SELF-CONTROL, FUTURE TIME PERSPECTIVE AND SAVINGS – THE KEYS TO PERCEIVED FINANCIAL WELL-BEING

Technical report

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THINK FORWARD INITIATIVE

SELF-CONTROL, FUTURE TIME PERSPECTIVE AND SAVINGS – THE KEYS TO PERCEIVED FINANCIAL WELL-BEING *

TECHNICAL REPORT

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Abstract

We contribute to the emerging stream of research on financial well-being by analysing perceived financial well-being and factors correlating with it in 16 countries. We rely on the Netemeyer et al. (2018) conceptualisation of perceived financial well-being in which two components are distinguished: current money management stress and expected future financial security. We investigate the association of two psychological characteristics, self-control and future time perspective, with perceived financial well-being. These four constructs were included in the ING International Survey (IIS) on Savings 2019, a dataset containing information on saving behaviour and socio-economic background of more than 15,000 individuals from 16 countries. The key contributions of this study are the international comparison of the two components of perceived financial well-being, and showing two personal characteristics – self-control and future time perspective – to be highly correlated with perceived financial well-being.

Keywords: Perceived financial well-being; Self-control; Future time perspective; Current money management stress; Expected future financial security; Savings.

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1. Introduction

Individuals are expected to be responsible for securing their financial well-being both in the short and long term. Yet there is ample evidence of people not being capable nor motivated to do that (Fernandes et al., 2014; Shephard et al., 2017; Cronqvist et al., 2018). People tend to prefer immediate and concrete well-being over abstract security in the distant future (Riitsalu, 2018). The remedy has been long thought to be financial education (OECD, 2005).

There is evidence of shortcomings in financial knowledge and skills (Klapper et al., 2014; Lusardi, 2015; OECD, 2016, 2020), National Strategies for Financial Education have been launched in many countries (OECD, 2015). However, there is also evidence that better knowledge and skills do not always translate into more prudent behaviour (Riitsalu, 2018), and of the small effects of financial education on financial behaviour (Fernandes et al., 2014; Miller et al., 2015; Kaiser & Menkhoff, 2017, Kaiser et al., 2020).

The emerging research on financial well-being finds knowledge to have a modest, if any effect on financial well-being (Ponchio et al., 2019; Riitsalu & Murakas, 2019). Furthermore, studies show that psychological factors explain prudent behaviours in personal finances more than knowledge alone (Altman, 2012; Fernandes et al., 2014; Shephard et al., 2017), and that personality characteristics override the effects of financial knowledge on financial well-being (Kempson, 2018). Yet, none of the cross-national representative studies on financial behaviour conducted in so far (by the OECD or World Bank, for instance), have incorporated both psychological factors and detailed evaluation of financial well-being.

The recently published OECD financial literacy survey report (OECD, 2020) does include perceived financial well-being scores for 21 countries but it is not the main focus of their analysis.

For more than a decade, financial education has been on the policymakers´ agenda across the world. The OECD defines financial education as:

> *the process by which financial consumers/ investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being* (OECD, 2005).

This definition indicates that the ultimate objective of financial education is increasing financial well-being. However, research on this concept is only beginning to be conducted. Financial well-being has been studied in single countries, using rather different operationalisations and measurement tools.

Instead of adding to the confusion by proposing new definitions and conceptualisation, we discuss the existing concepts and reassess the instrument developed by Netemeyer et al (2018). We use their concept and approach for measuring perceived financial well-being in 16 countries and comparing the two components of it within and between these countries. Our analysis involves 13 European countries (Austria, Belgium, Czechia, France, Germany, Italy, Luxembourg, The Netherlands, Poland, Romania, Spain, Turkey, United Kingdom), Australia, USA and Philippines.

Furthermore, we are analysing the associations between self-control, future time perspective on the one hand and the components of financial well-being in these countries on the other hand. We control for socio-economic characteristics (income, household size) and savings.

In the next section, the theoretical background is discussed. The third section describes the sample and constructs, and presents the methodology applied in analysing financial well-being within and between countries. In the fourth section, the results of individual level analysis are presented. The fifth part discusses the key findings, and the report concludes with suggestions for practical applications.

2. Theoretical Framework

Research on factors explaining the differences in financial well-being is only beginning to be conducted, as indicated by the extensive list of suggestions for further research in Brüggen et al. (2017). Previous research has analysed financial well-being issues in a single country. Findings of the international comparison by Kempson and Poppe in five countries (Australia, Canada, Ireland, Norway, and New Zealand; Kempson, 2018) are underway but not yet published. Furthermore, there is no general agreement on the conceptualisation of financial well-being (FWB).

Some researchers perceive FWB as an objective measure (Greninger et al., 1996), others interpret FWB as a subjective or perceived matter (Brüggen et al., 2017; Netemeyer et al., 2018), the third group as a combination of both (Kempson et al., 2017; OECD, 2019). Some even confuse it with financial behaviours (CFPB, 2015; Fu, 2020). Prudent behaviours may lead to increased financial well-being, but they are not the indicators of financial well-being itself. It can also happen the other way around – the perception of financial well-being can lead to certain financial decisions (Schmidtke et al., 2020).

There are many definitions of financial well-being used by various authors. A few examples:
- *a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life* (CFPB, 2015)
- *the perception of being able to sustain current and anticipated desired living standards and financial freedom* (Brüggen et al., 2017)
- *the extent to which someone is able to meet all their current commitments and needs comfortably, and has the financial resilience*

to maintain this in the future (Kempson & Poppe, 2018)
- *a person is able to meet expenses and has some money left over, is in control of their finances and feels financially secure, now and in the future* (Salignac et al., 2020)

The OECD has previously supported using a combined approach of measuring financial well-being (OECD, 2019, p. 62) but in the latest survey (OECD, 2020) they assess perceived financial well-being without including objective measures.

Objective measures have some weaknesses. The pressure to keep up with the Joneses may turn even high incomes into being insufficient for reaching a desired living standard. Also, inequality may make the size of assets seem unfairly small, even if it is perfectly fine for keeping the current living standard. On the other hand, if self-expression or ecological sustainability is more important than economic security, counting assets is not helpful for understanding satisfaction with the living standard. Therefore, we support a subjective measurement of financial well-being. In our understanding, financial well-being includes the assessment of one´s present and future financial situation, the perceived ability to keep one's current lifestyle and to reach one's desired living standard in the future.

Some measures of financial well-being are longer, for example, the Netemeyer et al. (2018) method applied in the current study is to use 10 statements for evaluating both components of perceived financial well-being – *current money management stress* and *expected future financial security*. Kempson et al. (CCPC, 2018) include 11 questions for creating their financial well-being score.

The OECD refers to the definition used by the Consumer Financial Protection Board (CFPB), and claims to use a broader framework in its operationalisation: "*The OECD-proposed framework is broader than the CFPB one, as it includes elements of financial literacy such as financial knowledge, skills, consumer self-control, which form part of the financial literacy score*" (OECD, 2020, p. 52). However, they use a shortened version of the CFPB instrument, and present the sum of mean scores to five statements of perceived financial well-being in 21 countries. Two of these statements are also used by Netemeyer et al. (2018) and us for assessing *current money management stress*.

Some researchers use simpler constructs, for example Xiao & Porto (2017) ask the respondents to rate on just one scale, how satisfied they are with their finances. We agree with Ruggeri et al. (2020) who highlight the advantages of using multidimensional measures of well-being components, and warn of the risks single-item instruments have. However, if a survey sets strict limitations to the length of the instrument, also shorter measures can provide valuable data.

We see financial well-being (FWB) to be an evaluation of the present financial situation and an expectation about the future financial situation, not including financial knowledge, literacy, abilities and behaviours in the construct. Financial knowledge, literacy, abilities and behaviours are determinants of FWB. Including these in the definition of FWB makes it impossible to study the effects of these variables on FWB, FWB is, just like happiness and confidence in other domains, a subjective evaluation of the financial situation of a person or household.

2.1 Psychological factors & financial well-being

Many psychological variables have been found to have effects on financial behaviours (Shephard et al., 2017). However, little is known of the relation between psychological factors and financial well-being. One of the first contributions was made by

Kempson et al. (2018) by showing financial locus of control and confidence to have effects on financial well-being in five countries. Locus of control means taking responsibility for financial outcomes (internal control), or attributing outcomes to someone else or to circumstances (external control). In the current study, we are focusing on two psychological factors: *self-control* and *future time perspective*.

2.1.1 Self-control

Self-control is the exertion of control over one's behaviour, for instance to inhibit and control impulsive behaviour. Self-control occurs when a person attempts to change the way he/she would otherwise think, feel or behave. Self-control serves the long-term best interests of the person in several domains (Tangney et al. 2004): such as health, school, job, career, social relationships, and finance.

People exert self-control when they follow rules or inhibit immediate desires and delay gratifications. Without self-control, people would carry out the normal, typical or desired behaviours, would fail to delay gratification or would respond automatically (Muraven & Baumeister, 2000). Self-control often requires effortful deliberate decision processes (system 2) and a strong motivation to overcome easy and automatic (system 1) responses.

Self-control has been found to have significant effect on a broad range of financial behaviours, such as saving for the future and avoiding getting into debt (Nyhus, 2017; Strömbäck et al., 2017; van Raaij, 2016). Those with higher self-control are more likely to manage their finances prudently for the short and long term. A fewer number of studies analyse the link between self-control and financial well-being (Kempson et al., 2017; Strömbäck et al., 2017, 2020). The only one including both self-control and the two components of perceived financial well-being, found them to be significantly correlated in Brazil (Ponchio et al., 2019). We extend their findings and test how these hold across a number of countries.

Future time perspective (FTP) *is a general concern for and corresponding consideration of one's future* (Kooij et al., 2018, p. 3). It reflects whether individuals perceive their remaining years as either limited or open-ended (Lang & Carstensen, 2002). If an individual perceives his or her future as limited, emotionally meaningful goals are chosen, for example, to spend more quality time with the loved ones. In case of an open-ended perception, the goals a person sets are related to optimizing well-being in the future, such as saving and investing for financial freedom. Kooij et al., (2018) argue that FTP is not a stable personality characteristic and may be learned and may change over time depending on the context.

Individuals scoring low on future time perspective do not necessarily score higher on past or present perspective, these three measures are distinct (Kooij et al., 2018). It is assumed that individuals scoring higher on FTP are better at planning for their retirement. Kooij et al (2018) found in their meta-analysis that FTP is positively correlated with financial knowledge but there are only a few studies including retirement outcomes to evaluate the relationship of FTP and retirement planning. They also found conscientiousness to be significantly correlated with FTP.

Antonides, de Groot & van Raaij (2011) studied the use of mental budgeting in household financial management. Mental budgeting is a technique to assign budgets to expense categories in order to have a better overview and not to overspend on expense categories. They found that future time perspective (FTP) has a positive effect on financial overview, and thus on a better present and future financial management. A present time perspective (PTP) has a negative effect on mental budgeting and may lead to more current money management stress. PTP and FTP are not the extremes of one scale, but two independent scales.

Kempson et al. (2017) included time orientation in the development of their conceptual model of financial well-being. They found self-control and time orientation to influence spending and saving, however they did not find either of these psychological factors to have a direct effect on financial well-being. It is important to note that they used a combined measure of time orientation instead of focusing on future time perspective. As shown by Antonides, de Groot & van Raaij (2011) and Kooij et al (2018), past, present and future time perspective are distinct constructs that can have different relationships to financial management.

The only study analysing the effect of time perspective on the two components of financial well-being conceptualised by Netemeyer et al. (2018) and used in the current study, found that future time orientation has a negative effect on current money management stress and a positive effect on expected future financial security (Ponchio et al., 2019). They used data from a single country (Brazil), our sample includes individuals from 16 countries.

3. Methodology

3.1 Sample and research model

Based on Netemeyer et al. (2018) we distinguish two components of perceived financial well-being: current money management stress (CMMS) and expected future financial security (EFFS). We study the relationships between these components and the psychological variables self-control (SC) and future-time perspective (FTP) within and across 16 countries.

We use data collected with online questionnaires by market research agency Ipsos in Autumn 2019 as part of the ING International Survey (IIS) on Savings. The sample consists of 15,773 individuals aged 18+ from Australia, Austria, Belgium, Czechia, France, Germany, Italy, Luxembourg, The Netherlands, Philippines, Poland, Romania, Spain, Turkey, USA and United Kingdom (see Table 1 for the sample size in each of the countries). The economic and cultural background of these countries is briefly summarised in Appendix 1.

For most countries, the samples are online and representative based on age, gender and region. The Romanian and Turkish samples are representative of the online population only. To the Romanian and Turkish samples quota are added respectively on education and on education and working status. The Philippian sample is representative for the online population, gender and age within the group 18-45. This means that we have to be careful with interpreting results from The Philippines. Romania and Turkey, because of the relatively low numbers of online respondents and the possible self-selection of respondents with access to internet, which could be correlated to their socio-economic status and/or perceived financial well-being.

Table 1. Sample size in each of the countries

Country	n
Australia	1,005
Austria	1,000
Belgium	1,017
Czechia	1,028
France	1,010
Germany	1,005
Italy	1,004
Luxembourg	504
The Netherlands	1,004
Philippines	1,021
Poland	1,020
Romania	1,008
Spain	1,009
Turkey	1,021
USA	1,034
United Kingdom	1,083
Total	15,773

Figure 1. Research model.

Besides focusing on the relation between the psychological factors and the components of perceived financial well-being, we include in the analysis savings, and socio-economic status of the respondents. We also acknowledge the possibility of correlation with economic and cultural background of the country of the respondent (Figure 1).

3.2 The four constructs

For studying the model of Figure 1, we added the following questions to the 2019 IIS Savings survey. All of them used unipolar 5-point scales from "does not describe me at all" to "describes me completely."

Current Money Management Stress (CMMS, Netemeyer et al, 2018; component of perceived financial well-being).

 a. Because of my money situation, I feel I will never have the things I want in life.
 b. I am behind with my finances.
 c. My finances control my life.
 d. Whenever I feel in control of my finances, something happens that sets me back.
 e. I am unable to enjoy life because I obsess too much about money.

Expected Future Financial Security (EFFS, Netemeyer et al, 2018; component of perceived financial well-being).

 a. I am becoming financially secure.
 b. I am securing my financial future.
 c. I will achieve the financial goals that I have set for myself.
 d. I have saved (or will be able to save) enough money to last me to the end of my life.
 e. I will be financially secure until the end of my life.

Self-control (SC, Tangney et al., 2004; Strömbäck et al., 2017).

 a. I have a hard time breaking bad habits.
 b. I get distracted easily.
 c. I'm good at resisting temptation.

 d. I do things that feel good in the moment but regret later on.
 e. I often act without thinking through all the alternatives.

In analysis, statements a, b, d and e are reversely coded

Future Time Perspective (FTP, Lang & Carstensen, 2002).

 a. I generally plan for the future.
 b. I take each day as it comes.
 c. I like planning and preparing for the future.

In analysis, statement b is reversely coded.

All constructs are calculated as the arithmetic means of the responses to statements on 5-point scale. Note that a high score in CMMS indicates a high level of money management stress, while a high score of EFFS means a positive expectation for one´s financial future.

3.3 Methods of analysis

First, the four main constructs were created and tested. We used Principal Component Analysis (PCA) and calculated Cronbach alphas as a reliability measure of the four main constructs. We found good reliability of measuring both components of perceived financial well-being (CMMS α=0.87, EFFS α=0.90), and acceptable reliability for SC, α=0.74. For FTP the three statements gave insufficient reliability, α=0.52. Based on the PCA analysis, we decided to remove statement b ("I take each day as it comes."). The construct using the two statements, a and c, is of good reliability (α=0.88). Therefore, it was used in the remainder of the analysis.

We controlled for the quality of the financial well-being measures in the 16 countries by running PCA of the 5+5 perceived financial well-being per country (see Table 2).

Table 2. PCA-components of financial well-being 5+5 scales in 16 countries. Explained variance of five variables by component CMMS and five variables by component EFFS, respectively.

Country	comp. CMMS	comp. EFFS	2nd comp. EFFS
Australia	71.6%	81.5%	
Austria	61.6%	56.1%	22.9%
Belgium	63.8%	70.5%	
Czechia	65.0%	63.1%	
France	61.0%	71.7%	
Germany	62.6%	59.7%	19.5%
Italy	64.6%	72.2%	
Luxembourg	61.8%	64.8%	
Netherlands	72.0%	71.5%	
Philippines	60.5%	69.8%	
Poland	65.5%	64.5%	
Romania	61.2%	64.5%	
Spain	60.8%	74.0%	
Turkey	63.5%	73.9%	
USA	75.0%	81.1%	
UK	72.4%	79.2%	
Total	65.2%	71.0%	

In Austria and Germany there seem to be some peculiarities in the translation of the scales into German that reduced the explained variance of the component EFFS. A second smaller component EFFS was formed explaining about 20% of the variance. However, the first EFFS component is not a too weak measure for those two countries either, therefore we did not exclude them from further analysis.

Next, we calculated the correlations between the four constructs (see Table 3). There is a negative correlation (-0.304) between CMMS and EFFS – those who are more stressed about their finances, have lower expected future financial security; those

who have secured their financial future, have lower current money management stress. There is a strong correlation between self-control and current money management stress (CMMS), and between future-time perspective and expected future financial security (EFFS).

Third, we calculated and compared mean CMMS and EFFS scores for the 16 countries. Note that low level of stress (CMMS) is a favourable outcome, while low level of financial security (EFFS) is an unfavourable outcome for FWB.

Fourth, multiple regressions were run of the independent variables SC, FTP and savings, on the dependent variables CMMS and EFFS. In these models, the socio-economic factors were controlled for. The four constructs were standardized for these models in order to compare the size of the relation of the psychological variables with both components of perceived financial well-being. Such models were run both within each of the countries and for the entire sample.

Fifth, we calculated Spearman´s rank correlation coefficients of country level economic and cultural factors for identifying their relation to perceived financial well-being.

Lastly, four groups were created based on CMMS and EFFS scores, and the characteristics of the members of these groups were described. The proportions of these four groups in each of the countries were calculated. The results of these analyses are presented in the next section.

Table 3. Summary statistics and correlations of the main constructs

	Coefficient α	Mean	SD	min	max	CMMS	EFFS
CMMS	0.866	2.462	0.964	1	5		-0.304
EFFS	0.897	2.785	0.990	1	5	-0.304	
SC	0.735	3.456	0.747	1	5	-0.560	0.096
FTP	0.876	3.361	0.982	1	5	-0.090	0.499

Note: all correlations are significant (p <0.001), n=15,773

4. Results

4.1 The relation between savings, self-control, future time perspective and perceived financial well-being

Two-thirds (67%, 10,629 individuals) of the 15,773 respondents said their household has savings, a quarter (26%, 4,127 individuals) said they do not have savings and 6,5% (1,017) preferred not to answer.

Those who responded "Yes" to the question *Does your household have any savings*?, were asked about the amount of savings they hold. They were randomised into two groups and the wording of the question differed slightly in these two, therefore the results must be treated with some caution. It may be that the slightly different framing of the question on the amount of savings the household has (A: *What is the total sum of your household's savings?,* B: *How many months of take-home pay do you have in savings?*) gave different responses.

Table 4. Saving and its correlation with CMMS and EFFS, correlation coefficients.

	n	CMMS	EFFS
Has savings[1]	14,756	-0.324	0.381
Amount of savings:	8972		
Less than 1 month income	1,152	(base category)	
1 – 3 months´	2,448	-0.277	0.268
4 – 6 months´	1,783	-0.364	0.411
7 – 12 months´	1,496	-0.510	0.560
12+ months´	2,093	-0.861	0.794

Note: all correlations are significant (p<0.001), [1] base: no savings.

Savings have strong negative correlation with CMMS and a strong positive correlation with EFFS. People with savings have a substantially lower level of current money management stress and significantly higher expected future financial security. Savings may serve as a buffer for temporary lower income or higher expenditure (CMMS) and savings may be

reserved for later expenditure (EFFS). The more savings, the higher the perceived financial well-being. This supports the findings of Kempson et al. (2018) who found active saving to be a significant predictor of financial well-being. However, in our study only the amount of savings was measured; active saving was not assessed.

Self-control has a significant negative correlation with CMMS – those with more self-control have lower money management stress. Future time perspective has a substantial positive correlation with EFFS – those more oriented towards the future perceive to have secured their financial future more. Self-control and future time perspective explain 19% of the variance in CMMS and 24% of the variance in EFFS. Self-control does not have substantial relation with future financial security, the correlation between future time perspective on current money management stress is relatively small.

Table 5. The correlation between perceived financial well-being, self-control and future time perspective (linear regression coefficients, n=15,773)

		CMMS	EFFS
Self-control		-0.554***	-0.007
		(0.011)	(0.011)
Future time perspective		-0.020*	0.495***
		(0.008)	(0.008)
	R^2	0.188	0.242

Legend: * p<0.05; ** p<0.01; *** p<0.001

4.2 Perceived financial well-being scores for 16 countries

We find current money management stress to be highest in Turkey and lowest in Luxembourg. As these two countries are on the opposite ends in GDP based on the OECD data, it might relate to the economic background of the country.

Figure 2. Current money management stress (CMMS) and expected future financial security (EFFS) mean scores (max=5) by country
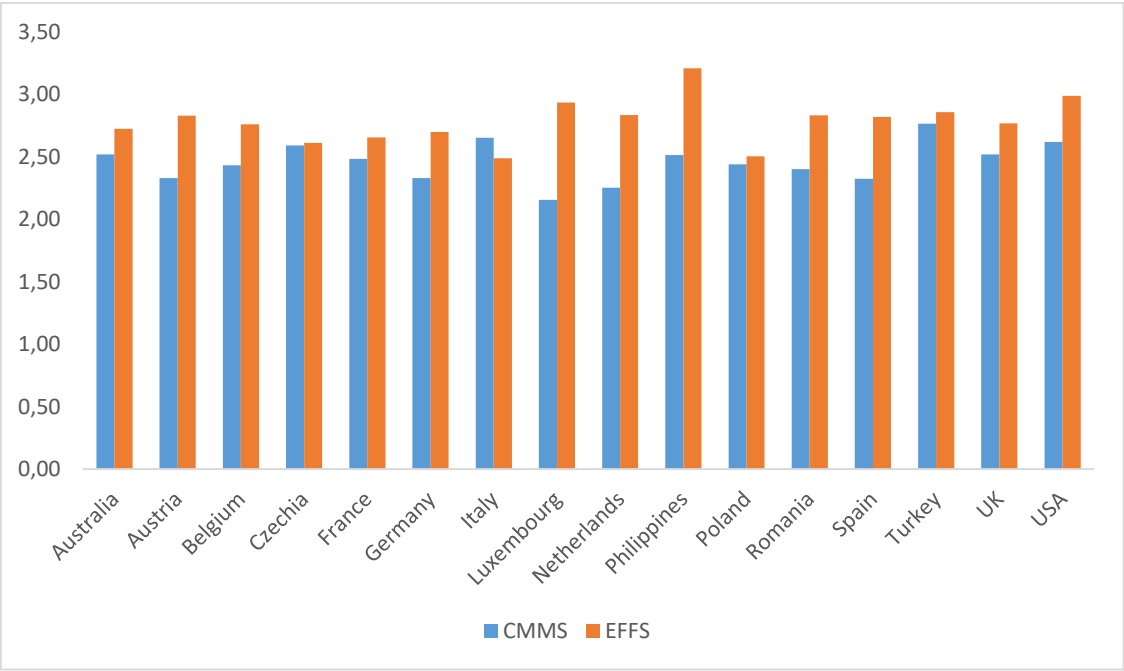
The lowest level of EFFS was measured in Italy.

The countries where the respondents report higher EFFS and lower CMMS are Austria, Belgium, Germany, Luxembourg, the Netherlands, Philippines, Romania, Spain and the USA. In Australia, France and the UK, EFFS is somewhat higher than CMMS. In Czechia, Italy, Poland and Turkey, CMMS and EFFS have the same value or CMMS is somewhat higher than EFFS. The difference between the mean scores of CMMS and EFFS is statistically significant in t-tests in all countries except for Czechia and Poland (see Figure 2). The distribution of both scores in each of the countries is presented in the Appendix 2.

4.3 Socio-economic status and perceived financial well-being

Using all 15,773 observations, we ran multiple linear regressions to analyse the correlates of the components of perceived financial well-being (Table 6). In order to compare correlation coefficients, we standardized the four constructs. We also controlled for the country fixed effects. In Models 1 and 3, we observe the correlation between SC, FTP, savings

and perceived financial well-being. Models 2 and 4 include the socio-economic variables.

Analysis of the relationship between perceived financial well-being and income level is complicated in the current data. First, the CMMS and EFFS questions are about the individual, his or her current and future finances, but income responses are about the household, not the respondent alone. Second, the household income is a categorical variable. This does not allow to calculate the mean or median income for creating the low, medium and high income groups. Third, what is a high income in poorer countries (e.g., Philippines) may be low income in wealthier countries (e.g. Luxembourg). Fourth, we were unable to find reliable data on household average or median income for the same time period for all countries participating in the IIS Savings Survey. Yet not controlling for income level would have set serious limitations to our results.

Self-control has strong correlation with current money management stress (one standard deviation increase in SC leads to 0.409 standard deviation decrease in CMMS (Model 1 in Table 6); if control

variables are included (Model 2), 0.388). Future time perspective has higher correlation with expected future financial security (one standard error increase in FTP leads to 0.422 standard deviation increase in EFFS (Model 3); if control variables are included (Model 4), 0.394). With both components of financial well-being, having savings has the highest correlation.

Some socio-economic characteristics do not seem to be correlated with both components of perceived financial well-being, i.e. gender and education. We have many missing answers in Models 2 and 4, because nearly a thousand participants preferred not to state their household income, and more than a thousand preferred not to say whether their household has savings or not.

We also calculated regression models with the standardized perceived financial well-being component as the dependent variable, and SC, FTP and socio-economic status as independent variables for 12 countries. We excluded the three countries where the sample was not representative of the entire population, and the small but very wealthy Luxembourg. The models are presented on Figures 6 – 13 in Appendix 3. We did not observe many country differences. In all countries self-control and savings have a significant correlation with CMMS; FTP and savings have strong relation with EFFS.

In most of the countries, higher income seems to be related to lower CMMS and higher EFFS. However, the correlation is not statistically significant in all countries. In most countries, only the highest income level has a significant role in financial well-being. We did not find gender gap in financial well-being, except for Czechia and Poland where men have significantly higher EFFS than women in our analysis.

In Germany, individuals in age 60+ report significantly lower CMMS but also lower EFFS than people in age 18-29. In Italy on the opposite, the oldest group has the highest CMMS. In the UK,

France and Spain, the middle age groups perceive their future to be less secured (lower EFFS) than the young and old. In the USA, people in age 60+ report significantly lower CMMS, but in age 45-59 lower EFFS. Education level correlates with CMMS in Poland, Belgium, the UK and USA.

There are variations also in the financial well-being of students, self-employed and retired people, supposedly this relates to the social security, benefits and retirement systems of the country.

For country level analysis, we chose the indicators that may correlate with financial well-being based on previous literature, and included the indicators for which data from all 16 countries involved was available. These indicators were: World Happiness score, S&P financial literacy score, GDP per capita, GDP growth rate and Gini coefficient. Similarly to a recent TFI report by Richards et al. (2019), we used the Hofstede cultural dimensions for operationalising country culture. We included Hofstede´s individualism, long-term orientation and indulgence score (the values of these can be found in section Appendix 1). We calculated Spearman´s rank correlations and found none of these indicators to be significantly correlated with either component of financial well-being in the sample of 16 countries, except for the Gini coefficient. The latter seems to be positively correlated with EFFS (Spearman's rho 0.523, p=0.037).

This supports the findings of Kempson (2018) who found inequality to have a more significant effect on financial well-being than average income level in the analysis of data from five countries. These findings suggest that inequality may also have more significant correlation with both components of perceived financial well-being than GDP per capita. However, this assumption requires further research as only 16 countries were included in our study.

Table 6. Linear regression models of perceived financial well-being (standardised) and socio-economic status

	CMMS		EFFS	
	Model 1	Model 2	Model 3	Model 4
self-control	-0.409***	-0.388***	-0.012	-0.006
	(0.022)	(0.018)	(0.015)	(0.014)
future time perspective	0.036	0.041*	0.422***	0.394***
	(0.021)	(0.016)	(0.031)	(0.029)
has savings	-0.662***	-0.568***	0.621***	0.500***
	(0.045)	(0.050)	(0.026)	(0.031)
age				
30-44		0.003		-0.107**
		(0.031)		(0.029)
45-59		-0.042		-0.144***
		(0.040)		(0.029)
60-99		-0.151*		-0.089*
		(0.053)		(0.036)
male		0.003		0.062*
		(0.024)		(0.025)
education				
secondary or vocational		0.068*		-0.037
		(0.028)		(0.034)
higher vocational		0.060		-0.002
		(0.042)		(0.033)
higher		0.055		0.034
		(0.045)		(0.037)
employment				
full-time		-0.010		0.187***
		(0.036)		(0.034)
student		-0.249***		0.167**
		(0.055)		(0.053)
part-time		0.004		0.084**
		(0.035)		(0.024)
retired		-0.102**		0.232***
		(0.031)		(0.035)
self-employed		0.001		0.191***
		(0.034)		(0.028)
household net income				
1-499		0.108		0.005
		(0.064)		(0.072)
500-999		0.172*		-0.092
		(0.061)		(0.070)
1000-1499		0.051		-0.072
		(0.062)		(0.070)
1500-1999		-0.110		0.052
		(0.067)		(0.072)
2000-2499		-0.127		0.105
		(0.077)		(0.092)
2500-3999		-0.293**		0.231*
		(0.089)		(0.097)
4000-4999		-0.328**		0.358**
		(0.086)		(0.088)
5000-6999		-0.430***		0.456**
		(0.086)		(0.121)
7000+		-0.474***		0.657***
		(0.111)		(0.111)
household members				
2		0.041		-0.063*
		(0.028)		(0.027)
3		0.160***		-0.067*
		(0.030)		(0.025)
4		0.133***		-0.054*
		(0.032)		(0.025)

	(1)	(2)	(3)	(4)
5		0.171** (0.047)		-0.091* (0.035)
6 or more		0.176** (0.053)		-0.094* (0.039)
country				
Austria	-0.185*** (0.004)	-0.192*** (0.012)	-0.002 (0.004)	-0.001 (0.010)
Belgium	-0.037*** (0.001)	-0.019 (0.013)	-0.001 (0.001)	-0.003 (0.009)
Czechia	0.001 (0.006)	-0.205*** (0.018)	-0.129*** (0.003)	0.018 (0.019)
France	-0.004 (0.003)	0.000 (0.014)	-0.053*** (0.002)	-0.084*** (0.008)
Germany	-0.197*** (0.004)	-0.195*** (0.009)	-0.074*** (0.004)	-0.073*** (0.007)
Italy	0.206*** (0.003)	0.114*** (0.011)	-0.272*** (0.003)	-0.197*** (0.011)
Luxembourg	-0.203*** (0.009)	-0.039 (0.030)	-0.020* (0.009)	-0.292*** (0.024)
Netherlands	-0.214*** (0.004)	-0.189*** (0.008)	0.098*** (0.004)	0.114*** (0.013)
Philippines	-0.028 (0.015)	-0.348*** (0.037)	0.266*** (0.018)	0.407*** (0.047)
Poland	-0.149*** (0.006)	-0.383*** (0.020)	-0.314*** (0.005)	-0.171*** (0.024)
Romania	-0.152*** (0.006)	-0.425*** (0.031)	0.098*** (0.007)	0.239*** (0.028)
Spain	-0.206*** (0.004)	-0.301*** (0.018)	-0.005 (0.005)	0.049*** (0.012)
Turkey	0.214*** (0.007)	0.075*** (0.016)	0.052*** (0.010)	0.113*** (0.018)
USA	0.046*** (0.005)	0.071*** (0.009)	0.213*** (0.006)	0.151*** (0.011)
UK	-0.072*** (0.002)	-0.094*** (0.008)	0.096*** (0.003)	0.107*** (0.004)
N	14756	13755	14756	13755
R^2	0.288	0.324	0.339	0.383

Note: Base categories were age 18-29, lower education, not working, no income, household of 1, country Australia. Standard errors clustered at the country level. Legend: * $p<0.05$; ** $p<0.01$; *** $p<0.001$

4.4 Four groups

We developed four groups based on the scores of the components of perceived financial well-being. We considered using mean scores and standard deviation (+/-1 SD of the mean) for categorising the participants, but this would have made the middle group disproportionally large (see Table 7).

Table 7. Categorisation using mean +/- 1SD

	EFFS low	EFFS medium	EFFS high
CMMS low	1%	10%	7%
CMMS medium	8%	**52%**	8%
CMMS high	5%	7%	2%

Note: n=15,773

Another option was to use the mean score of CMMS and EFFS for categorising the respondents. That would have meant that into one category belong people who have rated themselves to be more / less stressed about their current finances and perceive their financial future to be more / less secured than others in the sample.

Therefore, we decided to split the participants into groups from score 3 as on a 5-point scale it corresponds to response "describes me somewhat" This allows us to have in one group individuals who agree ("describes me somewhat", "describes me a great deal", "describes me completely") with most of the CMMS and EFFS statements enabling the

analysis of groups with higher/lower subjective financial well-being. Note that both CMMS and EFFS scores are the arithmetic means of 5+5 statements. Therefore, it is possible that the respondent with score 3 did not agree with some but agreed with other statements. However, the statements in CMMS are highly intercorrelated (see Cronbach alpha) and this means that for most respondents the ratings are on the same side of the split. The same is true for the statements in EFFS. Respondents scoring 5 on one statement and scoring 2 or another (correlated) statement are thus exceptional and do not influence the final results from a large sample.

We found that nearly 70% of the sample belongs into groups 1 and 2, while groups 3 and 4 are substantially smaller (Table 8).

Table 8. The proportions of the four groups

	EFFS < 3	EFFS 3+
CMMS < 3	Group 1: 33.5%	Group 2: 35.1%
CMMS 3+	Group 3: 21.5%	Group 4: 10.0%

In group 1 are individuals who scored < 3 points on both CMMS and EFFS. They are not stressed about managing current finances but have not secured their financial future. They are doing well in the present but may be in financial difficulties in the future. A third of the sample belongs to this group.

Group 2 consists of people whose CMMS < 3 and EFFS ≥ 3. This means they are not stressed about current money matters and feel they have sufficiently secured their future. Fortunately, this group with the highest financial well-being is also the largest group.

In group 3 are the people with CMMS ≥ 3 and EFFS < 3, meaning they are stressed about their finances in the present and feel uncertain about their financial future. That is the group with lowest financial well-being and in most fragile situation. A bit more than a fifth of the sample belongs into this group.

The smallest group, group 4, is composed of those who scored ≥ 3 on both components of financial well-being. People in this group are relatively stressed about their finances in the present but expect they have secured their financial future. They are investing into their future at the expense of their present well-being. 10% of the sample belongs to this struggling but optimistic group. One might assume that there is a hierarchy from the best-off group 2 via middle group 1 to the worse-off group 3. If you are stressed about managing personal finances in the present, you have no resources for securing your financial future (group 1). Intuitively, the other middle group (4) securing their financial future, while they have financial problems in the present, is unlikely to exist. It is found in this data set however that 10% of the respondents in our sample belong to this middle group (4).

The proportions of these groups differ across countries and regions (see Figure 3). In Central and Western Europe (Austria, Belgium, France, Germany, The Netherlands and the UK), and Australia the proportions of the four groups are rather similar. Luxembourg stands out with its large well-off group 2 – nearly half of the population belongs to this group. Looking at the Southern European countries, the worse-off group 3 is almost twice as large in Italy than it is in Spain (29% vs 14%).

Eastern European countries have different patterns as well, in Poland and Czechia less than 30% belong to the best-off group, in Romania this group accounts for 38,3% of the respondents. In Poland, over 40% are not stressed about their finances in the present but worry about the future, in Czechia and Romania this group is around a third of the population. Turkey and USA have similar proportions of groups 1 and 2, but in the USA almost a fifth of the sample is categorised under the fourth group. That is twice the size of it in European countries and in Australia. Interestingly, this stressed in the present but optimistic about the future group is the largest in the Philippines (23.9%).

In the UK, the Money Advice Service (MAS) developed a segmentation approach that could be of interest in the context of the current study. The segmentation methods and samples do not allow a direct comparison with our findings. MAS divided the population into three segments: those who are cushioned (55%), squeezed (25%) or struggling (20%) (Money Advice Service, 2016). Our findings are rather similar to these proportions (36%, 30% and 23% respectively in the UK data), except that we also looked at an additional fourth group. We observe that 12% of the people in the UK have stress with managing their finances in the present but expect that their financial future is sufficiently secured.

In the analysis of financial well-being in Australia, Canada, Ireland, Norway and New Zealand, Kempson et al. (2018) developed four segments: "financially secure; doing OK, but little put by; just getting by, and struggling financially". The only country that was present in both their and our study is Australia. However, it is important to keep in mind that the methods and data of their and our study are not directly comparable.

Kempson et al. find 24% of people in Australia to be financially secure (group 2 in our study, 36% belonging into it in Australia), 40% doing OK but little put by (group 1 with 31% in our approach), 23% to be just getting by and 13% struggling financially (in sum our group 3 with 23%). We find 10% of Australians to belong into the fourth group, the ones investing into their future at the expense of their current well-being.

Next, we looked at the proportions of these groups across socio-economic characteristics. As Luxembourg and Philippines differed from the pattern of the rest of the participating countries, we excluded them from the analysis of the individuals´ profile presented in Figure 4. We see that the two large groups 1 and 2 differ substantially from the smaller groups 3 and 4. Comparing the first two (the one doing well in the present and the second being well-off in the present and in the future) we see a rather obvious pattern. Individuals with higher education and income, larger savings and in retirement age are more likely to belong into the well-off group. The worse-off group (Group 3) consists of individuals with low education and income, without work or savings. The fourth group is more diverse without a clear profile, although they tend to be younger.

Lastly, we looked at the psychological characteristics of these four groups (Table 9). It is important to keep in mind that the first two groups account for more than 70% of the entire sample, while merely 10% belong to group 4, therefore the comparison must be treated with care.

Surprisingly, people in group 4 report the lowest self-control. This may indicate that they are struggling in the present partly due to lack of self-control, it may even be that their optimism towards the future is in part naïve hope to do better in the future. However, both this group and the best-off group 2 are highly orientated towards the future, unlike groups 1 and 3. The most vulnerable Group 3 also has relatively low level of self-control, indicating that not all difficulties in their finances are only linked to their socio-economic status.

**Figure 3.** The four groups within countries

Figure 3. The four groups within countries

Legend:
- G1 low stress, low security
- G2 low stress, high security
- G3 high stress, low security
- G4 high stress, high security

Country	G1	G2	G3	G4
Australia	31,14	36,42	22,59	9,85
Austria	31,90	41,00	18,70	8,40
Belgium	33,43	37,66	20,55	8,36
Czechia	34,14	29,47	28,70	7,68
France	37,33	32,08	22,08	8,51
Germany	39,70	31,84	16,92	11,54
Italy	37,85	25,20	28,98	7,97
Luxembourg	29,96	49,21	16,67	4,17
Netherlands	37,05	39,34	15,34	8,27
Philippines	26,64	39,86	9,60	23,90
Poland	40,88	27,55	24,02	7,55
Romania	32,04	38,29	19,35	10,32
Spain	37,86	38,85	14,27	9,02
Turkey	24,39	34,48	27,52	13,61
USA	23,89	36,07	20,99	19,05
UK	29,64	35,83	22,71	11,82

Table 9. Mean SC and FTP scores across groups (includes all countries, n=15,773, in brackets standard error)

	Group 1	Group 2	Group 3	Group 4
Self-control	3.547	3.691	3.193	2.872
	(0.009)	(0.009)	(0.014)	(0.017)
Future time perspective	3.003	3.767	3.036	3.704
	(0.013)	(0.012)	(0.018)	(0.022)

Note: all differences are statistically significant (p<0.001)

Figure 4. The socio-economic profile of the four groups (excluding Philippines and Luxembourg), n=14,248 in all except household income where 981 preferred not to answer)
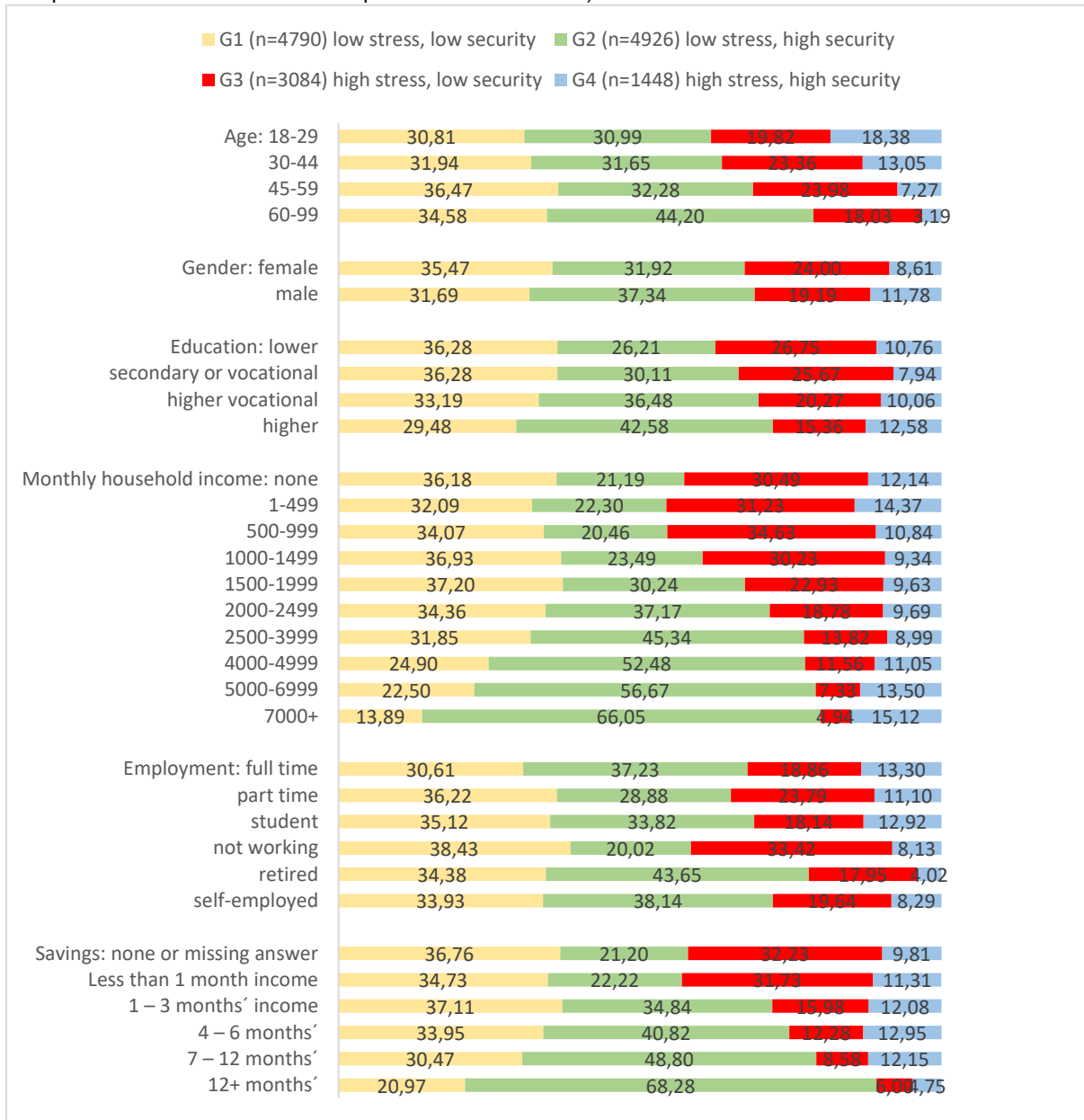
5. Discussion

In this study we restrict the concept of financial well-being (FWB) to evaluations and expectations that people have about their financial situation. We keep the FWB concept pure and do not include financial knowledge, capabilities and behaviours, because these are, in our opinion, determinants rather than components of FWB.

This international comparison of perceived financial well-being in 16 countries sheds light on the differences in the two components of FWB, current money management stress (an evaluation) and expected future financial security (an expectation). It shows high correlations between psychological characteristics, such as self-control and future time perspective, and these components of perceived FWB. It also highlights the importance of having savings.

We confirm the findings of Netemeyer et al. (2018) that these two components have different correlates. We find that the first component, current money management stress, is highly correlated with self-control and savings. The second component, expected future financial security, is correlated with future time perspective and also savings. Savings and wealth have at least two functions. Buffer savings help overcoming money management stress. Savings for 'later' (retirement, later transactions) help securing future finance. Individuals with more self-control have less money management stress in the present. Individuals who are more future oriented, expect that their financial future is more secured.

Because this is a cross-sectional study, we cannot conclude that the psychological characteristics are the cause of money management stress and future financial security. However, we consider it to be more

likely that high self-control causes prudent management of personal finances which leads to less money management stress than the reverse causation. In the same way, we consider it to be more likely that high future time perspective causes prudent financial behaviours such as saving and taking insurance and which lead to a more favourable perception of expected future financial security. Also in this case, we consider the reverse causation not to be very likely.

Relationships between SC and FTP on the one hand with CMMS and EFFS on the other hand seem to hold in all 16 countries, although with different degrees of strength. SC and FTP are not only relevant for financial behaviour but for other domains as well. Thus it is worthwhile to educate children with an emphasis on training them at home and in schools in exerting self-control and taking a future time perspective by considering future consequences of present behaviour.

Looking at the country level factors, we find evidence to support the arguments of Kempson et al. (2018) who found that income inequality has a stronger correlation with financial well-being than income level, we add that it may be also more relevant measure than the GDP per capita.

We also divided the respondents into four groups based on their scores on the components of perceived financial well-being. Slightly more than one-third of the population (35%) reports to have relatively high financial well-being (low stress in the present and expected high security for the future). Another third is doing well in the present but has not sufficiently secured their financial future. One fifth is in a financially fragile state. They report higher

current money management stress and lower expected future financial security.

Previous segmentation reported by the Money Advice Service and Kempson et al. (2018) have indicated similar segments with varying proportions, but neither of them include our fourth category – those who are securing their financial future at the expense of present financial well-being.

One might assume that those having financial problems in the present, are likely to have financial problems also in the future. The negative correlation of -0.304 between the components supports this idea: people with current money management stress are more likely to have lower expectation about their future financial security, However, we found 10% of the sample belonging into the fourth group with high current money management stress but also high expected future financial security. In the USA, it accounts even for almost one-fifth of the population.

Interestingly, we find them to have lower self-control but to be highly future oriented. The size of this segment might increase in the future with the rise of independent workers and start-ups. This assumption is based on their young age. They may struggle to make ends meet in the present due to irregular income from multiple sources, but to undergo and survive this phase as an investment into their future. Sadly, current data do not allow to indicate who belongs to the gig economy sector and who does not. This is left for further investigation.

They key contributions of this study is the international comparison of perceived financial well-being, showing two personal characteristics, self-control and future time perspective, to have a significant correlation with financial well-being, and the first indication of the struggling but secured fourth group.

5.1 Limitations

This study uses data collected as part of the IIS on Savings. Although it provided rich data from 16 countries, future research should include even more countries for analysing perceived financial well-being levels around the world in more detail. The length of the questionnaire also set limitations on the number of constructs to be added. Ideally, more information could have been collected about the personal characteristics of the respondents, and data on individual monthly income would have been valuable. The sample in some of the countries, for instance the Philippines, was not fully representative of the population as explained in section 3.1.

It is possible that people in some countries generally respond in a more positive or negative way. In the same direction, their assessment of financial well-being can be higher or lower. The limitation of the subjective approach to financial well-being is that we cannot know, whether the responses are biased or not. These are the evaluations and expectations of people.

In the categorisation we used the midpoint of the scale for creating the four groups. This allowed to describe them in and across countries, but methodologically this has its limitations. People on and close to the midpoint are now put into one group while a neighbouring category would match almost as well. Furthermore, our results are not directly comparable to the Money Advice Service and Kempson et al. segmentations.

6. Practical implications

Our results indicate that perceived financial well-being varies around the world more than objective measures, such as the GDP per capita, would predict. Therefore, we contribute to the discussion on the objective, subjective or combined nature of financial well-being by showing its subjective nature. However, more research is needed for coming to a conclusion on the superiority of one of these approaches.

We also confirm that psychological factors have a strong correlation with perceived financial well-being. This implies that segmentations using psychological profiles may prove beneficial for the well-being of consumers.

Savings have a significant correlation with both components of financial well-being, the more savings the lower the financial stress in the present and the higher the expected financial security in the future. Therefore, the providers of financial services should invest even more in persuading consumers to start and maintain saving and offering innovative tools that make saving more attractive and entertaining for them. Similarly, policy-makers providing financial education should put the emphasis on pre-committing and nudging individuals towards saving, rather than focusing on the improvement of financial knowledge.

The categorisation of respondents gave different proportions of the four groups. These groups have different problems and need different advice. Market segmentation is one side of the medal; the other side is product and service differentiation. Policy makers may decide to choose one or more groups to focus on as target groups. After having selected one or more target groups, products and services can be differentiated to serve these target groups in the best way.

There is abundant opportunity for further research on the determinants of financial well-being. First, more psychological characteristics could be included in future financial well-being studies, such as approach/avoidance tendency, optimism, trust, and confidence. Second, the relationship between income inequality and financial well-being could be further investigated. Third, cultural differences could be studied in relation to perceived financial well-being.

In future research, the components of FWB may be validated with objective variables such as income, wealth, actual savings and debt, in order to check whether people have a valid and realistic idea about their present and future financial situation. If the validity of the perceived FWB is high enough, perceived FWB may be sufficient to assess the financial situation of individuals and households.

Lastly, 16 countries are not enough to fully diagnose financial well-being issues in the world, especially as only one developing country was included in our sample. Therefore, future financial literacy or capability surveys conducted in a broad range of countries, such as the ones launched by the S&P, World Bank or the OECD, could include the measurement of current money management stress and expected future financial security for assessing financial well-being around the world, and also a number of psychological variables, such as self-control and future time perspective, could be added.

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8. Appendices

Appendix 1. Distribution of financial well-being scores within 16 countries (Figure 5)

Graphs by Country

Graphs by Country
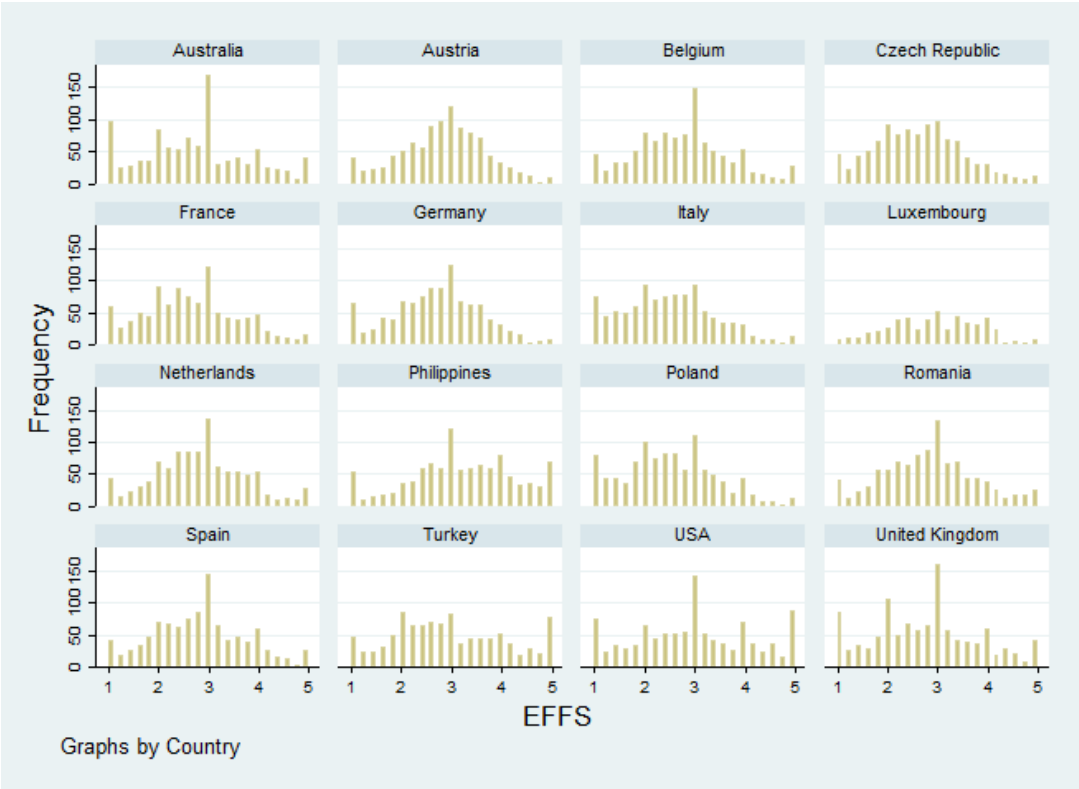
Table 10. The background variables of 16 countries (latest available data from OECD and World Bank data, Helliwell, et al., 2019; Klapper et al., 2014; Hofstede Insights, 2020)

	AUS	AUT	BEL	CZE	FRA	DEU	ITA	LUX	NLD	PHL	POL	ROU	ESP	TUR	GBP	USA
World Happiness score	7.23	7.25	6.92	6.85	6.59	6.99	6.22	7.09	7.49	5.63	6.18	6.07	6.35	5.37	7.05	6.89
S&P financial literacy score	64	53	55	58	52	66	37	53	66	25	42	22	49	24	67	57
GDP per capita (USD, World Bank data, 2018)	54 343	55 513	51 491	39 741	45 149	53 089	41 837	113 137	56 326	3 103	30 982	28 209	39 711	28 384	46 010	62 853
GDP per capita growth (annual %, WB data, 2018)	1.30	1.80	1.00	2.70	1.50	1.20	1.00	1.20	2.00	4.80	5.10	4.60	2.10	1.30	0.70	2.30
Inequality (Gini coeff., World Bank data, 2017)	0.330	0.284	0.266	0.253	0.291	0.294	0.328	0.304	0.285	0.444	0.284	0.359	0.341	0.404	0.357	0.390
Individualism (Hofstede)	90	55	75	58	71	67	76	60	80	32	60	30	51	37	89	91
Long-term orientation (Hofstede)	21	60	82	70	63	83	61	64	67	27	38	52	48	46	51	26
Indulgence (Hofstede)	71	63	57	29	48	10	30	56	68	42	29	20	44	49	69	68

The colours indicate confidence intervals on 99%, 95% and 90% significance level: 99 95 90

Figure 6. CMMS in Eastern Europe – Czechia and Poland
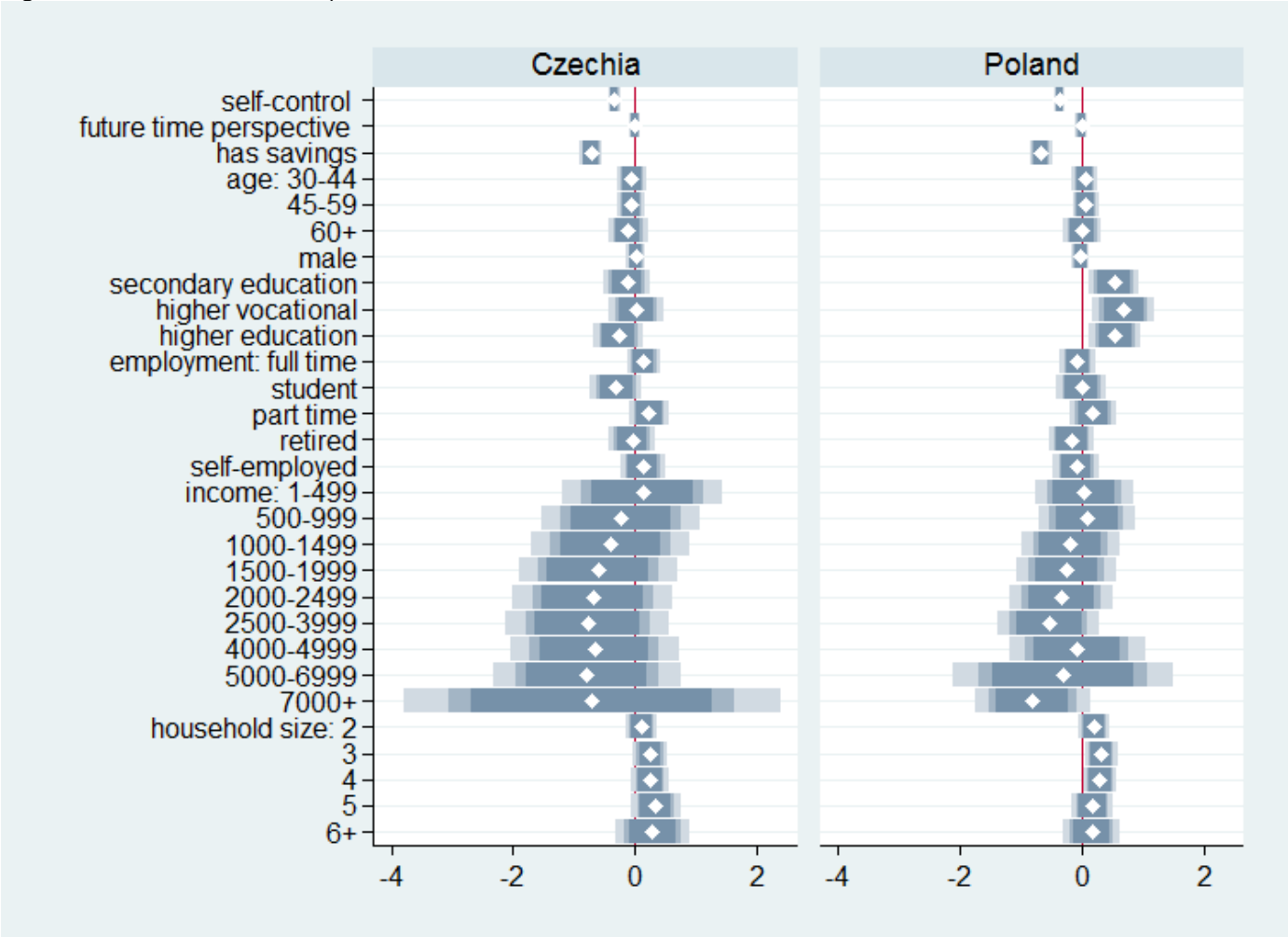
Figure 7. EFFS in Eastern Europe - Czechia and Poland
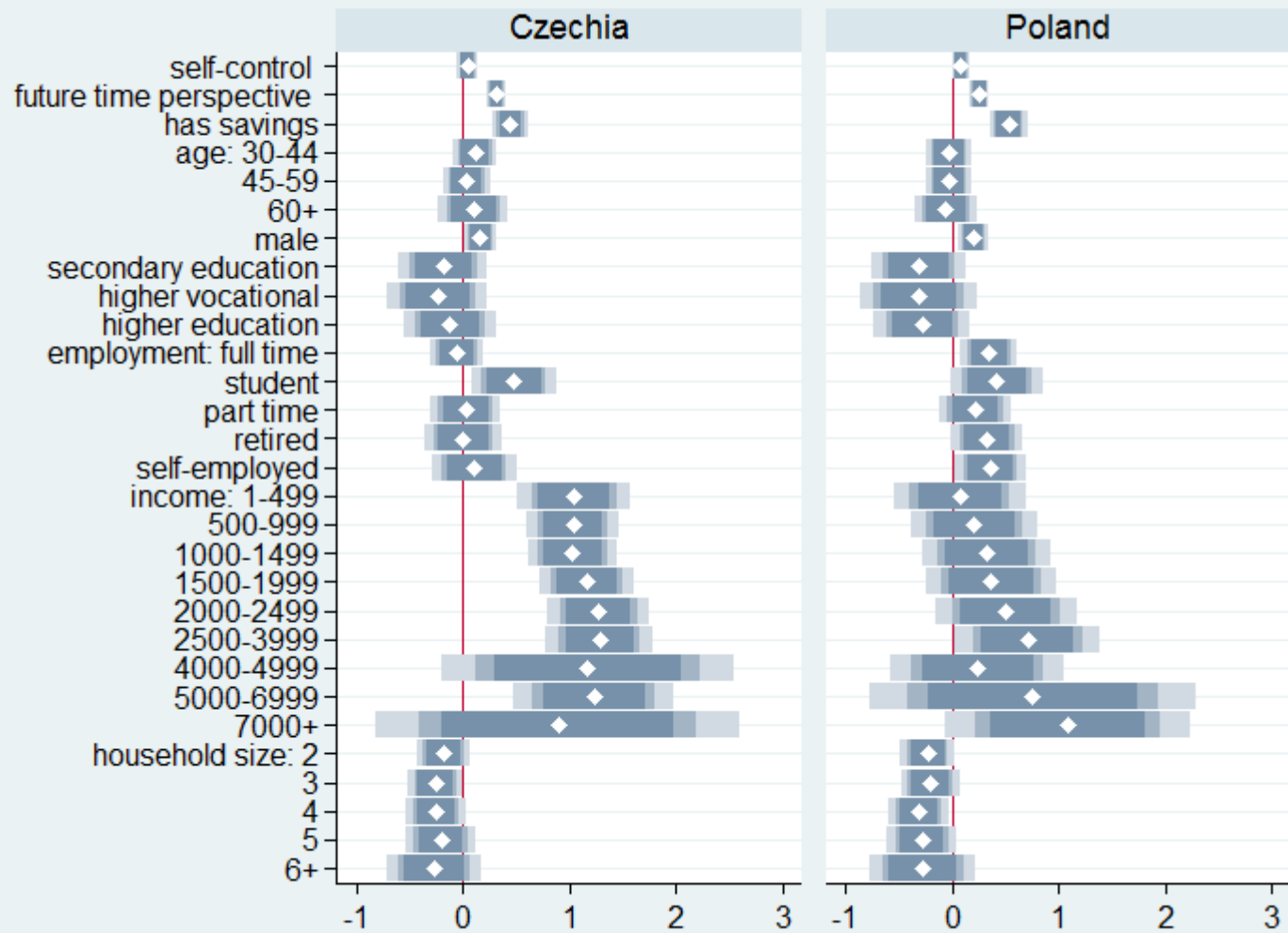
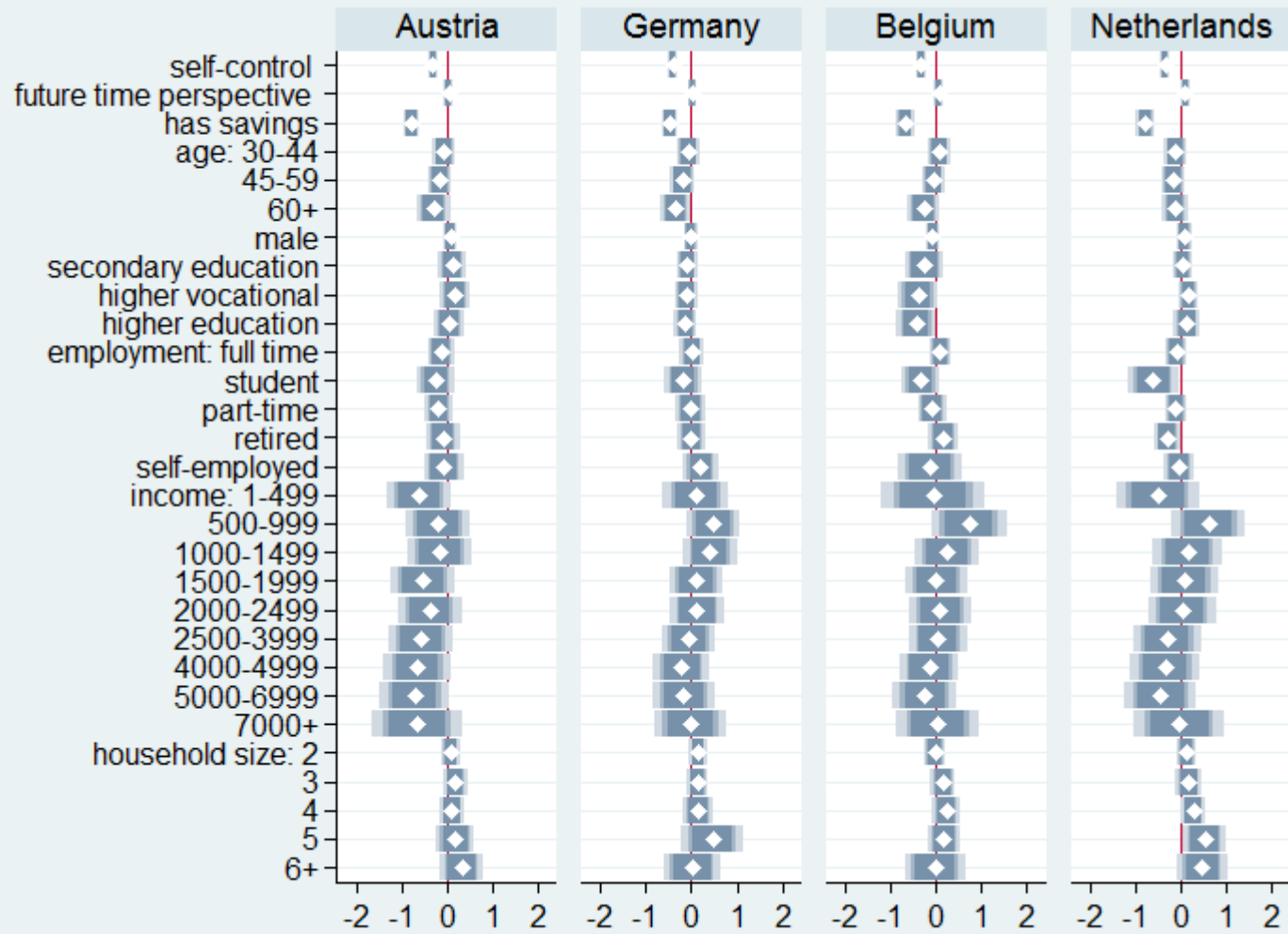**Figure 8.** CMMS in Central Europe – Belgium, Austria, Germany, and NL

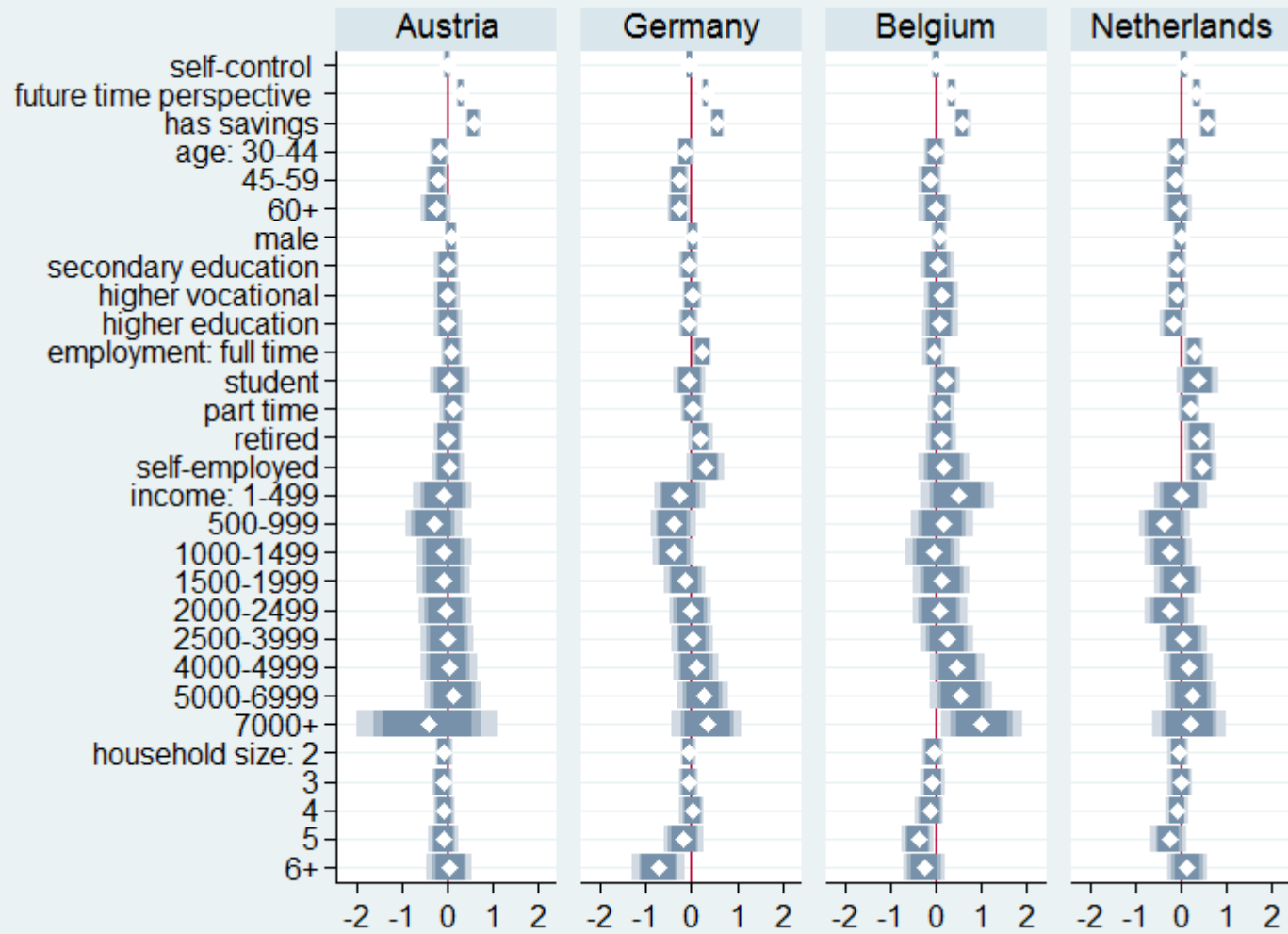**Figure 9.** EFFS in Central Europe - Belgium, Austria, Germany, and NL

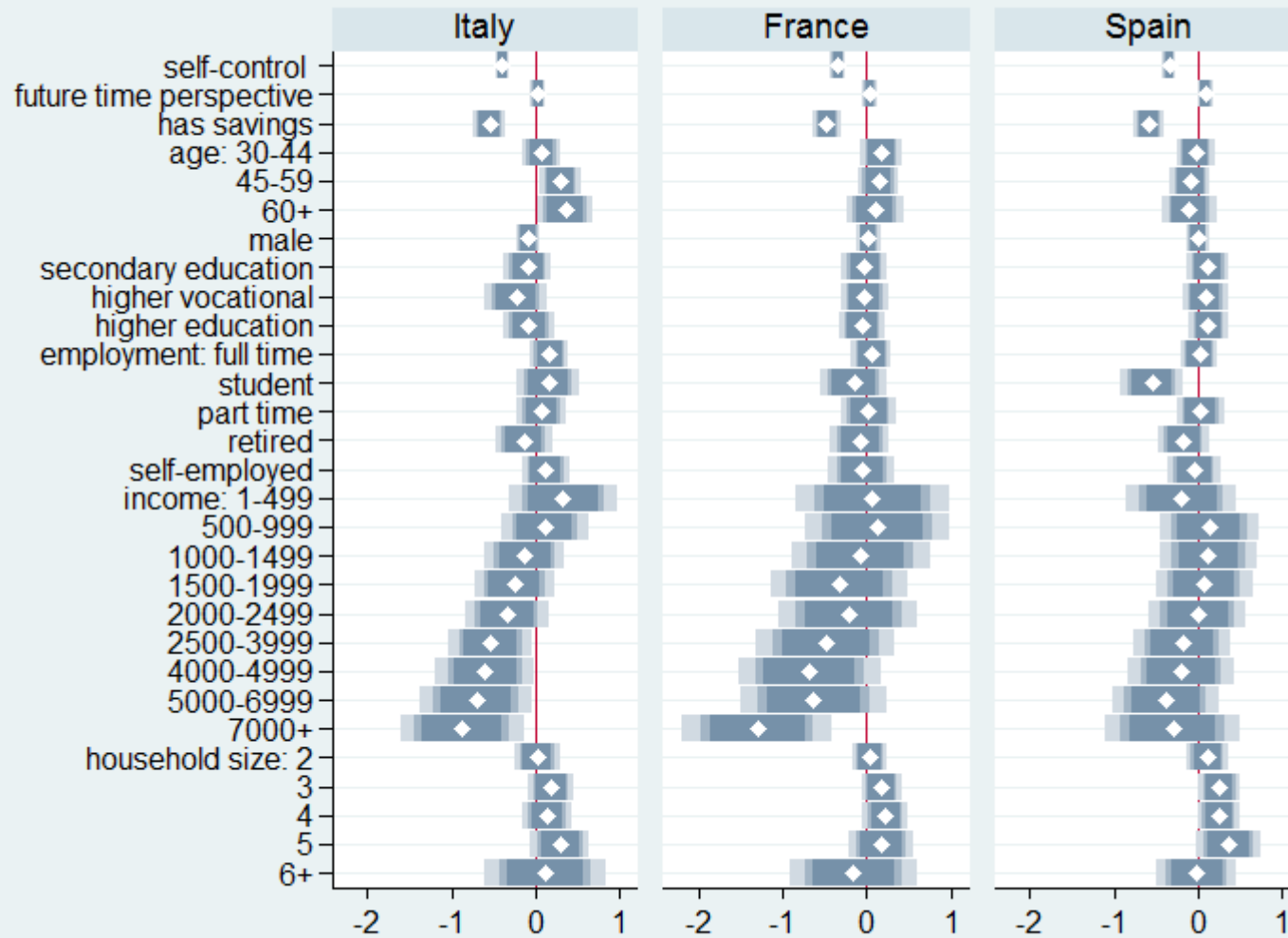**Figure 10.** CMMS in Southern Europe – Italy, France and Spain
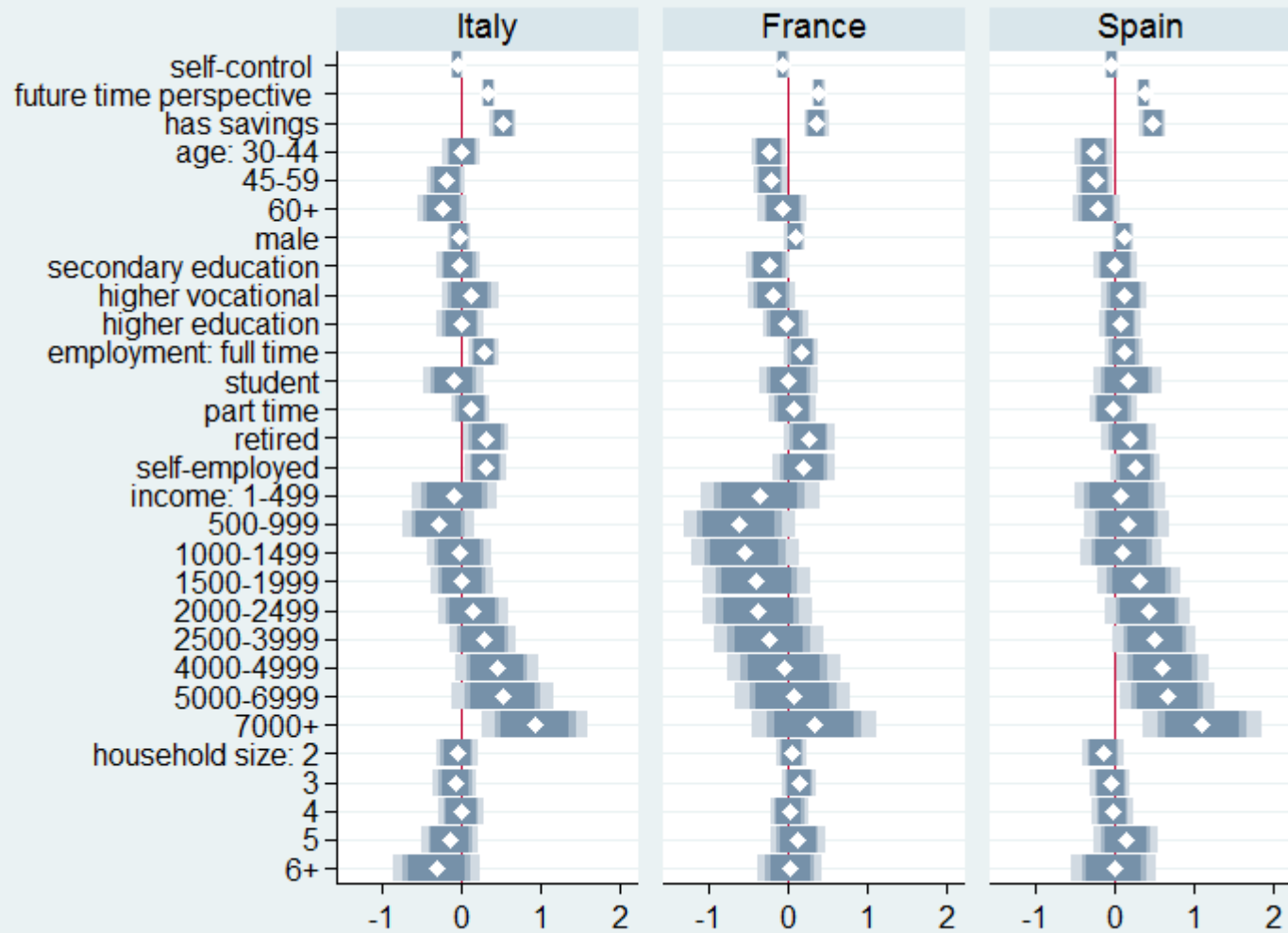
Figure 11. EFFS in Southern Europe - Italy, France and Spain

Figure 12. CMMS in the UK, Australia and US
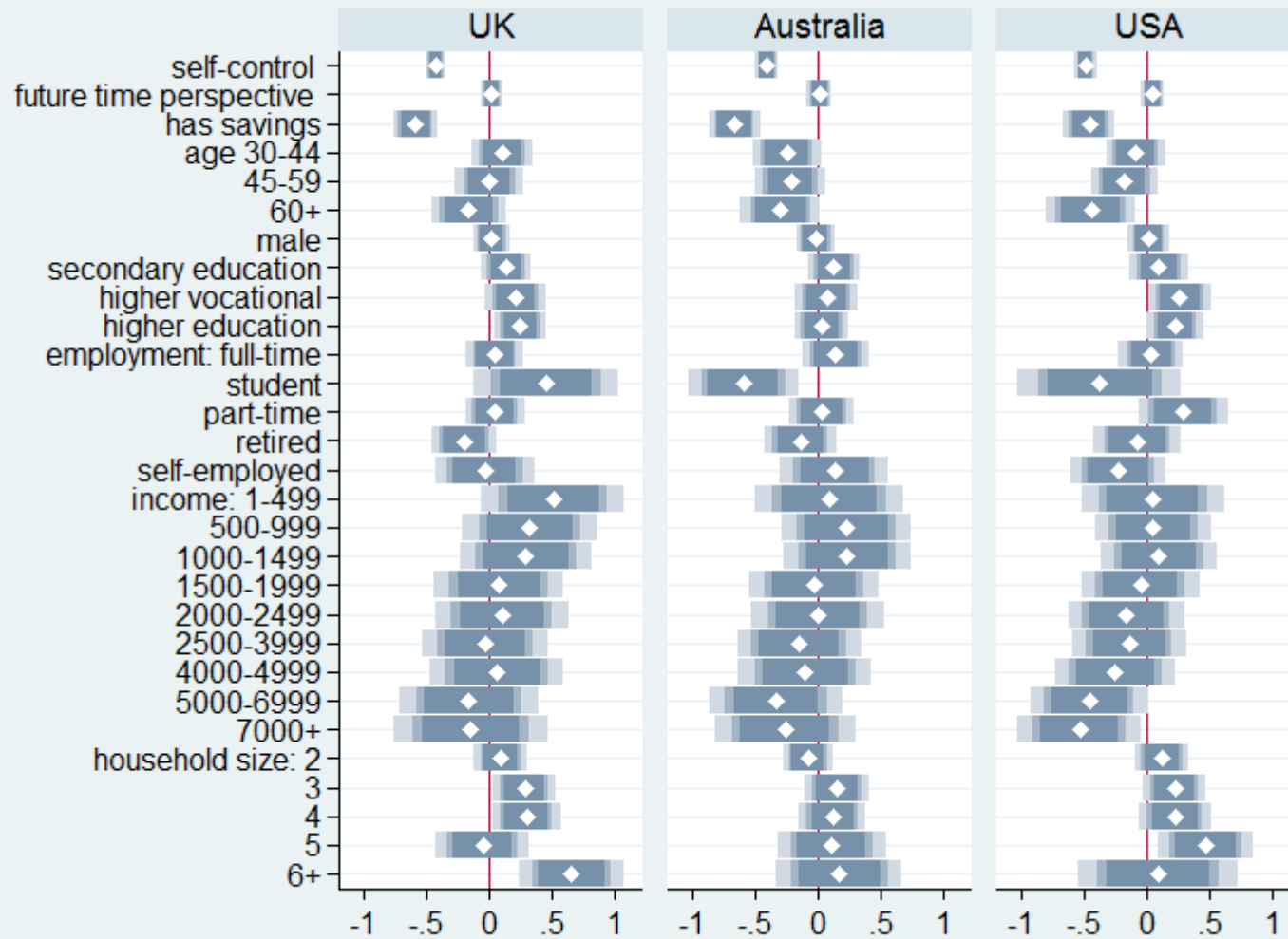
Figure 13. EFFS in in the UK, Australia and USA
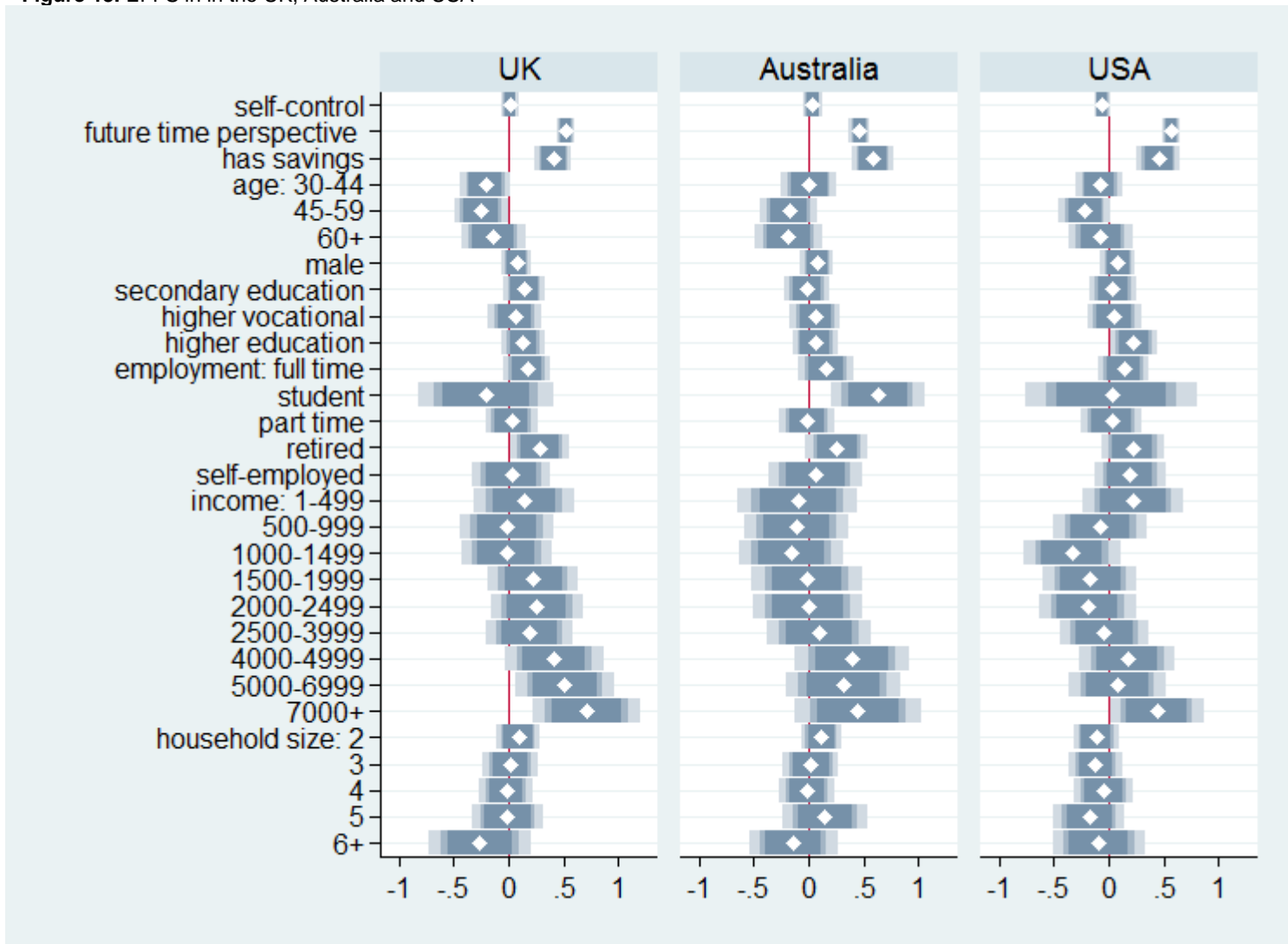
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