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"Measuring Household Financial Behaviour Through Item Response Theory: A Conceptual Framework For Wealth Creation"

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ABSTRACT

For Individuals and families, managing income, saving, investment, risk and accumulation of wealth in effective and efficient way is necessary for sound financial wellbeing. In this household financial behaviour plays an important role. Although financial behaviour is widely discussed in Behavioural finance or consumer finance, it can be measured using simple scores or self-reported indicators that may not adequately distinguish between individuals with different levels of underlying financial capability and behavioural consistency. Here Item Response Theory (IRT) play a role, in this paper the IRT has been used as a measurement framework for a developing a more precise latent measure of household financial behaviour and linking that measure to wealth creation. Life cycle hypothesis and behavioural Life-Cycle Hypothesis have been used to integrate Item Response Theory (IRT). The Life-Cycle Hypothesis provides the economic explanation for saving and asset accumulation over time, while the Behavioural Life-Cycle Hypothesis explains the roles of self-control, mental accounting and behavioural constraints in financial decisions. IRT provide the basis for measurement by explaining how individual financial behaviour can be represented as an underlying latent trait. The Life-Cycle Hypothesis provides the economic explanation for saving and asset accumulation over time, while the Behavioural Life-Cycle Hypothesis explains the roles of self-control, mental accounting and behavioural constraints in financial decisions. The framework shows how financial literacy, saving behaviour, investment planning, financial discipline and financial risk management as indicator of latent financial behaviour.

Keywords: Financial behaviour; Item Response Theory; household wealth; wealth creation; Life-Cycle Hypothesis; Behavioural Life-Cycle Hypothesis; financial literacy.

1. INTRODUCTION

Household financial decision is gaining importance in environment characterized by changing employment conditions, financial product complexity, inflation and responsibility for long-term financial security. Households are continuously engaged in making decision about consumption, saving, investment, borrowing, insurance and risk management. The decision are essential to meet current need while on the other hand building financial resources for future objective. On the other hand, financial behaviour is not about only gaining financial knowledge, it also concerns how knowledge is translated into regular and disciplined financial actions.

Financial behaviour is a multidimensional concept, where Individual who possess financial knowledge may fail to save regularly, plan investment or manage financial risks effectively. Conversely, some individuals may demonstrate disciplined saving and investment practices despite having only moderate formal financial knowledge. This distinction creates an important measurement problem. If financial behaviour is treated as simply as a total score obtained by adding response to several questions, all items are assumed to contribute equally to the construct.

Item Response Theory (IRT) provides an alternative measurement perspective. IRT is a family of mathematical models used to connect an individual's response to an item with

an underlying latent trait. In the present context, the latent trait may be conceptualised as the level of household financial behaviour. Different financial behaviour items can vary in their ability to distinguish between households and in the level of financial behaviour required for a particular response.

Measurement alone, however, does not explain why financial behaviour should influence wealth creation. For this purpose, the present paper draws on two complementary economic and behavioural perspectives. The Life-Cycle Hypothesis developed by Modigliani and Brumberg (1954) explains saving and consumption in relation to individuals' expected lifetime resources and suggests that accumulation and dissaving are linked to different stages of life. The Behavioural Life-Cycle Hypothesis proposed by Shefrin and Thaler (1988) extends the life-cycle perspective by incorporating behavioural factors such as self-control, mental accounting and the tendency to divide resources into different psychological accounts.

The purpose of this conceptual paper is therefore to integrate IRT with these theoretical perspectives and propose a framework explaining how household financial behaviour can be measured and conceptually connected to wealth creation. The paper does not present hypotheses, collect primary data or report empirical findings. Instead, it develops a theoretically grounded framework that can guide future empirical research.

1.2 Conceptual Understanding of Household Financial behaviour

Financial behaviour refers to the measured actions through which individuals and household manage their financial resources. It includes decision about saving, spending, investing, borrowing, and protection against financial risk associated with the investment. Xiao (2008) argues that financial behaviour can be understood through established behavioural theories, it provides how individuals make and implement financial decision. From the preview of household context, financial behaviour can be shown through several interconnected dimensions.

1.2.1 Financial Literacy

Financial literacy shows the knowledge and understanding which are required to make informed financial decisions. It includes several factors such as Interest, inflation, risk diversification, borrowing cost, various investment product for the investment options and the risk-return analysis. Lusardi and Mitchell (2014) demonstrate the economic importance of financial literacy and its relationship with financial decision-making. In this paper, financial literacy is used as a observable component of broader financial behaviour rather than a complete substitute for a behaviour itself.

1.2.2 Investment Planning

Investment planning refers to process of setting financial objective, selecting suitable assets, considering time horizons and balancing expected returns against risk. It requires household to current financial resources with longer-term goals such as education, retirement and assets accumulation. It provides a mechanism through which savings may be transformed into productive assets.

1.2.3 Saving Behaviour

Saving behaviour shows the diversification of current income towards future needs. It includes the knowledge and ability to maintain savings, establish financial goals, prepare for unexpected expenses and postpone some current consumption. Consistent saving creates the initial financial base from which households can accumulate assets. From a life-cycle perspective, saving allows households to transfer resources across periods of their lives.

1.2.4 Financial Discipline

Financial discipline refers to the consistency in savings and investment of the following plans and controlling unnecessary expenditure. It includes budgeting, monitoring expenses, maintaining regular savings and avoiding impulsive financial decisions. This dimension is particularly relevant to the Behavioural Life-Cycle Hypothesis because behavioural constraints can create differences between an individual's intentions and actual financial actions.

1.2.5 Financial Risk management

Financial risk management involves identifying and preparing for expected financial risks and shocks. It includes preparing for emergency resources, obtaining appropriate insurance, diversifying portfolio and managing debt responsibly. Effective risk management can protect accumulated resources and increase financial resilience, thereby supporting the preservation as well as creation of household wealth.

1.2.6. Item response Theory as a Measurement Framework

Item Response Theory provides a latent-trait approach to measurement. Instead of making assumption about every question contributes equally to an overall score, IRT estimates relationship between a person's underlying level of a trait and the probability of providing a particular response to an item. Embretson and Reise (2000) describe IRT as a framework in which item characteristics and person characteristics are modelled simultaneously. This makes IRT particularly useful when a construct is not directly observable but is reflected through multiple indicators.

For financial behaviour, the latent trait can be represented as θ (theta). Observable items may assess behaviours such as budgeting, regular saving, comparison of financial products, investment planning, debt management and preparation for unexpected financial needs. A commonly used two-parameter logistic model can be expressed as:

$$P(X_i = 1 \mid \theta) = 1 / [1 + \exp(-a_i(\theta - b_i))]$$

where θ represents the respondent's latent financial behaviour; a_i represents the discrimination parameter of item i; and b_i represents the item location or difficulty parameter.

The discrimination parameter shows how effectively an item differs from households with different levels of the latent trait. The difficulty or location parameter indicates the level of the latent trait associated with a particular probability of endorsing an item. In application of financial behaviour, maintaining items like simply monthly budget may be endorsed at a relatively lower level of financial behaviour, which some item involve systematic diversification of risk or comprehensive retirement planning may require a higher level of financial behaviour. The difference can be captured using IRT rather treating them equally informative. IRT is a measurement framework, rather than not a theory explaining wealth creation.

1.3. Theoretical Foundations

Item Response theory

IRT provides the measurement foundation of the framework. It is assumed in IRT that, Responses to observable items are related to an underlying latent characteristic. The financial behaviour of individual is difficult to observe directly because it is combines of multiple decisions and practice. IRT allows these observable indicators to be interpreted as manifestations of a latent level of behaviour. This is useful for conceptualising financial behaviour as a continuum rather than as a simple categorical condition such as financially responsible or financially irresponsible.

Life-Cycle Hypothesis

The Life-Cycle Hypothesis of Modigliani and Brumberg (1954) provides the economic foundation for the relationship between financial behaviour and wealth creation. The theory proposes that individuals consider resources over their lifetime when making decision about their consumption and saving decisions. During working years of individuals, they may accumulate assets over a period of time, and while later they man withdraw the accumulated resources during its needs such as economic shocks.

Applied to household wealth, the Life-Cycle Hypothesis suggests that current financial decisions influence the distribution of resources between present consumption and future financial security. Household that regularly invest in resources towards saving and productive assets can build financial resources over time.

Behavioural Life-Cycle hypothesis

It is developed in the year 1988 by Shefrin and Thaler. It strengthens the conventional life-Cycle perspective by recognizing behavioural limitations. Individuals may face self-control problems, mental accounting and differences between immediate consumption preference and long-term financial objective. It also emphasizes on the role of self-control in economic decision-making.

This theory is important for financial behaviour because financial knowledge alone cannot ensure disciplined action. Households may have understood the importance of saving alone but channelising the saving is difficult because they consume available income because immediate needs or psychological preference dominate long-term objective.

1.4 Proposed conceptual framework

Household financial behaviour has been placed as important dimensions for the centre of analysis. The construct is represented through five dimensions: financial literacy, saving behaviour, investment planning, financial discipline and financial risk management. These dimensions are observable for a broader latent financial behaviour trait. IRT is proposed as the measurement mechanism through which item responses can be used to estimate this latent trait.

FINANCIAL BEHAVIOUR

Financial Literacy // Saving Behaviour // Investment Planning

Financial Discipline // Financial Risk Management

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IRT-Based Latent Trait (θ)

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Financial Decision Quality

↓

Asset Accumulation

↓

WEALTH CREATION

Long-Term Wealth // Retirement Preparedness // Financial Resilience

For a effective financial decision, A stronger latent financial behaviour need to be associated with the framework proposed. These decisions can support regular saving, productive asset allocation and protection against financial losses. Over time, these processes contribute to wealth creation. The final outcomes include long-term wealth accumulation, retirement preparedness and financial resilience. The framework has been made non-causal at this conceptual stage; where it has identified a theoretically justified pathways that can subsequently by examined through empirical research.

2. METHODOLOGICAL APPROACH FOR A CONCEPTUAL DEVELOPMENT

This paper is based on conceptual research design based on theoretical synthesis. The approach doesn't have used or involve primary data collection, respondents, sampling or statistical hypothesis testing. Instead, the framework is developed using established theories and concepts relevant to financial behaviour, measurement and wealth accumulation. IRT literature has provided the measurement foundation whereas the life cycle hypothesis and behavioural life-cycle hypothesis provide the economic and behavioural foundations.

This approach helps in guide future empirical research in two stages. First, researchers may develop and validate a multidimensional financial behaviour item pool and estimate its latent structure using appropriate IRT models. Second, the resulting latent financial behaviour measure may be examined in relation to household financial

outcomes, including asset accumulation, retirement preparedness and financial resilience. Such future work could compare the explanatory usefulness of IRT-based measures with conventional financial behaviour scores.

3. DISCUSSION

3.1 Theoretical and Practical Implications

The paper uses established economic and behavioural theories for theoretical contributions for connecting measurement theories. Financial behaviour research frequently focuses on associations between financial knowledge, attitudes and outcomes. The paper shows that behavioural construct should be estimated by keeping the view of the characteristics of individual items. Thus, helps to improve conceptual clarity regarding what it means for one household to demonstrate a higher level of financial behaviour than another.

Its practical implication shows that the different measures of financial behaviour to identify areas in which households need support by financial educators and financial institutions. The measurement system could identify whether a household's main weakness concerns saving, planning, discipline or risk management. These information helps to design financial education and household financial resilience by policymakers. These applications remain propositions of the conceptual framework and require empirical validation before implementation.

3.2 Limitations and Future Research

This paper is conceptual in nature and therefore does not empirically estimate an Item Response Theory (IRT) model or examine the proposed relationship between financial behaviour and wealth creation using primary data. Another limitation is that some dimensions of financial behaviour may overlap with each other. For example, saving behaviour and financial discipline may be closely related. Therefore, future research will need to carefully develop and validate the items used to measure each dimension. Moreover, household wealth is shaped by several factors beyond individual financial behaviour, including income, employment, inheritance, housing conditions and broader economic circumstances. Thus, financial behaviour alone cannot fully explain differences in household wealth.

Future studies can build on this framework by developing and validating a multidimensional IRT-based scale for measuring household financial behaviour. IRT can help researchers identify which items are better at distinguishing between households with different levels of financial behaviour and determine how informative individual items are across the underlying behavioural continuum. Once a reliable scale is developed, researchers can examine whether it explains differences in wealth-related outcomes more effectively than traditional financial behaviour measures. Longitudinal studies would also be useful because wealth accumulation is a gradual process and the effects of financial behaviour may become more visible over an extended period.

3.3 Conclusion

This conceptual paper develops a framework for understanding household financial behaviour and its possible relationship with wealth creation. A key contribution of the paper is the integration of Item Response Theory (IRT) as a measurement approach with the Life-Cycle Hypothesis (LCH) and Behavioural Life-Cycle Hypothesis (BLCH) as theoretical foundations. IRT provides a useful way of viewing financial behaviour as an underlying or latent characteristic that can be measured through observable financial decisions and practices.

The framework identifies financial literacy, saving behaviour, investment planning, financial discipline and financial risk management as important dimensions of household financial behaviour. These dimensions are expected to influence how households make financial decisions, manage their resources and accumulate assets over time. In turn, better financial practices may contribute to outcomes such as long-term wealth accumulation, retirement preparedness and financial resilience.

However, the framework does not suggest that financial behaviour is the sole explanation for household wealth. Wealth is also influenced by economic and structural conditions, including income, employment opportunities, inheritance and asset prices. Rather, the paper highlights financial behaviour as one important mechanism through which households can manage their available resources and work towards long-term financial goals.

By combining a theory-based explanation of household financial decisions with an IRT-based approach to measurement, the paper provides a foundation for future empirical research. The proposed framework can support the development of a more reliable measure of household financial behaviour and encourage further research into how differences in financial behaviour are associated with differences in household wealth over time.

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