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Financial literacy between Finnish and Japanese university students

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ABSTRACT:
Tässä pro gradu -tutkielmassa on tehty vertaileva analyysi Suomen ja Japanin yliopisto-opiskelijoiden talousosaamisesta. Tutkimuksen taustalla on yksilön kasvava vastuu omasta taloudellisesta tulevaisuudestaan nyky-yhteiskunnassa sekä maiden tuoreet kansalliset strategiahankkeet talousosaamisen edistämiseksi. Tavoitteena on ollut tunnistaa ja selittää keskeisiä eroja maiden välisissä taloustiedoissa, -käyttäytymisessä ja -asenteissa. Tutkimuksen viitekehyksenä on hyödynnetty OECD/INFE-mallia sekä yleisesti hyväksyttyä talouslukutaidon teoriaa. Tutkimus on toteutettu määrällisenä kyselytutkimuksena (N = 183), joista 114 on Suomesta ja 69 Japanista.

Tutkimuksen keskeisenä havaintona on, että maiden välillä on huomattavia ja tilastollisesti merkittäviä eroja talousosaamisen kaikilla osa-alueilla. Suomalaisopiskelijoiden objektiivisen taloustiedon taso, joka kattaa koron, inflaation sekä riskien hajauttamisen, on havaittu huomattavasti japanilaisopiskelijoiden tasoa korkeammaksi. Taloudellisessa käyttäytymisessä selkein ero on sijoittamiskäyttäytymisessä, jossa suomalaisopiskelijat ovat merkittävästi aktiivisempia. Eroja ilmeni myös taloudellisessa itsenäisyydessä, jossa suomalaiset yliopisto-opiskelijat osallistuivat kotitaloutensa päätöksentekoon, toisin kuin japanilaiset yliopisto-opiskelijat.

Huomattavin ero on kuitenkin paljastunut taloudellisissa asenteissa. Suomalaiset opiskelijat kokevat henkilökohtaisen talousosaamisen erittäin tärkeäksi aiheeksi, kun taas japanilaiset opiskelijat eivät pidä sitä lähes ollenkaan tärkeänä. Tämä viittaa vahvasti siihen, että japanilaisten yliopisto-opiskelijoiden haasteet voivat olla ensisijaisesti asenteellisista tekijöistä johtuvia. Aiemmista tutkimuksesta poiketen aineistossa ei ole havaittu tilastollisesti merkittävää sukupuolieroa talousosaamisessa, paitsi Japanin aineistossa, jossa naiset suoriutuivat miehiä paremmin taloustiedossa. Taloudellisen lukutaidon eroja selittivät lisäksi itsearvioitu talousosaamisen taso, Suomessa opintovuosi ja talousosaaminen, kun taas Japanissa keskeisiksi tekijöiksi nousivat sukupuoli, pääaine sekä budjetointi.

Johtopäätöksenä esitetään, että talousosaaminen ei ole ainoastaan yksi universaali tekninen taito vaan syvästi kulttuurisiin ja asenteellisiin tekijöihin kytkeytyvä ilmiö. Tutkimus on osoittanut, että yhtenäismalli ei sovellu taloudellisen lukutaidon edistämiseen kaikissa asiayhteyksissä. Tulokset korostavat päättäjien ja kouluttajien tarvetta ottaa yhteiskunnalliset ja kulttuurilliset teemat huomioon kansallista talouslukutaidon strategiaa kehittäessään. Erityisesti teknisen tiedon ohella on keskityttävä asenteiden muokkaamiseen ja motivaation herättämiseen. Tutkimuksen mukaan yliopisto-opiskelijoiden keskuudessa on opiskelijalähtöistä kiinnostusta talouslukutaidon osaamiseen, erityisesti sijoittamiseen liittyen. Jatkossa onkin perusteltua syventyä laadullisin menetelmin näiden asenne-erojen taustalla oleviin kulttuurisiin ja yhteiskunnallisiin syihin.

KEYWORDS: Financial literacy, economic behaviour, personal finance, investing, comparative research, survey research, Finland, Japan

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1 Introduction

In an era of increasing financial market complexity and a global shift towards individual financial responsibility, the financial literacy of young adults has become a critical topic of their future economic well-being. The ability to make informed financial decisions is a fundamental skill in modern society, enabling individuals to manage wealth, assess risk, and participate effectively in the democratic process. This topic has gained further urgency in the current economic landscape, marked by recent changes in interest rates, inflation, and digitalization of financial services. As new financial instruments become widespread, gaps in knowledge and skills create vulnerabilities especially among young adults. This highlights the importance of financial literacy as a tool for promoting long-term security and reducing economic inequality.

While the financial literacy of young adults is a well-established field of study, much of the existing literature focuses on single-country analyses or broad international comparisons. A significant gap remains in direct comparisons of the specific age group of university students, and between nations with distinctly different cultural, educational, and welfare models. This study addresses this gap by comparing Finland and Japan, which are two highly developed economies with high standards of living and education, but fundamentally different societal structures. Finland represents a Nordic welfare state, which offers a compelling contrast to Japan's East-Asian model, which emphasizes family-centric support systems. Furthermore, the study focuses strictly on university students, who are a group of young people moving towards independent financial decision-making, while belonging in the same group educationally. This unique comparison examines how deep these structural differences may be regarding financial literacy. This could provide insights that a comparison of more similar nations might not uncover.

The primary objective of this study is to make a direct comparative analysis of the financial literacy of university students in Finland and Japan. The research focuses on three core dimensions: financial knowledge, financial behavior, and financial attitudes

including perceived importance. To achieve this objective, the study addresses the following research questions:

1. How do Finnish and Japanese university students differ in their level of financial literacy?
2. What are the main factors that can explain the potential differences between the two groups?

To answer these questions, this study utilizes a quantitative methodology, analyzing data from a custom-designed survey completed by 183 university students from both countries. The results of this analysis are intended to provide valuable insights for policymakers, educators, and financial institutions, helping to inform the design of more effective and culturally aware financial education programs.

This thesis is organized into seven chapters. Chapter 2 provides a review of the relevant literature, defining the key concepts of financial literacy and discussing existing theory. Chapter 3 explores the cultural and educational contexts of Finland and Japan, providing a background for the comparative analysis. Chapter 4 details the research methodology, including the survey design, data collection process, and a summary of the data. Chapter 5 presents the empirical results of the regression analysis. Chapter 6 offers an in-depth discussion and interpretation of these results, and Chapter 7 concludes the study by summarizing the key findings and their implications.

2 Financial literacy

This chapter provides a comprehensive overview of financial literacy. The chapter begins by tracing the evolution of the term's definition, establishing the framework. It then explores the importance of financial literacy, from its impact on long-term wealth accumulation and short-term financial money managing to its societal implications. The chapter critically examines the primary methodologies used to measure financial literacy, including the "Big Three" questions and the OECD/INFE toolkit. Finally, the chapter delves into the ongoing academic debate of the effectiveness of financial education.

2.1 Definition

In order to explore financial literacy in depth, it is essential at first to establish its definition. The term “Financial literacy” as a formal construct was introduced in 1997 by The Jump$tart Coalition for Personal Financial Literacy. At the time it was defined as the skill to manage money effectively by using knowledge and practical skills, which could ensure financial stability over a lifetime. (Hastings et al., 2013, p.5).

Since its introduction, the definition has been expanded with clarification and new perspectives. According to the Organisation for Economic Co-operation and Development (OECD, 2023, p.13), financial literacy is defined as a combination of “financial awareness, knowledge, skills, attitudes and behaviours necessary to make sound financial decisions and ultimately achieve financial well-being”. This definition widens the perspective to include not only skills and knowledge but also attitudes and behaviors.

Similarly, the definition now encompasses other aspects of personal finance beyond money management. The foundational pioneers of the field of financial literacy, Lusardi & Mitchell (2014, p.6), define financial literacy as “people’s ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions”. Their definition is distinct from OECD’s, but both are often used in the majority of the peer-reviewed academic papers on the topic. These definitions while

having major differences, do not completely contradict each other and therefore could be used alongside.

However, establishing a common ground for the definition has proven to be challenging. According to Kadoya & Khan (2020, p.2) the definition differs across studies, and several past studies have not included a definition for financial literacy, using the terms financial knowledge and financial literacy interchangeably.

Moreover, McCowage & Dwyer (2022, p.19) highlight that while financial literacy as a concept is mostly agreed upon within the academia, it often gets mixed up with economic literacy. These terms are often used synonymously, not only outside academia but also within professional and academic literature. According to McCowage and Dwyer, the main difference is that financial literacy focuses on individual's personal financial situation, such as how inflation and interest rates affect personal finances. Economic literature on the other hand, focuses on how these phenomena affect the government, institutions, and the economy and why these changes have occurred. Furthermore, basic economic concepts such as scarcity and allocation of resources are part of economic literacy while not being part of financial literacy.

As this demonstrates, the definition of financial literacy is not as objectively precise as terms in the fields of natural sciences. While it seems to have remained the core idea of being a way to make informed financial decisions alongside long-term financial planning by using an individual's capabilities, the definition has evolved and could see some changes in the future as well.

For the purpose of this study, the definition of Lusardi & Mitchell and OECD are used conjointly. Financial literacy is therefore defined as the necessary knowledge, attitudes and behaviors necessary to make sound financial decisions regarding financial planning, wealth accumulation, debt, and pensions and long-term financial wellbeing. The reason for choosing this definition is due to its widespread adoption in the academic field.

Furthermore, most of the previous research both in Finland and Japan has used these definitions making comparisons between these countries meaningful and consistent with previous research.

2.2 Importance

The importance of financial literacy is widely agreed upon in academic circles. Lusardi (2019, p.7) goes as far as to argue that financial literacy should be considered essentially a human right, holding equal importance as reading and writing, rather than a luxury or specialized skill only for the few. Furthermore, Lusardi found that there is a lack of financial literacy even in the most developed countries at the time when individuals are more responsible for their personal finances than ever before, holding societies back from achieving their full potential. Financial literacy is found to be the lowest among the young and the elderly (Lusardi & Mitchell 2014, p.17). The OECD (2023, p.13; 2024, p.17) has found a clear association between financial literacy and positive financial behaviours such as saving, investing, and recognizing financial scams.

Other studies have come to similar conclusions. Van Rooij et al. (2011, p.20) highlighted the fact that inadequate financial literacy prevents households from participating in the stock market while Sekita et al. (2022, p.1) argued that financial literacy has an economically large and positive impact on individuals' wealth accumulation. In the study of the US population, Lusardi & Mitchell (2011, p.15) found that the individuals without any retirement plan achieved only half of the retirement wealth of those who planned for retirement. This result is particularly relevant in both Finnish and Japanese societies experiencing declining birthrates and challenges regarding the age dependency ratio, which could cause individuals to take more proactive actions for their retirement funding.

The importance of financial literacy is not limited to long-term behaviors. According to Vaahtoniemi et al. (2023, p.22) there is a strong correlation between financial literacy and financial fragility, noting that a higher financial literacy score is linked to an improved ability to handle income shocks and major expenses. This is especially relevant in the

current world economy which has experienced multiple major shocks in recent years, including the COVID-19 pandemic, the war in Ukraine, and the looming possibilities of trade wars and geopolitical tensions. As both Finland and Japan have suffered from stagnant economic growth, being able to withstand financial shocks has become extremely important.

However, not all researchers agree on these positive implications. Kawamura et al. (2021, p.1-2) found in their study that high level of financial literacy among Japanese was associated not only with better retirement planning, but also with overborrowing, speculative investing, and excessive risk taking. Their study raises an interesting point that financial literacy could prove counterproductive at least in some cases.

In recent years the economy and especially the financial sector have been revolutionized by digitalization, introducing new complex financial products and opportunities. New Innovations such as mobile payment platforms, digital wallets, neobanks, blockchain, robo-advisors, and the platform economy have emerged and been adopted in both Finland and Japan. According to Lusardi (2019, p.1) today individuals face completely different financial decisions due to these technologies, making it essential to figure out how well people can understand these changes and make informed decisions. A digital financial literacy has therefore been emerging. According to Koskelainen et al. (2023, p.3-7) there is a need for digital financial literacy which would allow individuals to acquire necessary knowledge to understand the possibilities and risks these technologies present.

Financial literacy has important societal implications through positive externalities. For example, financial literacy can be seen as a way to decrease financial inequality and alleviate poverty. Furthermore, a financially literate population could have an impact on policymaking by understanding how certain political proposals affect their financial situation in both short and long term. Therefore, by enhancing financial literacy, individuals could become more rational in their decision-making, as seen in the study of Nguyen et al. (2022, p.14) in which cancer screening was positively associated with financial

education, enabling people to behave more rationally. This is linked to the core presumption of rationality in economics, suggesting that financial literacy can help combat market failures, reduce information asymmetries, and even improve economic models based on rationality.

2.3 Measuring Financial literacy

Now that the definition of financial literacy has been clarified and its importance explained, the question of how to measure it among the population arises. According to Hastings et al. (2013, p.9-11) measuring financial literacy dates back to early 1990s when Consumer Federation of America began conducting "Consumer Knowledge surveys" among the population. These surveys included questions regarding personal finance and consumption such as credit, insurance, consumer expenditures. However, Hastings et al. highlight that the current international standard for assessing financial literacy is based on Lusardi and Mitchell's "Big Three" questions from 2004 Health and Retirement Study.

The "Big Three" questions cover three core concepts of interest, inflation, and risk diversification. According to Lusardi & Mitchell (2011, p.3-4), the first two concepts are fundamental concepts for savings, while diversification is crucial for investments decisions. The questions are designed so that they do not require advanced mathematical calculations and can be solved by just understanding the core concept, which makes them useful for identifying individuals struggling with more complex financial phenomena (Lusardi & Mitchell, 2023, p.3). Moreover, the "Big Three" questions were designed with four principles in mind: Simplicity, relevance to everyday financial decisions, brevity for increasing adoptability, and comparability across different studies (Lusardi & Mitchell, 2014, p.10). By 2023 the "Big Three" have been used in more than 40 surveys across the world (Lusardi & Mitchell, 2023, p.3).

While the "Big Three" questions have been widely adopted and are particularly useful for comparing financial knowledge between countries, they have several limitations. For example, they lack aspects of behavior and attitudes such as budgeting, debt,

withstanding financial shocks, payment methods used, and retirement planning, which are crucial in order to measure financial literacy in its broader definition. There is some scepticism for the “Big Three” within the academia. Hastings et al. (2013, p.9-11) note that there is remarkably little evidence to support that these questions are superior way to measure financial literacy. Kawamura et al. (2021, p.16) agree with this statement, adding that “the Big Three” does not take into account asymmetric information, imperfect competition, or irrational behaviors.

Another commonly used and widely adopted way of measuring financial literacy is OECD/INFE Toolkit for measuring financial literacy and financial inclusion, started in 2009, it was designed to measure financial literacy in a comparable way internationally (OECD, 2022, p.5-6). It provides a more comprehensive approach by including questions on financial behavior and attitudes, while keeping the “Big Three” as a part of the financial knowledge segment. Therefore, this questionnaire remedies the shortcomings of using the “Big three” alone, it has its own shortcomings as well. Behavior is self-reported and might not be entirely objective. Some forms of this questionnaire include over 50 questions, requiring a lot more resources for the researcher, and attention for the participants, challenges the core idea of simplicity and brevity. These complexity of the questions might create issues related to cultural adaptation.

2.4 Financial literacy and education

The theoretical framework for financial literacy is strongly linked to financial education. According to Lusardi (2019, p.6), to be effective, financial literacy initiatives must to be large and scalable. Therefore schools, workplaces, and community platforms provide important opportunities to teach financial education to large populations. Similarly, OECD (2022, p.162-163) has found financial education through schools to be a realistic and attainable strategy. Results from their 2022 Programme for International Student Assessment indicate a positive correlation between financial literacy performance and students’ exposure to money and learning financial concepts at school. Students who reported having learned financial related terms in school attained higher financial literacy scores

than students who did not. It could be also argued that education through school system ensures that everyone, even those marginalized or vulnerable, has an opportunity to enhance their financial literacy.

A multitude of studies have found similarly positive results. According to Kadoya & Khan (2020, p.1) spreading financial literacy is highly valuable because there is a risk that government are unable to protect individuals in open markets since regulations alone may be insufficient, especially given the complexities of digital financial landscape mentioned previously. Xiao & Porto (2017, p.9) have similarly concluded that financial education enhances financial well-being through knowledge acquisition and improved confidence to act accordingly. Furthermore, Kalmi & Rahko (2022, p.3) found evidence that game-based educational interventions could offer even better results, enhancing students' interest in economic topics.

Despite these positive findings, there is still an ongoing debate regarding the effectiveness of financial education, especially through targeted financial intervention programmes. Hastings et al. (2013, p.16-17) highlighted the fact that the evidence for financial education to improve financial literacy is extremely limited and even contradictory. This critique was even more evident when Fernandes et al. (2014, p.12-14) found in their meta-analysis of 201 studies that financial education interventions explained only a 0.1 % of the variance in the financial behaviors studied, with an even lower percentage among individuals with lower income. Moreover, according to them financial literacy skills appear to decay over time and could prove inefficient due to high opportunity cost. Instead of these interventions, Fernandes et al. argue that "just-in-time" interventions delivered at the precise moment an individual is making financial decisions could prove more effective.

Studies thereafter have shown mixed results. Kalmi (2018, p.30-31) found in this study that among Finnish lower secondary school students, financial education intervention had a positive effect on financial knowledge but had no significant effect on savings

behavior. It could be argued that while financial education interventions have their limitations, there could be a case for overhauling the entire school curriculum in order to consolidate financial literacy early on and therefore enhance positive financial behaviour through individuals' life cycle. There is no unified academic consensus on this matter, and therefore arguments from either side must be taken into account.

3 Cultural and educational context in Finland and Japan

This chapter provides a comparative analysis of the distinct national contexts of Finland and Japan. The analysis begins by examining the fundamental macroeconomic, institutional, and cultural differences between the two nations. The chapter then explores the significant disparities in gender equality. Following this, the educational systems of both countries are compared. The chapter concludes by reviewing existing financial literacy studies from both nations.

3.1 Comparing the economies and culture

While both Finland and Japan are high-income and developed economies with a declining population and export-based economies, they differ drastically from each other in several key areas relevant to financial literacy. Finland operates under the Nordic model, which is characterised by a high level of public spending and progressive taxation that fund a high level of welfare. This includes for instance education, healthcare, unemployment benefits, pensions, and for university students study grants and housing allowances. Japan's welfare system is more limited and often depends on employment. It could be argued that these structural differences in welfare could affect financial literacy among university students. In Finland it is common for university students to live individually while focusing on their studies, while Japanese students may be more likely to work part-time or remain financially dependent of their families.

Another major difference between these countries is their macroeconomic environment, especially inflation rate. As illustrated in Figure 1, the Finnish economy has experienced modest annual inflation between 2000 and 2024 with spikes during the global financial crisis, Euro crisis and the COVID-19 pandemic. Japan on the other hand has experienced on average significantly lower inflation rates than Finland's, which have in fact frequently turned into deflation. This could have significant implications for financial literacy since

in deflationary environment incentivizes different financial behaviour such as discouraging spending. As Lusardi & Mitchell (2023, p.5) reason in their study, younger participants may lack the knowledge of inflation due to not experiencing it during most of their lifetimes compared to older generations, who might have seen even double digits inflation rates. While the "Big Three" is based on the understanding of inflation, for Japanese students understanding deflation could prove more important and beneficial. According to the data presented in figure 1, the average annual inflation rate (consumer prices) between 2000-2024 has been 1.9 % in Finland, and 0.42% in Japan.

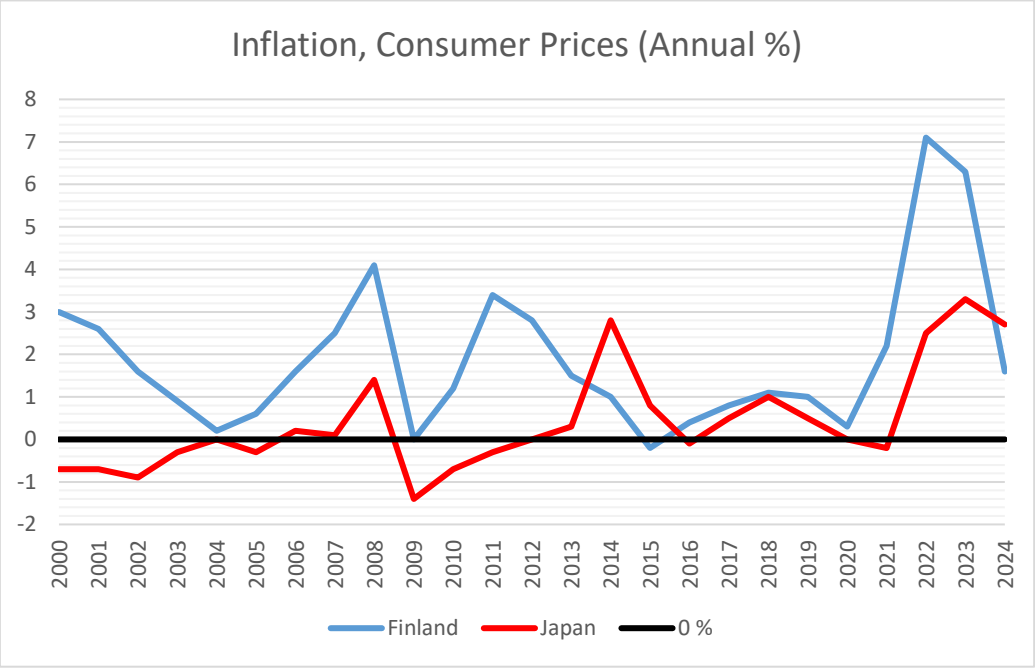

Figure 1. Annual inflation rates in Finland and Japan, 2000-2024 (%). Source: Created by using data from World Bank Group (2025).

Another major difference is found in the household savings rate. As shown in the Figure 2. While both countries have experienced higher savings rate in recent years during the COVID-19 pandemic, Japanese household saving rate has been historically higher than Finland's and has stayed mostly steady and positive throughout the years, except for 2014-2015. On the other hand, Finnish household savings rate has frequently been negative. The average household savings rates between 2000 and 2023 have been -0.48% in Finland, and 2.96% in Japan. This could have interesting implications regarding financial

literacy rates. There seems to be a case that the Japanese exhibit stronger financial planning and budgeting behavior compared to Finnish households, at least in theory, due to forementioned deflationary environment.

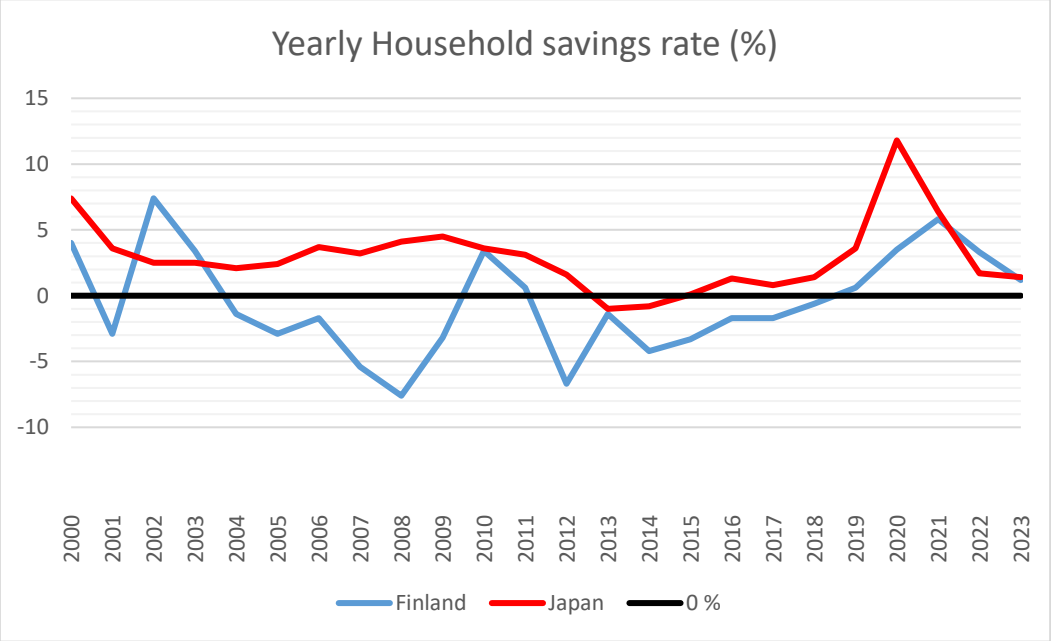

Figure 2. Yearly household savings rates in Finland and Japan, 2000-2023 (%). Sources: Created by using data from Statistics Finland (2025) and Cabinet Office, Government of Japan (2025).

Culturally Finland and Japan have factors which could explain these differences related to financial behaviour. Finnish culture is often characterized by independent behaviour and individualism, while Japanese culture traditionally embraces collectivism and strong family orientation. Furthermore, studies implicate differences in confidence. Kawamura et al. (2021, p.16) found Japanese participants to be, on average, underconfident in their financial literacy skills, while Kalmi & Ruuskanen (2018, p.24) have found Finnish participants to be confident in their abilities. This cultural caution and proneness to thrif, as seen in Japanese household savings rate, can be traced back historically. According to Garon (2011, p.134-147) in the year 1910 Japan already held the second highest amount of saving accounts in the world, and even one in every four elementary school students had a postal savings account. Even after the second World War there were massive National Salvation Savings Campaigns in order to encourage savings which have influenced

practices to this day, revealing that almost half of the married Japanese women in their twenties keep household account books (Garon 2011, p.257-287).

3.2 Gender and financial literacy

This leads us to the major gender disparities between Finland and Japan which can be seen in Global Gender Gap Report (World Economic Forum 2024, p.179-219), which ranked Finland 2nd among 146 both developed and developing countries across the world, with a score of 0.875. In the subcategories Finland was placed 20th on economic participation and opportunity, 1st on educational attainment, 70th on health and survival, and 3rd on political empowerment. In contrast, Japan was ranked 118th with an overall score of 0.663. In the subcategories it was placed 120th on economic participation, 72nd in educational attainment, 58th on health and survival, and 113th on political empowerment (World Economic Forum, 2024, p.219). These figures reveal that the gender disparities are striking especially among economic participation, educational attainment, and political empowerment, suggesting significant societal barriers in equality.

These differences are reflected in multiple outcomes of recent studies. Sekita (2011, p.14-15) found in their study Japanese women performing significantly worse than men in all questions regarding financial knowledge, highlighting the fact that financial knowledge is highly and positively correlated with level of education. However, on the contrary women were more likely to have retirement savings plans than men. Okamoto and Komamura (2021, p.17) argued that attaining higher education largely accounts for gender the inequalities in financial literacy, thus explaining the gender gap in Japan. While Kadoya and Khan (2020, p.12) came to a similar conclusion that males perform better in financial knowledge among Japanese participants, females outperform males in both financial behavior and attitudes, suggesting that women may not be less financially literate when considering the broader definition of financial literacy.

Surprisingly, similar gender gaps can be found in more gender equal Finland. Vaahtoniemi et al. (2023, p.1) found women to have lower financial literacy scores compared to men. This notion is affirmed by a study by Kalmi & Ruuskanen (2018, p.24), who concluded that males answered financial literacy questions correctly more often. However, they also highlighted that that the positive relationship between financial literacy and retirement planning is stronger for women than for men.

The gender gap related to financial literacy is prevalent across the world. Haag and Brahm (2025, p.2) highlighted in their literature review of 185 studies that nearly 78 % of studies found a strong male-favored gender gap across all ages and regions, particularly strong in developed countries like Finland and Japan. The reasons for this are still debated. Contrary to the explanation offered by Okamoto and Komamura, Tinghög et al. (2021, p.10) argued that in developed countries women are already attending universities more frequently than men, while also being integrated into banking and finance. Tinghög et al. found that increased anxiety reported by women regarding financial matters helps explain the gender gap in financial literacy.

While both Finland and Japan exhibit a gender gap in financial literacy, the reasons are still a matter of debate. One could argue that Japanese results are due to structural inequality while Finnish results might be influenced by psychological or cultural factors. According to Okamoto & Komamura (2021, p.17), gender differences could be mitigated by improving financial education. Therefore, in order to combat these disparities, designing an inclusive financial education policy could prove essential.

3.3 Educational systems and financial literacy

In the context of this study, understanding the educational systems surrounding financial literacy is important. Both Finnish and Japanese systems offer their own perspectives and emphases from elementary school to high school. In Finland, financial literacy is not a separate subject, but a part of multiple disciplines linked to both financial literacy and economics, most notably social sciences, math, and home economics (Kalmi & Rahko

2022, p.3; Vaahtoniemi et al. 2023, p.2). Vaahtoniemi et al. highlight that the amount of teaching related to financial literacy has increased during the past decade and therefore has played a role in achieving high financial literacy scores among young people in Finland alongside the high level of mathematics and languages taught in Finnish schools. However, Kalmi and Rahko argue that currently teachers are not specialized in economics or financial literacy, possibly hindering the effectiveness of teaching these subjects.

Historically the Japanese system has been viewed as more limited regarding financial education. Its main goals have been focused on understanding basic financial principles such as interest, inflation, deflation, exchange rates, and risk (Committee for the Promotion of Financial Education, 2015, p.10-13). According to Japan Financial Literacy and Education Corporation J-FLEC (2024, p.3-8), only 7% of Japanese report having received any formal financial education. The criticism has also come from the teachers: Japan Securities Dealers Association JSDA (2014, p.5-20) highlighted in their survey that around 70% of high school civics and economics teachers felt that teaching time for these topics was insufficient due to the education plan having no space for them, despite overwhelmingly finding the topic essential.

In response, both countries have made significant decisions and plans for improving financial literacy. Finland began a national financial literacy strategy in 2020, coordinated by the Bank of Finland and led by Ministry of Justice. The goal of this strategy is to make Finnish financial literacy the best in the world by the year 2030. (Bank of Finland, 2021, p.2-6.). The Japanese on the other hand have completely overhauled their education related to financial education. Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT) implemented updated and mandatory curriculum for both home economics (MEXT, 2018a, p.31-38) and civics (MEXT, 2018b, p.65-73) starting in 2022. The new home economics curriculum is based on understanding household finances, financial management, and financial planning with lifelong perspectives in mind, while teaching basics of financial instruments such as stocks and bonds. Civics curriculum on

the other hand includes more macroeconomic education related to economic systems, globalization, social security, aging population, and declining birthrates.

However, the success of these new strategies is not guaranteed. As Kalmi and Rahko (2022, p.3) noted, teachers' lack of expertise could cause curriculum to be ineffective. This is supported by Sekita et al (2022, p.11) who found that there is reluctance and confusion among home economics teachers in Japan regarding the recent curriculum changes, which could undermine the effectiveness of the new guidelines. One way to remedy these challenges is to provide teachers with professional development as educators along with materials. Organizations such as J-FLEC (2024, p.3-8) and JSDA (2024, p.5-20) have started this recently by offering schools tailored materials such as books, videos and games, as well as professional lecturers. On the other hand, there is an argument to be made that just understanding financial assets and phenomena is inadequate. Bhat et al. (2025, p.18) highlight that in order to ultimately enhance financial literacy, these educational programs should include strategies for managing impulsivity and self-control.

Alongside formal financial education, both countries have extremely high standards of general education, which could contribute to their financial literacy rates accordingly. As shown in the Figure 3, the mean PISA 2022 scores for both Finland and Japan in mathematics, reading, and science are higher than OECD average. Notably, Japan's scores are significantly higher than Finland's especially in the mathematics and science. If Vaahtoniemi et al. (2023, p.2) previously mentioned explanation for high level of math education causing high financial literacy scores in Finland is correct, it could be argued that current Japanese university students should have an advantage in their problem-solving and numerical skills since many of those participated in 2022 PISA would be university aged now.

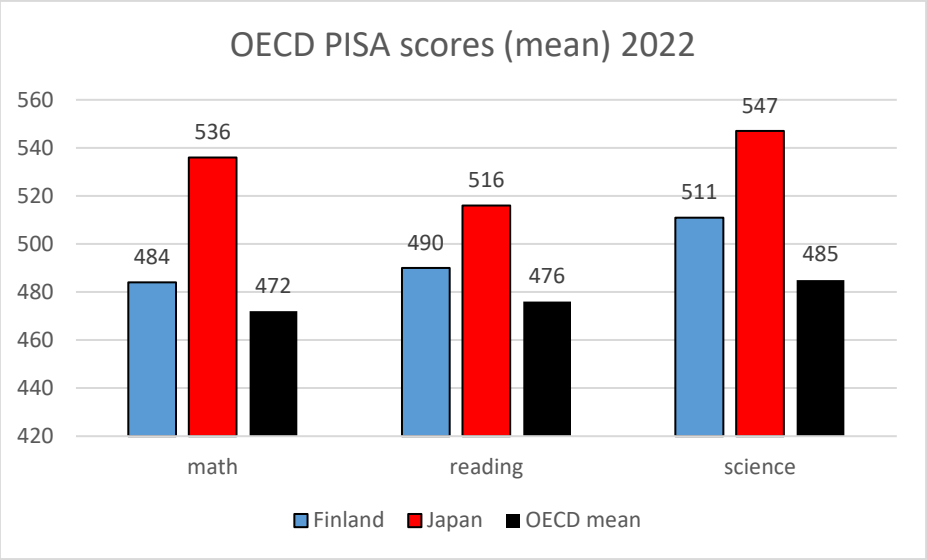

Figure 3. PISA scores of Finland and Japan in 2022 (mean). Source: Created by using data from OECD (2023).

3.4 Previous studies

A direct comparative study of financial literacy among Finnish and Japanese university students using the OECD framework or the "Big Three" questions could not be found in existing literature. This represents important but uncharted territory since the recent changes in both countries' national financial literacy strategies have taken place. Furthermore, some of the current university students have already experienced these updated strategies and curricula firsthand, but no results exist to show their impact. Moreover, international studies on students are rare. Most notable example of this is the PISA for Financial literacy. While Japanese students have not taken part in this program, Finland has been ranked highly, achieving second place in 2018 (OECD 2020, p.52), leaving no data for a direct comparison.

There have been several studies done regarding the financial literacy of the population aged 18-79 in these countries. Through these studies it is possible to make assumptions of national financial literacy, which could translate to university students. In Japan Sekita (2011, p.4) made the first comprehensive study of Japanese financial literacy, concluding that the national financial literacy rate was not high. They found that among the "Big

Three" questions, only 27% of the participants answered all three questions correctly, with the correct response rate of 70.5% for interest rate, 58.8% for inflation, and 39.5% for risk diversification. However, it must be noted that the interest rate question did not measure compounding interest, which has been commonly used in the studies after. A more recent study by the Central Council for Financial Services Information (2023, p.18) showed some improvements, with correct response rate of 39 % for interest, 63% for inflation, and 50% for risk diversification. Despite this, Japanese still lag far behind other advanced nations such as the UK, Germany, and France. As it can be seen, while the correct answering rate increased in the questions regarding inflation and risk diversification, interest question adding compounding element has lowered the correct response rate. Moreover, the lack of combined score makes direct comparisons more difficult. Both studies found that women and young people had lower financial literacy knowledge (Sekita 2011, p.18; The Central Council for Financial Services Information 2023, p.17).

In Finland studies have shown a relatively high level of financial literacy. Kalmi and Ruuskanen (2018, p. 8) found in their comprehensive study that Finnish people had a relatively high level of financial literacy. Correct response rate for compound interest was 58.1%, inflation 76.5%, and risk diversification 65.8 %, with 35.6% answering all three correctly. In recent years Vaahtoniemi et al. (2023, p. 2-5) have come to similar conclusions in their study, with the results of correct answers being 49 % for compounding interest, 64.5 % for inflation, and 73.5 % for risk diversification, while the correct response rate for all three questions was 36.3 %. According to Vaahtoniemi et al (p. 24) these differences could be explained by differences in methodology and wording. Similarly to Japanese studies, both Kalmi and Ruuskanen (p.21), and Vaahtoniemi et al (p. 24) found women and young people to have lower financial literacy knowledge.

In the wake of Finland's recent changes in financial education, Finnish Ministry of Justice commissioned a study on young people aged 15-29 (Wilska et al. (2024, p. 13-14). This study found that young people with a university or university of applied sciences degree

had relatively similar or lower knowledge levels than the general population in previous studies. 79.3% answered correctly to interest question, 56.8% to inflation, and 68% to risk diversification. However, the interest question did not take compound interest into account, making the comparison difficult. The study also concluded that main predictors of financial knowledge were family background and education (p.51), while also highlighting the fact that women achieved better results compared to men (p.13).

Comparing these national studies reveals several challenges. While the OECD framework and the “Big Three” questions are commonly used, the questions differ in context and wording. Furthermore, the studies often have different focuses and question sets, most notably regarding the use of simple or compound interest. Therefore, in order to compare survey results among university students comprehensively, the survey should be identical for both parties and preferably done during the same timeframe.

4 Research methodology

This chapter outlines the research design and methodological approach used in this study, which examines financial literacy among university students in Finland and Japan. The chapter describes the research framework, the structure of the survey, sampling strategies, ethical considerations, and the statistical techniques used in data analysis in order to ensure transparency and replicability of the study. Furthermore, it presents the descriptive statistics of the collected sample.

4.1 Research design and framework

In this research a quantitative methodology was applied using an online questionnaire survey to acquire primary data. Since no previous surveys were found that directly compare the financial literacy of university students in Finland and Japan, a new survey was designed and distributed. The main objective was to evaluate the null hypothesis that there are no statistically significant differences between Finnish and Japanese university students in terms of financial literacy, which encompasses financial knowledge, financial behavior, and financial attitudes as well as perceived importance. It is important to note that the financial attitudes and importance questions were designed to differ from the OECD main framework in order to capture several important cultural factors without lengthening the survey.

In order to create a meaningful survey which takes international standards into account, the survey was developed with the OECD/INFE 2022 Toolkit for Measuring Financial Literacy and Financial Inclusion as its main framework. However, some necessary modifications were required. The original framework is designed for broader populations, age groups and larger samples, which was not feasible in this study narrowed to university students and small sample size. Some questions were modified and improved due to cultural differences and focus on university students, while keeping the framework and core structure in order to ensure a high-quality and comparable study.

The survey was conducted online using Webropol survey platform. The link to the survey was distributed to Finnish and Japanese university students through personal contacts and their extended networks, using convenience sampling and snowball sampling**.** Data was collected between 3 February 2024 and 23 February 2024. The target group was strictly limited to university students of both of these countries. Therefore, it did not include other higher educational schools such as universities of applied sciences. While this institution contributes especially to the Finnish higher education, this study is focused on academic education in order to keep comparisons to Japanese system fair, since Japan does not have similar institution, which could cause problems in interpreting the results. Similarly, only domestic university students were taken into account, since exchange students or foreign degree students might differ in their level of financial literacy and cultural and educational background.

The survey was provided in three languages in order to enhance accessibility. The languages used were Finnish, English, and Japanese. A native Japanese person fluent in English performed the translation into Japanese. Consistency across all three versions was maintained by keeping the language simple and close to the original OECD framework. However, subtle differences in wording and cultural framing could still influence responses.

Participation in this survey was entirely voluntary and anonymous, with no personally identifying information collected. Participants were informed of this, and each question had the option of “prefer not to answer”. The study complies to standard ethical research practices and all procedures align with common ethical standards in social science research.

The acquired data was analysed using a combination of two commonly used statistical software, R and Microsoft Excel. The R packages used are “Readxl” and “Dplyr” for data input and manipulation, “Car”, “Pscl”, “Lmtest”, and “Sandwich” for regressions, and “Stargazer” for regression output and reporting. All the packages are listed in the references.

The survey contained 25 questions, 24 being multiple choice questions alongside one additional open-ended feedback question. The whole survey with all the questions and choices can be seen in Appendix 1. In some questions only one answer could be chosen (e.g. country) while in others multiple different answers were possible (e.g. investing instruments). In some questions Likert scale of 1-5 was used to measure opinions such as self-rated financial literacy.

4.2 Descriptive statistics of the sample

This section presents the descriptive statistics of the survey sample in the areas of demographic profile, financial knowledge, financial behavior, and financial attitudes.

4.2.1 Demographic profile

The total sample of comparative analysis of this study was N = 173, which is composed of 114 Finnish participants, and 69 Japanese participants, as shown in Figure 4. Chi-square tests and t-tests were used in order to assess differences between these groups. Statistical significances are reported as p-values ($p < 0.05$ *, $p < 0.01$**, $p < 0.001$***). For readability, values lower than 0.001 were reported as $p < 0.001$. Due to the small sample size, some categories with few responses were merged or excluded from the analyses. A complete table of variables alongside all the categories can be seen in Appendix 3.

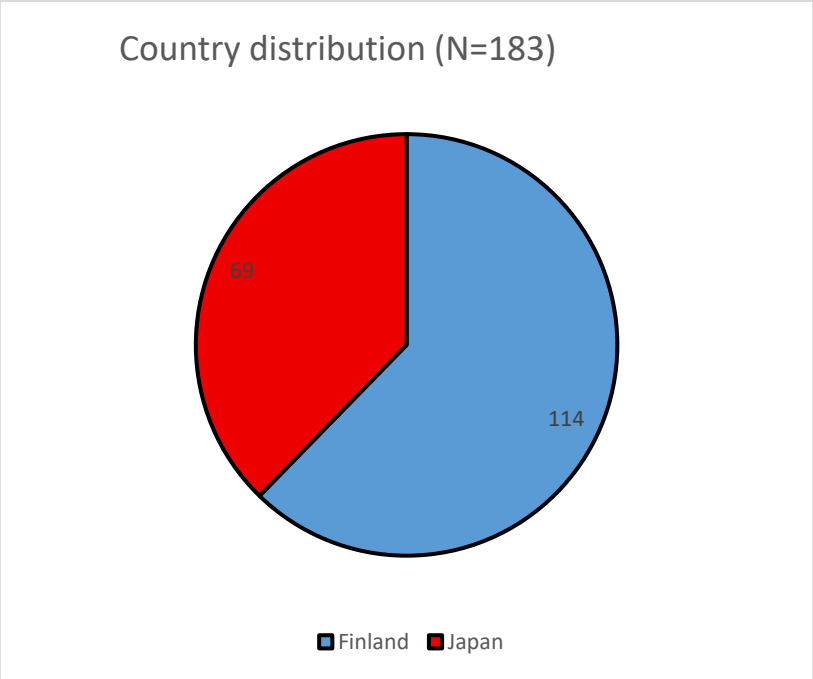

Figure 4. Country distribution of the sample.

The demographic data for gender does not present the whole population equally, being skewed towards female participants as shown in Figure 5. The majority of the participants were female, accounting for 119 answers, while the number for male answers was 57. Out of all participants, four answers were from other genders and four did not want to answer to the question. 62.3% of the participants were Finnish, while 37.7% were Japanese, showing no significant differences in participants' gender between Finland and Japan ($p = 0.675$).

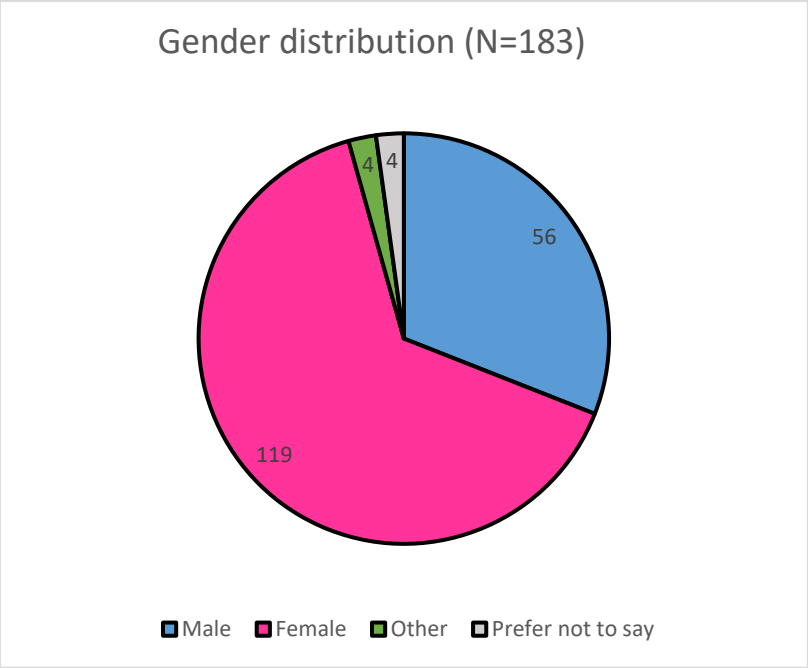

Figure 5. Gender distribution of the sample.

There were no statistically significant differences found regarding the population size of the participant's current city of residence, although cities with more than 100 000 people were in the majority. However, this could be due to the presentation of the question. For some people "city" might have been interpreted as their home province or similar entity, and some could have difficulties understanding where their city ends in major metropolitan areas. Therefore, this question could have been asked differently, perhaps asking for the population density instead. Merged categories made it impossible to compare between the extremely rural and urban areas due to inadequate number of answers.

Similar challenge was faced regarding the major of their degrees. There were several different majors unrelated to each other, which made classification inaccessible. Eventually, three major categories were formed. First is business together with economics due to their understanding of basic financial and economic terminology. Second is science, technology, engineering, and mathematics, the so called STEM-fields due to their ability in numerical calculations. Lastly other degrees include vast amounts of fields with

only a few answers in each major. These include history, religion, nursing, tourism, linguistics, culture studies, pedagogy, law, psychology. Neither Finland nor Japan had any statistically significant advantages in the number of answers in business and economics, or STEM-fields.

The year of study emerged as a major key difference between these populations. Japanese students are earlier in their study, while Finnish students are in later years. One of the reasons for this could be that studying master's degree is not that common in Japan while in Finland the majority of university students will complete master's degree. This could have major impact on their financial literacy as Finnish students could have more life experience and higher level of education.

Statistically significant differences were also found in household composition and employment. 60% of Finnish university students live either alone ($X2 = 19.08$, $p < 0.001$) or 29.6% with a partner ($X2 = 18.05$, $p < 0.001$), while 68% of Japanese university students live with their adult relatives ($X2 = 94.60$, $p < 0.001$). 91.3% of Japanese students are working while the rate for Finnish students is 45.6%. This result is statistically significant ($X^2= 36.50$, $p < 0.001$). As shown in Figure 6, the number of full-time employments is around the same between these countries, around 7% for Finnish and 7.2% for Japanese. However, 84.1% of Japanese are working part-time, while the number is 28.1% for Finnish students. Other types of employment such a gig work is exceeding full time employment among Finnish university students (10.5%), while Japanese sample does not have such form of employment present.

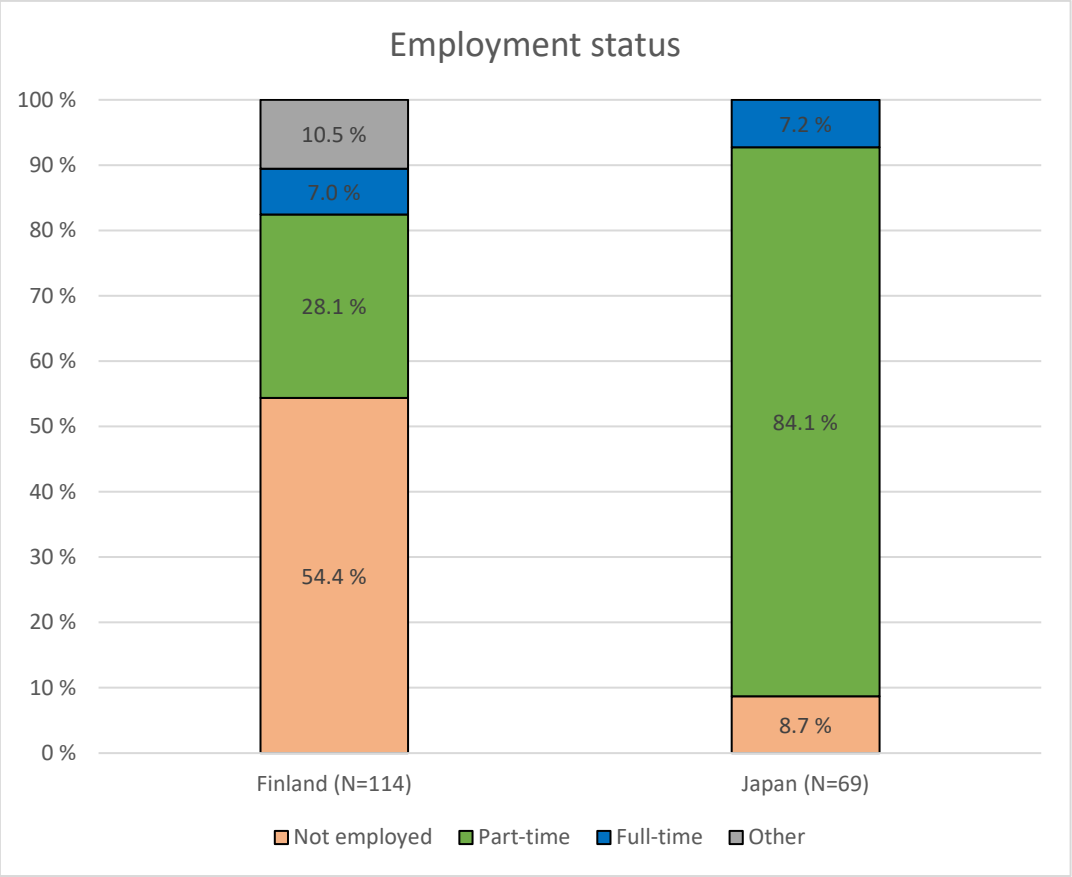

Figure 6. Employment status of the sample.

The type of financial support differs statistically significantly between Finnish and Japanese students. 51.3% of Finnish students (X^2 = 39.81, p < 0.001) have taken a student loan, while this number is 5.5% for the Japanese sample. Similarly, 84.1% of Finnish students have governmental study grant (X^2 = 116.26, p < 0.001), and 74.3% governmental housing grant (X^2 = 87.29, p < 0.001), while no Japanese answered receiving study grant, and 1.8% received housing grant. On the other hand, 80% of Japanese receive financial support from their parents (X^2 = 18.89, p < 0.001), while this number was 30.1% for Finnish students. Similarly other types of financial supports such as scholarships were also more common within Japanese participants, 34.5% receiving them (X^2= 7.67, p = 0.00561), while the same number for Finnish students was 10.6%.

Table 1. Summary statistics of demographic variables.

Variable	Finland (%)	Japan (%)	Finland (N)	Japan (N)	X^2	df	p-value
Country	62.3	37.7	114	69	178.77	1	**< 0.001*****
Gender			**107**	**68**	**0.18**	**1**	**0.675**
Male	33.6	29.4	36	20	0.04	1	0.839
Female	66.4	70.6	71	48	0.71	1	0.4
Population of the city you live in			114	68	0.012	1	0.912
< 100 000	38.6	41.2	44	28	0.012	1	0.912
> 100 000	61.4	58.8	70	40	0.092	1	0.761
Year of study (grade)			**111**	**68**	**24.48**	**3**	**< 0.001*****
1	19.8	27.9	22	19	1.24	1	0.266
2	19.8	29.4	22	20	1.77	1	0.184
3	15.3	32.4	17	22	6.41	1	0.0114*
4+	45.0	10.3	50	7	21.24	1	**< 0.001*****
Major			**100**	**62**	**5.67**	**2**	**0.059**
Business	9.0	17.7	9	11	1.96	1	0.162
STEM	6.0	12.9	6	8	1.52	1	0.218
Other	85.0	69.4	85	43	4.75	1	0.0294*
Household composition			**114**	**69**	**-**	**-**	**-**
Only me	60.0	24.0	69	18	19.08	1	**< 0.001*****
Partner	29.6	2.7	34	2	18.05	1	**< 0.001*****
Adult relatives	4.3	68.0	5	51	94.60	1	**< 0.001*****
Other	6.1	5.3	7	4	0.94	1	1
Working status			**114**	**69**	**36.50**	**1**	**< 0.001*****
Working	45.6	91.3	52	63	36.50	1	**< 0.001*****
Not working	54.4	8.7	62	6	36.50	1	**< 0.001*****
Receives financial support			**114**	**69**	**19.02**	**1**	**< 0.001*****
yes	99.1	79.7	113	55	19.02	1	**< 0.001*****
no	0.9	20.3	1	14	19.02	1	**< 0.001*****
If yes, what type of support?			**113**	**55**	**-**	**-**	**-**
Student loan	51.3	5.5	58	3	39.81	1	**< 0.001*****
Study grant	84.1	0.0	95	0	116.26	1	**< 0.001*****
housing grant	74.3	1.8	84	1	87.29	1	**< 0.001*****

Support from parents	30.1	80	34	44	18.89	1	**< 0.001*** **
Other	10.6	34.5	12	19	7.67	1	**0.00561****

4.2.2 Financial knowledge

For financial knowledge, the three main questions of compound interest, inflation, and risk diversification were asked alongside with a fourth additional question was developed about understanding the concept of supply and demand. Due to both groups performing similarly in this extra question, 93.9% of Finnish and 78.3% of Japanese answering correctly, a difference that is not statistically significant (X^2=0.12, p = 0.722). Because of this, and in order to keep financial literacy comparable with previous research, this additional question was dropped when calculating the score for financial literacy (the "Big Three"). The results can be seen in Table 2.

The difference between Finnish and Japanese samples on the "Big Three" questions was all statistically significant. 71.1% of Finnish participants answered correctly to the compound interest rate question, while Japanese rate was 29% (X^2 = 29.08, p < 0.001). Similarly, the correct response rate for inflation was 80.7% among Finnish students, while the Japanese rate was 40.6% (X^2= 28.9, p < 0.001). For risk diversification, the rate was 93.9% for Finnish and 72.5% for Japanese (X^2= 14.44, p < 0.001). The results also show the rate of "do not know" answers, showing the inflation related question having the highest uncertainty and compound interest having the lowest. However, the correct answering rate is lowest in the compound interest question.

By combining these "Big Three" question into one variable, comparison between the correct answering rate for all of the three questions was made. As Figure 8 illustrates, the correct answering rate was 57.9% for Finnish participants while the same rate for Japanese participants was 13.0%. The result is statistically significant (X^2= 37.89, p < 0.001). 26.3% of Finnish and 31.9% of the Japanese students answer correctly to two of the question, 8.8% of the Finnish and 34.8% of the Japanese answer correctly to one of

the questions, while 7.0% of Finnish and 20.3% of Japanese did not get any of the questions correct. Overall, Finnish answers are positively skewed, while Japanese answers exhibit a shape of a bell curve.

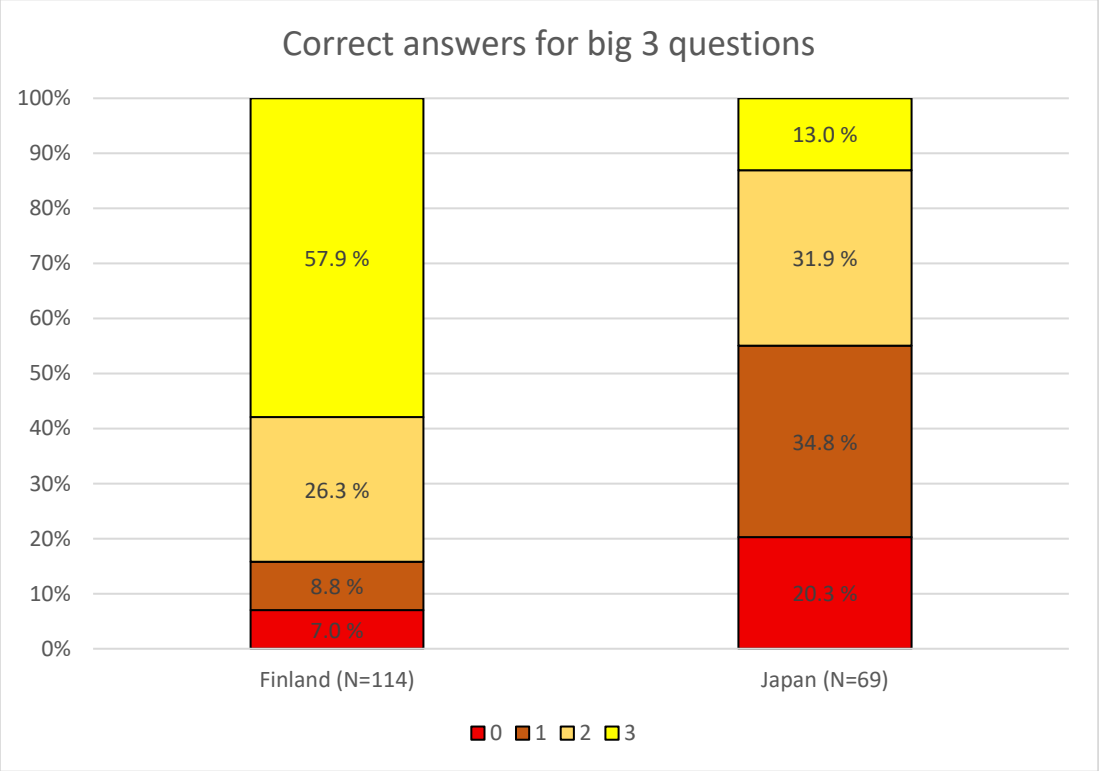

Figure 7. The Big 3 score.

Table 2. Summary statistics of Knowledge variables.

Summary statistics of Knowledge variables							
Variable	**Finland (%)**	**Japan (%)**	**Finland (N)**	**Japan (N)**	**X^2 / t-value**	**df**	**p-value (confidence interval 95%)**
Compound interest	-	-	114	69	-	-	-
Correct	71.1	29	81	20	29.08	1	< 0.001***
Incorrect (DK)	28.9 (2.6)	71 (13.0)	33 (3)	49 (9)	29.08	1	< 0.001***
Inflation	-	-	114	69	-	-	-

Correct	80.7	40.6	92	28	28.9	1	< 0.001***
Incorrect (DK)	19.3 (13.2)	59.4 (33.3)	21 (15)	41 (23)	28.9	1	< 0.001***
Risk diversification	-	-	114	69	-	-	-
Correct	93.9	72.5	107	50	14.44	1	< 0.001***
Incorrect (DK)	6.1 (5.3)	27.5 (15.9)	7 (6)	19 (11)	14.44	1	< 0.001***
Supply and demand	-	-	114	69	-	-	-
Correct	81.6	78.3	93	54	0.13	1	0.722
Incorrect (DK)	18.4 (7.9)	21.7 (8.7)	21 (9)	15 (4)	0.13	1	0.722
All of big3	-	-	114	69	-	-	-
Correct	57.9	13.0	66	9	37.89	1	< 0.001***
Incorrect	42.1	87.0	48	60	37.89	1	< 0.001***
Big3 score (0–3)	2.46 (0.82)	1.42 (0.73)	114	69	7.52	123.86	< 0.001*** (0.763 to 1.309

4.2.3 Financial behavior

Financial behavior among Finnish and Japanese students shows statistical significance in some areas, while not exhibiting significant differences in others. As Table 3 summarizes, 45% of Finnish students and 59.4% of Japanese students budget regularly but the difference was not statistically significant ($p = 0.107$). Similarly, retirement planning did not show any significant differences ($p = 0.261$), 67.4% for Finnish students and 58% of Japanese students budgeted. There were also no statistical differences in how well they self-rate their plans for retirement, averaging 2.98 out of 5 among Finnish and 3.00 out of 5 among Japanese ($p = 0.935$).

Financial decision-making in one's household had statistically significant differences between these two groups which are highlighted in Figure 8. Every Finnish participant contributes to their household financial decisions, 70.8% alone ($x^2 = 8.17$, $p < 0.001$) and

29.2% together with someone else ($x^2 = 5.28$, $p < 0.05$), while the percentage for Japanese was 49.3% alone, and 13.4% together with someone else. In the Finnish sample no other person made decisions on their behalf, but the percentage was 37.3% for Japanese ($x^2 = 44.82$, $p < 0.001$.

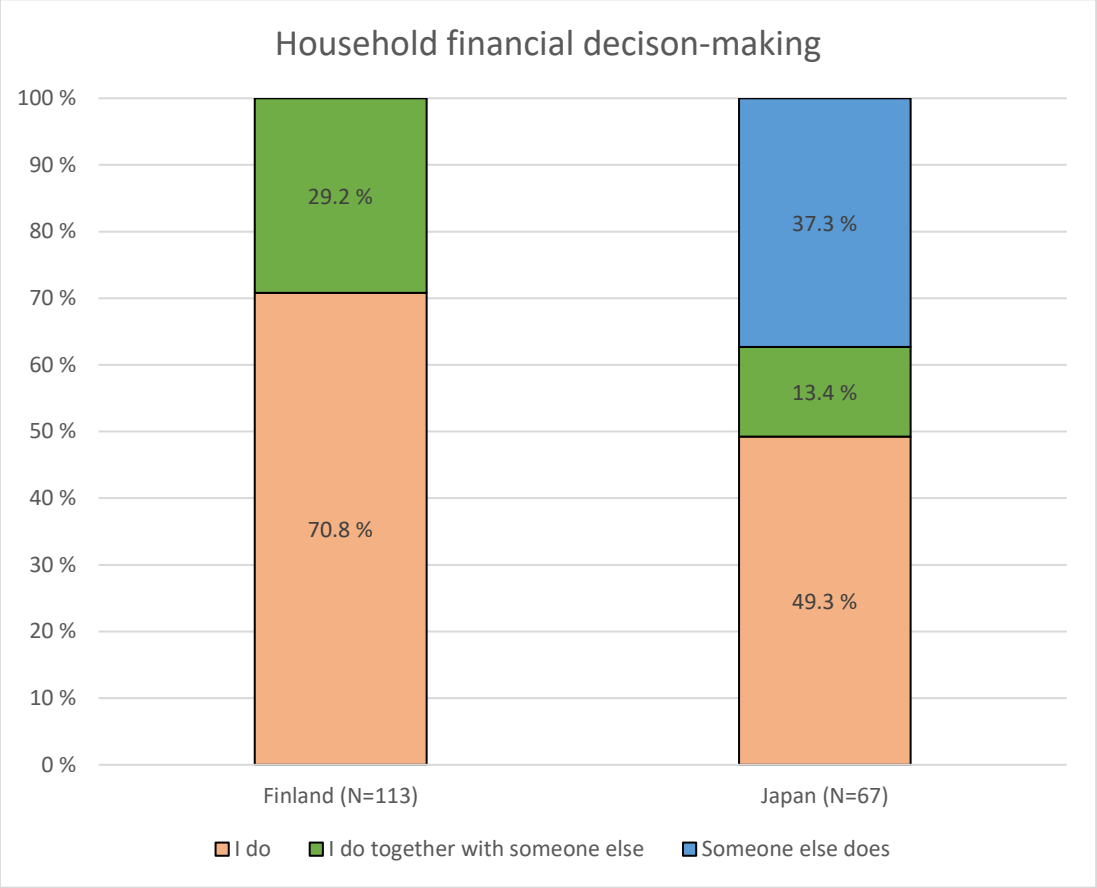

Figure 8. Household financial decision-making**.**

Another statistically significant difference is investment behavior. In Finland 77.2% of participants invested while 41.8% of Japanese did the same ($X^2 = 21.47$, $p < 0.001$). Out of those Finnish students who do not invest 11% were interested in it, while 46.3% of those Japanese who did not invest were interested in it ($X^2 = 24.65$, $p < 0.001$). These investments are highlighted in Figure 9, which shows how prevalent these instruments were in the entire sample, which takes into account those who invest alongside those who do not. Out of both Finnish and Japanese participants, three major instruments stand out from the rest: long-term savings accounts, funds, and stocks. Of the Finnish group 57% had a long-term savings account, 63.2% invested in funds, and 24.6% invested

in stocks. Of the Japanese sample 26.1% had a long-term savings account, 11.6% invested in funds, and 8.7% invested in stocks.

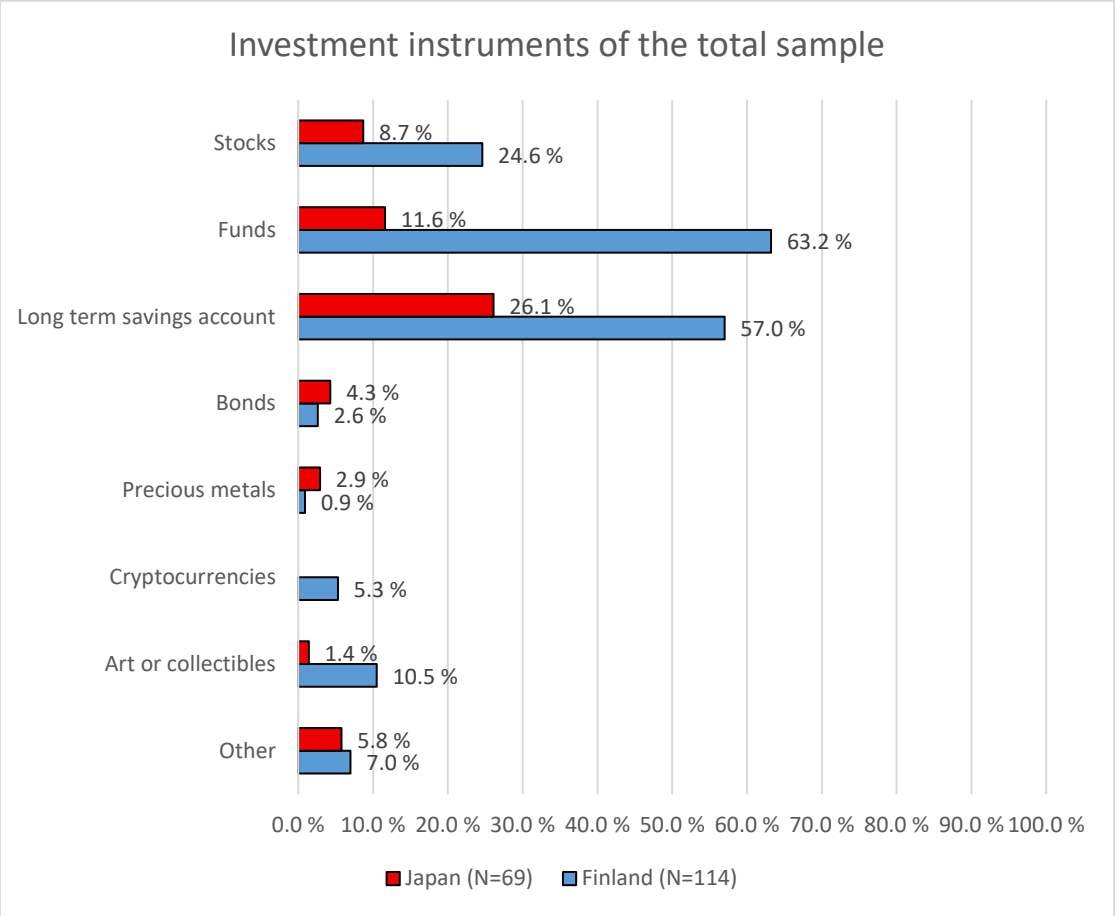

Figure 9. Investment instruments of the total sample.

The investment instruments among those who invest showed statistically significant differences between Finnish and Japanese students, contrary to the null hypothesis. Out of students who invest, 81.8% of Finnish and 28.0% of Japanese invested in funds (X^2 = 44.38, $p < 0.001$), 31.8% of Finnish and 21.4% of Japanese invested in stocks (X^2 = 6.14, $p = 0.0132$), while 73.9% of Finnish and 64.3% of Japanese had a long-term savings account as an investment (X^2 = 15.37, $p < 0.001$). Other types of investments such as collectibles and art, bonds, and cryptocurrencies showed no clear statistical significance.

The usage of different payment methods showed multiple statistically significant differences. Japanese students use cash more than Finnish students, 84.1% used it compared to 17.5% of Finnish ($X^2 = 75.06$, $p < 0.001$). Similarly, credit cards were more commonly used by Japanese, 58.0% used them compared to 7.0% of Finnish ($X^2 = 55.07$, $p < 0.001$). The Japanese specific rechargeable IC card was used by 24.6% of Japanese and no Finnish ($X^2 = 28.11$, $p < 0.001$). Finnish students mostly used debit cards, 93.9% used them compared to 20.3% of Japanese ($X^2 = 100.60$, $p < 0.001$). Similarly online bank payment methods were used by 53.5% of Finnish compared to 1.4% of Japanese ($X^2 = 49.71$, $p < 0.001$). Mobile payment did not show any statistically significant differences, 78.1% of Finnish and 63.8% of Japanese used it.

Table 3. Summary statistics of behavioral variables.

Summary statistics of behaviour variables							
Variable	**Finland % / mean (SD)**	**Japan % / mean (SD)**	**Finland (N)**	**Japan (N)**	**X^2 / (t-value)**	**df**	**p-value (95% confidence interval)**
Budgets	-	-	112	64	2.59	1	0.107
Yes	45.5	59.4	51	38	2.59	1	0.107
No	54.5	40.6	61	26	2.59	1	0.107
Has planned for retirement	-	-	95	81	1.26	1	0.261
Yes	67.4	58	64	31	1.26	1	0.261
No	32.6	42	47	34	1.26	1	0.261
If yes, how well (1–5)	2.98 (0.724)	3.00 (0.931)	64	31	-0.082	48.16	0.935 (-0.398 to 0.3666)
Who makes financial decisions in your household	-	-	113	67	49.76	2	< 0.001***
I do	70.8	49.3	80	33	8.17	1	0.00426 **

I do together with someone else	29.2	13.4	33	9	5.28	1	0.0216 *
Someone else	0	37.3	0	25	44.82	1	< 0.001***
Invests	-	-	114	67	21.47	1	< 0.001***
Yes	77.2	41.8	88	28	21.47	1	< 0.001***
No, not interested	11.4	11.9	13	8	19.89	1	1
No, but interested	11	46.3	13	31	24.65	1	< 0.001***
Investment instrument (if invests)	-	-	88	28	-	-	-
Stocks	31.8	21.4	28	6	6.14	1	0.0132 *
Funds	81.8	28.6	72	8	44.38	1	< 0.001***
Long term saving accounts	73.9	64.3	65	18	15.37	1	< 0.001***
Other (bonds, art, crypto etc)	28.4	28.6	25	8	2.45	1	0.118
Daily payment methods	-	-	114	69	-	-	-
Cash	17.5	84.1	20	58	75.06	1	< 0.001***
Debit	93.9	20.3	107	14	100.60	1	< 0.001***
Credit	7.0	58.0	8	40	55.07	1	< 0.001***
Mobile	78.1	63.8	89	44	3.74	1	0.0532
Online bank payment	53.5	1.4	61	1	49.71	1	< 0.001***
IC card	0.0	24.6	0	17	28.11	1	< 0.001***

4.2.4 Financial attitude and importance

From Table 4, which shows summary statistics, we can see that when it comes to financial attitudes and importance, the results were statistically significant in some areas. In the question regarding withstanding financial shock participants were asked on a 1-4 scale how well they could sustain 3-month shock to their personal income without needing any help. The results were not statistically significant ($p < 0.0118$), Finnish participants answered on average 3.209 and Japanese 2.927.

However, several other summary statistics were contrary to the null hypothesis. Self-rated financial literacy is higher among Finnish participants, with an average of 3.06 out of a 1-5 scale compared 2.32 among Japanese participants ($t = 5.11$, $p < 0.001$). Finnish and Japanese university students also showed have statistically significant differences in self-rated importance of financial literacy on a scale 1-5 as shown in Figure 10. Among the Finnish participants all the answers were between three and five, 91.2% answering either four or five. On the other hand, Japanese responses covered the entire scale, with 5.7% answering either four or five, while 62% answered one. Finnish students ranked financial literacy importance on average 4.34 while Japanese rated it 1.61 ($t = 18.09$, $p < 0.001$). The differences between previous education of financial literacy before university also showed statistical significance, Finnish participants rating the previous amount of teaching on average 2.393, while Japanese rated it 1.985 on a 1-5 scale ($t = 2.78$, $p < 0.00627$).

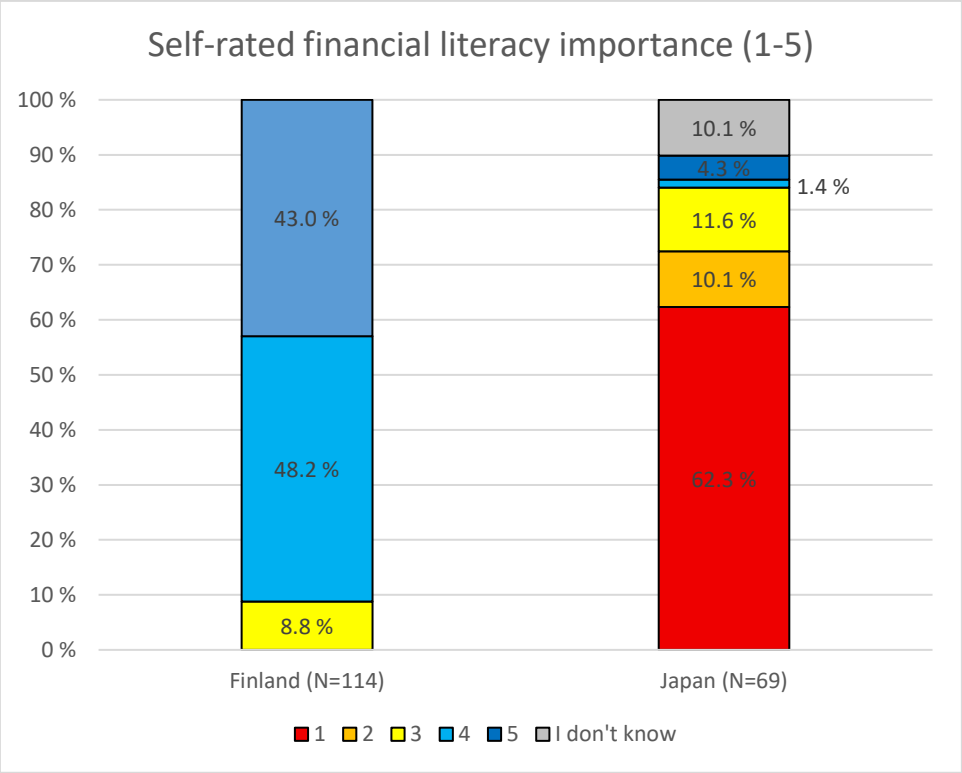

Figure 10. Self-rated financial literacy importance.

The Japanese participants had a more negative view of their country's economy, rating it on 1-5 scale on average 2.16. This number was 2.59 among Finnish students ($t = 3.20$, $p = 0.00177$), which showed statistical significance. Similarly economic matters were talked more in Finland among personal peers. On a scale 1-5 The Finnish average was 3.274, and Japanese average was 2.426 ($t = 5.4$, $p < 0.001$). There was no statistical significance on following the economy or economic news actively, with the average being 2.643 among Finnish, and 2.485 among Japanese.

Table 4. Summary statistics of attitude variables.

Summary statistics of attitudes and importance variables								
Variable	**Finland 1–5 (SD)**	**Japan 1–5 (SD)**	**Finland (N)**	**Japan (N)**	**t-value**	**df**	**p-value**	**Confidence interval 95 %**

Shock (1–4)	3.209 (0.959)	2.927 (1.136)	110	55	1.58	93.43	0.118	(-0.0724 to 0.636)
Self-rated financial literacy (1–5)	3.062 (0.805)	2.323 (0.971)	113	62	5.11	107.33	< 0.001***	(0.452 to 1.026)
Self-rated importance (1–5)	4.342 (0.636)	1.613 (1.091)	114	62	18.09	84.02	< 0.001***	(2.429 to 3.029)
Taught before university (1–5)	2.393 (0.809)	1.985 (1.022)	112	67	2.78	115.14	0.00627 **	(0.118 to 0.698)
Follows economy or news about it (1–5)	2.643 (1.146)	2.485 (1.152)	112	68	0.89	140.91	0.374	(0.537 to 1.159)
Economic matters talked in your peers (1–5)	3.274 (0.858)	2.426 (1.111)	113	68	5.40	114.93	< 0.001***	(0.537 to 1.159)
Economic situation in your country? (1–5)	2.587 (0.748)	2.162 (0.924)	109	68	3.20	120.47	0.00177 **	(0.162 to 0.689)

4.3 Problems and limitations

While overall the null hypothesis can be rejected, there are several possible problems and limitations that require attention. First, the representativeness of this survey might not correspond to the total population due to sampling bias. Furthermore, the regions of each country, age groups, and university majors are not equally distributed among the sample. Women were overrepresented in the responses. Additionally, in the Japanese sample the Kansai region is similarly overrepresented. This should not pose any significant problems since according to the Central Council for Financial Services Information

(p.24, 2023) Japanese nationwide correct answering rate for the “Big Three” question was 55.7%, while the same number for Kansai was 55.6%.

As in all surveys, there is the possibility that participants did not share their answers truthfully, or that they did not have an objective viewpoint of their self-rated skills. There is also a possibility that due to cultural and linguistic differences questions might have been misinterpreted even despite careful planning. For example, the term “financial literacy” might not be used in similar manner and as often in these countries.

A full-scale pilot was not possible due to limited resources and small sample sizes. However, a few people reviewed the survey for possible errors and problems before the full launch. A few important feedback answers were received through the last open-ended question, which helped to make some clarifications. This demonstrated the importance of having a clear and simple way to receive feedback especially in survey research.

There is also a problem of the limited sampling size which reduced generalization and statistical results. There is an argument to be made that this sample might not represent Finnish and Japanese university students fully. This had significant impact in analysing many of the variables, since there were not enough answers for thorough statistical analysis, most notably in different investment instruments, regional population sizes, and university majors. The results could also differ significantly if the premise is changed to for instance include students at universities of applied sciences.

A few problems were faced during the research process. In some questions a verbal scale was used instead of Likert scale, which was not ideal. In the population categories there was an overlap between more or less than 100 000 people living in a city, caused by including 100 000 in both categories by accident. The question for risk aversion was unfortunately missed during the development of the survey, which could have provided valuable information. In addition, in the Finnish translation in question number 24 two

choices were mixed initially. One of the answers was open choice and therefore this problem was manually corrected and did not cause any further problems.

5 Empirical analysis

This chapter presents the core empirical analysis of the study, with the primary objective of comparing the determinants of financial literacy among university students in Finland and Japan. The analysis begins by defining the variables used in the regression models and assessing robustness, following by three regressions for financial knowledge, investment behavior, and self-perceived importance of financial literacy.

5.1 Variables

A total of 11 variables were chosen for the regression analyses. While there were several other potential variables to consider, it was decided to keep only the most important ones since the sample size is relatively small. The chosen variables have all either backing from theory relating to financial literacy, have been used in previous research, or are major demographic variables essential for university students and control purposes. Several variables were tried in regressions to see how they would affect the results but to minimize potential p-hacking and enhance robustness, other variables were not chosen even if they improved adjusted R^2. The Chosen variables are as follows:

“Finland” is an independent dummy variable for country. It gets value 1 if the participant is Finnish and if participant is 0 Japanese. Since the research focus is on comparing financial literacy between Finland and Japan, this is essential independent variable.

“Female” is an independent dummy variable for gender. It gets value 1 if the participant is female, and 0 if the participant is male. Gender has been a major demographic indicator in past research for differences between groups in financial literacy and therefore including it is essential.

“Grade3plus” is an independent dummy variable for current year of their studies, which gets value 1 if the participant is at year 3 or more, and value 0 if lower than year 3. Since university students belong mostly to the same age bracket and have mostly the same

education level, this variable captures differences in study progression and potential correlation with financial literacy.

“Major” is an independent dummy variable for university major, getting value 1 if the participant studies either business, economics, or STEM, and 0 otherwise. Since the population studied consists of university students, their major is important demographic variable and could theoretically have an impact on financial literacy. Majors with association to finance, economics, and businesses could be more knowledgeable about the topics, while students from STEM fields could have an upper hand at calculating and processing numbers.

“Work” is an independent dummy variable for employment status. It gets value 1 if the participant is working, and 0 if they are not. Since there are major differences between working habits among students, earning personal income could affect skills related to personal finance, this variable was included in the regressions as demographic variable. This variable has been used previously in several research either as a categorical or binary (Kadoya & Khan, 2020; Kalmi & Ruuskanen, 2018; Lusardi & Mitchell, 2011; Sekita, 2011; Vaahtoniemi et al., 2023).

“Sr_finlit” is an independent ordinal variable measuring self-rated financial literacy on a scale of 1-5. This variable has been used previously in the research of Sekita (2011) as a self-assessed financial knowledge variable on a 1-4 scale.

“Invest” is both independent and dependent dummy variable which measures whether the participant invests or not. It gets value 1 if the participant invests, and 0 if they do not. Since retirement planning show no statistical significance between Finnish and Japanese students, investing was chosen as the main dependent variable for financial behavior. Kadoya and Khan (2020) used financial assets as a variable in their study, while not being the same, both indicate participation in the financial market.

“Budget” is a dummy variable which measures budgeting. It gets value 1 if the person budget, and 0 if they do not. Having a budget is a measure of financial behavior and independent financial decision-making. This dummy has been used as a variable in past research. Kalmi and Rahko (2022) used several savings related variables in their study. While not being the same as the variable used in this study, considering the budgeting culture between Finland and Japan this variable could prove explanatory.

“Fin_dec” is an independent dummy variable for household financial decision-making. It gets value 1 if the participant is in a decision-making role either alone or together and gets 0 if they are not.

“Big3” is both independent and dependent ordinal-scaled variable that gets values between 0-3 depending on how many “Big Three” questions (compound interest, inflation, risk diversification) participants answered correctly. It measures financial knowledge and is therefore essential for examining how financial knowledge affects financial behavior and self-perceived importance. This variable or parts of it have been used in previous research (Kadoya & Khan, 2020; Kalmi & Ruuskanen, 2018; Sekita, 2011; Vaahtoniemi et al., 2023).

“importance” is an ordinal-scaled dependent variable measuring self-rated importance of financial literacy on a scale 1-5. Since the statistical difference in importance is significant and large, as seen in summary statistics, this variable is better for comparing the countries and society related differences than other variables in similar category. Tinghög et al. (2021) have used similar variable of positive attitude towards finance in their study.

5.2 Robustness

To assess the stability of the results, several robustness checks were conducted. First, alternative specifications excluding the self-rated financial literacy variable were estimated, yielding results consistent with the full model. Second, since the survey data is

cross-sectional and could have cultural differences which could lead to inconsistent error variances and heteroskedasticity, standard robust standard errors (RSE) were used in all regressions. Finally, variance inflation factors (VIF) tables were calculated which can be accessed in appendix 2. These tables show that the VIF of these independent variables are all below 2.5, indicating no severe multicollinearity. The highest VIF value in every regression table for Model 4 and for variable "Finland", which was 2.05 in in knowledge regression, 2.25 in behavior regression, and 2.26 in attitude regression.

5.3 Regressions for financial knowledge

The regression for financial knowledge uses the score of the "Big Three" questions as the dependent variable, and therefore the dependent variable "Big3" was chosen. Since the dependent variable is ordinal-scaled, ordinary least squares (OLS) regression was chosen. The full model is:

$$Big3_i = \beta^0 + \beta^1 \cdot Finland_i + \beta^2 \cdot Female_i + \beta^3 \cdot Grade3plus_i + \beta^4 \cdot Major_i + \beta^5 \cdot Work_i + \beta^6 \cdot Sr\_finlit_i + \varepsilon_i \quad (1)$$

Table 5 shows the regression results, which consist of five different models. The first model includes country, gender, and control variables as basic demographic variables. The second model adds university major and working status. The third model (full model) includes self-rated financial literacy level. The fourth and fifth models are country specific for Finland and Japan.

The first model has an adjusted R^2 of 0.265, explaining 26.5% of the variance. This increases model by model until the third one, which has an adjusted R^2 of 0.321, explaining 32.1% of the variance. Country specific model for Finland has an adjusted R^2 of 0.120, which explains 12% of the variance while Japanese model has an adjusted R^2 of 0.071, explaining 7.1% of the variance.

The variable for country, “Finland”, has consistently a strong positive coefficient and statistical significance across the models. In the first model, the coefficient is 0.910 with statistical significance ($p < 0.001$), meaning that being a Finnish increases the financial knowledge score on the 0-3 scale by 0.91 points on average. In the second model, the coefficient rises to 0.944 ($p < 0.001$) but decreases to 0.720 ($p < 0.001$) in the full model when self-rated financial literacy level is controlled, indicating that Finnish participants score 0.682 points higher than their Japanese counterparts when it comes to the “Big Three” questions.

Gender does not show statistical difference except for the Japanese model, in which the coefficient for Female is 0.245 ($p < 0.05$), indicating that females achieved 0.245 points higher score. In the first two models Female has negative coefficient, which turns positive when self-rated financial literacy level is controlled, but standards errors remain high.

Variable for being in grade 3 or higher, “Grade3plus”, shows positive and statistically significant coefficient. In the first model the coefficient is 0.309 ($p < 0.01$), meaning that being in year 3 or above increases the “Big3” score by 0.309 points. The coefficient decreases to 0.266 ($p < 0.05$) when major and employment are controlled and finally loses statistical significance in full model when self-rated financial literacy level is controlled. However, the coefficient stays the same 0.266. While the Japanese specific models show no statistical significance, the Finnish model has statistically significant coefficient of 0.246 ($p < 0.05$), indicating that being on a higher grade affects objective financial literacy score by 0.246 points.

The additional demographic variables “Major” and “Work” introduced in the second model have varying levels of significance. “Major” has a positive coefficient of 0.353 ($p < 0.001$), indicating that those who are studying either business-related fields or STEM have on average 0.353 higher score on “Big3”. This coefficient is positive across the models but decreases in the second model to 0.330 ($p < 0.05$). However, it the coefficient is rather small, 0.054 in Finnish model with no statistical significance. In the Japanese

specific model the coefficient is 0.586 with high significance ($p < 0.001$). The variable "Work" for the employment on the other hand shows negative coefficient, which gets stronger in the second model, achieving the coefficient of -0.109, but stays statistically insignificant.

The attitude variable "Sr_finlit" for self-rated financial knowledge is consistent and significantly positive predictor across the models. It has a coefficient of 0.249 ($p < 0.001$) when introduced in the third model, indicating that each one-point increase in self-rated financial literacy scale increases the "Big3" score by 0.249 points. It is also a predictor in both country specific models, having coefficients of 0.273 ($p < 0.001$) in Finnish model, and 0.238 ($p < 0.01$) in the Japanese one.

Table 5. Regression table for financial knowledge

	Dependent variable:				
	Big3 (0–3)				
	base	+demo	+att	Finland	Japan
	(1)	(2)	(3)	(4)	(5)
Finland	0.910***	0.944***	0.720***		
	(0.151)	(0.179)	(0.213)		
Female	-0.121	-0.044	0.060	-0.031	0.245*
	(0.142)	(0.150)	(0.150)	(0.147)	(0.147)
Grade3plus	0.309**	0.266*	0.226	0.246*	0.169
	(0.137)	(0.145)	(0.141)	(0.133)	(0.133)
Major		0.353**	0.330*	0.054	0.601***
		(0.171)	(0.176)	(0.179)	(0.179)
Work		-0.084	-0.109		
		(0.159)	(0.149)		

Sr_finlit			0.249***	0.273***	0.238***
			(0.088)	(0.091)	(0.091)
Constant	1.514***	1.443***	0.863***	1.544***	0.594**
	(0.195)	(0.240)	(0.280)	(0.292)	(0.292)
Observations	153	153	153	99	54
R^2	0.280	0.302	0.348	0.156	0.141
Adjusted R^2	0.265	0.278	0.321	0.120	0.071
Residual Std. Error	0.793 (df = 149)	0.786 (df = 147)	0.762 (df = 146)	0.674 (df = 94)	0.910 (df = 49)
Note:	*p<0.1; **p<0.05; ***p<0.01				

5.4 Regressions for financial behavior

The regression for behavior uses the investing dummy "Invest" as the dependent variable. Since the dependent variable is a binary dummy, the regression model is logistic regression. The full model is:

$$logit(P(Invest\_i = 1)) = \delta_0 + \delta_1 \cdot Finland\_i + \ldots + \delta_9 \cdot Fin\_dec\_i, \quad (3)$$

To interpret the logistic regression coefficients, they must be converted into percentage changes in odds using the formula:

$$\%Change = (e^{\delta_j} - 1) \times 100\ , \quad (4)$$

in which e^{δ_j} equals the odds ratio (OR).

Table 7 presents six models. The first model includes country, gender, and grade as basic demographic control variables. The second one adds university major and working status. The third model adds self-rated financial literacy score. The fourth model adds objective financial knowledge score and drops the variable for self-rated score. The fifth model

(full model) includes all the forementioned variables and adds behavioral variables for budgeting and household financial decision-making. The sixth model is country specific for Finland and the seventh for Japan.

McFadden's pseudo R^2 is used due to regression being logistic. For the first model a pseudo R^2 is 0.130, meaning that the model offers 13% improvement over to the null model. The pseudo R^2 increases to 0.234 in the full model, offering 23.4% improvement over to the null model, while the Finnish model has a pseudo R^2 of 0.251, improving null model by 25.1%. Japanese model has a pseudo R^2 of 0.113, meaning 11.3% improvement over the null model.

The variable "Finland" while at first shows positive coefficient of 0.311 ($p < 0.001$) indicating that Finnish participants have 36.48% higher odds of investing. This coefficient increases in the second model to 0.334 ($p < 0.001$) which translates to 39.65% higher odds for investing. However, when self-rated literacy is controlled, the coefficient decreases to 0.234 ($p < 0.05$). If objective knowledge is controlled instead, the coefficient falls to 0.189 and loses statistical significance. Similarly, the full model has coefficient of 0.080 but no statistical significance.

The variable "Female" has coefficient of -0.122 ($p < 0.05$) meaning that women have 11.49% lower odds of investing. This coefficient loses significance and strength but stays negative among all models, having coefficient of -0.046 in the full model. "Grade3plus" has at first coefficient of 0.167 ($p < 0.01$) which translates to students in grade 3 or higher have 18.18% higher odds of investing. This coefficient decreases to 0.151 ($p < 0.05$) in the second model, which translates to an increase of 16.30% when university major and employment status are controlled. In other models "Grade3plus" lose strength and significance when other factors are controlled but stays positive.

The other two demographic variables "Major" and "Work" have both positive but small coefficients which are not statistically significant in any of the models. The coefficient for

“Major” is 0.022 in the full model, while the coefficient for “Work” is 0.029 respectively. Similarly, the variable “Fin_dec” for financial decision-making in household did not see any statistical significance, achieving coefficient of 0.161.

The attitude variable in the form of “Sr_finlit” engrosses all the models where it is included. It has a coefficient of 0.111 ($p < 0.05$) in the third model, meaning that each one-point increase in self-rated financial literacy increases odds of investing by 11.74%. This coefficient decreases to 0.087 ($p < 0.01$) in the full model when behavioral variables are controlled, translating into 9.09% higher odds per self-rated level. In the Finnish model this coefficient is 0.092 ($p < 0.01$) showing that one level of self-rated financial literacy increases odds of investing by 9.64% among Finnish participants. For the Japanese model the coefficient is 0.130 ($p < 0.01$) translating into increased odds of 13.88% among Japanese students per self-rated financial literacy level.

The objective score of the “Big Three” questions as seen in the variable “Big3”, is statistically significant in all models expect the Japanese specific one. It has coefficient of 0.155 ($p < 0.001$) in the third model, which slightly decreases to 0.131 ($p < 0.001$) in full model, meaning that each correct answer in “Big3” increases odds of investing by 13.88%. The coefficient is 0.207 ($p < 0.001$) in the Finnish model, translating to 23.00% increased odds of investing per correct answer to the “Big3”. Unlike Finland, Japanese model did not see statistical significance in investing regarding financial knowledge score, achieving coefficient of 0.073.

Budgeting variable “Budget” shows negative coefficient of -0.131 ($p < 0.05$) in the full model, indicating that a person who budgets has 12.28% lower odds of investing. This coefficient is -0.338 ($p < 0.05$) in Japanese model, translating into 28.68% lower odds of investing behavior. The coefficient for Finnish model is -0.018 and shows no statistical significancy.

Table 6. Regression table for financial behavior

	Dependent variable:						
	Investing (0/1)						
	base	+demo	subj	obj	+beh	Finland	Japan
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Finland	0.311***	0.334***	0.234*	0.189	0.080		
	(0.082)	(0.094)	(0.105)	(0.104)	(0.113)		
Female	-0.122*	-0.104	-0.057	-0.097	-0.046	-0.024	-0.085
	(0.074)	(0.075)	(0.079)	(0.076)	(0.078)	(0.078)	(0.164)
Grade3plus	0.167**	0.151*	0.113	0.110	0.076	0.090	0.041
	(0.076)	(0.079)	(0.078)	(0.076)	(0.074)	(0.092)	(0.137)
Major		0.081	0.070	0.026	0.022		
		(0.087)	(0.089)	(0.090)	(0.091)		
Work		0.012	0.001	0.025	0.029		
		(0.083)	(0.082)	(0.078)	(0.079)		
Sr_finlit			0.111*		0.087**	0.092*	0.130**
			(0.045)		(0.043)	(0.048)	(0.064)
Big3				0.155***	0.131***	0.207***	0.073
				(0.050)	(0.050)	(0.064)	(0.067)
Budget					-0.131*	-0.018	-0.338**
					(0.070)	(0.079)	(0.135)
Fin_dec					0.161		
					(0.125)		
Constant	1.432***	1.389***			0.950***	0.925***	1.220***
	(0.094)	(0.123)			(0.167)	(0.189)	(0.251)

Observations	153	153	153	153	153	99	54
Log Likelihood	-91.594	-91.208	-86.956	-84.285	-80.783	-42.321	-35.222
Akaike Inf. Crit.	191.189	194.415	189.912	184.570	181.565	96.642	82.443
McFadden	0.130	0.134	0.165	0.191	0.234	0.251	0.113

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

5.5 Regressions for financial importance

The OECD/INFE framework traditionally measures financial attitudes through factors such as future planning and confidence. In order to measure individuals' subjective perception, regression for financial attitude uses a different approach. The regression has dependent variable of "Importance", meaning self-rated financial literacy importance on a scale 1-5. Since the dependent variable is on an ordinary scale, ordinary least squares (OLS) regression was chosen. The full model is:

$$Importance\_i = \gamma_0 + \gamma_1 \cdot Finland\_i + \gamma_2 \cdot Female\_i + \gamma_3 \cdot Grade3plus\_i + \gamma_4 \cdot Major\_i + \gamma_5 \cdot Work\_i + \gamma_6 \cdot Sr\_finlit\_i + \gamma_7 \cdot Big3\_i + \gamma_8 \cdot Invest\_i + \gamma_9 \cdot Budget\_i + \gamma_{10} \cdot Fin\_dec\_i + \mu\_i. \quad (2)$$

Table 6 presents regression results, which consist of six different models. The first model includes country, gender, and grade controlled as basic demographic variables, the second model adds university major and working status. The third model one adds both self-rated financial literacy and objective financial knowledge scores. The fourth model (full model) includes behavioral variables for investing, budgeting, and financial decision-

making. The fifth model country specific for Finland, while the sixth country specific for Japan.

The first model has an adjusted R^2 of 0.762, explaining 76.2% of the variance. This increases model by model until the fourth one, which has an adjusted R^2 of 0.772, explaining 77.2% of the variance. Country specific model for Finland has an adjusted R^2 of 0.199, which explains 19.9% of the variance while Japanese model has an adjusted R^2 of -0.020 but was kept intact in order to ensure comparability with Finnish model.

The country variable “Finland” has coefficient of 2.793 coefficient ($p < 0.001$) in the first model, indicating that Finnish students on average rate their self-rated importance of financial literacy 2.793 points higher than their Japanese counterpart. The coefficient decreases in following models where new variables are added, and in the final model the coefficient is 2.314 ($p < 0.001$) when other factors are controlled. For other demographic variables, “Female” does not show any statistical significance but maintains positive coefficients in all but second model. Variables “Major” and “Work” have consistently negative coefficient with no statistical significance.

The variable for grade, “Grade3plus” has positive coefficient with statistical significance, having coefficient of 0.283 ($p < 0.01$) in the first model, increasing to 0.305 ($p < 0.01$) when major and employment are controlled, and while decreasing to 0.230 ($p < 0.01$) when self-rated financial literacy and knowledge are controlled, suggesting that being in grade 3 or higher increases the self-rated importance of financial literacy by 0.230 points. However, the coefficient becomes insignificant when behavioral variables are controlled in the full model which would suggest that grade would not matter in financial attitudes. In the Finnish model this coefficient becomes 0.324 with statistical significance ($p < 0.001$), while in the Japanese model the coefficient is negative and statistically insignificant. This means that higher grade students find financial literacy 0.324 points more important in Finland compared to lower grade students, while grade is statistically insignificant in Japanese model.

Self-rated financial literacy “Sr_finlit” has consistent positive and significant coefficient across the models, expect the Japanese one. It has coefficients of 0.190 ($p < 0.01$) in the third model, which decreases to 0.161 ($p < 0.05$) when behavioral variables are controlled in the full model, meaning that for each level increase in self-rated literacy score increases perceived importance by 0.161 points. In the Finnish model the coefficient rises to 0.221 ($p < 0.01$), while being statistically insignificant in Japanese model.

The “Big3” variable for financial knowledge score introduced in the third model has coefficient of 0.166 ($p < 0.05$), which would suggest that for each correct answer to the “Big Three” question rises self-rated importance of financial literacy by 0.166 point. This, however, becomes statistically insignificant in the full model, but also in both countries’ individual models, alongside with the behavioral variables “Invest”, “Budget”, and “Fin_dec”, which all have positive but statistically insignificant coefficients.

Table 7. Regression table for financial importance

	Dependent variable:					
	Importance (1–5)					
	base	+demo	+att/kn	+beh	Finland	Japan
	(1)	(2)	(3)	(4)	(5)	(6)
Finland	2.793***	2.749***	2.421***	2.314***		
	(0.149)	(0.208)	(0.260)	(0.301)		
Female	0.001	-0.007	0.080	0.089	0.038	0.294
	(0.122)	(0.127)	(0.126)	(0.128)	(0.137)	(0.277)
Grade3plus	0.283**	0.305**	0.230*	0.199	0.324***	-0.092
	(0.130)	(0.136)	(0.130)	(0.132)	(0.124)	(0.272)
Major		-0.037	-0.113	-0.111		

		(0.156)	(0.163)	(0.165)		
Work		-0.069	-0.074	-0.066		
		(0.173)	(0.156)	(0.155)		
Sr_finlit			0.190**	0.161*	0.221**	0.120
			(0.081)	(0.083)	(0.108)	(0.100)
Big3			0.166*	0.150	0.144	0.163
			(0.093)	(0.093)	(0.097)	(0.143)
Invest				0.182		
				(0.167)		
Budget				0.062		
				(0.131)		
Fin_dec				0.254		
				(0.223)		
Constant	1.368***	1.441***	0.759***	0.404	3.058***	0.817**
	(0.150)	(0.253)	(0.243)	(0.273)	(0.403)	(0.376)
Observations	153	153	153	153	99	54
R^2	0.762	0.762	0.783	0.788	0.232	0.057
Adjusted R^2	0.757	0.754	0.772	0.773	0.199	-0.020
Residual Std. Error	0.771 (df = 149)	0.775 (df = 147)	0.746 (df = 145)	0.745 (df = 142)	0.586 (df = 94)	0.976 (df = 49)

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

6 Discussion

In this chapter, the key empirical findings are summarized, followed by interpretation of the results. It then connects them to the national frameworks and previous research alongside with its limitations. The chapter concludes by assessing the practical policies and future research.

6.1 Key findings

There are notable differences found in all aspects of financial literacy between Finnish and Japanese university students. Demographically, Finnish students live more independently, with almost of 90% living either alone or with a partner, while 68% of Japanese university students live with adult relatives. Their sources of financial support are almost opposite. Over 91% of Japanese students work while studying, while minority of Finnish, a bit under 46% do the same. Finnish student receives governmental grants both for studying and housing, while Japanese students rely primarily on parental financial support.

Finnish students outperform Japanese students in financial knowledge related to compound interest, inflation, and risk diversification by a very wide margin. Almost 58% of Finnish students answered correctly to all of these “Big Three” questions, while only 13% of Japanese could achieve the same result. Furthermore, on average Finnish students answered 2.5 questions correct, while Japanese answered on average only 1.4 questions correctly. A statistically significant gender gap is found in the financial knowledge but only among the Japanese participants. Surprisingly, Japanese women outperform male, scoring 0.25 points higher than their male counterparts on a 0-3 scale.

In terms of financial behavior, there are no difference in budgeting or retirement planning between the two samples. However, notably all Finnish students partook in their household financial decision, while over 37% of Japanese did not. There is a large difference in investing behavior, with over 77% of Finnish students investing, funds and savings

accounts being most popular choices, compared to almost 42% of Japanese investing. Among Japanese students who do not invest, over 46% are interested in investing, while only 11% of Finnish students who do not invest are interested in it. Payment method preferences show opposite patterns. While both groups used predominantly mobile payment methods, Finnish students favored debit cards and online bank payments, while Japanese relied on cash and credit card.

The attitudes and importance regarding financial literacy were profound. Finnish students found financial literacy very important, rating it on 4.3 out of 5 on average, while Japanese found financial literacy not important at all, rating it on average 1.6 out of 5. No differences are found in withstanding a financial shock or following economic news, but Finnish students discuss more about economic topics in their peers and rate their financial literacy education prior to university higher than Japanese students.

6.2 Interpretation

The results suggest that Finnish students are significantly more independent in their way of living and financial decision making, while Japanese rely more on family structure, which reinforces the stereotype that Japan among other East-Asian countries is more family oriented, while Finland among other Nordic countries values independent lifestyle.

The high rate of employment among Japanese could be due cultural factors along with the motivation of covering their tuition costs and lack of governmental support system towards students. Finnish students on the other hand might not feel the necessity of working due to governmental support and free tuition for university, allowing them to access individual lifestyle. While in theory Japanese students have several potential factors in achieving high financial literacy, such as an access to their self-earned money, a culture valuing budgeting, and higher PISA scores in math related fields, they still underperform compared to Finnish students.

The main predictor for differences in financial knowledge seems to be the country. Being Finnish increases the financial knowledge score by almost 0.7 points, when demographic variables, attitudes, and subjective financial knowledge are controlled. This suggests a baseline difference beyond individual characteristics, which could include cultural, educational, or societal differences. Self-rated financial literacy did also contribute to the financial knowledge score significantly, indicating that there is correlation between perception and real understanding. This accounts for an increase of 0.27 points among Finnish participants and 0.24 among Japanese participants, slightly stronger for Finnish students.

The higher grade contributes to financial literacy score in the Finnish model by 0.25 points, but instead in the Japanese model university major is rather strong and significant predictor, indicating an increase of 0.6 points. This result suggests that financial knowledge develops broadly across all university majors in Finland, driven probably by experience and maturity. It could also be argued that Finnish students are older on average due to men being part of the mandatory military conscription usually before university, and perhaps the university students studying for master's degree more often. On the other hand, among Japanese, the financial knowledge skills are more tied to the numeracy STEM or business background, perhaps due to there being a lack of common financial literacy education.

Interestingly the gender gap is absent among Finnish student, but present among Japanese students, favoring women. Being woman is statistically significant and rather strong predictor for financial knowledge among Japanese, increasing the financial literacy score by 0.25 points. This could be due to sampling bias and small sample size, but it could be argued that there is a tradition of women being financially more responsible and managing the household finances. Similarly counterintuitive result was that the employment has negative but insignificant impact on financial knowledge, which gets stronger when other factors are controlled. This suggest that working itself does not seem to strengthen financial literacy knowledge.

The vast differences in investing behavior can be explained mostly due to self-rated financial literacy, each level increasing odds of investing by almost 10% among Finnish students and almost 14% among Japanese students. This result indicates that those who perceive themselves financially literate could have more confidence in their abilities to enter financial markets. However, interestingly the objective financial knowledge result being a strong predictor is unique to Finland, in which one level increases odds by 23%. In Japan the knowledge does not significantly affect investing behavior, perhaps due to savings preferences, risk aversion, or institutional barriers. On the other hand, budgeting is a negative predictor for investing among Japanese, decreasing odds for investing by almost 29%, which could be traced down to risk-aversion and perhaps even preferences for short term financial priorities.

However, while Japanese were not as enthusiastic about investing, there is a great demand for learning and understanding more about it meaning that the root cause for lack of investing is not due to disinterest. There could be shortage of information available for Japanese students, or other barriers which make investing more difficult in their environment compared to Finland.

Students from Finland were significantly more likely to rate financial literacy as important even when other factors were controlled. Being Finnish increases self-rated importance of financial literacy by over 2 points, reflecting deep-rooted cultural and societal factors that contribute to Finnish financial knowledge beyond these individual characteristics. For Finnish students, being in their third year or beyond was a statistically significant predictor for self-perceived importance, indicating that the importance grows alongside maturity and life situation near graduation, or perhaps due to higher level of education.

Interestingly, self-rated financial literacy had stronger effect than the actual knowledge score. This result suggests that similarly to investing, the confidence in one’s ability

matters more than objective skill when it comes to the perceived importance of financial literacy. However, among Japanese model no reliable predictor emerged, indicating that the differences are probably structural. It could be argued that due to Japanese students living with their parents, financial literacy might feel less relevant. There is also a possibility that the financial literacy has not been explained well as a concept in Japan.

These results suggest that the motivation to learn these valuable financial literacy skills might be almost non-existent among Japanese university students. This highlights that teaching knowledge alone is not sufficient. Improving motivation and understanding of the topic's importance is essential.

The question can be raised that how country specific economic situation affect the results. In deflationary economies like Japan, saving can be seen as investment, making investing less necessary, while inflation may appear as an opportunity for cheaper debt. Therefore, the current standard measurement of financial literacy may need adjustments and should be challenged in cross-country comparisons, especially outside of Western countries.

6.3 Comparison to previous studies

Compared to previous research, Finnish students exceeded expectations while Japanese students underperformed in all areas other than risk diversification. One explanation for overall better results could be that university students can be seen belonging cognitively to the top percentage of their age group. However, the Japanese underperformance challenges this argument. The results suggest that fundamental financial literacy knowledge is lacking among Japanese students, which becomes evident when comparing to previous literature.

For the compound interest the Finnish correct answers of 71.1% was higher than those of previous research of 58.1% (Kalmi & Ruuskanen, 2018), and 49% (Vaahtoniemi et al., 2023). The Japanese correct answers of 29 % was worse than previous study of 39% (The

Central Council for Financial Services Information, 2023). There is a possibility that Finnish university understand compound interest more due to them taking student loans which add their interest to the loan itself, making it real life example of compounding interest, while Japanese students seldom take loans as previously found.

Regarding the question of inflation, Finnish correct answers of 80.7% were higher than those of previous research which got correct answering rates of 76.5% (Kalmi & Ruuskanen, 2018), 64.5% (Vaahtoniemi et al., 2023), and 56.8% (Ministry of Justice, 2024). Japanese correct answering rate of 40.6% was poorer than previous 58.8% (Sekita, 2011) and 63% (The Central Council for Financial Services Information, 2023). A relevant argument is that Japan has experienced long-term deflation, which may make the concept of inflation less intuitive for Japanese students, while Finnish students may find deflation more difficult concept to grasp.

For risk diversification, the correct answering rate of 93.9% for risk diversification among Finnish participants was significantly larger compared to previous research of 65.8% (Kalmi & Ruuskanen, 2018) and 65.8% (Vaahtoniemi et al., 2023). Similarly high result can be seen within Japanese group which had 72.5% of correct answers, compared to previous 39.5% (Sekita, 2011) and 50% (The Central Council for Financial Services Information, 2023). This may partly be due to easier wording of the questions or increasing awareness of investing and equity markets among university students. While Finnish students outperformed Japanese students in every area, it seems both countries ranked this question with same difficulty order. Risk diversification was clearly the easiest, followed by inflation while compound interest was most difficult.

Surprisingly, the findings regarding gender gap are contrary to the previous research. Among the Finnish participants the result did not indicate any gender gap. This could indicate that among the university students the other demographic variables such as yearly income, educational differences, work experience, household responsibilities, or gender norms which come evident into adulthood. This goes along with Okamoto &

Komamura (2021) and Sekita (2011) notion that gender differences could be explained through higher education, which is the same among the participants of the survey. However, among the Japanese there was an indication of gender gap in financial knowledge, favoring women. This result is contrary to most of the previous research, such as the research of Haag & Brahm (2025), Kalmi & Ruuskanen (2018), and Vaahtoniemi et. al (2023). This result could, however, may reflect small sample size or sampling bias.

6.4 Implications and policy suggestions

There is a massive potential for improvement and collaboration in the field of financial literacy, especially regarding investing. A significant number of Japanese university students seem to be interested in investing, but due to numerous reasons are unable to get started. Offering easily digestible investment material or workshops for university students could enhance their capabilities of investing. Finland could share its teaching methods, which show strong results across all aspects of financial literacy, while Japan could contribute insight from its budgeting and part-time working culture, which show promise even when other areas of financial literacy might be lacking. Such budgeting skills could be extremely helpful for enhancing financial independence among Finnish students, who rely on loans and government grants. Collaboration between these countries would be relevant and beneficial for both countries, since they have national financial literacy strategies in place with ambitious goals.

The governmental financial support system for students in Finland may ease financial stress and promote autonomy, while reliance on family support in Japan might delay financial independence. Policymakers in Japan could consider whether a more structured public financial support system would benefit the higher education and economy.

Improving financial knowledge is important, but attitudes are even more crucial in several areas of financial literacy. Therefore, attitudes, the motivation, and feeling of importance should be the main focus on teaching, rather than solving financial problems through calculations and raw numbers. Improving financial knowledge leads to positive

financial behavior in Finland, but in Japan the focus should be on encouraging risk-taking, confidence, and long-term financial planning. Investing in specialized teacher training and creating space in the current curriculum would be necessary steps to enhance financial literacy towards the goals of national strategies.

While Japan is clearly a cash society and Finnish are used to debit cards and online bank payments, the rise of mobile payment methods alongside new innovative digital payment methods especially among young people raises a valid concern for digital financial literacy, which could lead to increased financial frauds if not taken seriously.

6.5 Limitations

There are several major limitations to this study, as mentioned previously. First, the premise for this study is university students between Finland and Japan, and therefore the results cannot be interpreted as representative of all young people, or of the populations from these countries. The sample size of 183 is rather small and might not represent the population well due to sampling bias.

The study has several differences in its methodology, such as some different questions, outcome variables, and answering options. For instance, the question regarding interest rate was changed to compound interest in order to measure deeper understanding of this phenomenon. Furthermore, the measured attitudes and importance differ from OECDs definition. Therefore, making comparisons between studies should be done with extreme care.

In the regressions there could be omitted variable bias present, meaning that important statistical variables may have been left out unintentionally. The adjusted R^2 values of the regression models varied. While some models offered rather strong explanations such as model 4 for financial knowledge (R^2 of 0.349), some models like the Japanese model 6 for financial importance performed poorly (R^2 of less than 0). However, these weaker models were kept in order to make comparisons with other models.

As the study is based on a survey, the data is self-reported, which could result in misinformation either accidentally or deliberately. Furthermore, due to the cross-cultural nature of the study, the questions can be interpreted differently and there might be problems with specific wording or concepts.

6.6 Suggestions for future research

There are several relevant ideas for future research. Since the sample size of this study is rather small and the national financial literacy strategies of both countries are currently being implemented, a new study on the same topic would offer significant value for policymakers and educators in evaluating if these strategies have been effective. Similar studies to this should be done with bigger sample sizes to reveal clearer differences between majors and grades and to conclude if there are real gender differences among university students. Additionally, other subgroups such as students at universities of applied sciences, vocational schools, and high schools could be included to see if the results differ among them.

There is an interesting possibility of exploring the whole concept of financial knowledge from different perspectives. For example, if the questions focused on deflation or other less commonly used terms, would some participants or countries, such as Japan, perform better? Another promising perspective would be digital financial literacy, which is becoming increasingly important in the future.

Since there is clear motivation for investing especially among Japanese students as well as a lack of finding financial literacy important, a qualitative study on investing behavior and attitudes toward financial literacy would be extremely valuable perspective. This could explore why students feel financial literacy as not important, and what barriers keep them from investing. These motivated students could be used for testing financial literacy interventions to see if their financial literacy could be improved through gamification or other related activities. Furthermore, since there is a Japanese specific gender

gap in favor of women in financial knowledge, further research should affirm whether this result can be replicated with larger sample size.

This study highlights that more cross-cultural studies are needed in order to provide broader picture on how different welfare models, educational structures, and cultural norms affect financial literacy. It would be interesting to see how Finland compares with other Nordic countries, and how Japan performs with other East-Asian countries, using the same methodology. This would be especially important for countries that have not participated in OECD surveys, since otherwise comparisons between these countries are limited.

7 Conclusions

The aim of this study was to investigate the differences in financial literacy between university students in Finland and Japan and to identify the factors explaining them. Employing a quantitative survey with 183 students, this study analysed differences in three major aspects of financial literacy: knowledge, behaviour, and attitudes.

The research confirms a significant gap in financial literacy, with Finnish students demonstrating substantially higher levels of objective financial knowledge and investment activity. On average, Finnish students correctly answered 2.5 of the "Big Three" financial literacy questions, compared to 1.4 among Japanese students. This knowledge gap translated directly into behaviour, with 77% of Finnish students investing, compared to only 42% of Japanese students.

Perhaps the most profound difference was found in the perceived importance of financial literacy. Finnish students rated it highly at 4.3 out of 5, while Japanese students rated it at a strikingly low 1.6 out of 5. This suggests that the primary barrier in the Japanese context may be attitudinal rather than analytical skills. Critically, nearly half of non-investing Japanese students expressed an interest in investing, pointing to significant obstacles in either access, confidence, or information.

The regression analyses reinforced these results. Financial knowledge was primarily explained by country, with self-rated financial literacy also emerging as a strong predictor. In Finland being in a higher year of study was associated with greater knowledge, while in Japan both university major and gender played significant roles. Investing behavior was linked to higher self-rated financial literacy in both countries, but objective financial literacy predicted investing only among Finnish students. In Japan, by contrast, maintaining a budget was negatively associated with investing. For self-rated importance of financial literacy, country was by far the strongest predictor. Among Finnish students, higher self-rated financial literacy and study year were associated with stronger perceived importance, while among Japanese students no additional factors explained the differences.

The primary contribution of this thesis is its direct comparison between an independent Nordic and a family oriented East Asian country, revealing that a universal approach to financial education is insufficient. The fundamental differences in financial autonomy, household composition, and source of income are key to understanding these outcomes. These findings have clear implications for educators and policymakers. In Japan, interventions must focus on fostering a sense of importance and confidence around personal finance, not just on technical knowledge. In Finland, the challenge remains in translating high financial literacy into even broader positive financial behaviours. In both cases, investing in specialized training for teachers would be essential for achieving the goals of the national financial literacy strategies.

This study's limitations, primarily its modest sample size and the potential cultural bias in survey questions, provide important guidance for future research. Future work should analyse larger, more diverse samples and integrate qualitative methods. These qualitative studies are essential to uncover the reasons behind numerical results, such as the barriers preventing interested Japanese students from investing, and the cultural causes of their low attitudes towards the importance of financial literacy. Global financial literacy strategies must be guided by cross-cultural evidence and diverse research approaches.

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Appendices

Appendix 1. Survey

Question 1.

In which country are you living in?

a) Finland
b) Japan

Question 2.

What is the population of the city you live in?

a) Less than 3 000
b) 3 000 – 15 000
c) 15 000 – 100 000
d) 100 000 – 1 000 000
e) More than 1 000 000
f) Prefer not to answer

Question 3.

What year of study are you in?

a) 1
b) 2
c) 3
d) 4
e) 5+
f) Prefer not to answer

Question 4.

What is your gender?

a) Male
b) Female

c) Other

d) Prefer not to answer

Question 5.

What is your major?

a) Major:

b) Prefer not to answer

Question 6.

Who else lives in your household besides you? (can choose multiple answers)

a) Only me

b) Partner/Spouse

c) Children under 18 (e.g.. own childer, siblings)

d) Adult relatives (e.g.. parents, grandparents, siblings)

e) Friend/roommate/other adults

f) Prefer not to answer

Question 7.

You receive 100 $ in a new savings account. You are paid 2% annual interest on this account for five years. You cannot deposit or withdraw any more money during this period. How much money will there be in the account after five years? (There are no fees on the account, and you do not need to pay taxes).

a) Over 110 $

b) Exactly 110 $

c) Under 110 $

d) Impossible to know with this information

e) I don’t know

f) Prefer not to say

Question 8.

You have 1 000 $ in your bank account. You are paid 2 % annual interest. The annual inflation rate is 4 %. You cannot deposit or withdraw any more money during this period (There are no fees on this account and you do not need to pay taxes). You withdraw the money after one year. With your money, you can now buy:

a) More than a year ago
b) The same as a year ago
c) Less than a year ago
d) I don't know
e) Prefer not to say

Question 9.

True or false: You can often reduce the risk of stock investing by investing in several different stocks, rather than investing in the same stock.

a) True
b) False
c) I don't know
d) Prefer not to answer

Question 10.

How are the prices of products usually determined in free markets?

a) According to government-set prices
b) According to the central bank's interest rate
c) According to supply and demand
d) According to the consumer price index
e) I don't know
f) I prefer not to answer

Question 11.

Do you keep a personal budget?

a) Yes

b) No
c) I don’t know
d) Prefer not to answer

Question 12.

Who makes financial decisions in your household?

a) I do
b) I do, together with someone else
c) Someone else
d) I don’t know
e) Prefer not to answer

Question 13.

Which of the following have you invested in? (can choose multiple options)

a) Stock shares
b) Funds (equity, bond, or mixed funds)
c) Bonds (private or government)
d) Saving account
e) Precious metals
f) Cryptocurrencies
g) Art or collectibles
h) Other, what?:
i) I don’t invest, and I am not interested in it
j) I don’t invest, but I am interested in it
k) I don’t know
l) Prefer not to answer

Question 14.

How well do you think you have planned your finances for retirement?

a) Very well

b) Well
c) Fairly well
d) Poorly
e) Very poorly
f) I have not planned at all
g) I don't know
h) Prefer not to answer

Question 15.

If you personally had a major expense equal to one month's income, would you be able to pay it without taking a loan or asking family/friends for financial support?

a) yes
b) Probably
c) Probably not
d) No
e) I don't know
f) Not applicable (eg.. No income)
g) Prefer not to answer

Question 16.

How important do you think financial literacy is on a scale of 1-5 (1=not important at all, 5=very important)

a) 5
b) 4
c) 3
d) 2
e) 1
f) I don't know
g) Prefer not to answer

Question 17.

How good do you think your financial literacy is on a scale of 1-5? (1=very poor, 5=very good).

a) 5
b) 4
c) 3
d) 2
e) 1
f) I don’t know
g) Prefer not to say

Question 18.

How much financial literacy was taught in your school before university? On a scale 1-5 (1=not taught at all, 5=taught a lot)

a) 5
b) 4
c) 3
d) 2
e) 1
f) I don’t know
g) Prefer not to answer

Question 19.

How often do you follow the economy or news about economics on a scale 1-5? (1=never follow, 5=follow very often)

a) 5
b) 4
c) 3
d) 2
e) 1

f) I don’t know

g) Prefer not to answer

Question 20.

How often do you and your family or friends talk about economic matters on a scale of 1-5? (1=never talk about it, 5=talk about it very often)

a) 5

b) 4

c) 3

d) 2

e) 1

f) I don’t know

g) Prefer not to answer

Question 21.

How do you think economic situation in your country is on a scale of 1-5? (1=very poor, 5=very good)

a) 5

b) 4

c) 3

d) 2

e) 1

f) I don’t know

g) Prefer not to answer

Question 22.

What is your current employment situation?

a) I am not employed

b) Part-time job

c) Full-time job

d) Gig work (e.g.. freelancer)
e) Other, what?:
f) Prefer not to answer

Question 23.

Which of the following payment methods do you primarily use in your daily life? You can select multiple options

a) Cash
b) Debit card (bank card)
c) Credit card
d) Mobile payment (e.g.. Apple Pay, MobilePay, Paypay)
e) Online bank payment
f) IC card (e.g.. Suica, Icoca)
g) Other, what?:
h) Prefer not to answer

Question 24.

Which of the following financial supports do you receive? You can select multiple options

a) Student loan
b) Government-provided student support
c) Government-provided housing support
d) Financial support from parents
e) Scholarship
f) Other, what?:
g) I do not receive any of the above
h) Prefer not to answer

Question 25.

Any additional comments or suggestions related to the survey? (Optional) Open answer

Appendix 2. VIF tables

Table 8. VIF table for financial knowledge

Big3	Model1	Model2	Model3	Model4	Model5
Finland	1.022476	1.459842	1.748467		
Female	1.003871	1.080074	1.142686	1.119292	1.192916
Grade3plus	1.019698	1.138553	1.148667	**1.177696**	1.034886
Major		1.183013	1.185383	1.208555	1.099303
Work		1.398376	1.401928		
Sr_finlit			1.367158	1.144668	1.074026

Table 9. VIF table for financial behavior

Invest	Model1	Model2	Model3	Model4	Model5	Model6	Model7
Finland	1.022476	1.459842	1.748467	1.802247	**2.248460**		
Female	1.003871	1.080074	1.142686	1.080814	1.160201	1.085594	1.125076
Year	1.019698	1.138553	1.148667	1.167957	1.200440	1.110586	1.104362
Major		1.183013	1.185383	1.218535	1.220958		
Work		1.398376	1.401928	1.401161	1.415656		
Sr_finlit			1.367158		1.517104	1.241092	1.387323
Big3				1.431957	1.545748	1.216578	1.065374
Budget					1.054359	1.050583	1.334239
fin_dec					1.397161		

Table 10. VIF table for financial attitude

Importance	Model1	Model2	Model3	Model4	Model5	Model6
Finland	1.022476	1.459842	1.96199	**2.257268**		
Female	1.003871	1.080074	1.144187	1.163109	1.072265	1.090206
Year	1.019698	1.138553	1.171352	1.208964	1.110013	1.039984
Major		1.183013	1.218535	1.22144		
Work		1.398376	1.406907	1.416839		
Sr_finlit			1.464857	1.557114	1.241036	1.124341
Big3			1.534287	1.633973	1.183556	1.061245
Invest				1.374643		
Budget				1.080011		
fin_dec				1.416426		

Appendix 3. Full table of descriptive statistics

Table 11. Full table of descriptive statistics

	Finland (%)	Japan (%)	Finland (N)	Japan (N)
	62.3 %	37.7 %	114	69
What is the population of the city you live in?				
< 3 000	1.8	1.4	2	1
3 000 - 15 000	3.5	7.2	4	5
15 000 - 100 000	33.3	31.9	38	22
100 000 - 1 000 000	58.8	42.0	67	29
>1 000 000	2.6	15.9	3	11
Prefer not to answer	0.0	1.4	0	1
What year of study are you in?				
1	19.3	27.5	22	19
2	19.3	29.0	22	20
3	14.9	31.9	17	22
4	15.8	2.9	18	2
5+	28.1	7.2	32	5
Prefer not to answer	2.6	1.4	3	1
What is your gender?				
Male	31.6	29.0	36	21
Female	62.3	69.6	71	48
Other	3.5	0.0	4	0
Prefer not to answer	2.6	1.4	3	1
What is your major? (Open ended)				
Business and economics	7.9	15.9	9	11
STEM	5.3	11.6	6	8
Other	74.6	62.3	85	43
Prefer not to answer	12.3	10.1	14	7
Who else lives in your household (can choose multiple answers)				
Only me	60.5	26.1	69	18
Partner/spouse	29.8	2.9	34	2
Children under 18	0.9	5.8	1	4
Adult relatives	4.4	73.9	5	51
Other adults	5.3	0.0	6	0
Prefer not to answer	0.0	0.0	0	0
You receive 100 $ in a new savings account. You are paid 2% annual interest on this account for five years. You cannot deposit or withdraw any more money during this period. How much money will there be in the account after five years? (There are no fees on the account, and you do not need to pay taxes).				
Over 110 $	71.1	29.0	81	20
Exactly 110 $	21.1	39.1	24	27
Under 110 $	2.6	11.6	3	8

	Finland (%)	Japan (%)	Finland (N)	Japan (N)
Impossible to know with this information	2.6	7.2	3	5
I don't know	2.6	13.0	3	9
Prefer not to answer	0.0	0.0	0	0
You have 1 000 $ in your bank account. You are paid 2 % annual interest. The annual inflation rate is 4 %. You cannot deposit or withdraw any more money during this period (There are no fees on this account and you do not need to pay taxes). You withdraw the money after one year. With your money, you can now buy:				
More than a year ago	3.5	17.4	4	12
The same as a year ago	2.6	8.7	3	6
Less than a year ago	80.7	40.6	92	28
I don't know	13.2	33.3	15	23
Prefer not to answer	0.0	0.0	0	0
True or false: You can often reduce the risk of stock investing by investing in several different stocks, rather than investing in the same stock.				
True	93.9	72.5	107	50
False	0.9	11.6	1	8
I don't know	5.3	15.9	6	11
Prefer not to answer	0.0	0.0	0	0
How are the prices of products usually determined in free markets?				
According to govern-ment-set prices	0.0	1.4	0	1
According to the central bank's interest rate	0.9	4.3	1	3
According to supply and demand	81.6	78.3	93	54
According to the con-sumer price index	9.7	10.1	11	7
I don't know	7.9	5.8	9	4
Prefer not to answer	0.0	0.0	0	0
Do you keep a personal budget?				
Yes	44.7	55.1	51	38
No	53.4	37.7	61	26
I don't know	1.8	7.2	2	5
Prefer not to answer	0.0	0.0	0	0
Who makes financial decisions in your household?				
I do	70.2	47.8	80	33
I do, together with someone else	28.9	13.0	33	9
Someone else does	0.0	36.2	0	25
I don't know	0.0	0.0	0	0
Prefer not to answer	0.9	2.9	1	2
Which of the following have you invested in?				
Stock shares	24.6	8.7	28	6
Funds	63.2	11.6	72	8

	Finland (%)	Japan (%)	Finland (N)	Japan (N)
Bonds	2.6	4.3	3	3
Savings account	57.0	26.1	65	18
	Finland (%)	Japan (%)	Finland (N)	Japan (N)
Precious metals	0.9	2.9	1	2
Cryptocurrencies	5.3	0.0	6	0
Art of collectibles	10.5	1.4	12	1
Other	7.0	5.8	8	4
I don't invest, and I am not interested in it	11.4	11.6	13	8
I don't invest, but I am interested in it	11.4	44.9	13	31
I don't know	0.0	2.9	0	2
Prefer not to answer	0.0	0.0	0	0
How well do you think you have planned your finances for retirement?				
Very well	0.0	0.0	0	0
Well	14.0	18.8	16	13
Fairly well	27.2	7.2	31	5
Poorly	14.9	18.8	17	13
Very poorly	0.0	0.0	0	0
I have not planned at all	41.2	49.3	47	34
I don't know	0.0	0.0	0	0
Prefer not to answer	2.6	5.8	3	4
If you personally had a major expense equal to one month's income, would you be able to pay it without taking a loan or asking family/friends for financial support?				
Yes	50.0	33.3	57	23
Probably	22.8	21.7	26	15
Probably not	17.5	10.1	20	7
No	6.1	14.5	7	10
I don't know	2.6	15.9	3	11
Not applicable	0.9	4.3	1	3
Prefer not to answer	0.0	0.0	0	0
How important do you think financial literacy is on a scale of 1-5 (1=not important at all, 5=very important)				
5	43.0	4.3	49	3
4	48.2	1.4	55	1
3	8.8	11.6	10	8
2	0.0	10.1	0	7
1	0.0	62.3	0	43
I don't know	0.0	10.1	0	7
Prefer not to answer	0.0	0.0	0	0
How good do you think your financial literacy is on a scale of 1-5? (1=very poor, 5=very good).				
5	3.5	2.9	4	2
4	21.9	4.3	25	3
3	53.5	30.4	61	21
2	17.5	33.3	20	23

	Finland (%)	Japan (%)	Finland (N)	Japan (N)
1	2.6	18.8	3	13
I don't know	0.9	10.1	1	7
Prefer not to answer	0.0	0.0	0	0
How much financial literacy was taught in your school before university? On a scale 1-5 (1=not taught at all, 5=taught a lot)				
5	0.9	1.4	1	1
4	4.4	8.7	5	6
3	40.4	14.5	46	10
2	39.5	34.8	45	24
1	13.2	37.7	15	26
I don't know	1.8	2.9	2	2
Prefer not to answer	0.0	0.0	0	0
How often do you follow the economy or news about economics on a scale 1-5? (1=never follow, 5=follow very often)				
5	5.3	7.2	6	5
4	20.2	10.1	23	7
3	23.7	26.1	27	18
2	32.5	34.8	37	24
1	16.7	20.3	19	14
I don't know	1.8	1.4	2	1
Prefer not to answer	0.0	0.0	0	0
How often do you and your family or friends talk about economic matters on a scale of 1-5? (1=never talk about it, 5=talk about it very often)				
5	6.1	2.9	7	2
4	35.1	14.5	40	10
3	37.7	29.0	43	20
2	20.2	27.5	23	19
1	0.0	24.6	0	17
I don't know	0.9	1.4	1	1
Prefer not to answer	0.0	0.0	0	0
How do you think economic situation in your country is on a scale of 1-5? (1=very poor, 5=very good)				
5	0.0	2.9	0	2
4	7.9	4.3	9	3
3	47.4	20.3	54	14
2	33.3	49.3	38	34
1	7.0	21.7	8	15
I don't know	4.4	1.4	5	1
Prefer not to answer	0.0	0.0	0	0
What is your current employment situation?				
I am not employed	54.4	8.7	62	6
Part-time job	28.1	84.1	32	58
Full-time job	7.0	7.2	8	5
Gig work	8.8	0.0	10	0
Other	1.8	0.0	2	0
Prefer not to answer	0.0	0.0	0	0

	Finland (%)	Japan (%)	Finland (N)	Japan (N)
Which of the following payment methods do you primarily use in your daily life? You can select multiple options				
Cash	17.5	84.1	20	58
Debit card (bank card)	93.9	20.3	107	14
Credit card	7.0	58.0	8	40
Mobile payment	78.1	63.8	89	44
Online bank payment	53.5	1.4	61	1
IC card	0.0	24.6	0	17
Other	0.0	0.0	0	0
Prefer not to answer	0.0	0.0	0	0
Which of the following financial supports do you receive? You can select multiple options				
Student loan	50.9	4.3	58	3
Goverment-provided student support	83.3	0.0	95	0
Government-provided housing support	73.7	1.4	84	1
Financial support from parents	29.8	63.8	34	44
Scholarship	6.1	0.0	7	0
Other	4.4	27.5	5	19
I do not receive any of the above	0.9	20.3	1	14
Prefer not to answer	0.0	0.0	0	0