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Financial Literacy, Financial Knowledge, and Financial Behaviors in OECD Countries

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Abstract: As an integral part of financial inclusion, adequate and correct financial knowledge provides individuals with tools to achieve better financial performance throughout their lives. Financial knowledge also contributes to agents exhibiting financial behaviors. As there is consensus in the literature regarding the benefits of financial literacy, we decided to investigate the importance of several indicators that generally appear to explain this literacy in a set of twenty OECD countries, considering financial literacy, financial knowledge, and financial behavior. Using estimation through corrected heteroscedasticity, the results show that the completion of higher education contributes positively and significantly to financial literacy and financial knowledge and behaviors. Inequality in access to health and education, as well as the level of household debt, negatively impacts financial literacy and knowledge. Still, on the other hand, progression in human development contributes to progression in literacy and financial behavior. In terms of average income, it can be seen that it contributes to literacy and financial behavior, but surprisingly, public spending on education does not impact financial literacy.

Keywords: financial literacy; financial knowledge; financial behavior; OECD

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1. Introduction

Financial literacy is crucial for effectively managing economic resources and financial and social well-being. In an increasingly complex and unpredictable world, making informed decisions about saving, investment, and indebtedness is essential. These decisions impact personal and social life and indicate economic and social development (Almeida et al., 2024). In societies with high inequality, barriers can hinder access to financial education, resulting in lower financial literacy among the most disadvantaged populations (Rehan et al., 2019).

Financial literacy is not just a local concern; it is a global movement. The G20 countries (G20, 2021) have recognized financial literacy as one of the primary skills facilitating the well-being and empowerment of individuals and societies. This global recognition means that countries must unite to promote financial literacy. Strengthening and investing in financial education and inclusion programs will significantly expand financial literacy, making it a shared goal for all.

As Asli et al. (2021), Mbona (2022), and Sulaiman et al. (2023) assert, financial literacy is not just a personal skill but a crucial element for achieving economic stability and sustainable human development. This understanding is shaped by a range of macroeconomic and institutional factors, including the Human Inequality Coefficient (HIC), household debt (HD), and Gross Domestic Product (GDP). These authors also highlight the role of education, accessibility, and dissemination of financial information and government efficiency in promoting increased financial literacy.

The National Financial Educators Council (NFEC) defines literacy as "possessing the skills and knowledge to confidently take effective action that best fulfils an individual's personal, family, and global financial goals". This definition highlights the importance of having the necessary skills and knowledge to make informed financial decisions that align with one's goals.

Lusardi and Messy (2023) state that financial literacy contributes to financial inclusion, especially at a time when digital financial services are increasingly sophisticated and widely accessible around the world. As Schagen and Lines (1996) point out, it is through financial literacy that people make informed decisions about their financial lives, allowing them to make the best possible choices at all times, improving their financial well-being in the long term. Financial knowledge will allow the acquisition of skills that contribute to individuals taking behavioral actions that protect them financially, both in the short and long term, in terms of, for example, future financial planning or obtaining credit (OECD, 2023), as well as in reducing the likelihood of financial insecurity (Chu et al., 2017).

Our work contributes to the existing literature on financial literacy in several ways. This is the first time that OECD (2023) data on financial literacy, knowledge, and behavior are used in conjunction with OECD's Worldwide Governance Indicators (2023). This allows the two OECD databases to be used simultaneously to study OECD countries. Through this study, we obtained evidence contrary to what was obtained in the existing literature. As far as we know, this is the first time public spending on education has not positively impacted financial literacy. This evidence will open avenues for future research in other, more or less broad geographic areas. Finally, by carrying out this division, we open highways further to deepen knowledge about financial literacy in the future.

The research questions we propose to answer are related to the literature review. The human development index normally positively influences financial literacy and behavior, while the inequality presented by populations in various dimensions is in the opposite direction. On the other hand, traditionally, high levels of household debt contribute to low levels of financial literacy and knowledge, and income has no significance for financial behavior. Finally, we intend to verify the relationship between spending on education and financial literacy, as well as the role that the completion of higher education plays in the three dimensions considered.

Regarding estimation, as heteroscedasticity was detected in the OECD databases, we used the model with corrected heteroscedasticity in the estimations. In addition to verifying that public spending on education is not significant in acquiring financial knowledge, the human development index, the average income level, and the completion of higher education contribute positively to financial literacy. On the other hand, inequalities observed in societies and high levels of household debt have a negative impact on financial literacy and knowledge. In all models considered, higher education positively advances literacy, knowledge, and financial behaviors. Due to the limited data available, the results obtained through empirical analysis may not be considered strong support for the conclusions drawn, and this work is a first step in that direction.

The rest of this article is structured as follows. Section 2 presents a brief review of the recent literature on the topics. Section 3 presents the data, variables, statistics, and

correlations. Section 4 provides the model specification, estimation methods, and empirical results, and Section 5 discusses the results. Finally, Section 6 concludes this work and provides some policy implications.

2. Literature Review

Financial literacy, a term that encompasses a broad and ever-evolving range of skills and knowledge, has continually adapted to the emergence of new investment alternatives and financial products. This adaptability is a testament to the dynamic nature of financial literacy and its responsiveness to the constantly changing financial landscapes.

According to Robb and Sharpe (2009), an individual considered financially literate can choose the best financial alternatives, considering the diversity of existing possibilities. On the other hand, Hung et al. (2009) state that financial literacy allows people to improve their financial performance. Huston (2010) argues that financial literacy and applying this knowledge provide self-confidence when making financial decisions, while Redmund (2010) believes that financial literacy can help people make better financial decisions.

Concerned with individuals' financial well-being and full participation in economic life, Lusardi and Mitchell (2014) state that financial literacy contributes to understanding financial concepts and risks and allows confidence in applying these concepts in the financial environment and achieving said well-being.

More recently, Lusardi and Messy (2023) report that financial literacy promotes financial inclusion and is expected to help individuals deal with emerging trends and challenges in the financial landscape, from digital financial services to sustainable finance, thus contributing to more excellent protection and adequate finance.

Given the importance of financial literacy, Lang et al. (2024) conducted a large study that considers 113 countries to explore the relationship between financial literacy and poverty reduction; these authors concluded that higher levels of financial literacy are strongly associated with a lower probability of individuals falling into poverty. This highlights financial literacy as an essential tool for the fight against global poverty. This research reinforces the need for public policies focused on financial education, especially in regions with high poverty rates, where financial training can economically empower communities.

Over time, the definition that has been most cited in the literature was introduced by Schagen and Lines (1996), who define financial literacy as the ability to make informed judgments and concrete decisions about managing money.

While a few decades ago, consumers only had two primary financial products at their disposal: a bank account and a savings account, today, they are offered various products that include increasingly innovative financial solutions and instruments (Rodrigues et al., 2019).

Given the constant sophistication of financial products, the OECD (2013) states that financial literacy should enable individuals to know and perceive the financial risks and returns associated with products. To do this, they will need to apply previously acquired knowledge. According to the OECD (2013, 2023), financial literacy is achieved through financial knowledge, behavior, and attitudes. These three factors will help individuals make solid financial decisions.

With a similar opinion, Hwang and Park (2023) add that financial literacy improves financial results and the financial well-being of individuals in the long term. Financial literacy must be encouraged, as it contributes to individual financial strength and the well-being of society as a whole. Also, previously, Johan et al. (2021) relate financial literacy to the dimensions of financial knowledge, financial attitudes, and financial behavior, and specific sociodemographic characteristics, education, and financial socialization can influence the dimensions, as mentioned earlier.

2.1. Financial Knowledge and Financial Literacy

Financial knowledge refers to the theoretical understanding of financial concepts and instruments, such as interest rates, investments, and banking products. In contrast, financial literacy encompasses this knowledge and involves applying it effectively in personal financial management, including budgeting, saving, and responsible credit usage. Thus, while financial knowledge represents the cognitive foundation, financial literacy translates this knowledge into making informed decisions and adopting sustainable financial behaviors (Castagno et al., 2025; Świecka et al., 2025).

Financial knowledge provides the necessary theoretical foundation to understand economic concepts such as budgeting, saving, and investing. However, financial literacy enables the practical application of this knowledge, facilitating informed decision-making and the effective management of financial resources. Thus, both are complementary, as financial knowledge equips the individual with information, while financial literacy transforms that information into sustainable and responsible behaviors (González-Prida et al., 2025; Świecka et al., 2025). On the other hand, financial literacy is also a result of financial education. Financial education provides the means for individuals to acquire financial literacy and develop the necessary skills to manage their resources efficiently (Zhang & Fan, 2024). While financial literacy focuses on acquiring specific knowledge and skills, financial education represents a continuous and structured learning process (Akram et al., 2025; Bellocchi & Travaglini, 2025).

Financial literacy refers to the knowledge and skills that enable an individual to understand basic financial concepts, such as budgeting, saving, investing, and debt management. It involves applying this knowledge in practice, allowing individuals to effectively manage their financial resources and avoid economic vulnerability (OECD, 2023; Zhang & Fan, 2024). Thus, a financially literate person can interpret financial information and utilize it efficiently daily (Bellocchi & Travaglini, 2025).

According to the OECD (2023), financial knowledge can be defined as an individual's basic knowledge of financial concepts to apply them in financial contexts correctly and thus make their choices. Concepts about the effects of inflation on savings, the benefits of savings, interest, and risks are some of the ideas that must be mastered to have financial knowledge.

For Lind et al. (2020), financial knowledge can be divided into objective and subjective components. Objective financial understanding is measured by the stock of specific knowledge related to personal finances, financial products, inflation, and interest rates. It can be evaluated objectively, while subjective financial knowledge is equated with self-efficacy, which implies confidence and perceived financial skills.

On the other hand, financial knowledge is usually associated with financial behaviors. For Kim et al. (2019), financial knowledge is demonstrated, among other things, through paying off credit cards, planning retirement, punctual mortgage payments, establishing preventive savings, seeking financial advice, or even anticipating investment risks.

More recently, Gafoor and Amilan (2024) have argued that financial knowledge enables individuals and societies to make rational decisions, which can lead to favorable results and is an important contributor to increasing individual and global financial well-being.

Regarding general bank loans and credit cards, Chen et al. (2024) consider financial knowledge important in increasing responsible credit behavior. These authors believe that policymakers should promote financial knowledge that helps consumers formulate plans for using credit responsibly.

The significance of these concepts has been widely recognized, particularly in the context of increasing complexity in financial markets. Individuals with low financial literacy levels are likelier to make poor financial decisions, accumulate excessive debt, and experience economic difficulties (OECD, 2023; Zhang & Fan, 2024). Consequently,

governments and financial institutions have invested in financial knowledge programs to enhance financial literacy among the population and promote a more stable economy.

2.2. Financial Behavior

According to the OECD (2023), financial behaviors manifest themselves when individuals take actions to protect their financial situation in the short and long term. These actions may include planning future expenses, choosing financial products, or taking out loans.

Financial behavior is associated with each person's responsibility for managing money. Individuals with knowledge and skills in adequately managing their finances will promote behaviors that allow them to demonstrate sound financial behavior (Andarsari & Ningtyas, 2019). Chavali et al. (2021) add that individuals who exhibit positive financial behaviors, such as maintaining budgets, saving, not making decisions that involve financial risks, controlling expenses, and avoiding compulsive purchases, have high financial well-being.

Chu et al. (2017) also report that appropriate financial behaviors reduce the likelihood of financial insecurity, ultimately leading to a desirable financial state, including better financial results and satisfaction with achieved financial well-being.

2.3. Human Development Index

The literature shows a strong link between the human development index (HDI) and financial literacy, influenced by inequalities and institutional factors. In 1987, the United Nations created an index that measures human development, covering its multiple dimensions. This index encompasses individual and collective development regarding easy access to education with sufficient quality and quantity, knowledge acquisition, health, literacy, average life expectancy, etc.

Kummu et al. (2018) consider that although human development is difficult to quantify, the HDI is an appropriate proxy to measure this development in all its dimensions, as it groups the key dimensions of human life. Still, for this author, the sustainability and well-being of countries and individuals are reflected in the HDI. Regarding financial literacy, Santini et al. (2019) found no evidence of any significance between the HDI and financial literacy.

Muti'ah et al. (2022), in their study in North Sumatra, demonstrate that the implementation of training activities in different types of literacy, including cultural, civic, numerical, financial, digital, and scientific literacy, can have a direct impact on human development, which is evidenced by the increase in the HDI in the studied community. This study highlights the importance of educational programs adapted to local needs, especially in communities with limited academic and financial resources. In the same sense, Geraldes et al. (2022) used a sample of 61 countries over 10 years (2008–2018), using indicators of financial inclusion, financial literacy, human development, banking concentration, and number of bank branches. The main conclusions indicate that financial literacy and human development are necessary and sufficient conditions for achieving high levels of financial inclusion. Furthermore, the study highlighted that supply-side factors such as bank concentration and branch accessibility also play a crucial role. In turn, Datta and Singh (2019) found positive correlations between the level of the HDI and financial literacy, and Xiao and Bialowolski (2023) also found the same statistical relationships between the HDI and financial behavior.

This shows that financial literacy, financial behavior, and human development are linked and depend on institutional and macroeconomic contexts; so, implementing public policies that promote financial education, reduce inequality, and improve resource management is necessary. Based on the existing literature, we formulate the following hypothesis to be tested empirically:

Hypothesis 1 (H1). *The human development index positively relates to financial literacy or behavior.*

2.4. Human Inequality Coefficient

Peterson (2014) analyzed non-economic inequality in well-being indices, pointing out that the human development index does not capture all the nuances of inequality. He proposed using the inequality-adjusted human development index to reflect these variations better. The author identified the Human Inequality Coefficient (HIC) as a significant factor, demonstrating that higher levels of inequality are correlated with lower financial literacy, suggesting that inequality limits access to education and financial knowledge.

The relationship between the Human Inequality Coefficient (HIC) and financial literacy is complex and mediated by factors such as access to education, availability of resources, and public policies aimed at combating inequality (Liu et al., 2024). The HIC influences financial literacy by affecting individuals' ability to make informed financial decisions and social mobility. Thus, a high HIC may be associated with lower financial literacy due to the lack of access to education and adequate resources, perpetuating social inequality and hindering effective financial decision-making (Nugraha, 2018; Alvarado et al., 2021; Muzekenyi et al., 2023).

Furthermore, human inequality affects financial market participation and the adoption of digital technologies, and improving financial literacy is crucial to increasing trust and relationships with capital markets, especially in low-income countries (Febrianto et al., 2023).

In studies carried out in Indonesia and India, Nugraha (2018) and Pandey (2023) highlight that, despite economic growth, a high HIC continues to limit human development. Nugraha (2018) and Pandey (2023) found evidence of inequality in populations in these countries, pointing out that this restricts access to educational and financial resources, perpetuating poverty and financial exclusion cycles. These studies demonstrate that financial literacy is not just a matter of education but equity in access to opportunities.

Davoli and Rodríguez-Planas (2021), Mbona (2022), and Sulaiman et al. (2023) reinforce the negative relationship between the HIC and financial literacy, analyzing different geographic and temporal contexts. These authors emphasize that inequality affects individuals' ability to acquire essential financial knowledge and limits confidence and patience, which are crucial for making informed financial decisions. Research by Mbona (2022), which compares 120 countries, reveals that inequality impedes financial inclusion and social mobility, a conclusion corroborated by Sulaiman et al. (2023) for the reality of Nigeria. Based on the existing literature, we formulate the following hypothesis to be tested empirically:

Hypothesis 2 (H2). *The HIC negatively correlates with increased financial literacy or financial knowledge.*

2.5. Household Debt and Gross Domestic Product per Capita

Household Debt as a percentage of GDP has a significant impact on financial literacy, influencing the need for financial education and the ability to implement effective policies to promote financial knowledge and management among the population (Jelić & Kedžo, 2018; Liu et al., 2024; Park & Mercado, 2021).

Authors such as Alvarado et al. (2021) and Rehan et al. (2019) argue that high family debt levels increase the need for financial literacy. An effective government facilitates access to this education, creating a healthier financial environment, mitigating the adverse effects of high debt, promoting financial education, and improving families' ability to manage their finances.

Studies carried out by Nugraha (2018) and Pandey (2023)evidence the negative relationship between household debt and financial literacy. They show that high levels of family debt limit families' financial management capacity, creating economic vulnerabilities.

Tseng and Hsiao (2022) observed that in China, financial literacy and debt management vary with the level of debt, highlighting the importance of socioeconomic factors, such as economic stability and access to financial knowledge, for families' financial resilience. This negative relationship between high household debt (HD) and financial literacy is corroborated by Davoli and Rodríguez-Planas (2021), Mbona (2022), and Sulaiman et al. (2023), who highlight that excessive debt generates dependence on credit and compromises long-term financial planning.

Mbona (2022), when analyzing 120 countries, concludes that a high HD harms the economic stability of families, reducing their ability to invest in financial education and perpetuating cycles of financial exclusion. In the Nigerian context, Sulaiman et al. (2023) highlight that the lack of basic financial training aggravates the effects of a high HD, underscoring the need for educational interventions to train the population and mitigate vulnerability to debt.

The analysis of factors such as household debt (as a percentage of GDP) reveals that high levels of household debt reduce financial literacy, since more indebted families with less institutional support have fewer resources to invest in educational training. The conclusions of the different works converge in defending the implementation of public policies focused on debt reduction to promote the financial education of its citizens. These variables are essential to empower families to manage credit more responsibly and thus mitigate the negative impacts of excessive debt.

Ababio et al. (2021) studied GDP per capita in various financial inclusion settings. The authors describe that economies with higher GDP per capita tend to have higher levels of financial inclusion, promoting advances in human development. These results suggest that financial inclusion contributes to economic growth and reduces inequalities, creating a virtuous cycle of inclusive development and reducing corruption.

Among others, the works of Arora (2010), Pietrzak and Pietrzak (2018), and Peterson (2014) investigate the impact of Gross Domestic Product (GDP) per capita in Purchasing Power Parity (PPP) on financial literacy, concluding that factors such as inequality shape the financial environment and economic opportunities for individuals and countries, contributing to the increase in financial literacy.

According to Rehan et al. (2019), an environment characterized by a high GDP per capita establishes more favorable conditions for promoting financial literacy, while a low GDP per capita can hinder access to financial literacy.

In their empirical study, Arifin (2017) found that income does not influence financial behavior, which means that whether income is high or low, it does not affect financial behavior. The author justifies this conclusion by the fact that individuals are not always able to manage their expenses adequately, which is justified by the theory of behavioral finance, which states that human beings are irrational in their behavior due to psychological factors that affect them. In contrast, when conducting a study of 137 countries, Xiao and Bialowolski (2023) concluded that superior financial behaviors are observed for higher per capita incomes.

Based on the existing literature, we formulate the following hypotheses to be tested empirically:

Hypothesis 3 (H3). *Higher levels of household debt contribute to lower levels of financial literacy or financial knowledge.*

Hypothesis 4 (H4). *Income levels do not have any influence on financial behavior.*

2.6. Public Expenditure on Education

Public expenditure on education as a percentage of GDP (PSE) significantly impacts financial literacy by influencing the quality of education, equitable access to education, and the implementation of financial education programs (Jelić & Kedžo, 2018). Higher investments in education promote an informed population capable of making effective financial decisions and are, therefore, essential for economic and social development (Alvarado et al., 2021; Kálmán et al., 2023; Alim, 2022).

Pandey (2023) highlights the importance of access to education in India to mitigate inequalities and increase financial inclusion, while Tseng and Hsiao (2022) show that adequate investment in education in China can reduce the adverse effects of a high Human Inequality Coefficient (HIC).

Studies by Muzekenyi et al. (2023), Rastogi and Ragabiruntha (2018), and Nugraha (2018) reinforce that increased public spending on education is a crucial factor for financial literacy, contributing to the financial empowerment of the population. Davoli and Rodríguez-Planas (2021) show that robust investments in education are associated with increased higher education, improving the ability to make financial decisions. Mbona (2022) argues that strengthening education is vital to empower vulnerable populations, while Sulaiman et al. (2023) reveal that education expenditure in Nigeria positively correlates with economic growth.

The literature shows that the PSE and education variables positively correlate with financial literacy, showing that more significant investments in education and high educational levels are essential for the financial empowerment of individuals. In addition, Ouertani et al. (2018), when analyzing the situation in Saudi Arabia, point out that the simple allocation of resources for education and health is insufficient to improve financial literacy, emphasizing the importance of effective governance and strategic management of public spending. This conclusion complements the results of Nugraha (2018) and Pandey (2023), suggesting that, in addition to an increase in funding, it is necessary to ensure that resources are applied efficiently to generate significant educational and economic results.

Based on the existing literature, we formulate the following hypotheses to be tested empirically:

Hypothesis 5 (H5). *A country's expenditure on education positively impacts financial literacy.*

2.7. Tertiary Education

The percentage of the population with a higher education (tertiary) has a significant impact on financial literacy, influencing the level of financial knowledge, access to opportunities, and financial behavior, and contributing to a culture of financial literacy and economic development (Liu et al., 2024). Higher education offers fundamental skills and knowledge for understanding and effectively managing personal finances, promoting a more financially literate population capable of making informed decisions (Kálmán et al., 2023). Abdelghaffar et al. (2023) also facilitate an understanding of financial products and inclusion in the financial system.

Studies such as those by Muzekenyi et al. (2023) and Nugraha (2018) emphasize that education at all levels is fundamental to financial literacy. Pietrzak and Pietrzak (2018) analyze how characteristics of higher education institutions influence financial literacy and employment opportunities, suggesting that financial literacy is crucial in enabling graduates to manage their finances and make strategic decisions about their careers. When studying education's impact on financial literacy, financial knowledge, and financial behavior, Johan et al. (2021) conclude that education positively impacts financial knowledge and financial literacy but not financial behaviors.

Based on the existing literature, we formulate the following hypotheses to be tested empirically:

Hypothesis 6 (H6). *The percentage of the population with tertiary education contributes positively to financial literacy, financial knowledge, or financial behavior.*

3. Data, Variables, Statistics, and Correlations

The sample used in this study was obtained from the 2023 editions of The Worldwide Governance Indicators and the International Survey of Adult Financial Literacy. Our analysis focuses only on the twenty OECD countries in the two databases because there is no complete data for the other countries. Table 1 shows the variables used in the empirical analysis, units of measurement, and the data source. Table 2 contains the main statistics used in the entire sample for the original series. We can see in Table 2 that there are relatively high standard deviations in almost all variables and that the HDI variable is the one with the smallest relative amplitude between the minimum and maximum values. In Table 2, we can also see that all the *p*-values of the Jarque–Bera test are greater than 0.05, which means that the data are normally distributed.

Table 1. Variable definition and data source.

Variable	Definition	Objectives	Unit
FL_i	Financial literacy in country i	Measurement of the level of financial literacy in each country.	Index
FK_i	Financial knowledge in country i	Measurement of the level of financial knowledge in each country.	Index
FB_i	Financial behavior in country i	Measurement of the level of financial behavior in each country.	Index
HDI_i	Human Development Index in country i	Measure human development, taking into account several dimensions.	Index
HIC_i	Human Inequality Coefficient in country i	Measure inequality in terms of access to healthcare, education and income distribution.	Index
HD_i	Household debt in country i	Household liabilities to the banking system as a percentage of net income.	Percentage
$PIBpcPPP_i$	GDP per capita in Purchasing Power Parity in country i	GDP per capita is adjusted to the cost of living in each country.	Value
PSE_i	Public spending on education in country i	Measure the public amount spent on education as a percentage of its GDP.	Value
$Tertiary_i$	Percentage of the population with at least a university degree.	Assess higher education in the country.	Percentage

Source: Authors' elaborations.

Table 2. Main descriptive statistics.

	Maximum	Minimum	Average	Std Deviation	Skewness	Kurtosis	Jarque–Bera
FL	75.97	53.33	62.70	5.506	0.381	−0.050	0.783
FK	85.20	52.77	66.85	8.448	0.210	−0.540	0.822
FB	73.68	45.19	61.58	6.460	−0.423	0.946	0.514
HDI	0.952	0.781	0.896	0.047	−0.861	−0.245	0.746
HIC	17.60	5.800	9.900	3.648	1.046	0.085	0.282
HD	210.8	26.45	105.6	58.63	0.554	−0.829	0.160
PIBpcPPP	109,714	10,079	35,371	26,922	1.642	1.948	0.064
PSE	5.400	1.000	2.625	0.991	0.907	1.244	0.133
Tertiary	46.00	18.00	32.45	8.450	−0.113	−0.807	0.133

Source: Authors' calculations.

Table 3 contains Pearson's correlation coefficients. The multicollinearity analysis allows us to assess the precision of the estimation results. By analyzing the results in Table 3, we can verify no multicollinearity between the variables under study. Gujarati (2009) recommended using the values of −0.80 and 0.80 as limits.

Table 3. Pearson's correlation coefficients.

	FL	FK	FB	HDI	HIC	HD	PIB	PSE	Tertiary
FL	1	0.725	0.778	0.652	−0.502	−0.503	0.572	0.019	0.486
FK	-	1	0.345	0.502	−0.545	−0.332	0.345	0.021	0.326
FB	-	-	1	0.477	−0.233	−0.382	0.536	0.071	0.535
HDI	-	-	-	1	−0.747	0.698	0.665	−0.037	0.614
HIC	-	-	-	-	1	−0.338	−0.429	0.266	−0.708
HD	-	-	-	-	-	1	0.635	0.057	−0.412
PIB	-	-	-	-	-	-	1	−0.093	0.593
PSE	-	-	-	-	-	-	-	1	−0.184
Tertiary	-	-	-	-	-	-	-	-	1

Source: Authors' calculations.

4. Model Specification, Estimation Methods, and Empirical Results

As previously mentioned, we intend to study the importance of a wide range of variables that, in terms of the literature, tend to be significant for financial literacy, knowledge, and behaviors. The data was obtained from the OECD survey (2023) and the OECD's Worldwide Governance Indicators (2023), and the twenty OECD countries (which represent the total number of observations present in our study) listed in these two publications were chosen. In all calculations, we use STATA version 15. As heteroscedasticity was detected (a prevalent problem in sectional series), we used the model with corrected heteroscedasticity in the estimations. In our study, we used a log-log model specification, which allows us to interpret the coefficients more intuitively, as they will show the percentage variation in the dependent variables as a function of a percentage variation in the explanatory variables. Models take the following forms:

$$\text{LnFL}_\text{i} = \alpha_i + \beta_1\ \text{LnHDI}_\text{i} + \beta_2\ \text{LnHIC}_\text{i} + \beta_3\ \text{LnHD}_t + \beta_4\ \text{LnPIBpcPPP}_i + \beta_5\ \text{LnPSE}_i + \beta_6\ \text{LnTertiary}_i + u_t \quad (1)$$

$$\text{LnFK}_\text{i} = \alpha_i + \beta_1\ \text{LnHIC}_\text{i} + \beta_2\ \text{LnHD}_t + \beta_8\ \text{LnTertiary}_i + u_t \quad (2)$$

$$\text{LnFB}_\text{i} = \alpha_i + \beta_1\ \text{LnHDI}_\text{i} + \beta_2\ \text{Ln PIBpcPPP}_i + \beta_3\ \text{LnTertiary}_i + u_t \quad (3)$$

Equations (1)–(3) regress the three dependent variables against a set of variables that, in terms of the literature and the hypotheses formulated, have demonstrated statistical significance in financial literacy, financial knowledge, and financial behavior. Considering only variables with statistical significance, the results of the four estimations are found in Table 4.

Although in none of the cases did the Pearson correlation coefficient (Table 3) present values outside the range of −0.80 to 0.80, as the issue of multicollinearity assumes great importance, we carried out the variance inflation (VIF) test. Craney and Surles (2002) argued that when the VIF is greater than 10, there is multicollinearity between at least two regressors, as the explanatory variables will be orthogonal. Also, according to Craney and Surles (2002), multicollinearity means that the variables' associated parameters lose explanatory power. As shown in Table 5, none of the VIF statistic values exceed 10, so we can assume that multicollinearity is reduced.

Table 4. Results from the estimations.

	Dependent Variable: LnFL	Dependent Variable: LnFK	Dependent Variable: LnFB
Intercept	3.3725 ***	4.5553 ***	2.8587 ***
LnHDI	0.0980 **	-	0.0305 **
LnHIC	−0.0234 ***	−0.2052 **	-
LnHD	−0.0193 **	−0.0499 ***	-
LnGDPpcPPP	0.0824 **	-	0.0715 *
LnPSE	-	-	-
LnTertiary	0.0488 *	0.0561 **	0.0417 *
R-Squared	0.6848	0.6138	0.7107
F-test (*p*-value)	0.0000	0.0000	0.0000
Schwarz criterion	34.581	24.214	29.137
Akaike criterion	41.551	28.191	33.120
Hannan-Quim criterion	40.191	27.419	32.342

Note: ***. **. and * denote statistical significance at the 1%, 5%, and 10% levels of significance, respectively. Source: Authors' calculations.

Table 5. Variance inflation (VIF).

	Dependent Variable: LnFL	Dependent Variable: LnFK	Dependent Variable: LnFB
LnHDI	6.655	2.173	4.047
LnHIC	3.044	2.564	
LnHD	3.468		
LnGDPpcPPP	4.548		3.494
LnPSE	1.115		
LnTertiary	2.419	2.273	1.758

Source: Authors' calculations.

5. Discussion

In Table 4, we can find several pieces of evidence. In all three models, the tertiary variable (percentage of the population with at least one university degree) assumes statistical significance at adequate levels, with the most significant impact being seen in financial knowledge. In this case, we can say that a 1% increase in the number of people with a university degree, ceteris paribus, will positively impact financial knowledge. Higher education provides individuals with additional, deeper knowledge at various levels, and when applied to financial issues, it allows them to make more accurate and precise decisions. Similar conclusions about the importance of higher education in terms of increasing literacy, knowledge, and financial behaviors have also been obtained by Liu et al. (2024), Kálmán et al. (2023), and Johan et al. (2021), among many others.

The level of human development contributes positively to financial literacy. However, our evidence contradicts Santini et al. (2019), who did not significantly relate the HDI to financial literacy. In our study, the HDI variable has the greatest impact on financial literacy, with an estimated contribution of 0.098% for every 1% variation in this indicator. Progression in human development facilitates access and concerns at a financial level when other, more basic concerns are satisfied.

In both models estimated with the HIC variable, the coefficients assume a negative value, as expected. Greater inequality in access to health, education, and income distribution contributes to the decline in financial literacy and knowledge in the twenty OECD countries considered. Similar conclusions have already been obtained, for example, by Alvarado et al. (2021), Sulaiman et al. (2023), and Mbona (2022), who report that this

inequality affects individuals in terms of making informed financial decisions due to the lack of access to education and lower incomes.

Household debt contributes negatively to financial literacy and financial behavior. With the increase in this type of debt in the banking system, individuals and families should show greater financial concerns, but in reality, the opposite occurs. Due to a lack of financial education, these economic agents take on excessive debt. Similar evidence, although with other magnitudes, was found by several authors, such as Davoli and Rodríguez-Planas (2021), Mbona (2022), and Sulaiman et al. (2023), in which it is justified that the high dependence on bank credit makes access to financial literacy difficult.

The GDPpcPPP variable contributes positively to financial literacy and behaviors. This means that increases in individuals' income promote financial literacy and create opportunities to invest in this literacy, which leads to financial behaviors. Our results align with those obtained by Kálmán et al. (2023) and Rehan et al. (2019).

In our study, public spending on education does not significantly influence financial literacy as a percentage of GDP, which contradicts the findings of Tseng and Hsiao (2022) and Muzekenyi et al. (2023).

6. Conclusions

This study explores the impact of a set of variables that, in terms of the literature, contribute to the formation of financial literacy, knowledge, and behavior. The first major conclusion is that obtaining higher education qualifications positively impacts all models, with this impact being more pronounced in financial knowledge. Higher education opens students' horizons in different directions, allows them to develop critical thinking, and promotes attitudes that align with the defense of legitimate personal interests. These skills end up positively impacting financial life as well.

Human inequality negatively impacts financial literacy and knowledge. The greater the disparity in access to healthcare, education, and income distribution, the less likely economic agents are to be concerned about these issues, since the main concerns will probably focus on more basic needs. In the same sense, the higher the household debt value, the lower the willingness of agents to express concerns about financial literacy. The increase in debt, instead of leading people to seek financial knowledge, leads them to distance themselves from these concerns. Possibly, the rise in debt is a consequence of reduced financial literacy.

The value of GDPpcPPP contributes to increasing financial literacy. The increase in average income in these OECD countries allows economic agents to have access to other concerns, including financial literacy.

Contrary to what would be expected, spending on education does not positively contribute to increasing financial literacy. Education can allow individuals to obtain more comprehensive training in different areas, but in our case, only higher education positively impacts the dimensions considered.

The main recommendations that emerge from our study are related to increasing spending on education at different levels of education aimed at financial literacy, because this type of expense is probably not aimed at achieving financial literacy among students. We know that some initiatives may not present desirable results in the short term, such as improving human development or reducing household debts to the banking system. The current generation attending school will be the future generation in professional activity, and financial literacy will be essential for their entire lives, even allowing them to gain defenses against all the harmful schemes that increasingly emerge to defraud people. We know that some initiatives may not present desirable results in the short term, such as improving human development or reducing household debts to the banking system.

However, some initiatives can be taken that, in the short term, will produce effects in terms of financial inclusion. Implementing financial education programs at different levels of education, mainly in secondary and higher education settings, will quickly provide financial inclusion to a wide range of young people, and this inclusion will continue throughout adult life. Financial training programs for working-age adults also allow for rapid financial inclusion.

In the medium term, countries should focus on human development, initiatives that reduce educational, social, and economic inequalities, and raising awareness among individuals throughout the banking system about the risk of excessive debt. Financial education throughout all levels of education and specific programs for adults will allow students to gain better financial knowledge, improve financial behaviors, and ultimately contribute to financial literacy.

One limitation of this work is the number of observations. As the number of observations we currently have is limited and may bias the conclusions, extending the number of countries in the sample as soon as possible, expanding to other surveys, or obtaining a data panel, can enrich and solidify the conclusions. Expanding the study by including other variables that explain financial literacy in the literature can broaden the understanding of the phenomenon under study and provide clues for scientific debate and new or reinforced policy recommendations. Due to the limited data available, the results obtained through empirical analysis may not be considered strong support for the conclusions drawn, and this work is a first step in that direction.

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