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Universities Fostering Financially Healthy Competencies: Mitigating Domestic Bias for Optimal Decision-Making

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ABSTRACT

This study explores the relationship between financial capability and domestic bias in investment decisions among economics and business students at the University of Santiago de Compostela. Financial capability is defined as the combination of knowledge, attitudes, and behaviors that enable individuals to make informed financial decisions and manage their resources effectively. Employing a deductive approach rooted in the theory of bounded rationality and behavioral finance, a questionnaire was administered to 402 first- and fourth-year students. Structural equation modeling (SEM) tested the hypotheses, revealing that financial capability is negatively related to domestic bias. Factors such as financial knowledge, attitudes, long-term planning, price and expense analysis, and preventive behaviors significantly reduce under-diversification in portfolios, thereby benefiting investor's financial well-being. The relationship is further reinforced by the knowledge acquired during the degree program although no direct effect of academic seniority is observed. Although economics and business training may not directly lead to diversified portfolios, it helps mitigate domestic bias. The findings, situated in the Spanish context, provide implications for financial education and investor behavior.

JEL Classification: A22, G40, I22, I23

1 | Introduction

For traditional financial theory, humans make their financial decisions like a perfectly oiled thinking machine (Fama 1998; Simon 2000). In this way, a person would be able to solve their problems, with maximum efficiency and under conditions of complete certainty, after analyzing all the possible alternatives for action as well as their expected consequences. However, empirical evidence has observed numerous events in financial markets, such as “speculative bubbles” or “black days,” which could illustrate how uncertainty and emotions play a role in a

decision-making process that may not be as entirely rational as proposed by classical authors (Fama 1998).

The arguments behind these events may be grounded within the theory of bounded rationality (Simon 1956, 2000). This theory suggests that humans face cognitive limitations that prevent them from making fully rational decisions (Simon 1956). Therefore, in contexts with information asymmetries and time constraints (Simon 1956), as in financial market decisions, humans need to use feelings, expectations, or group influences as mechanisms that allow them to “simplify” their decision-making process

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(Simon 2000; Tversky and Kahneman 1974). Although cognitive and emotional heuristics play an essential role in supporting human decision-making, they are not free from problems. Thus, heuristics, as simplified decision rules, can introduce biases that may generate inappropriate decisions and behaviors (Simon 1956; Tversky and Kahneman 1974).

Specifically, domestic bias, conceptualized as the irrational tendency of individuals to invest more in securities that are familiar to them than in securities with optimal financial characteristics (French and Poterba 1991), is one of the biases that could generate the most destabilizing and costly effects on household economies (Abreu et al. 2011; Gaar et al. 2022). Despite its importance, the literature has not yet delineated the boundaries of the phenomenon, distinguishing between home (Cooper and Kaplanis 1994; Fidora et al. 2007; French and Poterba 1991) and local (Baltzer et al. 2013; Hong et al. 2005; Huberman 2001) biases.

In this context, humans need capabilities, that is, tools to optimally manage resources at their disposal (Johnson and Sherraden 2007) when making decisions (e.g., time or money management). Thus, greater capability is related to greater competence to analyze the relevant elements of a decision, leaving less room for heuristics and possible unwanted biases. Financial capability can be defined as the set of knowledge, attitudes, and behaviors that enable individuals to make informed financial decisions and effectively manage their resources in order to achieve financial well-being (Johnson and Sherraden 2007; Xiao et al. 2022). This multidimensional construct goes beyond financial literacy, which is often limited to knowledge, by explicitly incorporating how individuals plan, save, and behave in financial contexts (Fernandes et al. 2014). In this sense, capability reflects both the ability to act—through cognitive and attitudinal resources—and the opportunity to act—through the application of these resources in real financial behaviors (Sherraden 2013; Fernández-López et al. 2023, 2024). However, the financial literature has rarely studied how financial capability could dilute the presence of domestic bias.

This article aims to delve into the relationship between financial capability and domestic bias, trying to cover the gaps identified in previous literature. More in detail, we study a plethora of variables that measure these two phenomena through multiple approaches and that have been considered by previous research. The analysis is carried out in the context of university education, an area underexplored in the literature (Gerrans and Heaney 2019), key to developing capable financial professionals and fully autonomous financial investors. Thus, we want to inform the design of more effective interventions to promote financial capability and mitigate domestic bias among future investors, by gaining a deeper understanding of relationship between these phenomena.

There are two main contributions of this article to the literature on personal finance. First, based on structural equation modeling (SEM), we propose a holistic and comprehensive characterization of financial capability and domestic bias among university students. Second, we broaden the empirical evidence by presenting fresh findings from Spain, a southern European country deemed

for study owing to its comparatively modest levels of financial competencies (Arrondel et al. 2021).

The remainder of the article proceeds as follows. Section 2 provides the literature review, addressed through a hypothesis development. Section 3 describes the data and variables considered in the study. Section 4 then shows the results of the multivariate analysis and, finally, Section 5 outlines the conclusion remarks.

2 | Literature Review and Hypothesis Development

2.1 | Domestic Bias: Behavioral and Rational Perspectives

Financial biases have increasingly attracted scholarly attention, as they are understood as systematic deviations from rational behavior (Adil et al. 2022) resulting from intuitive judgments shaped by emotions and perceptions (Moya-Ponce and Madrazo-Lemaroy 2023). This connects to the theory of bounded rationality (Simon 1956, 2000), which argues that individuals face cognitive and informational constraints that prevent them from making fully rational decisions. Under uncertainty and time pressure, decision-making often relies on heuristics (Slovic 1972; Tversky and Kahneman 1974). Although these mental shortcuts facilitate decision-making, they may also lead to biases that distort optimal portfolio allocation (Kasoga 2021; Kubilay and Bayrakdaroglu 2016; Sahi et al. 2013).

One of the most persistent manifestations of these biases is domestic bias, defined as the disproportionate allocation of investments to familiar securities, even when diversification would provide higher risk-adjusted returns (French and Poterba 1991; Gaar et al. 2022; Huberman 2001). Empirical research shows that most investors' portfolios remain under-diversified and disproportionately weighted toward domestic assets (Bekaert et al. 2017). Early studies focused on home bias, where individuals favored securities from their home country (Cooper and Kaplanis 1994; Fidora et al. 2007; French and Poterba 1991), whereas subsequent research has emphasized local bias, where investors concentrate their holdings in their regional or subnational context (Baltzer et al. 2013; Hong et al. 2005; Huberman 2001). This distinction is particularly relevant in federated or supranational contexts, such as the United States or the European Union (Armenteros-Ruiz et al. 2023).

It is important to note, however, that not all domestic concentration is irrational. Rational drivers include information asymmetries, lower monitoring costs, institutional and regulatory barriers, and currency risk exposure. Cooper and Kaplanis (1994) emphasize inflation-hedging motives for domestic holdings, Kang and Stulz (1997) attribute home bias in Japan to information frictions and institutional barriers, and Fidora et al. (2007) find that real exchange rate volatility significantly contributes to home bias in global bond and equity markets. Thus, domestic bias reflects both behavioral distortions and rational considerations. The present study focuses on the familiarity-driven component of domestic bias, which is more closely related to heuristics and

perceptions and therefore may be mitigated by strengthening financial capability.

2.2 | Financial Capability: Conceptualization and Measures

Humans require capabilities to effectively manage scarce resources such as time and money in decision-making (Johnson and Sherraden 2007). Financial capability has been defined as the integration of knowledge, attitudes, and behaviors that enable individuals to achieve financial well-being (Johnson and Sherraden 2007; Xiao et al. 2022).

Specifically, financial capability combines different dimensions that reinforce each other. Knowledge refers to the understanding of fundamental financial concepts such as inflation, compound interest, and risk diversification, together with individuals' subjective perception of their own competence. Attitudes capture orientations toward long-term planning, future orientation, and self-control in saving and spending decisions, reflecting how individuals evaluate intertemporal trade-offs. Behaviors represent the observable practices that translate knowledge and attitudes into action, including budgeting, setting savings goals, comparing prices and conditions before purchases, adjusting expenses to changes in income, or implementing preventive strategies such as protecting personal data and avoiding fraud.

This multidimensional approach expands beyond the concept of financial literacy, which is often operationalized through narrow knowledge-based questions such as the "Big Three" (Lusardi and Mitchell 2011). Evidence shows that knowledge alone does not guarantee sound financial behavior (Fernandes et al. 2014). Instead, a broader framework is required to connect knowledge to opportunities and behaviors (Fernández-López et al. 2023, 2024; Sherraden 2013).

2.3 | Financial Socialization and Capability Development

Beyond formal instruction, financial capability is also shaped by socialization processes. According to social learning theory (Bandura 1971), individuals acquire behaviors by observing others and through reinforcement. Social cognitive theory further emphasizes the interaction of personal cognition and socio-structural influences in shaping behaviors (Bussey and Bandura 1999).

Applied to finance, these perspectives suggest that family, peers, and experiential learning strongly influence financial attitudes and decisions. LeBaron-Black et al. (2022) developed the Parent Financial Socialization Scale, which distinguishes three main channels: (i) modeling parental behaviors, (ii) financial discussions between parents and children, and (iii) experiential learning through managing financial responsibilities. For university students, additional socialization occurs through peer interactions, independent living, and part-time work, which may shape financial capability in ways not directly linked to academic coursework. This highlights that formal training is just one of multiple pathways through which capability develops.

2.4 | Financial Socialization and Capability Development

The connection between financial capability and domestic bias remains relatively underexplored. Most studies have relied on narrow measures of financial literacy, focusing only on knowledge, while neglecting attitudes and behaviors. Nevertheless, several empirical contributions suggest that greater financial capability is associated with more diversified portfolios. Table 1 summarizes the main studies that have investigated this relationship, including their samples, measures, and findings.

Globally, financial capability has often been measured through objective financial knowledge, particularly the *Big Three* questions proposed by Lusardi and Mitchell (2011). Most studies in Table 1 show that financial knowledge is associated with more diversified portfolios (Bekaert et al. 2017; Bose et al. 2015; Dimmock et al. 2016; Lei and Mathers 2023; Mouna and Jarboui 2015). However, other authors argue that knowledge alone does not necessarily lead to healthier financial behaviors (Fernandes et al. 2014). Consequently, a broader conceptualization of financial capability—integrating knowledge, attitudes, and behaviors, and considering individuals' opportunities to apply this knowledge—appears to be a more effective safeguard against biases such as home and local bias (Fernández-López et al. 2023, 2024; Sherraden 2013).

2.5 | Hypothesis Development

The arguments behind the relationship between financial capability and domestic bias are grounded within the Behavioral Finance framework (Simon 1956; Slovic 1972; Tversky and Kahneman 1974). According to this theoretical paradigm, humans have a finite set of resources, such as money and time to process all available information (Bonome 2010; Ibrahim and Khaimah 2009). These resources would be insufficient to cope with an increasingly complex and unstable financial environment (Sahi et al. 2013) and to reflect on the vast array of choices that people must make daily (Riaz et al. 2022).

In this context, individuals must rely on heuristics and *animal spirits* (Keynes 1936) to optimize their scarce resources as much as possible. Heuristics, defined as general rules that attempt to solve complex problems through simpler judgments (Rasool and Ullah 2020), are valuable, useful, and inherent to human nature and its evolutionary process (Kasoga 2021; Sahi et al. 2013; Tversky and Kahneman 1974). However, heuristics are not always based on rationality (Kubilay and Bayrakdaroglu 2016) and they do not guarantee a complete analysis of the relevant facts. In other words, they are unable to avoid the potential assessment errors driven by biases (Slovic 1972).

Therefore, people need tools to carry out a more efficient analysis of the available information that help them to make optimal decisions with their financial health in mind (Fernandez-Lopez et al. 2023), without getting carried away by familiarity or proximity to possible investments (Anderson et al. 2011; Lei and Mathers 2023). More in detail, some authors argue that financial capability could reduce inappropriate investment through better management of financial resources (Sherraden 2013). In other

TABLE 1 | Summary of empirical literature analyzing domestic bias and financial capability.

Reference	Sample [Source]: Period (place)	Domestic bias variable (type of measure): Detail [Statistical models]	Financial capability variables (type of measure): Detail [Main results]
Abreu et al. (2011)	918,246 investors [Data from banks]: January 1997–September 2006 (Portugal)	Time that elapses from first time of investment in domestic securities to first time of investment in foreign securities (continuous): [Cox proportional hazard model]	Individual is an economist, manager, or employee of bank (0–1; yes): [(+)]
Bose et al. (2015)	345 individuals from 38 countries [Coordinated Portfolio Investment Survey]: 2001–2010	Local equity bias (continuous): <i>Difference between the proportion of the total equity portfolio invested in home equity and the relative weight of the domestic stock market in the global equity market capitalization [OLS]</i>	Finance skills readily available (0–10; High): [O]
Mouna and Jarboui (2015)	256 small investors actively trading on the stock market [Own survey]: (Tunisia)	Portfolio diversification (continuous): <i>Number of the different financial instruments that compose the investor's portfolio [OLS]</i>	Financial literacy (0–11; high): <i>Financial knowledge, investors' educational level, and the sources of information commonly used by investors [(+)]</i>
Dimmock et al. (2016)	2943 individuals [Own survey]: March–April 2012 (United States)	Respondent holds foreign stock (0–1; yes): [Probit]	Financial literacy (0–3; high): Knowledge about financial interest, risk diversification, and inflation [(+)]
Bekaert et al. (2017)	28,525 individuals [Data from independent advisor]: 2005–2015 (United States)	Degree of international diversification in portfolios (continuous): [Nonlinear least squares model]	Financial knowledge (continuous): <i>Average performance in five questions [(+)]</i>
Armenteros-Ruiz et al. (2023)	109 individual investors [Own survey]: June 2020 (Spain)	Local bias and home bias: [chi-square tests]	Knowledge about financial interest, risk diversification, and inflation
Lei and Mathers (2023)	28,885 individuals [Survey of Consumer Finances]: 2019 (United States)	Home bias (0–1; yes): <i>Having no direct investment in international stock [Logit]</i>	<ul style="list-style-type: none"> Self-assessed financial literacy (continuous): <i>Knowledge about personal finance [(–)]</i> Objective financial literacy (continuous): <i>Questions about savings and investments [O]</i>

Note: Some information were omitted due to it was not available in the papers. (+)/(–)/(O) indicate positive/negative/nonsignificant relationship, respectively. SEM and OLS refer to structural equation modeling and ordinary least squares. (0–1) represents dichotomous variables; and (#–#) stands for scalar variables.

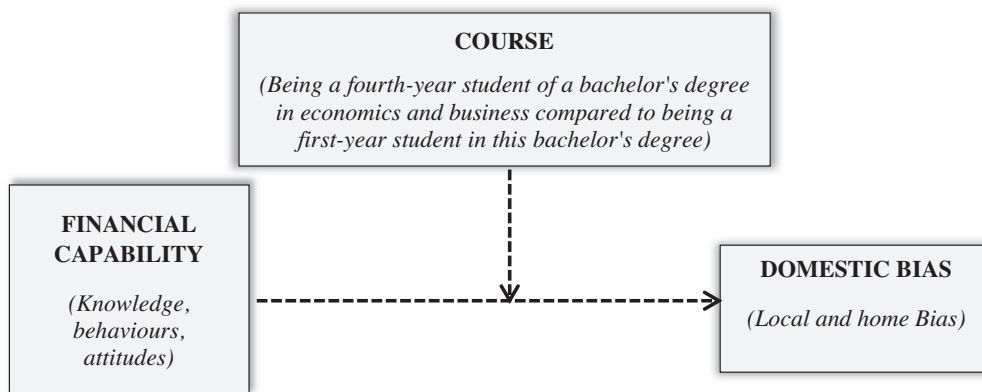


FIGURE 1 | Detail of pictorial model.

words, financial capability helps in the effective management of money (Johnson and Sherraden 2007; Sherraden 2013).

Formal education could be a channel through which to acquire these financial capabilities (Seraj et al. 2022). The essential idea is that educational attainment can result in individuals with more and better cognitive skills that allow a better understanding of consumer financial decisions (Fernández-López et al. 2024). Therefore, we propose the following hypotheses:

Hypothesis 1. *Financial capability is negatively related to domestic bias.*

Hypothesis 2. *Fourth-year economics and business students exhibit lower levels of domestic bias, compared to first-year students.*

Hypothesis 3. *Being a fourth-year economics and business student has a moderating role in the relationship between financial capability and domestic bias.*

In sum, the article aims to analyze the relationship between domestic bias and financial capability among students of bachelor's degree in economics and business, considering the limitations of measurement of the variables in the previous research. On the basis of SEM, we aim to obtain a comprehensive framework on the relationships (Bielby and Hauser 1977) between these two phenomena in a novel context for the literature. Therefore, Figure 1 details the pictorial model that will guide our empirical analysis.

3 | Methodology

3.1 | Sample Selection and Field Work

The questionnaire was administered in September 2023 to first-year and fourth-year students enrolled in Economics and Business Administration at the University of Santiago de Compostela (USC).¹ Rigorous pretesting and refinement of the questionnaire were conducted in collaboration with students whose profiles closely resembled the target demographic.

Contact with the students was facilitated by involving teachers from both levels of the degree, ensuring that the distribution

and collection of questionnaires took place in person during class sessions. The cooperation of these teachers significantly contributed to the study's high response rate, with only three students declining to participate when asked.

The survey was conducted exclusively in Spanish, considering that all respondents were native Spanish speakers. Four students belonging to the Erasmus study program were not invited to participate in the study. Finally, after eliminating seven incomplete questionnaires, the total sample consisted of 402 college students, with 234 belonging to the first year and 168 to the fourth year of their studies. This sample size was calculated through a power analysis (small effect size = 0.25; significance level = 0.05; power = 80%) using the G*Power software.

The questionnaire encompassed two sections: the first sought to gauge financial capability, encompassing variables of knowledge, behaviors, and attitudes. The second section included questions related to domestic bias influencing investment decisions. The presence of this behavioral bias among the respondents was assessed in the questionnaire, encompassing both home bias and local bias dimensions. The former referred to the national level (Spanish), whereas the latter pertained to the Galician autonomous community level.

It is pertinent to draw this distinction given the distinctive identity of the Galician community within the broader Spanish context. Galicia is notable for its deep-rooted historical identity, shaped over centuries by its relative geographic isolation. Galicians are seen as reserved and cautious, which is reflected in their preference for stable, locally focused consumption and investment practices (Armenteros-Ruiz et al. 2023).

3.2 | Measurement of Variables

The assessment of respondents' financial literacy utilized the OECD/INFE toolkit for measuring financial literacy (OECD 2022). This report also served as the source for the question regarding the respondent's self-assessed knowledge. To assess financial behaviors and attitudes, a set of eight statements was formulated using a 5-point Likert scale (OECD 2020). Table 2 presents the variables and corresponding measurement results for first-year and fourth-year students.

TABLE 2 | Variables and measurement results for financial capability.

Variable (<i>short name</i>) [original question (Annex 1); values]	First-year students (<i>n</i> = 234)	Fourth-year students (<i>n</i> = 168)
Financial knowledge		
Understanding inflation (<i>inflation_1year</i>) [(I.1a); (1) Less than I could buy today; (0) Otherwise] (%)	52.30	84.90
Interest calculation (5 year) (<i>int_5years</i>) [(I.2a); (1) €110 or more; (0) Less than €110] (%)	72.20	95.20
Understanding risk diversification (<i>risk_return</i>) [(I.3a); (1) Less than I could buy today; (0) Otherwise] (%)	63.70	90.40
Self-assessed knowledge (<i>subj_fin</i>) [(I.4a); (1) Very low to (5) Very high] (%)	2.927	3.375
Financial behaviors [(1) Totally disagree to (5) Totally agree]		
I carry out periodic budget planning and set savings goals (<i>FBA_planning</i>) [(I.1b)]	3.175	3.202
I establish long-term financial objectives and strive to achieve them (<i>FBA_longterm</i>) [(I.2b)]	3.004	2.773
I have considered specific strategies to avoid falling victim to fraud (<i>FBA_fraud</i>) [(I.3b)]	2.935	2.630
I am very careful with the protection of my data (bank account number, passwords, etc.) (<i>FBA_protection</i>) [(I.4b)]	4.094	3.767
I compare prices and conditions from different providers before making a purchasing decision (<i>FBA_compare</i>) [(I.5b)]	4.282	4.327
I adjust my expenses and purchasing decisions to changes in my economic situation (<i>FBA_adjust</i>) [(I.6b)]	4.197	4.197
Financial attitudes [(1) Totally disagree to (5) Totally agree]		
I tend to live day-to-day without worrying too much about the future (<i>FBA_daytoday</i>) [(I.7b)]	2.128	2.089
I find more satisfaction in spending money than saving it in the long term (<i>FBA_spending</i>) [(I.8b)]	2.213	2.321

Note: The percentage of students falling into Category 1 is reported for the dummy variables, whereas the mean value is presented for the ordinal variables. The values with significant differences ($p < 0.05$) are highlighted in bold. Annex 1 shows the original employed questions.

Evidence shows a higher average level of financial knowledge among fourth-year students compared to first-year students. All differences in average levels of financial knowledge, both objectively and subjectively, are statistically significant. Regarding behaviors and attitudes, fourth-year students are more likely to set savings goals and compare prices. However, they tend to strategize against fraud less frequently, worry less about the protection of their data, and establish long-term goals to a lesser extent than younger students, with these differences being statistically significant.

Finally, the questionnaire addressed domestic bias in investment decisions through three questions, extracted from Armenteros-Ruiz et al. (2023), Coval and Moskowitz (1999), and Huberman (2001), and presented as a percentage of the total investment. Table 3 provides a detailed description of these variables for both first-year and fourth-year students.

The evidence suggests a slightly lower level of domestic bias among fourth-year students compared to first-year students.

Nevertheless, this comparison of average values only yields significance when addressing local bias.

4 | Multivariate Analysis

To analyze the plethora of variables on financial capability and domestic bias (Tables 2 and 3) collected for our sample of 402 students, a structural equation model was applied. This “second generation” multivariate technique facilitates the analysis of measures that are not directly observable (Hair et al. 2017), particularly in contexts of limited theoretical development, exploratory approach, and non-normal data (Hair et al. 2017).

4.1 | Exploratory Factor Analysis (EFA)

In order to construct latent measures of financial capability that “summarize” the items provided in Table 2, we chose to use EFA. Principal component analysis was used in EFA as an

TABLE 3 | Variables and measurement results for domestic bias.

Variable (<i>short name</i>) [original question (Annex 1); values]	First-year students (<i>n</i> = 234)	Fourth-year students (<i>n</i> = 168)
Percentage of your investment allocated to Spanish financial products (<i>D_country</i>) [(II.1); 0–100]	11.555	10.416
Percentage of your investment allocated to domestic assets in a real estate portfolio (<i>D_realstate</i>) [(II.2); 0–100]	17.337	16.622
Percentage of your investment allocated to products from your autonomous community (<i>D_community</i>) [(II.3); 0–100]	9.907	7.357

Note: The average values are detailed. The values with significant differences ($p < 0.05$) are highlighted in bold. Annex 1 shows the original employed questions.

TABLE 4 | Summary of exploratory factor analysis (EFA).

Group	Short name of variable	Cross component loadings					
		Comp. 1	Comp. 2	Comp. 3	Comp. 4	Comp. 5	Comp. 6
Financial knowledge	inflation_1year	0.039	−0.122	0.684	−0.101	0.044	−0.129
	int_5years	0.024	0.098	0.629	0.122	0.103	−0.039
	risk_return	−0.051	0.440	0.465	0.216	0.131	0.643
	subj_fin	−0.024	−0.010	0.673	−0.311	−0.243	0.371
Financial behaviors	FBA_planning	−0.049	0.805	−0.009	−0.204	0.092	0.090
	FBA_longterm	0.009	0.790	−0.015	−0.236	−0.058	0.170
	FBA_fraud	0.146	0.297	0.055	0.108	0.133	0.726
	FBA_protection	−0.032	0.028	−0.144	−0.067	0.347	0.651
	FBA_compare	−0.017	−0.061	0.013	−0.120	0.711	0.216
Financial attitudes	FBA_adjust	0.009	0.122	0.090	−0.140	0.805	0.072
	FBA_daytoday	0.052	−0.195	−0.014	0.762	−0.096	−0.086
	FBA_spending	−0.061	−0.176	−0.037	0.750	−0.203	0.092
Domestic bias	D_country	0.808	0.034	0.068	0.129	0.039	0.018
	D_realstate	0.783	−0.040	0.175	0.007	0.016	0.095
	D_community	0.736	−0.043	−0.235	−0.167	−0.075	−0.018

EFA fit:

Kaiser–Meyer–Olkin measure of sampling adequacy: 0.646.

Bartlett's test of sphericity: $\chi^2 = 648.004$; $gl = 105$; $p < 0.000$.

Explained variability = 63.45% (total eigenvalue = 15)

Note: The highest loadings for each original variable are highlighted in bold. Comp. stands for Component.

extraction methodology, whereas *varimax* was employed as a rotation method. In addition, all variables have been reviewed so that they approximate financial capability in direct terms and with homogeneous extreme values. Regarding model fit, Bartlett's test of sphericity rejects the null hypothesis of no correlation among the variables ($p < 0.000$). Simultaneously, the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy shows a value of 0.646, indicating that the data are appropriate for factor analysis (Dash and Paul 2021).

The 15 original items form six components in the EFA, which account for 63.45% of the total variance (Table 4). In detail, Component 1 integrates the three original domestic bias variables. Furthermore, the variables related to financial training are divided into five components: Component 2 (*Long-term planning*

behaviors), Component 3 (*Financial knowledge: Inflation and compound interest*), Component 4 (*Financial attitudes*), Component 5 (*Price and expense analysis behaviors*), and Component 6 (*Knowledge and behavior about prevention*).

Two additional EFAs were conducted for robustness purposes using alternative oblique rotations. Specifically, the component distribution obtained through *varimax* rotation was replicated when considering *oblimin* and *promax* rotations. Table 5 details corresponding cross component loadings.

Overall, obtained factor loadings remain the highest for each variable or, at the very least, stay above or very close to the threshold of 0.5. Obtaining similar results using orthogonal and oblique rotations would be related to relatively low correlation

TABLE 5 | Comparative of exploratory factor analysis (EFA) with oblique rotations.

Group	Short name of variable	Cross component loadings		
		Varimax	Oblimin	Promax
Financial knowledge	inflation_1year	0.684	0.653	0.618
	int_5years	0.629	0.473	0.517
	risk_return	0.643	0.786	0.764
Financial behaviors	subj_fin	0.673	0.849	0.823
	FBA_planning	0.805	0.780	0.755
	FBA_longterm	0.790	0.856	0.823
	FBA_fraud	0.726	0.390	0.601
	FBA_protection	0.651	0.426	0.620
Financial attitudes	FBA_compare	0.711	0.765	0.743
	FBA_adjust	0.805	0.770	0.759
	FBA_daytoday	0.762	0.730	0.735
Domestic bias	FBA_spending	0.750	0.783	0.791
	D_country	0.808	0.791	0.791
	D_realstate	0.783	0.783	0.788
	D_community	0.736	0.723	0.711

TABLE 6 | Construct reliability and validity.

Construct	Composite reliability (CR)	Average variance extracted (AVE)	Maximum shared variance (MSV)	Average shared variance (ASV)
Domestic bias	0.820	0.603	0.005	0.001
Long-term planning behaviors	0.778	0.636	0.001	0.001
Financial knowledge: Inflation and compound interest	0.701	0.439	0.0002	0.0001
Financial attitudes	0.727	0.572	0.005	0.002
Price and expense analysis behaviors	0.731	0.577	0.003	0.001
Knowledge and behaviors about prevention	0.714	0.455	0.0004	0.0002

levels between the financial capability and domestic bias variables (always below 0.3) that would not be considered statistically concerning (Schober et al. 2018).

4.2 | Confirmatory Factor Analysis (CFA)

As evidence of discriminant validity, convergent validity, and reliability, a CFA was applied (Anderson and Gerbing 1988). The final model demonstrates a high level of internal consistency (Table 6), with a minimum composite reliability value of 0.701. This value exceeds the generally accepted threshold of 0.6 (Dash and Paul 2021; Hair et al. 2010).

Regarding convergent validity, the average variance extracted (AVE) exceeded the recommended cut-off of 0.50 (Anderson and Gerbing 1988; Dash and Paul 2021; Fornell and Larcker 1981) for *Domestic bias* (AVE = 0.603), *Long-term planning behaviors* (AVE = 0.636), *Financial attitudes* (AVE = 0.572), and *Price*

and expense analysis behaviors (AVE = 0.577). Although the AVE reached a slightly lower value for the *Financial knowledge: Inflation and compound interest* (AVE = 0.439) and *Knowledge and behaviors about prevention* (AVE = 0.455), considering that composite reliability and factor loadings reached an adequate level for these constructs, an AVE greater than 0.40 could be considered acceptable (Iglesias 2004; Verhoef et al. 2002). In terms of discriminant validity, the averages and maximum values of the shared variances between the constructs are notably low, clearly falling below the values obtained for the AVEs (Hair et al. 2010).

To assess the multicollinearity among the variables, we computed the variance inflation factors (VIF). The highest VIF value (1.29) is considerably lower than 6, indicating the absence of this statistical problem (Hair et al. 2010). Regarding model fit, we employed the criterion proposed by Hair et al. (2010), which entails the analysis of at least four indicators encompassing absolute, comparative, and parsimonious fit. Table 7 details these measures.

TABLE 7 | Model fit.

Fit measure	Value
Absolute fit measures	
χ^2	153.548
df	79
χ^2/df	1.94360
Goodness of fit index (GFI)	0.955
Root mean square error of approximation (RMSEA)	0.039
Standardized root mean square residual (SRMR)	0.049
Comparative fit measures	
Comparative fit index (CFI)	0.937
Tucker–Lewis index (TLI)	0.910
Bentler–Bonett non-normed fit index (NNFI)	0.910
Parsimony adjustment measures	
Parsimony normed fit index (PNFI)	0.602
Akaike information criterion (AIC)	17,813.212

First, the χ^2/df ratio was used as an absolute fit measure. The value of the ratio was significantly below the threshold of 3, indicating an acceptable fit (Joreskog and Sorbom 1993). However, this indicator is very sensitive to variations in sample size. For this reason, we also checked the goodness-of-fit (GFI) which, by showing a value very close to 1, confirms the good fit of the model (Bollen 1989). Furthermore, RMSEA and SRMR reached values less than 0.05 (Dash and Paul 2021; Hu and Bentler 1999).

Second, comparative fit measures (also known as incremental fit measures) assess how well a theoretical model fits, compared to an alternative baseline model. Globally, we achieved values greater than 0.90 that are considered acceptable (Hu and Bentler 1999).

Third, the indicators referring to parsimony analyze the extent to which the model is excessively complex, taking into account the relationships that are intended to be studied. The PNFI reported a good result by exceeding the generally accepted cut-off of 0.50 (Mulaik et al. 1989). Furthermore, AIC achieves a relatively high value.

4.3 | Testing of Hypothesis

Due to model complexity and the need to test the relationships between multiple constructs at the same time, we employed a structural equation model. Our model contains five independent variables (X_k) which represent each of the financial capability constructs previously identified in the CFA, one moderator variable (M) which represents the students' course and an independent variable (Y) which measures domestic bias. In this context, we need five equations, one for each independent variable, maintaining the following structure:

$$Y = \beta_{0k} + \beta_{1k}X_k + \beta_{2k}M + \beta_{3k}(X_k \times M) + \varepsilon_k \forall k = 1 \text{ to } 5 \quad (1)$$

where β_{1k} stands for the direct effect of X_k on Y , β_{2k} indicates the direct effect of M on Y in each equation, and β_{3k} refers to interaction term between X_k and M . Moreover, β_{0k} stands for

intercept and ε_k indicates the error term in each equation. The final interaction term is obtained as the latent construct that links the interactions related to the five independent variables (X_k).

Table 8 summarizes the main results of the previously developed structural equation model. Regarding Hypothesis 1, there is a clear relationship between financial capability and domestic bias. Long-term planning behaviors, financial knowledge about inflation and compound interest, sound financial attitudes, and price and expense analysis behaviors contribute to the reduction of domestic bias. Our findings are consistent with those of previous studies such as Abreu et al. (2011), Bekaert et al. (2017), Dimmock et al. (2016), and Mouna and Jarboui (2015). Conversely, there is no significant relationship between belonging to the first or fourth year and domestic bias, thus preventing us from validating Hypothesis 2.

Considering the moderating role of course variable (Table 9), we note that the relationship between capability and domestic bias is strengthened for students in their fourth year, confirming Hypothesis 3. Although training in economics and business may not directly result in more diversified portfolios with reduced domestic bias (Table 8), the negative and significant relationship observed between capability and domestic bias is enhanced by the knowledge acquired during the degree program.

Classical portfolio theory highlights the importance of the fundamental principle of diversification in achieving more stable and profitable long-term investments. However, due to the profile of our respondents, they may have struggled to translate this knowledge into practical investments. This explanation is consistent with the findings of Abreu et al. (2011) or Goetzman and Kumar (2001), which demonstrate that investors are aware of the benefits of diversification but encounter challenges in “implementing” and maintaining a well-diversified portfolio.

These difficulties may be due to several reasons. First, the results could point to a gap between theoretical and practical competencies in investment and risk diversification. Although fourth-year students are expected to acquire a solid theoretical understanding of diversification and portfolio management, they may not have had sufficient opportunities to invest in financial market. This limitation may stem not only from the typical scarcity of financial resources at the beginning of a professional career but also from emotional conditioning that students develop during their education.

Emotional conditioning, in particular, is difficult to overcome through formal education alone, as this training often relies on rigid methodologies that do not foster students' creativity and confidence (Grajčević and Shala 2016). Although students may understand the advantages of international diversification, they might still prefer to make, for many of them, their first investment in a local or national environment that they perceive as familiar, known, and ultimately safe.

The results indicate that financial capability provides essential skills that contribute to risk diversification, enabling students, either now or when they begin investing, to achieve more stable portfolios and greater financial well-being. Moreover, formal education enhances the impact that financial competencies can

TABLE 8 | Structural equation model: direct relationships.

Predictor	Outcome	Coefficient	Std. Error	p	Sign.
Long-term planning behaviors	Domestic bias	-15.572	8.439	0.065	†
Financial knowledge: Inflation and compound interest		-50.000	9.770	<0.001	***
Financial attitudes		-66.424	9.101	<0.001	***
Price and expense analysis behaviors		-66.644	11.772	<0.001	***
Knowledge and behaviors about prevention		1.838	0.924	0.047	*
Course		0.720	0.487	0.139	ns

Note: ns indicates not significant.

***, *, and † indicate statistical significance at the 0.1%, 5%, and 10% level, respectively.

TABLE 9 | Structural equation model: moderating role of course variable.

Predictor	Outcome	Coefficient	Std. Error	p	Sign.
Long-term planning behaviors	Domestic bias	3.632	0.298	<0.001	***
Financial knowledge: Inflation and compound interest		7.963	1.543	<0.001	***
Financial attitudes		62.503	15.866	<0.001	***
Price and expense analysis behaviors		1.226	0.237	<0.001	***
Knowledge and behaviors about prevention		5.289	0.407	<0.001	***

Note: A positive (negative) and statistically significant coefficient indicates that the direct relationship between each dimension of financial capability and domestic bias (Table 8) is stronger (weaker) among fourth-year students compared to first-year students.

*** indicates statistical significance at the 0.1% level.

have in reducing domestic bias. However, formal education alone would not be sufficient to reduce students' domestic bias. Despite formal education, especially at the university level, is a fundamental mechanism for bringing business culture closer to the younger population (Debarliev et al. 2022), it should be complemented with nonformal education interventions, such as lectures, meetings, or mentoring programs with financial managers. These measures would better address the specific needs of students (Debarliev et al. 2022; Kedrayate 2012), particularly at an emotional level.

5 | Conclusions

In recent years, economic literature has uncovered a consistent investor behavior characterized by maintaining portfolios with proximity investment and a lack of diversification, contrary to the propositions of classical portfolio theory. This behavior, known as domestic bias, distances investors from optimal decisions that would maximize their financial well-being. In this context, investors require financial capabilities that enable them to make decisions without room for heuristics and financial biases.

This article analyses the relationship between financial capability and domestic bias on investors' decision-making for students in the first and four years in economics and business degrees at the USC. The findings underscore a clear association between financial capability and domestic bias. Long-term planning behaviors, financial knowledge about inflation and compound interest, sound financial attitudes, and price and expense analysis behaviors contribute to reducing domestic bias.

Conversely, there is no significant relationship between academic year and domestic bias. However, it is observed that the negative relationship between financial capability and domestic bias is enhanced for fourth-year students. This indicates that the knowledge acquired during the degree program reinforces the negative and significant relationship. Although economics and business education may not directly lead to more diversified portfolios with lower levels of domestic bias, it aids students in mitigating this kind of bias, suggesting that investors may face challenges in implementing and maintaining well-diversified portfolios despite awareness of diversification benefits.

From a practical standpoint, these insights suggest that financial education programs emphasize the practical application of knowledge acquired during economics and business degrees to foster a more rational approach to financial decision-making, ultimately improving future financial well-being and societal development. Institutions and educators can tailor interventions to address this specific bias, acknowledging the divergent role of saving tendencies and expectations on cognitive biases. Investors' ability to make sound financial decisions is severely challenged in times of crises, emphasizing the importance of education and knowledge to avoid poor risk diversification and inefficient portfolio allocations.

Nevertheless, it is crucial to recognize the limitations of this article that can guide development of new studies. Thus, our sample is restricted to university students, which calls for caution in generalizing the findings to a broader population. Moreover, the cross-sectional nature of our research prevents establishing causality, underscoring the need for longitudinal studies to

observe how the relationship between financial capability and domestic bias evolves over time. Future longitudinal studies can provide insights into the evolution of financial biases over the course of individuals' financial journeys. In addition, applying the questionnaire to graduates already active in the labor market would provide valuable insights, as students may not yet have had the opportunity to fully implement their financial knowledge in real investment decisions. Finally, our design does not fully control for other socialization processes that shape financial capability, such as parental influence, peer effects, and experiential learning. As highlighted by LeBaron-Black et al. (2022), experiential learning is a key pathway through which financial attitudes and behaviors develop, particularly for young adults beginning to manage their finances independently. Consequently, the differences observed between first- and fourth-year students may partly reflect the cumulative impact of these socialization influences, not only the effect of formal coursework. Future research should therefore seek to disentangle these effects, for instance, by applying a difference-in-differences design that compares economics and business students with non-economics and business cohorts across years of study. Such an approach would provide more rigorous evidence on the extent to which academic training, as opposed to broader life experiences, reduces domestic bias.

In essence, this research contributes to our understanding of the interplay between financial capability and domestic bias, offering practical implications for educators, policymakers, and financial institutions. As we navigate an evolving financial landscape, continued exploration into these dynamics will be crucial for refining theoretical frameworks, improving educational strategies, and fostering more informed financial decision-making.

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Ethics Statement

The study exclusively collects information on behaviors, habits, and attitudes toward certain financial issues. No health or especially sensitive information is collected. The participants have known the purpose of the study and have voluntarily chosen to participate in it. For these reasons, ethics approval from an ethics committee was not sought.

Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

¹The data collected will be provided to readers upon request.

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ANNEX 1

Questions About Financial Issues

1. *Data collected by the researchers:* Which course are you studying? First course Fourth course

I.1a) Imagine that you have to wait a year to collect a prize of €1000 and inflation remains at 5%. Within a year you will be able to buy...

More than I could buy today The same amount Less than I could buy today

I.2a) Suppose you deposit €100 into a savings account with a guaranteed interest rate of 2% per year (*without taxes*). You make no further payments to this account and do not withdraw any money. How much would be left in the account at the end of the fifth year, once the interest payment had been made?

Less than €110 €110 or more

I.3a) It is generally possible to reduce the risk of investing in the stock market by investing in a wide range of financial products

True False

I.4a) How would you rate your general knowledge about financial topics compared to the average of the Spanish population?

Very low Low On the average High Very high

The following nine statements are answered using a common scale, being (1) "Totally disagree" and (5) "Totally agree"

1 2 3 4 5

I.1b) I carry out periodic planning of my expenses and establish savings goals

I.2b) I set long-term financial goals and try to achieve them

I.3b) I have thought about specific strategies to avoid being a victim of fraud

I.4b) I am very careful with the protection of my data (account number, passwords, etc.)

I.5b) I compare prices and conditions from different suppliers before making a purchase decision

I.6b) I adjust my expenses and purchasing decisions to changes in my financial situation

I.7b) I tend to live day to day without worrying too much about the future

I.8b) I find it more satisfying to spend money than to save it in the long term

Financial Decision Questions

II.1) Taking into account the amount of money you could invest or currently invest and your own knowledge of the markets, what is the approximate percentage that you would allocate or have allocated to Spanish financial products (shares, public debt, investment funds, etc. . .)? _____%

II.2) What is the approximate percentage that you have allocated or would allocate to domestic products in a portfolio of real assets (e.g., real estate)? _____%

II.3) And the approximate percentage that you have allocated or would allocate to products (company shares) from your autonomous community? _____%