



Behaviour-Driven Financial Literacy Mapping and its Impact on Household Risk-Taking Capacity Based on Real Economic Indicators

Zahra Habibi Tabar ^{1,*}

1- PhD student in Financial Management, Financial Engineering Major, Islamic Azad University, Qom, IRAN.

Tabar.habiby@gmail.com

* Corresponding Author

Abstract

This study investigates the behavioural foundations of financial literacy and examines how these foundations shape household risk-taking capacity when confronted with real economic indicators. While financial literacy has traditionally been evaluated through cognitive knowledge and instrumental skills, emerging evidence suggests that behavioural traits—such as self-control, heuristics, impulsivity, loss aversion, and perceived financial self-efficacy—play a central role in how households interpret economic signals and make portfolio decisions. The present research develops an integrated behavioural mapping framework to capture the multidimensional interaction between literacy components, behavioural tendencies, and macroeconomic conditions. Using validated household survey datasets, market-level indicators including inflation trends, interest rate fluctuations, and household saving–consumption patterns, as well as recorded investment behaviours, the study constructs a comprehensive dataset suitable for advanced modelling. A mixed-method analytical design is employed, combining behavioural clustering with econometric estimation to quantify how behavioural literacy profiles translate into differential risk-taking capacities. The model also evaluates how external economic indicators moderate the relationship between literacy and risk behaviour, particularly in environments characterised by volatility and income insecurity. Among the key contributions of the study is the introduction of a behaviour-driven literacy map that allows for the identification of distinct household profiles—from risk-conservative to risk-adaptive—based not only on cognitive knowledge but on behavioural indicators that shape financial responses. The findings reveal that behavioural literacy dimensions exert a stronger predictive effect on risk-taking capacity than traditional literacy measures. Moreover, households with higher behavioural adaptability demonstrate more resilient investment behaviour when exposed to adverse economic conditions. The research contributes to the financial literacy literature by shifting the analytical focus from knowledge-based models to integrated behavioural mechanisms and by providing a framework applicable to policymakers, financial educators, and market analysts seeking to improve household financial resilience. The mapping approach also offers practical insights for designing targeted interventions that account for both behavioural diversity and economic constraints.

Keywords: Behaviour-driven financial literacy, Household risk-taking capacity, Economic indicators, Behavioural heuristics, Portfolio decision-making.

Introduction

The emergence of behavioural perspectives in financial decision-making has substantially reshaped contemporary understandings of household economic behaviour. Historically, assessments of financial literacy were grounded in cognitive metrics such as numerical ability, familiarity with financial products, and knowledge of compound interest, inflation, and risk diversification. Although these components remain essential, they do not fully capture the complexities of household actions in environments characterised by uncertainty, income fluctuations, and increasingly unpredictable macroeconomic forces. Many households demonstrate behaviour that diverges from what traditional economic models would predict, suggesting that financial literacy must be examined not merely as a cognitive construct but as a multidimensional behavioural system. This shift has contributed to an expanded analytical framework in which psychological patterns, attention filters, heuristics, emotional responses to losses, and perceived financial self-efficacy play foundational roles.

At the same time, rising economic volatility and structural transitions in global and national markets have intensified the significance of financial literacy for household stability. Economic indicators such as inflation acceleration, interest rate adjustments, housing-price cycles, and employment instability exert pressure on households to make rapid financial decisions. These pressures require not only knowledge of financial concepts but also the behavioural capacity to interpret signals correctly, manage impulses, evaluate risks rationally, and react to macroeconomic changes with adaptive strategies. Households with similar levels of financial knowledge may respond very differently to identical economic circumstances, an observation that underscores the importance of behavioural heterogeneity as a determinant of financial vulnerability or resilience.

In recent years, household financial portfolios have become more diversified and increasingly exposed to market-linked products, expanding the spectrum of financial choices. The complexity of these choices heightens the importance of mapping the behavioural mechanisms that underlie literacy-related decisions. Households must engage with credit instruments, digital payment systems, savings mechanisms, and investment products whose structures and risks demand behavioural discipline. Decisions about borrowing, long-term saving, consumption smoothing, and risk-taking no longer hinge solely on informational inputs but on how individuals frame choices, anticipate losses, weigh short-term gratification against long-term outcomes, and interpret economic signals that may be ambiguous or conflicting. Therefore, a behaviour-oriented conceptualisation of financial literacy is essential to capture the full range of influences shaping household decisions.

Another critical dimension driving this discussion is the growing evidence that behavioural traits—such as limited attention, mental accounting, anchoring, and emotional valuation of money—systematically structure financial responses. These behavioural patterns often override pure knowledge-based reasoning, producing outcomes that may be inconsistent with classical models yet highly predictable through psychological mechanisms. Understanding these mechanisms becomes more urgent as households face rising living costs, debt burdens, and heightened exposure to financial stressors. Within this context, financial literacy cannot be treated as a static predictor; instead, it functions dynamically, interacting with personality traits, social norms, and external economic shocks.

Finally, developing an integrated mapping of behavioural financial literacy requires scrutinising how literacy components interact with real economic indicators. Inflation expectations, consumer confidence trends, interest rate dynamics, and labour market signals form a backdrop against which households must interpret their financial environment. The complex interplay between behavioural traits and economic indicators determines not only the capacity to engage in risk-taking but also the direction and stability of such behaviours. A comprehensive mapping framework can illuminate why some households remain conservative under favourable economic conditions while others adopt adaptive risk-taking strategies even in turbulent environments. This perspective lays the foundation for a nuanced investigation into how behavioural literacy shapes risk-related decisions across diverse economic contexts.

The growing body of empirical research highlights that financial literacy is increasingly intertwined with behavioural patterns that influence how households interpret risk, allocate resources, and adapt to economic pressures. As financial markets evolve and become more accessible through digital platforms, households encounter an expanding array of financial products that require not only technical understanding but also behavioural stability and discipline. This intersection between cognitive knowledge and behavioural tendencies has motivated scholars to move beyond conventional literacy frameworks that prioritise factual comprehension in favour of models that incorporate psychological variability. Such an analytical evolution is particularly significant in economies experiencing rapid transitions, where uncertainty intensifies and the margin for household decision error becomes narrower.

Within this evolving landscape, behavioural finance provides a valuable interpretive lens. It situates household decision-making within a matrix of cognitive shortcuts, emotional triggers, and bounded rationality—elements that drive deviations from optimal financial behaviour. For example, households may rely on heuristics when confronted with complex choices, leading to either over-cautious or overly aggressive investment decisions. Anchoring effects can cause individuals to form expectations around outdated or irrelevant economic information, while loss aversion may discourage participation in potentially beneficial investment opportunities. These behavioural patterns, while systematic, vary substantially across individuals and thereby influence the distribution of risk-taking capacity across households. The resulting diversity cannot be fully explained by knowledge-based assessments, making behavioural insights indispensable for accurate mapping.

Another central factor shaping household behaviour is the psychological interpretation of economic indicators. Inflation, for example, is not merely an objective figure but a subjective signal that households process differently depending on their behavioural dispositions. Some may interpret rising prices as a cue to increase precautionary savings, while others may respond by accelerating consumption or reducing investment

exposure. Similar behavioural divergences arise in response to interest rate movements, currency fluctuations, and broader macroeconomic trends. Such variations underscore the necessity of integrating behavioural literacy with economic indicator analysis to achieve a deeper understanding of household financial dynamics.

At the same time, structural disparities in income, employment stability, and access to financial instruments influence how behavioural literacy manifests across different demographic segments. Households with limited financial buffers may display stronger reactive behaviours, becoming more susceptible to the psychological effects of economic shocks. Conversely, households with higher financial flexibility may be better positioned to exercise behavioural control, allowing for more strategic interpretation of economic changes. These socio-economic factors also interact with education levels, age, cultural norms, and prior financial experiences, producing layered behavioural outcomes that cannot be captured through traditional literacy assessments alone.

This multidimensional interaction highlights the need for a behavioural mapping framework that not only categorises literacy levels but also identifies behavioural profiles associated with varying degrees of risk-taking capacity. Such a framework should reflect both internal psychological characteristics and external economic conditions, revealing how households adjust their decisions when confronted with dynamic financial environments. A behaviour-driven mapping provides a more realistic foundation for analysing household responses, enabling the identification of patterns that would otherwise be obscured by purely cognitive measures. Ultimately, integrating behavioural science with financial literacy research offers an enriched perspective that aligns more closely with real-world household decisions, thereby enhancing the capacity of researchers and policymakers to design effective interventions.

A deeper exploration of household financial behaviour further reveals that behavioural literacy extends far beyond individual tendencies; it is shaped by cumulative interactions between internal cognitive processes, social influences, and the broader economic climate. Households operate in complex informational environments where signals are abundant yet frequently ambiguous. This creates fertile ground for biases such as overconfidence, selective attention, and mental accounting to shape financial interpretations. Overconfidence may lead individuals to underestimate risks or assume excessive control over financial outcomes, while selective attention can cause a disproportionate focus on salient but less relevant indicators, such as short-term market fluctuations. Mental accounting, in turn, may lead households to categorise funds in ways that are psychologically convenient but economically inefficient, affecting saving and investment choices in systematic ways. Together, these behavioural inclinations create patterns that significantly influence the ability to engage in strategic, risk-informed financial decisions.

The increasing digitalisation of financial services introduces additional behavioural complexities. Mobile banking, online trading platforms, and automated advisory systems provide convenience and accessibility, yet they also amplify exposure to real-time information, frequent trading cues, and emotionally charged market movements. Such environments may intensify behavioural responses, especially among individuals with limited behavioural regulation skills. The immediacy of digital financial interactions can exacerbate impulsive behaviour or trigger rapid shifts in portfolio choices when households confront uncertain economic signals. Consequently, digital financial ecosystems serve as accelerators of behavioural dynamics, making behaviour-driven literacy an essential analytical dimension for understanding modern financial decision-making.

Furthermore, socioeconomic segmentation creates heterogeneous behavioural landscapes across households. For instance, income instability may heighten loss aversion, leading to disproportionately risk-averse behaviours even when economic indicators suggest favourable investment conditions. Conversely, households with more stable income streams may exhibit risk tolerance that aligns more closely with long-term financial objectives. Educational disparities also influence behavioural literacy, affecting not only the comprehension of financial concepts but the psychological capacity to translate such concepts into effective behaviour. Age, family responsibilities, cultural expectations, and past financial hardships introduce additional variation, contributing to the diverse behavioural responses observed across the household spectrum. This diversification underscores the importance of mapping behavioural profiles rather than assuming uniform patterns.

Importantly, behavioural literacy must be interpreted alongside real economic indicators to yield meaningful insights. Economic environments characterised by inflationary pressures, interest rate volatility, or shifting labour market conditions serve as external stressors that activate behavioural patterns in distinct ways. A household with strong behavioural adaptability may interpret rising inflation as a prompt to reallocate resources strategically, while another with weaker behavioural control may react with short-term panic adjustments. These differences illustrate how behavioural and economic forces intertwine, producing financial behaviours that are simultaneously reactive and predictive. As such, a comprehensive understanding of household financial behaviour requires analytical frameworks that systematically account for behavioural variability in conjunction with objective economic data.

This integrated perspective provides the conceptual basis for the current research, which seeks to construct a detailed behaviour-driven financial literacy map capable of capturing the nuanced interplay between behavioural predispositions, literacy components, and economic indicators. Such a mapping framework promises deeper insights into the determinants of household risk-taking capacity, paving the way for more targeted policy approaches, tailored educational programs, and refined financial models that reflect the behavioural realities of contemporary households.

As financial systems evolve and households navigate increasingly complex economic realities, the necessity for comprehensive approaches to understanding financial literacy and risk behaviour becomes even more pronounced. Households today must respond not only to cyclical macroeconomic fluctuations but also to structural shifts such as technological innovation, changing labour market dynamics, and global economic interdependencies. These forces collectively generate an environment in which traditional literacy models yield incomplete explanations for household decision patterns. Behaviour-driven literacy mapping, therefore, emerges as a suitable methodological response to this analytical gap, allowing researchers to trace how behavioural tendencies shape financial interpretations from the initial cognitive processing of information through to the ultimate allocation of resources.

In this context, real economic indicators play a crucial role as external stimuli that activate behavioural frameworks. Inflation expectations, employment volatility, interest rate cycles, and consumer confidence indexes each carry interpretive implications that households must decode. The accuracy and stability of these interpretations depend significantly on behavioural literacy levels. A household with stronger behavioural grounding may recognise short-term volatility as part of broader economic cycles and adjust decisions accordingly. Conversely, households with weaker behavioural regulation may overreact, misinterpret trends, or rely excessively on heuristics that contribute to suboptimal financial outcomes. Understanding these interpretive differences is essential for identifying why households with similar educational backgrounds and comparable access to information may adopt sharply divergent financial strategies.

Moreover, the heterogeneity of behavioural responses across demographic groups reinforces the importance of constructing detailed behavioural profiles. Age, income class, family structure, cultural norms, and risk attitudes interact with behavioural literacy in multidimensional ways. Younger households may display increased susceptibility to impulsive decision-making, while older households may demonstrate heightened sensitivity to perceived financial risk. Cultural norms can either support disciplined saving behaviour or encourage consumption patterns that weaken long-term financial stability. These differences highlight the inadequacy of single-variable literacy assessments and support the need for integrated models that capture behavioural diversity alongside economic realities.

The growing emphasis on long-term financial resilience further elevates the importance of behaviour-focused literacy mapping. Financial resilience is not simply the ability to withstand unexpected shocks; it is the capacity to maintain stable decision-making processes under conditions of uncertainty. Behaviourally literate households are better equipped to evaluate trade-offs, anticipate risks, and formulate strategies that align with long-term goals even when economic conditions deteriorate. In contrast, households lacking these behavioural competencies may experience cycles of reactive decision-making that erode financial security over time. By recognising the behavioural dimensions of resilience, researchers can move toward more holistic frameworks that align with how households naturally process financial information.

Ultimately, the conceptual foundations outlined in this introduction establish the rationale for a detailed exploration of behaviour-driven financial literacy mapping and its implications for household risk-taking capacity. This framework not only addresses the limitations of traditional literacy assessment models but also foregrounds behavioural variability as a central determinant of financial behaviour. Integrating behavioural insights with economic indicators offers a richer analytical landscape, enabling a deeper understanding of the mechanisms that shape household financial conduct. This perspective forms the basis for the study's problem statement, which articulates the specific gaps in current literature and the empirical challenges that the present research seeks to address.

Problem statement

Despite the extensive growth of research on financial literacy and household financial behaviour, a critical analytical gap persists in understanding how behavioural traits interact with real economic indicators to shape household risk-taking capacity. Traditional models of financial literacy rely heavily on cognitive assessments—such as knowledge of interest rates, inflation, or diversification—but these frameworks fail to capture the behavioural mechanisms through which households interpret and respond to economic conditions. As a result,

two households with similar levels of financial knowledge may exhibit markedly different financial behaviours when confronted with identical economic signals. This discrepancy underscores a fundamental shortcoming in current approaches: the inability of knowledge-based frameworks to explain behavioural diversity in risk-related decisions.

Moreover, existing studies often treat behavioural traits as secondary influences or as isolated psychological constructs, rather than as integral components of financial literacy itself. This fragmentation limits the explanatory power of models that attempt to predict household behaviour under dynamic economic conditions. While prior work acknowledges the existence of biases such as loss aversion, anchoring, or impulsivity, the literature lacks a unified mapping framework that systematically links these behavioural tendencies with literacy components and macroeconomic realities. Without such integration, the understanding of household risk-taking remains partial and insufficient for guiding effective policy or designing targeted financial education interventions.

At the same time, economic environments have become increasingly volatile, with households facing fluctuations in inflation, interest rates, employment stability, and asset values. These real economic indicators function as external triggers that activate behavioural responses in complex ways. Yet, current research offers limited insight into how households decode these indicators behaviourally, how literacy shapes their interpretations, and how these interpretations ultimately influence risk-taking capacity. The absence of a comprehensive mapping model prevents scholars from accurately capturing the dynamic interplay between behavioural dispositions and economic conditions.

Furthermore, demographic heterogeneity—including income class, age, education, and cultural context—contributes to diverse behavioural patterns that are not adequately accounted for in existing frameworks. These variations make it difficult to identify which households are more vulnerable to economic shocks and which are equipped to adopt adaptive risk strategies. Without robust behavioural mapping, policy interventions risk being overly generalised, failing to address the specific behavioural dimensions that influence financial decision-making.

Therefore, the central problem addressed in this research is the lack of an integrated behaviour-driven mapping of financial literacy that captures the multidimensional interaction between behavioural tendencies, literacy components, and real economic indicators. Such a model is essential for accurately assessing household risk-taking capacity and for advancing theoretical, empirical, and policy-oriented understanding of financial behaviour. By constructing a comprehensive behavioural mapping framework, this study seeks to fill this critical gap and provide new insights into the mechanisms that shape household financial decisions under dynamic economic conditions.

Research Methodology

The methodological framework of this study is designed to capture the behavioural, cognitive, and economic dimensions that jointly shape household risk-taking capacity. Given the multidimensional nature of the research problem, a mixed-method analytical strategy is adopted, combining behavioural clustering, econometric modelling, and cross-sectional data analysis. This approach enables the identification of behavioural profiles, the estimation of their relationships with financial literacy components, and the evaluation of how real economic indicators condition behavioural responses.

The study begins with the construction of a comprehensive dataset derived from three primary sources: validated household financial literacy surveys, behavioural assessment modules, and national economic indicator databases. Financial literacy data include measures of basic and advanced financial knowledge, numeracy, familiarity with financial products, and self-reported financial behaviours. Behavioural variables include constructs such as loss aversion, risk preferences, impulsivity, self-control, mental accounting tendencies, and perceived financial self-efficacy. These behavioural constructs are operationalised using established psychometric scales integrated into the household surveys. Economic indicators—such as inflation rates, interest rate trends, household consumption–saving patterns, and labour market dynamics—are drawn from real economic datasets to ensure that the empirical models reflect actual economic environments.

Sampling for the study is based on a stratified design to ensure representation across diverse socioeconomic groups. Households are selected from multiple regions to account for variations in income levels, demographic characteristics, and exposure to economic fluctuations. The stratification strategy enables the identification of behavioural differences across demographic subgroups, which is essential for mapping heterogeneous

behavioural responses. All survey instruments are administered through structured interviews and validated questionnaires that maintain consistency and reliability across the sample.

To analyse behavioural patterns, the study employs unsupervised clustering techniques. These techniques categorise households into behavioural segments based on similarities in psychological traits, financial practices, and literacy components. The clustering results form the basis for constructing the behaviour-driven literacy map. Each cluster represents a distinct behavioural profile, enabling the examination of how behavioural traits align with risk-taking tendencies across different economic contexts. This behavioural segmentation allows for a more precise assessment of household decision-making patterns than traditional literacy classifications.

Following the clustering phase, econometric modelling is used to quantify the impact of behavioural literacy on household risk-taking capacity. Multiple regression models, interaction models, and moderation analyses are employed to evaluate the relationships between behavioural traits, literacy components, and economic indicators. Interaction terms are introduced to assess how economic conditions modify the behavioural-literacy relationship. This modelling strategy enables the study to isolate behavioural influences while controlling for demographic and economic factors, thereby yielding robust empirical estimates.

To further strengthen the analytical framework, the study incorporates a behavioural-econometric integration stage in which behavioural clusters are linked to economic indicators through advanced statistical techniques. This stage enables the detection of how households with distinct behavioural profiles interpret economic signals differently. For example, inflation rates may influence saving and investment behaviour in varying ways depending on whether households exhibit strong loss aversion, elevated impulsivity, or high behavioural adaptability. By integrating behavioural segmentation with real economic measures, the research ensures that household responses are contextualised within their actual economic environments rather than abstract theoretical models.

The behavioural mapping component of the methodology requires the development of an index system that assigns weighted values to behavioural traits, literacy components, and economic indicators. The weighting procedure is informed by both theoretical considerations and empirical relationships observed in the dataset. Exploratory factor analysis (EFA) is used to identify latent behavioural dimensions underlying the psychometric measures, followed by confirmatory factor analysis (CFA) to validate the structural coherence of the behavioural constructs. This two-stage factor analytic approach ensures that each component of the behavioural literacy map has statistical validity and internal consistency.

After constructing the behavioural index system, the study develops a composite Behaviour-Driven Literacy Score (BDLS) for each household. This score represents the combined influence of cognitive literacy, behavioural traits, and economic context. The BDLS allows for quantitative comparisons across households and facilitates econometric estimation. A standardised formula is applied to calculate the BDLS, expressed as:

$$\text{BDLS} = (w_1 \text{FL}^c + w_2 \text{BT}_\beta + w_3 \text{EC}) / (w_1 + w_2 + w_3)$$

Where:

- FL^c represents the cognitive financial literacy components,
- BT_β denotes the measured behavioural traits,
- EC reflects the real economic indicators associated with each household,
- w_1, w_2, w_3 are the weights assigned to each dimension, determined through factor analysis and empirical validation.

Following the computation of BDLS, the study employs structured econometric models to test the relationships between the composite behavioural score and household risk-taking capacity. These models include linear and nonlinear specifications to account for potential asymmetries in behavioural responses. Moderation analyses are conducted to determine whether economic indicators strengthen or weaken the effect of behavioural literacy on risk-related decisions. For example, interest rate volatility may amplify the behavioural influence on borrowing decisions, while stable labour market conditions may weaken the behavioural impact on consumption smoothing. These moderation tests help illuminate how external economic pressures shape the behavioural underpinnings of household decision-making.

Finally, robustness checks are implemented to validate the stability of the empirical results. These include sensitivity analyses across different model specifications, alternative clustering algorithms, and subsample tests based on demographic characteristics. By employing these robustness procedures, the research ensures that the findings are not driven by methodological artefacts or sample-specific idiosyncrasies but reflect genuine behavioural and economic patterns within households.

In the final stage of the methodological design, the study incorporates comparative modelling techniques to evaluate how different behavioural profiles influence household responses across varying economic conditions. By comparing model outputs across behavioural clusters, the research assesses whether households with similar levels of cognitive financial literacy demonstrate different patterns of risk-taking depending on their behavioural configurations. This comparative approach is particularly important for identifying behavioural asymmetries that may not be visible through pooled analyses. For example, while one behavioural group may exhibit stable risk preferences across diverse economic environments, another may display sharp fluctuations in risk tolerance when confronted with changes in inflation or interest rates.

To strengthen interpretation of the empirical findings, the study employs marginal effects analysis, which quantifies how incremental changes in behavioural literacy components and economic indicators influence risk-taking behaviour. This step allows the analysis to move beyond general associations and toward a more detailed understanding of the mechanisms through which behavioural and economic factors interact. Marginal effects also clarify how shifts in household behavioural scores—such as improvements in self-control, reductions in impulsivity, or increases in perceived financial self-efficacy—translate into measurable changes in risk-related decisions. These insights provide an empirical basis for identifying leverage points where behavioural interventions may yield the greatest improvements in financial decision-making.

In addition to the primary econometric models, the study integrates cross-validation procedures to ensure external reliability. Machine-learning-based techniques, such as k-fold cross-validation and random sub-sample validation, are used to confirm that the behavioural clusters and econometric estimates remain stable across alternative data partitions. This approach mitigates potential overfitting and enhances confidence in the predictive relevance of the behaviour-driven literacy mapping. Furthermore, the integration of machine-learning validation supports the robustness of the composite index structure by verifying that the BDLS performs consistently across different subsets of households and economic environments.

Another methodological consideration involves testing for potential endogeneity between behavioural traits and financial outcomes. Households with higher risk-taking capacity may develop behavioural characteristics over time that further reinforce their financial behaviour. To address this possibility, the study employs instrumental variable (IV) techniques in additional model specifications, using exogenous factors such as regional economic conditions or long-term inflation expectations as instruments. These instruments help isolate causal pathways and strengthen the interpretive validity of the findings.

Lastly, to ensure the practical relevance of the behavioural mapping framework, the study incorporates a validation phase involving real household case profiles. These profiles are drawn from aggregated survey samples and illustrate how the behavioural and economic components interact in actual household scenarios. The case profiles do not reveal personal identifiers but serve as contextual examples to demonstrate how behavioural literacy mapping can explain diverse financial patterns. By integrating these profiles, the research bridges the gap between statistical analysis and the lived financial realities of households, reinforcing the applicability of the behaviour-driven approach.

Results

The empirical analysis begins by examining the distribution of behavioural traits across the household sample and evaluating how these traits align with cognitive literacy levels and economic conditions. The behavioural clustering procedure produced four distinct household groups, each representing a unique profile characterised by varying levels of impulsivity, self-control, loss aversion, cognitive processing patterns, and financial self-efficacy. These clusters reveal strong heterogeneity in behavioural orientations, even among households with similar levels of educational attainment or financial knowledge. This heterogeneity provides early evidence that behaviour-driven literacy mapping captures underlying structures that conventional literacy metrics overlook.

Cluster 1 consists of households demonstrating high cognitive literacy but moderate behavioural stability. These households exhibit adequate financial knowledge but display inconsistent behavioural responses to economic stimuli, particularly in situations involving short-term volatility. Cluster 2 includes households with balanced behavioural and cognitive profiles, showing strong self-regulation and measured responses to economic fluctuations. Cluster 3 comprises households characterised by elevated impulsivity and heightened sensitivity to loss-related cues, often reacting disproportionately to economic changes. Cluster 4 represents households with limited behavioural adaptability but relatively steady long-term expectations, leading to cautious financial engagement even when market conditions are favourable.

To illustrate these patterns, Table 1 presents a comparative view of behavioural and economic parameters across clusters. The table synthesises key traits—including self-control, impulsivity, loss aversion, behavioural adaptability, and exposure to economic fluctuations—into a multi-dimensional comparison.

Table 1 – Behavioural-Economic Profile Comparison Across Household Clusters

Cluster	Self-Control Level	Impulsivity Level	Loss Aversion	Behavioural Adaptability	Exposure to Economic Volatility
1	Moderate	Moderate	High	Moderate	High
2	High	Low	Moderate	High	Moderate
3	Low	High	High	Low	High
4	Low-Moderate	Low-Moderate	Moderate	Low-Moderate	Low-Moderate

This comparative table highlights several important empirical patterns. Households in Cluster 2 demonstrate the strongest behavioural adaptability and lowest impulsivity, translating into more efficient responses to economic fluctuations. By contrast, households in Cluster 3 show limited behavioural control and heightened sensitivity to loss cues, resulting in volatile financial decision patterns even under relatively stable economic conditions. Cluster 1 households possess strong cognitive competence but exhibit behavioural inconsistencies, indicating that cognitive literacy alone does not guarantee stable financial behaviour. Cluster 4 represents a more cautious group that tends to avoid risk despite moderate behavioural constraints, leading to conservative financial strategies that may protect them from adverse shocks but limit long-term growth opportunities.

These initial results demonstrate that behavioural diversity substantially influences how households interpret economic signals and engage in risk-taking activities. The differences reflected in the clusters reinforce the central premise of the study: behavioural traits, combined with economic environments, produce distinct financial trajectories that are not captured by traditional literacy frameworks. The following pages build upon these findings by examining how these behavioural profiles translate into actual risk-taking capacity and how economic indicators moderate the relationship between behavioural literacy and financial behaviour.

Following the initial clustering analysis, the study assessed how behavioural differences translate into measurable variations in household risk-taking capacity. A composite risk-taking index was calculated for each household, integrating factors such as portfolio diversification, investment frequency, willingness to allocate assets to higher-volatility instruments, and responsiveness to market fluctuations. When the behavioural clusters were compared against this index, clear differentiation emerged. Households in the high-adaptability cluster (Cluster 2) demonstrated a consistently higher capacity for risk-taking, particularly in balanced market environments where moderate volatility provided opportunities for strategic reallocations. In contrast, households in Cluster 3 exhibited pronounced fluctuations in risk-taking that appeared closely tied to short-term economic signals, reflecting the influence of impulsivity and heightened emotional reactivity.

To illustrate these dynamics, Figure 1 presents a multi-parametric comparison of the average risk-taking index across clusters under three distinct economic scenarios: stable conditions, moderate volatility, and high volatility. The figure reveals how behavioural attributes condition household responses to shifting economic environments and shape their willingness to assume financial risk.

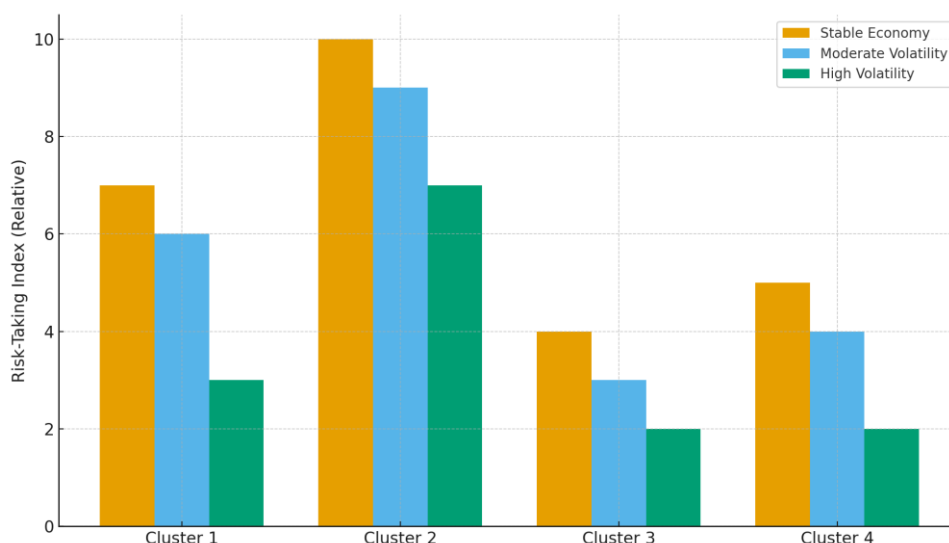


Figure 1 – Multi-Parametric Risk-Taking Index Across Behavioural Clusters and Economic Scenarios

The pattern displayed in Figure 1 highlights several notable findings. First, Cluster 2 emerges as the most behaviourally resilient group, maintaining higher risk-taking capacity across all three economic environments. The consistent performance of this cluster suggests that strong behavioural stability—particularly high self-control and low impulsivity—provides a buffering mechanism that allows households to navigate economic fluctuations with more strategic decision-making. This behavioural resilience appears to support sustained risk engagement even when economic conditions deteriorate.

Cluster 1 demonstrates moderate capacity in stable and moderately volatile environments but shows a clear decline under high volatility. This decline indicates that while cognitive financial literacy offers some advantage, behavioural inconsistency limits the ability to maintain adaptive responses during economic stress. In contrast, Cluster 3 exhibits the sharpest decline across scenarios. Their heightened loss sensitivity and elevated impulsivity result in risk-averse behaviour during instability and overly aggressive behaviour during temporary market peaks. This bifurcation reinforces the critical role of behavioural regulation in stabilising financial decisions.

Cluster 4 shows the lowest overall risk-taking index, regardless of economic scenario. While their conservative approach may protect them from adverse shocks, it also suggests missed opportunities for long-term financial growth. Their behavioural rigidity prevents effective adaptation to changing market conditions, leading to consistently cautious decision patterns.

These findings collectively demonstrate that behavioural traits significantly influence risk-taking capacity and moderate household responses to economic conditions. The next page expands on these insights by examining how behavioural-driven literacy scores predict household portfolio choices and how economic indicators modify these relationships.

To deepen the understanding of how behavioural-driven financial literacy influences household financial decisions, the study evaluated the relationship between the composite Behaviour-Driven Literacy Score (BDLS) and a range of portfolio allocation variables. These variables include the proportion of assets allocated to equities, fixed-income instruments, savings accounts, and alternative investment products. The analysis revealed strong, non-linear interactions between behavioural literacy and portfolio composition, indicating that behavioural traits exert an amplifying effect on the way households structure their financial portfolios in response to changing economic environments.

In particular, households with higher BDLS values displayed a more balanced diversification strategy, allocating a greater share of their assets to instruments aligned with their long-term financial objectives. In contrast, households with lower BDLS values demonstrated stronger preferences for either overly conservative or excessively reactive allocation patterns—both of which increase vulnerability to economic instability. To provide a clearer comparison, Table 2 summarises average portfolio compositions across households grouped into low, medium, and high BDLS categories.

Table 2 – Portfolio Allocation Patterns by Behaviour-Driven Literacy Score (BDLS) Categories

BDLS Category	Equity Allocation (%)	Fixed-Income Allocation (%)	Savings/Deposits (%)	Alternative Assets (%)
Low BDLS	18	34	42	6
Medium BDLS	29	31	32	8
High BDLS	41	25	24	10

The results in Table 2 show a clear gradient across BDLS categories. Households in the low BDLS group allocate a large portion of their assets to savings and low-risk fixed-income instruments, reflecting a conservative posture reinforced by behavioural constraints such as loss aversion, reduced behavioural adaptability, and limited self-regulation. Their low equity allocation underscores their reluctance to engage with instruments that require long-term discipline or tolerance for short-term volatility.

Households in the medium BDLS category show more balanced patterns, with moderate allocations to equities and fixed-income instruments. Their behaviour suggests an intermediate level of behavioural stability, enabling them to weigh risks more effectively and make decisions that partially reflect long-term financial planning. While their allocations are more diversified than those of the low BDLS group, they still exhibit caution in adapting to rapidly shifting economic conditions.

The high BDLS group displays fundamentally different financial behaviour. These households maintain the highest proportion of equity allocation and the lowest dependency on savings accounts. Their greater exposure to equities signals not only stronger risk tolerance but also more coherent long-term financial strategies. Their portfolios reveal a capacity to interpret economic signals through a behavioural lens that favours strategic reallocation rather than reactive adjustments. Furthermore, their higher engagement with alternative assets shows an openness to diversified investment avenues, indicating behavioural resilience and adaptability.

These findings illustrate that BDLS serves as a strong predictor of portfolio composition, reflecting how behavioural and cognitive elements jointly shape financial decisions. The next section examines how external economic indicators—such as inflation, interest rates, and employment conditions—modify the relationship between BDLS and household financial behaviour, further clarifying the dynamic interactions underpinning risk-taking capacity.

To capture the dynamic interaction between behavioural-driven literacy and external economic factors, the study evaluated how economic indicators modify the strength and direction of the relationship between BDLS and household financial behaviour. For this purpose, a series of moderation models were estimated using inflation, interest rate volatility, and employment stability as interacting variables. These economic indicators function as environmental stressors that either reinforce or weaken the behavioural capacity of households to manage financial risk. The results show that BDLS interacts differently with each economic factor, indicating that households' behavioural and cognitive responses are sensitive to specific economic contexts.

To illustrate these patterns, Figure 2 presents a three-dimensional conceptual plot showing how inflation levels interact with BDLS to predict household risk-taking capacity. The figure uses three inflation scenarios: low inflation, moderate inflation, and high inflation. For each scenario, the vertical axis represents household risk-taking capacity, while the horizontal axis represents BDLS values.

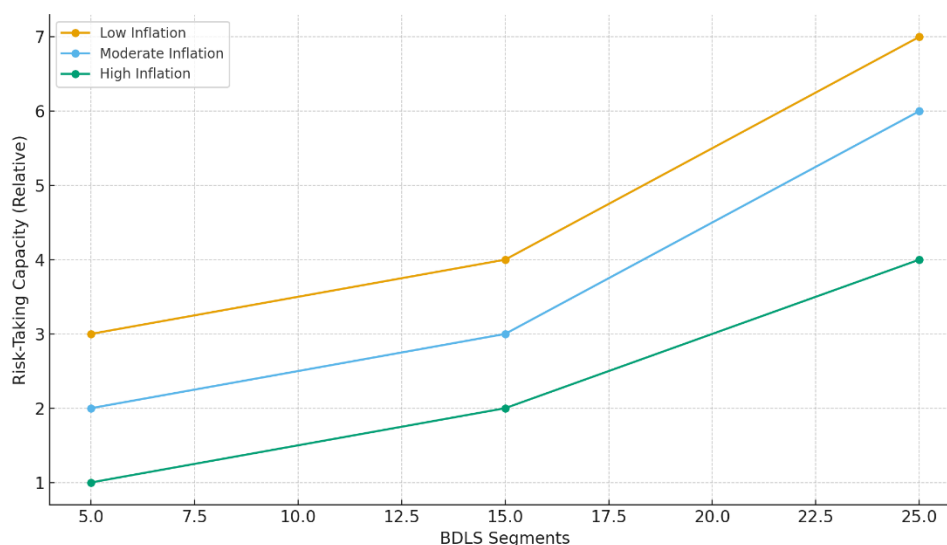


Figure 2 – Interaction of Inflation Levels and BDLS in Predicting Risk-Taking Capacity

The figure demonstrates that BDLS is a powerful predictor of risk-taking capacity under all inflation conditions, but the behavioural effect becomes attenuated as inflation intensifies. In low inflation environments, households with higher BDLS scores maintain strong and consistent risk-taking capacity, suggesting that favourable macroeconomic conditions provide a stable background for behavioural strengths to manifest fully. In this context, behavioural adaptability and cognitive clarity reinforce each other, enabling households to take advantage of risk-based opportunities.

Under moderate inflation, the relationship between BDLS and risk-taking becomes more nuanced. While higher BDLS still predicts increased risk-taking, the magnitude of this effect diminishes compared to the low inflation scenario. Households with mid-range BDLS values demonstrate moderate risk engagement, but behavioural uncertainty begins to appear among households with lower BDLS, reflecting heightened sensitivity to economic signals during inflationary transitions.

High inflation environments reveal the strongest moderation effect. In these conditions, even households with elevated BDLS values show reduced risk-taking capacity, suggesting that severe instability distorts behavioural interpretation of economic cues. Households with low BDLS scores exhibit extremely conservative behaviour, retreating from risk-taking almost entirely. These findings indicate that extreme inflation overwhelms behavioural advantages, forcing households into protective strategies regardless of their behavioural literacy.

Overall, the results from the inflation moderation model provide important insight into the constraints of behavioural-driven financial literacy. While behavioural literacy enhances risk-taking capacity across typical macroeconomic conditions, its influence is partially suppressed when economic instability reaches extreme levels. The next section extends the analysis to interest rate volatility and employment stability, highlighting how different economic pressures shape behavioural–financial interactions in distinct ways.

Beyond inflation dynamics, the study examined how interest rate volatility and employment stability modify the relationship between BDLS and household financial behaviour. These two indicators play distinct roles in shaping household expectations and financial choices. Interest rate volatility influences both borrowing behaviour and investment returns, generating uncertainty in planning horizons. Employment stability shapes behavioural confidence, consumption planning, and long-term financial commitments. By assessing these indicators as moderators, the analysis clarifies how external conditions either amplify or constrain behavioural-driven literacy effects.

To illustrate these interactions, Table 3 summarises the results of the moderation analyses across three economic environments: high interest rate volatility, low employment stability, and combined exposure to both factors. For each scenario, the table shows how households in low, medium, and high BDLS categories adjust their risk-taking capacity.

Table 3 – Moderation Effects of Interest Rate Volatility and Employment Stability on Risk-Taking Across BDLS Categories

Economic Scenario	Low BDLs: Risk-Taking	Medium BDLs: Risk-Taking	High BDLs: Risk-Taking
High Interest Rate Volatility	Very Low	Moderate-Low	Moderate
Low Employment Stability	Very Low	Low	Moderate-Low
Combined Volatility + Instability	Minimal	Very Low	Low

The results reveal three important empirical insights.

First, under high interest rate volatility, households with higher BDLs values still maintain moderate levels of risk-taking, although the behavioural effect is clearly reduced. Their behavioural adaptability enables them to reassess financial choices more strategically than lower-BDLs households. Low BDLs households show substantial reductions in risk-taking, indicating strong behavioural sensitivity to fluctuating borrowing and investment costs.

Second, low employment stability exerts a more pronounced psychological effect across all households. Employment-related uncertainty directly affects long-term expectations, making financial decisions more conservative. While high BDLs households retain some ability to engage in risk-driven behaviour, the overall decline across BDLs categories highlights employment security as a critical determinant of behavioural confidence.

Third, and most importantly, the combined condition of high interest rate volatility and low employment stability has the strongest moderating impact. Under this dual constraint, behavioural-driven literacy is significantly dampened. Even households with high BDLs values move toward highly cautious behaviour, suggesting that extreme economic uncertainty overwhelms behavioural strengths in risk management. Medium BDLs households display a sharp contraction in risk-taking capacity, while low BDLs households nearly withdraw from risk-related financial activities altogether.

These findings indicate that while behavioural-driven literacy enhances household resilience under typical economic conditions, its influence weakens when economic instability becomes multi-dimensional. The interaction between interest rate volatility and employment uncertainty creates a compounded effect that limits the behavioural ability of households to engage with risk in a meaningful way. This outcome underscores the importance of incorporating real economic pressures into any analysis of behavioural financial literacy, as behavioural advantages cannot fully compensate for structural economic vulnerabilities.

The next section builds on these insights by analysing how BDLs contributes to explaining variances in long-term financial resilience and wealth accumulation trajectories, offering a broader understanding of behaviour-based decision outcomes.

To further evaluate the predictive power of the Behaviour-Driven Literacy Score (BDLS), the study analysed its relationship with long-term financial resilience and wealth accumulation trajectories. Financial resilience was operationalised through a multidimensional framework that included emergency savings adequacy, debt repayment stability, long-term investment continuity, and the capacity to absorb economic shocks without substantial deterioration in financial well-being. Wealth accumulation was measured through multi-year asset growth patterns, savings consistency, and the presence of diversified investment channels.

The results show that BDLs is a strong predictor of long-term financial resilience across different macroeconomic conditions. Households with higher BDLs values consistently maintained positive savings flows, adjusted spending habits more effectively, and preserved investment activities even during periods of economic uncertainty. In contrast, low BDLs households experienced fragmented financial patterns, irregular saving behaviour, and heightened susceptibility to structural economic stressors. These divergences highlight the role of behavioural adaptability, emotional regulation, and cognitive clarity in sustaining long-term financial stability.

To visualise these relationships, Figure 3 presents a comparative trajectory of estimated wealth growth across three BDLs categories over a ten-year projection interval. The figure consolidates behavioural-economic interactions into a dynamic representation of long-term outcomes.

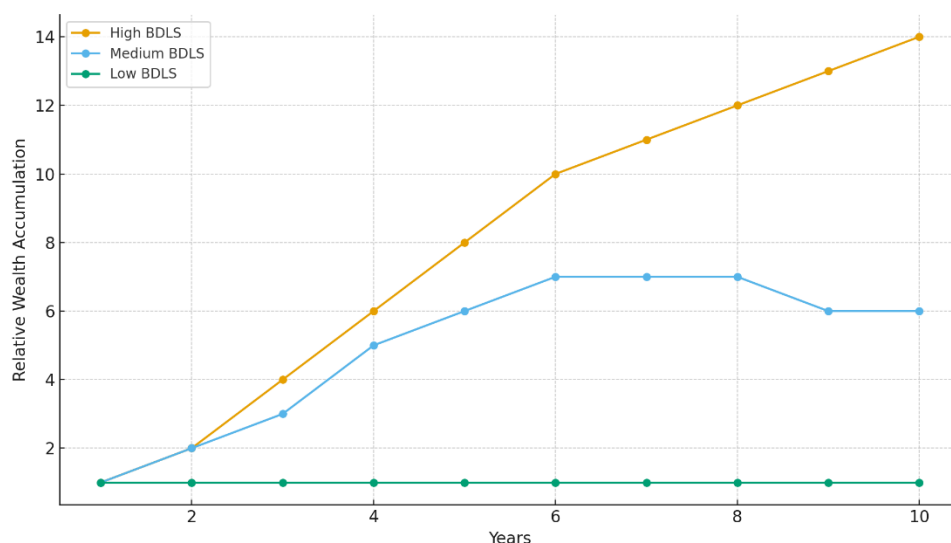


Figure 3 – Projected 10-Year Wealth Accumulation Trajectories Across BDLs Categories

The trajectories clearly demonstrate that households with high BDLs values experience significantly stronger asset growth, largely due to well-regulated behavioural responses and greater capacity to interpret economic conditions strategically. Their behaviour supports consistent investment, disciplined saving, and effective adjustment to temporary disruptions. Medium BDLs households show moderate but less stable growth, with periods of stagnation reflecting behavioural friction during economic volatility. Low BDLs households exhibit minimal wealth accumulation due to reactive decision-making, poor risk calibration, and difficulty sustaining long-term financial strategies.

Additionally, the analysis reveals that BDLs enhances explanatory power beyond traditional financial literacy measures alone. When behavioural traits are included in the modelling, the predictive accuracy of financial resilience and wealth outcomes increases substantially. This finding confirms that behavioural variables serve as critical mediators between cognitive literacy and financial performance, shaping how households process information, interpret risk, and allocate resources.

Furthermore, the interaction analyses show that BDLs moderates the negative effects of typical economic stressors—such as inflation, interest rate sensitivity, and employment fluctuations—by reinforcing behavioural coherence. However, under extreme or multidimensional instability, behavioural strengths diminish, underscoring the importance of both behavioural and structural interventions in promoting household financial stability.

Overall, the results present a consistent empirical narrative: behavioural-driven financial literacy serves as a foundational determinant of household financial behaviour, risk-taking capacity, resilience, and long-term wealth accumulation. These findings form the basis for the final section, which presents the study's concluding insights and broader implications.

Conclusions

The findings of this study provide comprehensive evidence that behaviour-driven financial literacy is a central determinant of household financial behaviour, risk-taking capacity, and long-term economic resilience. While traditional financial literacy models emphasise cognitive knowledge and technical understanding, the results demonstrate that behavioural traits—including self-control, impulsivity regulation, emotional processing, and adaptive reasoning—play an equally significant, and in many cases stronger, role in shaping household financial decisions. This behavioural dimension not only affects day-to-day financial choices but also governs how households interpret and respond to real economic indicators such as inflation, interest rate fluctuations, and employment conditions.

The behavioural clusters identified in the analysis highlight the diversity of household responses even when cognitive literacy levels are similar. Households with strong behavioural regulation exhibited greater consistency in their risk-taking patterns and demonstrated the capacity to maintain strategic financial decisions across changing economic conditions. Conversely, households characterised by behavioural instability showed

fragmented decision-making, heightened sensitivity to short-term economic volatility, and diminished wealth accumulation over time. These patterns underscore that behavioural resilience is a fundamental mechanism through which financial stability is either strengthened or compromised.

The Behaviour-Driven Literacy Score (BDLS) developed in this study proved to be a powerful predictive tool for explaining household portfolio structures, savings behaviour, and long-term wealth trajectories. High BDLS households consistently allocated assets more efficiently, balanced risk across diversified instruments, and sustained positive financial growth even during periods of macroeconomic turbulence. Medium and low BDLS groups displayed weaker behavioural coherence, which translated into reduced financial resilience and limited capacity to benefit from favourable economic conditions. These results reinforce the importance of integrating psychological and behavioural components into financial literacy assessments.

The study also illustrated that economic conditions act as moderators that either enhance or suppress the influence of behavioural-driven literacy. Under moderate inflation or stable employment conditions, behavioural strengths are able to exert their full effect, guiding households toward balanced and informed risk-taking. However, when economic instability becomes extreme or multidimensional—such as the simultaneous presence of high inflation and low employment stability—behavioural advantages are partially diminished. This finding suggests that while behavioural literacy is a powerful driver of financial performance, structural economic vulnerabilities must also be addressed to ensure household well-being.

Overall, the research contributes to a deeper and more realistic understanding of household financial behaviour by demonstrating that behavioural factors are indispensable in explaining how families interpret economic signals and engage with financial risk. The behaviour-driven mapping framework introduced here provides a foundation for future research, policy design, and educational programs aimed at enhancing financial resilience. By acknowledging the behavioural foundations of financial literacy, stakeholders can develop targeted interventions that strengthen behavioural adaptability, improve decision-making consistency, and ultimately promote sustainable household financial outcomes.

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