To determine the *satisfaction with life*, the participants were asked about their satisfaction. The answers could be given on a rating scale from 0 to 10, where 0 means “not at all satisfied” and 10 means “completely satisfied”. For the other variables, the participants were asked how often they normally experience the described feeling. Except for the variable perceived stress, the rating was from 0 to 10, where 0 means “never” and 10 means “always”. The variable perceived stress was rated from 0 to 4, where 0 means “never” and 4 means “very often”. The exact questions asked to the participants regarding the variables can be seen in table 2.

Table 2 Variables and measurement methods

Variable	Measurement method
Savings	Self-reported saving amount of the individuals in the household per month
Age	Age in year of interview
Gender	Dummy variables: Male, Female Reference category: Male
Civil status	Dummy variables: single (never married), married, separated, divorced, widowed, registered partnership, dissolved partnership Reference category: single (never married)
Number of children	Number of children in household (0 to 17 years)
Education	Dummy variables: Compulsory education, Upper-secondary level, Tertiary level Reference category: Upper-secondary level
Income	Yearly total personal gross income per month
Working status	Dummy variables: active occupied, unemployed, not in the labor force Reference category: active occupied
Language	Dummy variables: French, German, Italian Reference category: German
Satisfaction with life	Question: In general, how satisfied are you with your life if 0 means “not at all satisfied” and 10 means “completely satisfied”?
Joy	Question: How frequently do you generally experience joy, if 0 means “never” and 10 “always”?
Anger	Question: How frequently do you generally experience anger, if 0 means "never" and 10 “always”?
Sadness	Question: How frequently do you generally experience sadness, if 0 means "never" and 10 “always”?
Worry	Question: How frequently do you generally experience worry, if 0 means "never" and 10 “always”?
Perceived stress	Question: How often have you felt stressed during the last month? Answer possibilities: Never, almost never, sometimes, fairly often, very often
Depression	Question: Do you often have negative feelings such as having the blues, being desperate, suffering from anxiety or depression, if 0 means “never” and 10 “always”

3.3 Sample Characteristics

In the following two tables, the used sample characteristics for the discrete variables and the categorical variables are presented. For the empirical analysis, 4,512 participants could be considered.

The average age of the sample is 41, and the age ranges from 16 to 59. The reason for limiting the maximum age to 59 years is explained in the following section methodology. Income has a very large distribution, as can be seen from the standard deviation. Furthermore, the minimum and maximum are very far apart, with most values closer to the minimum. The variables of happiness, anger, sadness, worry, perceived stress, and depression show similar results, which is consistent with the literature that

these variables are all measures of AWB. In this comparison, it was considered that the variable perceived stress does not have the same rating scale.

Table 3 Sample characteristics; discrete variables

	Age	Number of children	Income	Satisfaction with life	Joy	Anger	Sadness	Worry	Perceived Stress	Depression
Minimum	16	0	8.33	0	0	0	0	0	0	0
Maximum	59	8	101,666.67	10	10	10	10	10	4	10
Mean	41.41	0.68	6,762.57	7.96	7.49	4.12	3.45	3.22	1.95	2.16
Median	43	0	5,966.67	8	8	4	3	3	2	2
Standard deviation	11.84	1.00	5,397.10	1.28	1.16	1.84	1.82	2.18	1.03	2.00

For categorical variables, the distribution is shown in absolute numbers and as a percentage of the total sample (Table 4). From this it can be seen that the sample used includes roughly the same number of women as men. The proportion of Italian speakers is underrepresented compared to French and German speakers. The civil status shows that most of them are single or married. Since only one person has a dissolved partnership, these results cannot be considered representative. The highest level of education completed is about the same for upper secondary and tertiary education. The working status shows that the majority of people are employed. The group of people who are not in labor force is underrepresented, as only people between the ages of 16 and 59 were considered in the sample.

Table 4 Sample characteristics; categorical variables

	Gender	Language	Civil Status	Education	Working Status
Female	2,181 (48.34 %)				
Male	2,331 (51.66 %)				
French		1,206 (26.73 %)			
German		3,118 (69.10 %)			
Italian		188 (4.17 %)			
Single			1,737 (38.50 %)		
Married			2,217 (49.14 %)		
Separated			94 (2.08 %)		
Divorced			417 (9.24 %)		
Widowed			26 (0.58 %)		
Registered Partnership			20 (0.44 %)		
Dissolved Partnership			1 (0.02 %)		
Compulsory Education				374 (8.29 %)	
Upper-secondary level				1,975 (43.77 %)	
Tertiary Level				2,163 (47.94 %)	
Employed					4,140 (91.76 %)
Unemployed					89 (1.97 %)
Not in labor force					283 (6.27 %)

3.4 Methodology

In order to answer the RQ: "*What are the drivers of savings in Swiss households and which role does well-being play*?" two different regression analyses were applied.

Both analyses were used to find the significant variables that influence saving behavior. However, the methods are based on different principles and have different advantages and disadvantages to answer the question.

With both analyses, the same independent variables were used, whereby in each analysis, seven different models were examined. The models differ in that a different well-being variable was considered in each case. In a regression analysis, each independent variable must be truly independent of the other to prevent multicollinearity between the variables. However, this is not fully given for the measured well-being variables because some measurements are the opposite of the others, and therefore depend on each other. In order to prevent multicollinearity, only one well-being variable was used in each of the other models.

In order to conduct a regression analysis, the linearity of the model needs to be given. Therefore, the functional form of the model needs to be correct. However, this is not the case for the independent variable age, as shown in the following figure 5, and can also be theoretically justified by the life cycle hypothesis.

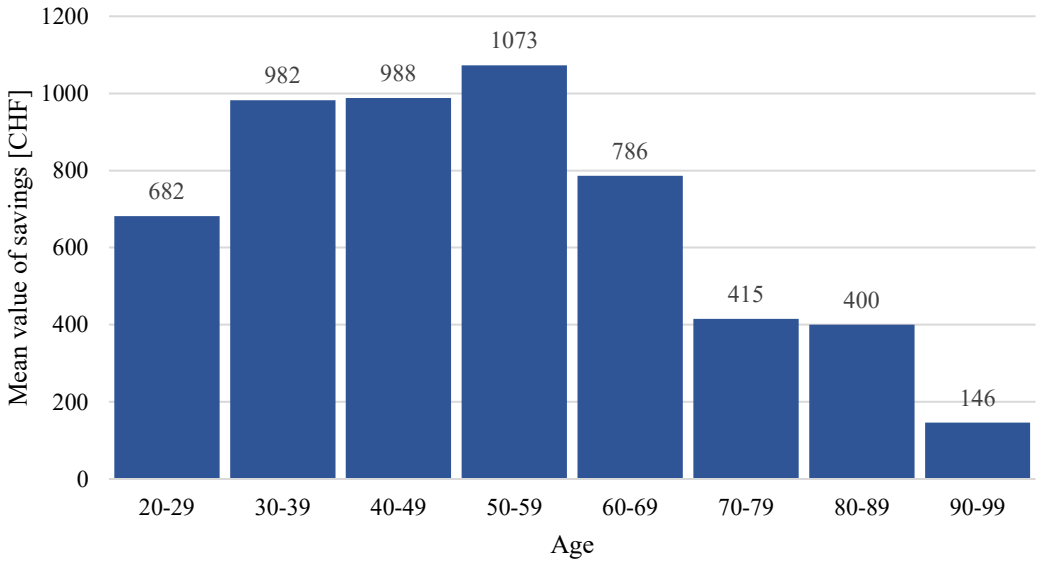

Figure 5 Mean values of savings for the different age groups

Figure 5 shows the mean values of savings for the different age groups defined for ten years. Similar to Brounen et al. (2016), it can be seen that after the age of 60, the mean value drops sharply since retirement significantly reduces savings. Overall, there is a consensus that there is a decrease in savings around retirement age (Ando & Modigliani, 1963; Brounen et al., 2016; Demery & Duck, 2006; Yuh & Hanna, 2010). Due to this drop age cannot be represented by a linear function (Brounen et al., 2016). For this reason, persons with age above 60 years are not considered. For the other independent variables, linearity can be assumed, although there are also large residuals in some cases. However, this is normal for wealth data.

As a first method, a linear regression was applied. The denotation for the regression is the following:

$$S_i = \beta_i x_i + \beta_0 + \varepsilon_i$$

The variables are named as follows:

S_i: Dependent variable (Savings)

β_i: Regression coefficient

x_i: Independent variable

β_0: Constant intercept term

ε_i: Error term

This method has the advantage of being widely used, and therefore the results can be compared and replicated. In addition, the financial data was not adjusted, and therefore the regression coefficients can be easily interpreted. A disadvantage is that outliers strongly influence this method, and thus the findings are distorted. For this reason, the outliers were indicated with the Cook's distance, and each data point was checked according to logical criteria to see if the data correspond to reality (Cook & Weisberg, 1982). This observation has shown that certain individuals have indicated in the questionnaire that their annual savings exceed their income. This is not possible from an economic point of view, and therefore such values were excluded. Of course, with the Cook's distance, more outliers were indicated. However, these were not excluded. Otherwise, only the data would be adjusted to the given model, and thus the results would be falsified (Newbold, Carlson, & Thorne, 2013).

In the second method, a quantile regression analysis has been applied. This analysis does estimate the conditional median of the response variable, whereas the linear regression estimates the conditional mean of the response variable across values of the predictor variables. The advantage of the quantile regression analysis relative to the linear regression analysis is that the estimates are more robust against outliers. Therefore, the outliers need not be treated (Koenker, 2013).

In addition, in the second method, the problem with wealth data that is not normally distributed is treated using a hyperbolic sine transformation (Friedline, Masa, & Chowa, 2015). The above-stated problem can be seen in figure 6 and 7, where a histogram of the savings is presented.

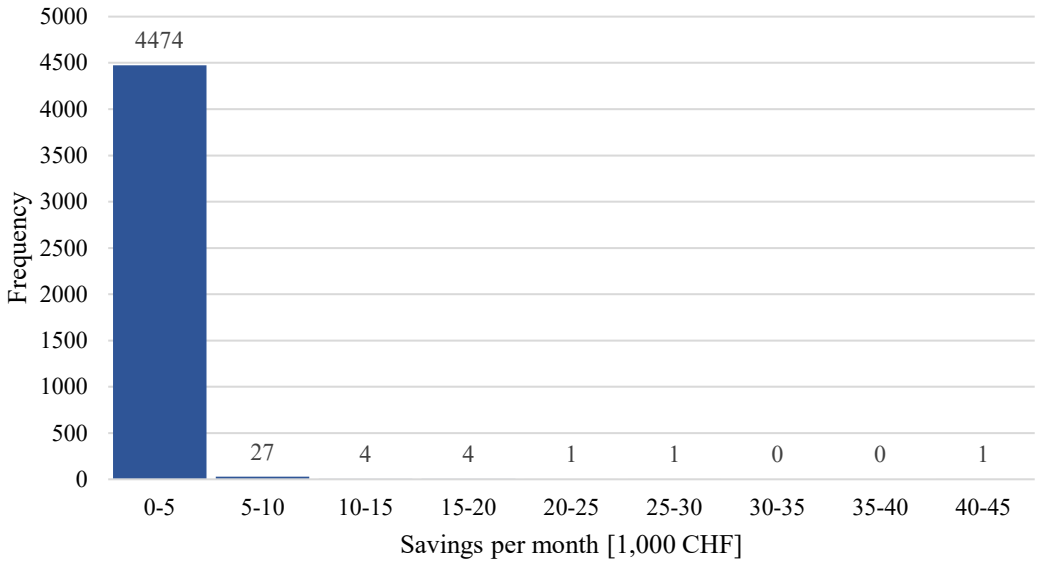

Figure 6 Histogram of savings per month

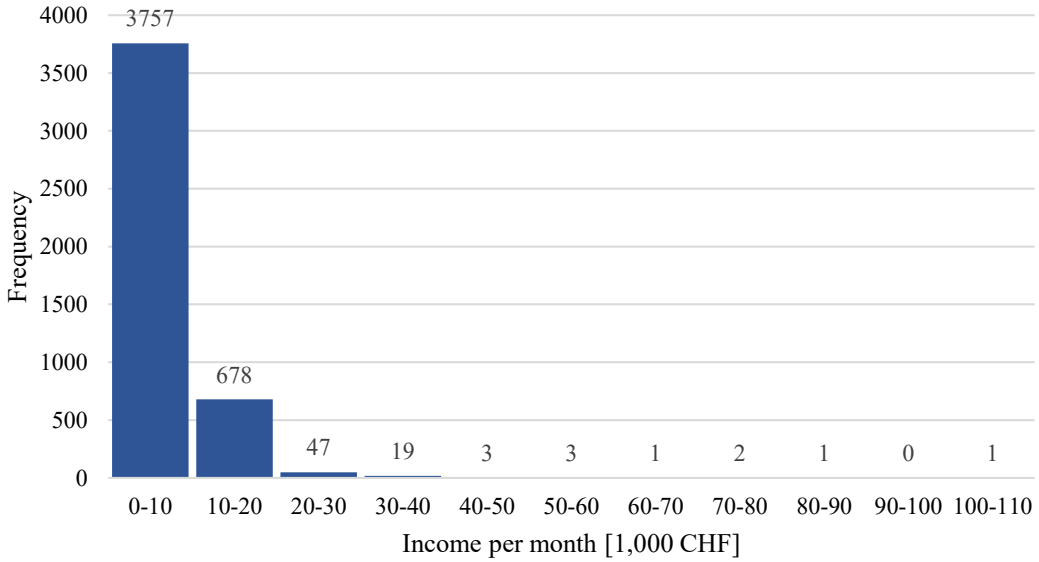

Figure 7 Histogram of income per month

In figure 6, it can be seen that many people are saving less, and just a few people are saving a lot. This leads to a distribution with a very long tail. In order to solve this problem, a hyperbolic sine transformation for the wealth data savings and income is used. The form for the hyperbolic sine transformation is:

$$\log\left(W_i + (W_i^2 + 1)^{\frac{1}{2}}\right)$$

The variables are named as follows:

W_i: Wealth data (Savings, Income)

log: natural logarithm

In figure 8 and 9, the histogram of the transformed wealth data is presented. It can be seen that the data is normal distributed.

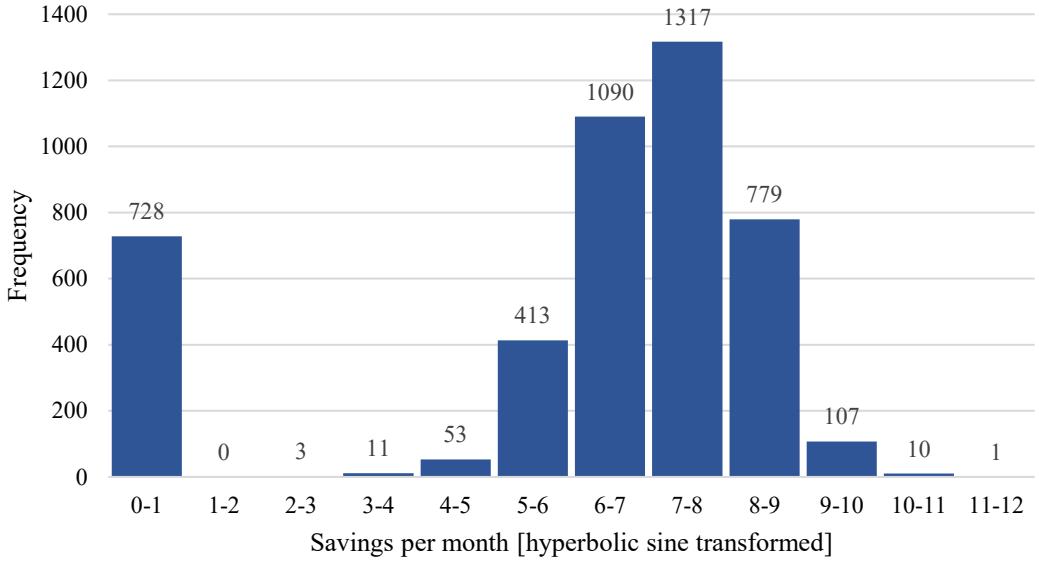

Figure 8 Histogram of savings per month with hyperbolic sine transformation

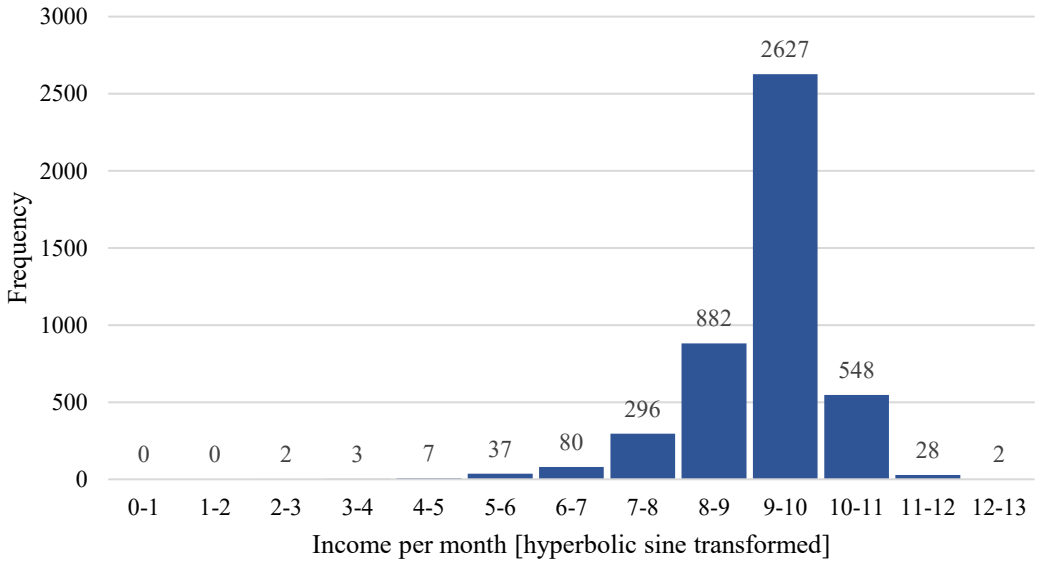

Figure 9 Histogram of income per month with hyperbolic sine transformation

As an advantage compared to the simpler log transformation, the zero-wealth data is not lost due to the fact that the hyperbolic sine transformation is defined. A disadvantage of this transformation is that the regression coefficients can no longer be easily interpreted since they have been transformed.

Therefore, the denotation for the quantile regression is the following:

$$log\left(S_i + (S_i^2 + 1)^{\frac{1}{2}}\right)_i = \beta_i x_i + \beta_0 + \varepsilon_i$$

The variables are named as follows:

$log\left(S_i + (S_i^2 + 1)^{\frac{1}{2}}\right)_i$:	Transformed dependent variable (Savings)
β_i:	Regression coefficient
x_i:	Independent variable
β_0:	Constant intercept term
ε_i:	Error term

4 Empirical Results and Discussion

In the following two sections, the results of the two regression analyses conducted are listed and discussed. As mentioned in the previous chapter, both regression analyses serve to find the significant variables influencing savings and consequently to answer the RQ: "*What are the drivers of savings in Swiss households and which role does well-being play?*"

In each analysis, the results of seven different models are presented. The models differ only by a single well-being factor, making it possible to identify the different effects that stem from the various well-being factors.

4.1 Linear Regression

Table 5 below shows the results of the linear regression. Since the hyperbolic sine transformation was not applied to the wealth data savings and income in this analysis, the regression coefficients can be interpreted directly. This means that an increase or a decrease in savings per month per unit of the independent variable can be interpreted straightforwardly. For example, all models show that an increase of income of 1 CHF leads to an increase in savings per month by 0.18 CHF.

Table 5 Linear regression

	Linear Regression						
	Dependent variable:						
	Savings						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Demographic:							
Age	-9.772***	-10.324***	-10.269***	-9.846***	-9.919***	-10.376***	-10.103***
	(1.896)	(1.899)	(1.898)	(1.899)	(1.896)	(1.904)	(1.895)
Female	199.180***	208.190***	206.923***	218.832***	218.807***	209.586***	217.558***
	(35.688)	(35.775)	(35.687)	(35.889)	(35.829)	(35.951)	(35.880)
Married	-7.370	10.255	8.968	6.316	10.831	8.792	5.041
	(48.770)	(48.725)	(48.656)	(48.619)	(48.602)	(48.655)	(48.640)
Separated	-462.536***	-511.357***	-509.835***	-490.861***	-497.395***	-507.918***	-498.094***
	(122.935)	(122.534)	(122.502)	(122.556)	(122.409)	(122.528)	(122.477)
Divorced	-345.842***	-349.110***	-349.440***	-349.238***	-347.194***	-348.218***	-346.432***
	(70.067)	(70.174)	(70.173)	(70.107)	(70.093)	(70.199)	(70.126)
Widowed	-556.069**	-572.748**	-568.798**	-532.102**	-539.782**	-572.868**	-557.347**
	(223.751)	(224.216)	(224.083)	(224.234)	(223.994)	(224.171)	(223.947)
Registered partnership	-182.326	-159.283	-160.430	-177.072	-170.222	-165.070	-172.665
	(252.664)	(253.008)	(253.026)	(252.830)	(252.719)	(253.099)	(252.842)
Dissolved partnership	-860.594	-853.475	-856.739	-901.512	-879.601	-865.517	-885.682
	(1,113.998)	(1,115.762)	(1,115.773)	(1,114.843)	(1,114.475)	(1,115.818)	(1,114.945)
Number of children	-76.441***	-75.363***	-75.470***	-77.111***	-74.720***	-75.326***	-76.741***
	(18.927)	(18.955)	(18.975)	(18.946)	(18.934)	(18.955)	(18.946)
Compulsory education	72.238	70.297	71.120	86.660	80.750	71.545	84.436
	(63.350)	(63.481)	(63.567)	(63.614)	(63.442)	(63.449)	(63.592)
Tertiary level	13.853	13.525	14.654	10.283	7.323	15.872	14.168
	(36.541)	(36.661)	(36.634)	(36.595)	(36.624)	(36.659)	(36.571)
Income	0.183***	0.184***	0.184***	0.183***	0.183***	0.184***	0.183***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Unemployed	8.232	-43.984	-41.365	-28.850	-22.040	-42.823	-24.094
	(120.799)	(120.394)	(120.278)	(120.244)	(120.282)	(120.298)	(120.358)
Not in labor force	88.870	63.944	66.135	69.580	76.336	65.445	80.861
	(71.011)	(71.003)	(70.871)	(70.813)	(70.854)	(70.874)	(71.029)
Geographic:							
French	-241.299***	-249.768***	-249.830***	-229.468***	-182.082***	-247.472***	-239.550***
	(38.257)	(38.250)	(38.252)	(38.860)	(43.489)	(38.449)	(38.416)
Italian	-126.299	-132.789	-132.966	-105.100	-86.464	-130.220	-112.759
	(83.973)	(84.087)	(84.113)	(84.559)	(85.187)	(84.200)	(84.362)

Table 5 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Well-being:							
Satisfaction with life	50.861***						
	(13.437)						
Joy		-7.114					
		(14.443)					
Anger			0.400				
			(9.093)				
Sadness				-27.672***			
				(9.570)			
Worry					-28.996***		
					(8.890)		
Perceived stress						-10.042	
						(16.567)	
Depression							-22.961***
							(8.621)
Constant	-269.932**	196.950	140.575*	212.443***	198.968***	162.657**	179.631**
	(130.814)	(133.049)	(80.083)	(76.583)	(74.660)	(80.230)	(73.979)
Observations	4,512	4,512	4,512	4,512	4,512	4,512	4,512
R^2	0.417	0.415	0.415	0.416	0.416	0.415	0.416
Adjusted R^2	0.414	0.413	0.413	0.414	0.414	0.413	0.414
Residual Std. Error (df = 4494)	1,112.846	1,114.588	1,114.618	1,113.583	1,113.301	1,114.573	1,113.740
F Statistic (df = 17; 449)	188.847***	187.431***	187.407***	188.247***	188.476***	187.443***	188.120***
Note:							*p<0.1; **p<0.05; ***p<0.01

The results from the linear regression show that the variables: *age*, *gender*, *French*, *separated*, *divorced*, *widowed*, *number of children*, *income*, *satisfaction with life*, *sadness*, *worry*, and *depression* have a significant impact on savings. On the other hand, the model shows that the variables: *Italian*, *married*, *registered partnership*, *dissolved partnership*, *compulsory education*, *tertiary level*, *unemployed*, *not in labor force*, *joy*, *anger*, and *perceived stress* are insignificant for the used model to explain the saving behavior.

Since a quantile regression was also performed, which has some advantages over the linear regression, as mentioned in section 3.4, the significant variables are discussed in more detail in the next section.

4.1.1 Well-being Variables

Looking at the different well-being variables, the variable *satisfaction with life* has the greatest influence on the model. The regression coefficients of the different well-being variables can be compared directly with each other since all variables apart from the variable *perceived stress* have the same scale (0 to 10) (Table 2).

The variables *sadness*, *worry*, and *depression* have a similar negative influence on the model, which also confirms the holistic overview of well-being (Figure 3). Based on this classification, it can be shown that the CWB (satisfaction with life) does influence the savings around double as high as the AWB (sadness, worry, depression). Moreover, the AWB also affects savings by the same magnitude, confirming that these variables reflect the same thing and therefore should not be combined in one model.

4.2 Quantile Regression

Table 6 shows the results of the quantile regression. The respective descriptions and explanations of these results are given in the following three sections below.

Table 6 Quantile regression

	Quantile regression						
	Dependent variable:						
	Savings						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Demographic:							
Age	-0.010***	-0.013***	-0.013***	-0.010***	-0.012***	-0.013***	-0.013***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Female	0.138***	0.172***	0.170***	0.167***	0.174***	0.168***	0.198***
	(0.039)	(0.038)	(0.036)	(0.034)	(0.035)	(0.040)	(0.036)
Married	0.019	0.115***	0.094**	0.071*	0.118***	0.100**	0.096**
	(0.044)	(0.041)	(0.043)	(0.038)	(0.039)	(0.045)	(0.044)
Separated	-0.869***	-0.931***	-0.934***	-0.896***	-0.869***	-0.891***	-0.978***
	(0.258)	(0.257)	(0.273)	(0.258)	(0.297)	(0.261)	(0.217)
Divorced	-0.471***	-0.373***	-0.381***	-0.363***	-0.342***	-0.378***	-0.349***
	(0.070)	(0.061)	(0.056)	(0.058)	(0.058)	(0.065)	(0.061)
Widowed	-0.403***	-0.407***	-0.508***	-0.400***	-0.561***	-0.523**	-0.442***
	(0.116)	(0.093)	(0.052)	(0.093)	(0.118)	(0.210)	(0.162)
Registered partnership	-0.140	-0.076	-0.067	-0.089	0.036	0.016	-0.058
	(0.212)	(0.189)	(0.174)	(0.148)	(0.147)	(0.323)	(0.219)
Number of children	-0.092***	-0.089***	-0.081***	-0.090***	-0.096***	-0.086***	-0.093***
	(0.019)	(0.017)	(0.017)	(0.016)	(0.016)	(0.020)	(0.019)
Compulsory education	-0.096	-0.061	-0.050	-0.045	-0.040	-0.053	-0.023
	(0.098)	(0.086)	(0.099)	(0.086)	(0.109)	(0.097)	(0.106)
Tertiary level	0.078**	0.103***	0.106***	0.078**	0.091**	0.109***	0.097***
	(0.039)	(0.039)	(0.037)	(0.038)	(0.039)	(0.040)	(0.034)
Income	1.148***	1.176***	1.183***	1.150***	1.156***	1.179***	1.169***
	(0.022)	(0.032)	(0.031)	(0.031)	(0.026)	(0.034)	(0.024)
Unemployed	-0.848	-1.199	-1.247	-1.006	-1.078	-1.202	-0.953
	(0.803)	(1.061)	(1.027)	(1.017)	(1.129)	(0.998)	(1.002)
Not in labor force	-1.171**	-1.021*	-1.051**	-1.095**	-1.074**	-1.077**	-1.035*
	(0.494)	(0.543)	(0.530)	(0.531)	(0.514)	(0.513)	(0.532)
Geographic:							
French	-0.332***	-0.379***	-0.386***	-0.313***	-0.268***	-0.377***	-0.341***
	(0.045)	(0.044)	(0.045)	(0.039)	(0.041)	(0.044)	(0.044)
Italian	-0.351***	-0.433***	-0.399***	-0.353***	-0.316***	-0.436***	-0.321***
	(0.117)	(0.126)	(0.141)	(0.126)	(0.105)	(0.120)	(0.100)

Table 6 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Well-being:							
Satisfaction with life	0.170*** (0.017)						
Joy		0.040** (0.016)					
Anger			-0.020** (0.009)				
Sadness				-0.065*** (0.010)			
Worry					-0.051*** (0.010)		
Perceived stress						-0.037** (0.017)	
Depression							-0.070*** (0.009)
Constant	-7.346*** (0.297)	-6.583*** (0.397)	-6.290*** (0.368)	-5.856*** (0.361)	-5.960*** (0.307)	-6.236*** (0.403)	-6.087*** (0.279)
Observations	4,512	4,512	4,512	4,512	4,512	4,512	4,512

Note: *p<0.1; **p<0.05; ***p<0.01

4.2.1 Demographic Variables

Similar to Brounen et al. (2016), as illustrated in figure 5, there is a non-linear relationship between age and savings from age 60 onwards. Consequently, only respondents up to age 60 were considered for the applied analyses (see Section 3.4). When doing so, the linear and quantile regression both support Brounen et al.'s (2016) finding, indicating a significant negative relationship between savings and age.

Contrarily, Fernández-López et al. (2010) found that the probability of savings increases with age and peaks around mid-to-late 40s. Similarly, Yuh and Hanna (2010) and Demery and Duck (2006) concluded that savings are highest from age 50 to 59, followed by a pronounced decline. Interestingly, when income was excluded from the two used analyses, savings also increased with age (Appendix 7.1). The reasons for this will not be explored further in this thesis.

In line with Fisher (2010) and Fisher et al. (2015), it can be seen that saving behavior differs significantly between men and women. Across both analyses, women

showed to have significantly more savings than men. However, those findings are contrary to Fisher (2010), who found that women save less than men, particularly when they have low risk tolerance.

Concerning *civil status*, the linear and quantile regression analyses showed that separated, divorced, and widowed persons have lower savings than single persons. In comparison, individuals in registered partnerships did not appear to be significant in either of the analyses. Moreover, all models apart from the 1 and 4 show that married individuals generally save more than singles. Thus, supporting the findings of Browning and Lusardi (1996) as well as Yuh and Hanna (2010).

Consistent with previous studies, the *number of children* living in a household shows a significant negative effect on savings. Hence, the more children that live in a household, the lower the savings (Alessie & Lusardi, 1997; Curtis et al., 2015; Harris et al., 2002; Lee et al., 2000).

Although the findings on the impact of *education* on savings are somewhat divergent, the results in the quantile regression analysis indicate that individuals with tertiary levels of education are found to have higher savings than those with secondary levels of education. Consequently, it can be concluded that higher education leads to higher savings, as also observed by Lugauer et al. (2019), Furnham and Cheng (2019), and Kostakis (2012). However, no significance is found for individuals who have completed solely compulsory education to those who have attained upper-secondary education.

The influence of *income* on savings is significantly positive in the linear and quantile regression analysis. Thus, in line with previous studies (Fernández-López et al., 2010; Harris et al., 2002; Huggett & Ventura, 2000), it can be assumed that as income increases, the level of savings also increases accordingly.

Regarding *working status*, both analyses showed that unemployment is not significant. Consequently, it is impossible to support Alessie and Lusardi's (1997) and Kan and Lauri's (2010) findings that unemployment is generally associated with a lower likelihood of savings. However, it was noted in the quantile regression analysis that people who are not employed have significantly lower savings than those who are employed.

4.2.2 Geographic Variables

In accordance with previous research, this thesis examined cultural differences based on Switzerland's three main language groups: French, Italian, and German (Eugster et al., 2011; Guin, 2017). Consistent with Chen (2013) and Guin (2017), both linear and quantile regression show that French-speaking individuals save significantly less than German-speaking individuals. Furthermore, although only significant in the quantile regression, Italian-speaking individuals were found to save less than German-speaking individuals. Overall, the results confirm that individuals with a strong FTR language such as French and Italian tend to save less than individuals with a weak FTR like German (Chen, 2013; Sutter et al., 2015).

4.2.3 Well-being Variables

As already outlined in the results for the linear regression, the same conclusion can be drawn for the quantile regression. Similarly, the results show that the CWB (satisfaction with life) has the strongest influence on savings. Conversely, AWB (happiness, anger, sadness, worry, perceived stress, depression) has a smaller impact on savings, with all variables being of a similar magnitude. One reason for this is that the different AWB variables have a roughly similar effect, though measured through different variables. Nevertheless, in contrast to the linear regression, all SWB variables are significant in the quantile regression.

Cryder et al. (2008) concluded that sad people have higher purchasing behavior, indicating that people are less likely to save when they are sad. Consistent with the findings of Cryder et al. (2008), sadness exhibits a significant negative effect on savings. However, the results in this thesis further show that *anger*, *worry*, *perceived stress*, and *depression* likewise have a significant negative effect on savings.

Contrarily, the variables *joy* and *satisfaction with life* have a significant positive effect on savings. Accordingly, rising *joy* and *life satisfaction* both increase savings, supporting Guven's (2012) findings that happy people are more likely to save. Consequently, the linear and quantile regression results confirm both the statements of Guven (2012) and Cryder et al. (2008).

5 Conclusion

This section gives a concise overview of the main findings of the thesis based on the existing literature, discusses the limitations, and points out some directions for future research.

5.1 Summary Findings

This thesis analyzed what the different drivers of savings are and which role well-being plays. In doing so, this thesis verified that most of investigated drivers had a significant impact on savings. Only three drivers were found to be partially insignificant for which a more detailed elaboration is given in section 5.1.1.

Table 7 lists the various drivers of saving examined in this thesis based on whether they were significant or not:

Table 7 Overview of the significant and partially insignificant drivers

Significant drivers	Partially insignificant drivers
Age	Civil status
Gender	Education
Language	Working status
Household size	
Income	
Satisfaction with life	
Joy	
Anger	
Sadness	
Worry	
Perceived stress	
Depression	

5.1.1 Partially Insignificant Drivers

Civil status was divided into the following five dummy variables: single, married, separated, divorced, widowed, and registered partnerships. Single was thereby used as the reference category. It was found that separated, divorced, and widowed participants all save significantly less than single individuals, whereas registered partnerships were

insignificant. Moreover, the results showed that married individuals generally save more than singles. However, this was insignificant in the first and fourth model applied.

The variable *education* was measured using three different dummy variables: compulsory education, upper-secondary level education, and tertiary education. For the analysis, the upper-secondary level was used as the reference category. Whereby, compulsory education was insignificant according to the analysis performed in this thesis. However, individuals with a tertiary education were found to have significantly more savings than upper-secondary level.

For *working status*, three different dummy variables were used. Thus, on the one hand, employed, unemployed, and not in the labor force were examined, with employed representing the reference category. Again, the result was only partially significant. Unemployed did not show any significant results in this thesis. In contrast, persons not in the labor force saved significantly less than employed.

5.1.2 Well-being Variables

As illustrated in table 6, all well-being variables examined showed to have a significant influence on saving. Whereby the CWB (satisfaction with life) had the most significant influence. In contrast, AWB (happiness, anger, sadness, worry, perceived stress, depression), although significant, appeared to have less influence on saving. Overall, it can be concluded that well-being has a significant impact on savings and should be considered more often as a driver. Further, this thesis verifies that *satisfaction with life* is the most important driver out of all the investigated SWB variables and is a sufficient variable to be examined for future panels.

5.2 Limitations and Future Research

In this thesis, the different drivers for savings were presented and examined based on the existing literature. However, these variables are by no means exhaustive, and several other drivers not mentioned in this paper may also influence savings. Further, only data from the SHP during the 2018 wave were used for the empirical analysis. In light of the available data from the SHP, only the demographic, geographic, and well-being variables which were introduced in the literature review were considered for the empirical analysis. A particular emphasis in this thesis was placed on the well-being variables.

Based on the available data from the SHP, this thesis analyzed the SWB as defined by Diener et al. (1999), and thus did not consider PWB. The thesis examined self-reported measures of well-being, which is in line with existing research (see Cryder et al., 2008; Guven, 2012; Martin & Hill, 2015). However, some researchers may view these results and the reliability of self-reported subjective measurements critically, as it could be that people incorrectly report and value their actual behavior based on their mood swings (Guven, 2012). Despite researchers using different definitions and calculations for savings, they could not be applied to the data from the SHP. Therefore, the savings variable is exclusively based on self-reported values.

Regarding the sample data, only participants from the age of 16 to 60 were included for the empirical analysis. Moreover, participants were excluded from the sample when they reported having higher savings than their yearly total personal gross income or making a one-off payment. Additionally, savings and income were both analyzed with monthly values. Thus, for those respondents who stated their yearly savings and income, the amount was divided by 12 to get the monthly value.

In conclusion, well-being variables are shown to be significant drivers for savings. Although the different drivers of savings have been investigated extensively, little research is available on the different well-being variables and their influence on savings. Therefore, further research should be done to give a better insight into the different effects of well-being and savings.

6 List of References

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7 Appendices

7.1 Linear regression without income

Linear regression without income

	Dependent variable:						
	Savings						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Demographic:							
Age	12.183***	11.565***	11.569***	12.066***	11.952***	11.830***	11.660***
	(2.294)	(2.303)	(2.302)	(2.301)	(2.296)	(2.307)	(2.295)
Female	-408.735***	-402.077***	-399.340***	-378.715***	-374.668***	-408.478***	-374.913***
	(41.700)	(41.916)	(41.832)	(42.146)	(42.064)	(42.061)	(42.142)
Married	-55.232	-26.859	-24.473	-28.605	-20.836	-23.673	-32.176
	(60.660)	(60.738)	(60.649)	(60.570)	(60.508)	(60.633)	(60.555)
Separated	-382.100**	-468.776***	-470.200***	-441.267***	-449.561***	-478.948***	-448.337***
	(152.925)	(152.758)	(152.710)	(152.692)	(152.405)	(152.706)	(152.493)
Divorced	-235.954***	-242.469***	-242.163***	-241.774***	-238.345***	-246.762***	-236.282***
	(87.124)	(87.444)	(87.437)	(87.307)	(87.228)	(87.453)	(87.271)
Widowed	-257.864	-272.019	-280.452	-220.806	-228.469	-264.709	-257.761
	(278.257)	(279.428)	(279.252)	(279.273)	(278.782)	(279.280)	(278.739)
Registered partnership	-353.605	-316.100	-317.816	-339.874	-330.199	-296.197	-337.246
	(314.298)	(315.399)	(315.401)	(314.984)	(314.631)	(315.422)	(314.791)
Dissolved partnership	-290.471	-284.167	-280.059	-351.797	-322.437	-245.915	-339.357
	(1,385.800)	(1,390.938)	(1,390.863)	(1,388.956)	(1,387.544)	(1,390.568)	(1,388.169)
Number of children	-27.452	-25.181	-24.016	-27.913	-24.052	-25.562	-27.975
	(23.514)	(23.598)	(23.620)	(23.574)	(23.540)	(23.591)	(23.559)
Compulsory education	-100.681	-102.264	-99.640	-78.767	-85.988	-104.744	-76.586
	(78.692)	(79.023)	(79.128)	(79.151)	(78.880)	(78.955)	(79.077)
Tertiary level	485.110***	493.025***	489.124***	482.699***	475.096***	485.063***	487.598***
	(43.898)	(44.109)	(44.104)	(44.039)	(44.070)	(44.159)	(43.966)
Unemployed	-269.861*	-362.451**	-367.082**	-346.294**	-330.568**	-361.132**	-330.757**
	(150.119)	(149.883)	(149.720)	(149.606)	(149.561)	(149.717)	(149.663)
Not in labor force	-460.349***	-505.065***	-509.882***	-501.928***	-487.315***	-505.399***	-476.206***
	(87.262)	(87.371)	(87.170)	(87.064)	(87.084)	(87.172)	(87.333)
Geographic:							
French	-240.175***	-256.664***	-256.848***	-223.517***	-133.659**	-265.546***	-235.649***
	(47.594)	(47.686)	(47.685)	(48.417)	(54.134)	(47.917)	(47.832)
Italian	-237.444**	-251.267**	-248.725**	-205.794*	-166.288	-260.972**	-209.731**
	(104.430)	(104.789)	(104.817)	(105.325)	(106.046)	(104.888)	(105.012)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Well-being:							
Satisfaction with life	96.946***						
	(16.677)						
Joy		13.523					
		(17.999)					
Anger			-10.660				
			(11.332)				
Sadness				-44.802***			
				(11.917)			
Worry					-52.559***		
					(11.053)		
Perceived stress						38.291*	
						(20.613)	
Depression							-46.487***
							(10.718)
Constant	-185.495	499.807***	643.569***	716.809***	704.649***	524.599***	677.740***
	(162.726)	(165.698)	(99.038)	(94.581)	(92.092)	(99.581)	(91.264)
Observations	4,512	4,512	4,512	4,512	4,512	4,512	4,512
R^2	0.097	0.090	0.090	0.093	0.095	0.091	0.094
Adjusted R^2	0.094	0.087	0.087	0.090	0.092	0.088	0.091
Residual Std. Error (df = 4495)	1,384.440	1,389.547	1,389.498	1,387.455	1,386.152	1,389.101	1,386.736
F Statistic (df = 16;4495)	30.191***	27.908***	27.930***	28.841***	29.423***	28.107***	29.162***
Note:							*p<0.1; **p<0.05; ***p<0.01