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Mario Situm
University of Applied Sciences Kufstein

Lukas Hartleif
University of Applied Sciences Kufstein

Dominika Galkiewicz
University of Applied Sciences Kufstein

Knowledge of capital market products and risk aversion:
An empirical analysis for generation X and Z students on financial literacy

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Structure of the presentation

- Problem statement, relevance & aim of the study
- Literature review
- Research design, data & methodology
- Variables of the study
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Problem statement, relevance & aim of the study

- Financial literacy serves as the foundation for achieving "**financial well-being**" (Bongini & Zia, 2018), a goal increasingly difficult to achieve by the growing complexity of financial environments and products (Alsemgeest, 2015; Lusardi, 2015b; Lusardi & Mitchell, 2014).
- Recent financial crises and market uncertainties underscore the **importance of financial literacy**, as individuals must make financial decisions despite such situations (Becchetti et al., 2013; Lusardi & Mitchell, 2014).
- Empirical literature widely agrees that increasing general financial literacy leads to **better financial decision-making** (Allgood & Walstad, 2016) and improved financial well-being (Bae et al., 2023; Finke & Huston, 2014).
- Hence, the integration of financial literacy into university curricula is **deemed essential** in equipping students to face these challenges (Alsemgeest, 2015; Baglioni et al., 2018; Lusardi, 2015a; Lusardi et al., 2010).
- Research questions:
  - Which experiences and knowledge do Austrian and Germen students haven concerning capital market products?
  - What can be said about their loss aversion in context of investments?

Literature review

- There is **no general definition** of financial literacy in the literature (Finke & Huston, 2014)
- The lack of a uniform definition is also one of the reasons why there are **no accurate measures** of financial literacy (Knoll & Houts, 2012).
- From a theoretical perspective, it can be assumed that financial literacy increases general financial knowledge and improves the ability to make decisions in financial situations (Warmath & Zimmermann, 2019).
- The **positive effects** of increased financial literacy have been documented in several studies. People with good financial literacy
  - are more aware of saving for their retirement (Behrman et al., 2012; Breitbach & Walstad, 2016; Lusardi & Mitchell, 2011; van Rooij et al., 2012)
  - show a more professional and less risky behaviour, understand the concept of debt and interest, can calculate future debt payments and are generally less likely to be over-indebted (Breitbach & Walstad, 2016; Lusardi & Tufano, 2015; Stango & Zinman, 2009)
  - Are more likely to select investment funds based on fundamental analysis and more likely to diversify their savings to reduce risk and earn higher returns (Hasting & Mitchell, 2020; van Rooij et al., 2012)

Research design, data & methodology

- Data for this study were collected through an **online questionnaire** developed based on a literature review (Greenstein & Davis, 2013, p. 67)

- Application of **loss aversion scale** based on Li et al. (2021) – with eight items measured on a 7-point scale (1 = strongly disagree; 7 = strongly agree)

- Prior to distribution to students, the questionnaire underwent a **pre-test** by three experts to ensure question **comprehensibility** and **content validity** (Hulland et al., 2018).

- A total of 262 Austrian and German students completed the questionnaire. Incomplete responses were removed, resulting in further statistical analyses being conducted with complete datasets only (Jamshidian, 2009). This led to a final sample of **231** students

- Application of descriptive statistic, factor analysis, correlation analysis and tests for differences

Variables of the study

Table 1. Variables of the study

Name	CODE	Computation/Defintion	Scale
Age	AGE	Age of the respondent in years	metric
Generation	GEN	1 = Generation Y / 0 = Generation Z	nominal
Gender	GENDER	1 = female (f); 0 = male (m)	nominal
Security purchase	SEC_PUR	1 = wenn a security was bought; 0 = otherwise	nominal
Knowledge about capital market proucts	KNOW	1 = Product/instrument is known; 0 = otherwise / for following variables: KNOW_SHARE, KNOW_BOND, KNOW_FUND, KNOW_ETF und KNOW_CRYPTO	nominal
Loss aversion scale		7-point scale (1 = strongly disagree; 7 = strongly agree)	ordinal
	LOSS I	1) When making a decision, I think much more about what might be lost than what might be gained.	
	LOSS II	2) The pain of losing money matters more than the pleasure of gaining the same amount of money.	
	LOSS III	3) I feel nervous when I have to make a decision that may lead to loss.	
	LOSS IV	4) The pain from losing something matters much more to me than the pleasure from getting it.	
	LOSS V	5) Avoiding failure is less important to me than seeking success. (Reverse coding)	
	LOSS VI	6) Experiencing a major loss stays in my mind longer than experiencing a major gain.	
	LOSS VII	7) A potential failure scares me more than a potential success encourages me.	
	LOSS VIII	8) The suffering that comes with losses can be fully offset by the pleasure that comes from gains. (Reverse coding)	

Results

Descriptive statistics

Based on the year of birth queried, students could be divided into generations Y (1980-1994) and Z (1995-2009) (McCrindle, 2014, p. 6-14), which were modeled with dummy variables

Variable	n	Mean	Median	σ
AGE	231	24.403	23.000	4.206
AGE (m)	89	25.247	24.000	4.568
AGE (w)	142	23.873	23.000	3.886
AGE (Y)	203	32.929	31.500	3.848
AGE (Z)	28	23.227	23.000	2.589

Table 2. Demographics of the respondents & knowledge of capital market instruments

KNOWLEDGE	GENDER	NOT_KNOW	KNOW	SUM	Chi-Square	Cramer-V
KNOW_SHARE	m	9	80	89	.387	.041
	f	11	131	142		
KNOW_BOND	m	32	57	89	.405a	.042
	f	57	85	142		
KNOW_FUND	m	18	71	89	**5.420****	**.153****
	f	49	93	142		
KNOW_ETF	m	29	60	89	**23.775*****	**.321*****
	f	93	49	142		
KNOW_CRYPTO	m	17	72	89	1.478	0.080
	f	37	105	142		
KNOWLEDGE	**GEN**	**NOT_KNOW**	**KNOW**	**SUM**	**Chi-Square**	**Cramer-V**
KNOW_SHARE	Y	15	188	203	**3.409***	**.121***
	Z	5	23	28		
KNOW_BOND	Y	79	124	203	.107	.021
	Z	10	18	28		
KNOW_FUND	Y	59	144	203	.003	.004
	Z	8	20	28		
KNOW_ETF	Y	106	97	203	.240	.032
	Z	16	12	28		
KNOW_CRYPTO	Y	46	157	203	.480	.046
	Z	8	20	28		

Sign. *** 1 %; ** 5 %; * 10 %

- **Male students have significantly greater knowledge** of financial products such as fund and ETF compared to their female counterparts, confirming a **gender gap** previously noted in the literature (Bianchi, 2018; Gerrans & Heaney, 2019)
- There is **no significant difference** in knowledge between Generation X and Generation Y, suggesting that age does not necessarily correlate with improved financial literacy.
- A significant **interaction effect** between gender and generation and knowledge was **not** found

Results

Factor & correlation analysis

Table 3. Factor & correlation analysis for 8 items of the loss aversion scale

	Factor										
Item	**1**	**2**	**Cronbach-Alpha, when item deleted**	**LOSS I**	**LOSS II**	**LOSS III**	**LOSS IV**	**LOSS V**	**LOSS VI**	**LOSS VII**	**LOSS VIII**
LOSS I	0.714		0.607	--							
LOSS II	0.705		0.597	.392**	--						
LOSS III	0.738		0.592	.487**	.381**	--					
LOSS IV	0.717		0.602	.356**	.566**	.390**	--				
LOSS V		0.796	0.679	.023	.030	.115	.026	--			
LOSS VI	0.641		0.614	.267**	.331**	.302**	.361**	.166*	--		
LOSS VII	0.640		0.610	.438**	.228**	.432**	.288**	.081	.350**	--	
LOSS VIII		0.731	0.746	-.195**	-.096	-.181**	-.213**	.213**	-.190**	-.063	--

The table shows the results of factor analysis and bivariate correlation analysis for the 8 items of the loss aversion scale based on Li et al. (2021) . In the factor analysis, two factors could be extracted using Varimax rotation, as this method allows the clearest separation of factors. Absolute values smaller than 0.33 were suppressed following Ho (2014, 249), so that their values do not appear in the rotated component matrix. The three factors can explain 52.945 % of the total variance (Burns & Burns, 2008, 449-459; Foster et al., 2006, 75; Ho, 2014, 255). KMO: 0.772; Cronbach-Alpha: 0,667
Significances: *) 5 percent level; **) 1 percent. n= 231 observations

Results

Factor & correlation analysis

Table 4. Factor & correlation analysis for 6 items of the loss aversion scale

	Factor							
Item	**1**	**Cronbach-Alpha, when item deleted**	**LOSS I**	**LOSS II**	**LOSS III**	**LOSS IV**	**LOSS VI**	**LOSS VII**
LOSS I	0.725	0.748	--					
LOSS II	0.720	0.747	.392**	--				
LOSS III	0.736	0.743	.487**	.381**	--			
LOSS IV	0.728	0.743	.356**	.566**	.390**	--		
LOSS VI	0.624	0.771	.267**	.331**	.302**	.361**	--	
LOSS VII	0.641	0.765	.438**	.228**	.432**	.288**	.350**	--

The table shows the results of factor analysis and bivariate correlation analysis for the 6 items of the loss aversion scale based on Li et al. (2021) . In the factor analysis, one factors could be extracted using Varimax rotation, as this method allows the clearest separation of factors. Absolute values smaller than 0.33 were suppressed following Ho (2014, 249), so that their values do not appear in the rotated component matrix. The three factors can explain 48.587 % of the total variance (Burns & Burns, 2008, 449-459; Foster et al., 2006, 75; Ho, 2014, 255). KMO: 0.805; Cronbach-Alpha: 0,785
Significances: *) 5 percent level; **) 1 percent. n= 231 observations

Results

Loss aversion

Table 5. Descriptive statistics & test for differences [loss aversion scale]

	GENDER	Mean	Median	σ	Z-statistic
LOSS_AVERSION	m (n = 89)	4.007	4.000	1.134	**-2.814****
	f (n = 142)	4.487	4.500	1.104	
	GENERATION	**Mean**	**Median**	**σ**	**Z-statistic**
LOSS_AVERSION	Y (n = 203)	4.274	4.333	1.117	-1.182
	Z (n = 28)	4.506	4.500	1.278	

The table shows the descriptive statistics and test for differences based on U-test (Z-statistic).
Significances: *) 5 percent level; **) 1 percent.

- The loss aversion is **significantly higher for female** compared to male students
- There is **no significant difference** in loss aversion between generations
- A significant **interaction effect** between gender and generation and loss aversion was **not** found
- Loss aversion does **not explain the differences in knowledge** about the single capital market products (statistics here not shown)

Summary and discussion of the results (1/2)

- Similar to Li et al. (2021) the **loss aversion scale** with 8 items was not suitable to determine the loss aversion of Austrian and German students; in this study only 6 items show internal consistency, whereas in Li et al. (2021) 7 items had been extraced

- This aspects undermindes the problem in research that **no accurate measures of financial literacy exist** (Knoll & Houts, 2012)

- **Gender** is the relevant variable to explain **differences in knowledge** and **loss aversion** between Austrian and German students:
  - Female students sow a **significantly higher loss aversion** compared to male students
  - They also have **significantly less knowledge** about **fund** and **ETF** compared to male students

- The study partially confirms the results from prior research that there is **gender gap** – in case of this study for Austrian and German students – in financial literacy (Bianchi, 2018; Gerrans & Heaney, 2019)

- However, the study **does not confirm** that financial literacy increases with age. This is a contrary result to the study by Baglioni et al. (2018).

Summary and discussion of the results (2/2)

Implications:

- Given the changes in the economic environment outlined in the introduction and the lack of knowledge about certain capital market products, it seems relevant to **integrate financial knowledge into courses** when developing curricula of universities.

- The majority of empirical studies confirm that this is the biggest lever to increase financial literacy (Baglioni et al., 2018; Martinez, 2018) and also **to close the "gender gap"** (Bae et al., 2023; Baglioni et al., 2018; Bianchi, 2018).

- Thus, with a proper didactic implementation, not only **content** but also the development of **skills** in general (e.g. savings behavior, retirement planning, etc.) and for the acquisition and processing of relevant information can be taught (Huston, 2010; Santini et al., 2019; Warmath & Zimmer, 2019).

Limitations

- The limitation of this study is that the variables and scales used did **not measure** financial knowledge per se. The extent to which this is possible at all on the basis of the available findings in the literature remains an open question (Knoll & Houts, 2012)

- Nevertheless, based on the comments of Bongini & Zia (2018), it is also possible to argue for the use of simple measures when obtaining indications between specific populations.

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Contact details

Prof. (FH) DDr. Mario Situm, MBA
Director of Studies & Professor
Bachelor Management
Master Corporate Transformation Management
University of Applied Sciences Kufstein
Andreas Hofer-Straße 7 | 6330 Kufstein
Mail: mario.situm@fh-kufstein.ac.at
Tel +43 (0)5372 - 71 819 – 147
Web: www.dr-situm.com

Mario Situm is programme director and professor at the Institute for Corporate Restructuring at the University of Applied Sciences, where he is active in research and teaching. Research topics focus on the early detection of corporate crises, risk management and family businesses. In addition to his work in the financial services and real estate business, he worked for several years at the Bank für Tirol und Vorarlberg AG, Innsbruck, where his last function was as an account manager for key accounts and special financing, following a management position. Actually, he additionally works as an independent consultant and advises small and medium-sized enterprises on the implementation of a wide range of topics.

He studied business administration at the Leopold Franzens University in Innsbruck and received his doctorate there. He also completed studies in financial services at Danube University Krems and in financial management at Johannes Kepler University in Linz. He completed his doctorate in finance at the Swiss Management Center. In the area of publications, his focus is on controlling, family businesses, finance, crisis and insolvency forecasting, and payment & cash management. He is an editorial board member and reviewer of the Business Strategy Review, the American International Journal of Business and Management Studies, the International Journal of Finance and Banking Research and several other international journals.