



Economic Uncertainty and Precautionary Paradox: An Empirical Investigation of Household Income Risk, Inflation Sensitivity, and Liquidity Constraints in Siliguri, India

Shomnath DUTTA

International School of Business & Media (ISB&M), Kolkata, West Bengal; India

e-mail: shomnath76@gmail.com

ORCID iD: 0000-0001-7978-9515

Abstract. This study analyses how economic uncertainty, inflation expectations, and macroeconomic sentiment affect household consumption of durable and non-durable goods, as well as precautionary saving behaviour in Siliguri, a key commercial hub of North Bengal. Using primary survey data, the research applies specialized composite metrics like the Economic Uncertainty Index, risk-adjusted vulnerability, or inflationary pressure sensitivity to analyse the role of various relevant economic factors in shaping monthly savings rates and income buffers through the lens of buffer-stock and liquidity constraint theories. The Economic Uncertainty Index was developed by combining job risk, income stability, price-rise expectations, macroeconomic confidence, social capital, and liquidity constraints to better capture household risk-coping behaviour. The findings reveal a precautionary paradox in Siliguri, where households increase spending instead of saving when economic uncertainty rises. This occurs because families prioritize essential goods and hedge against rising prices, even when they have limited access to credit. The results show that income levels and inflation expectations influence financial decisions more strongly than perceived job risk or vulnerability and credit access, suggesting that demand-focused fiscal policies remain effective in urban economies like Siliguri despite high levels of uncertainty.

Keywords: Economic Uncertainty Index, risk-adjusted vulnerability, inflationary pressure sensitivity, local multiplier impact, precautionary paradox

JEL Classification: D12, D91, E21

1. Introduction

For policymakers, understanding the household saving behaviour of economies exposed to frequent income shocks and price volatility is crucial because it determines whether government stimulus actually boosts the economy or is lost to “precautionary savings” due to its direct implications for macroeconomic stability, fiscal multiplier effectiveness, and the design of demand-oriented policies. While classical theories focus on income levels, modern economic theory has recognized that uncertainty and risk perceptions, specifically the precautionary saving motive, can significantly weaken the effectiveness of fiscal policy multipliers (Carroll, 2009; Carroll and Kimball, 1996; Leland, 1968). When households reduce current consumption to build financial buffers against future risks, the intended impacts of government spending, credit expansion, multiplier-driven fiscal policy, and inflation management policies may get diminished depending on their behavioural responses (Carroll, 1997).

This policy challenge is particularly acute in strategic regional urban hubs like Siliguri, where the economy relies on volatile labour markets, informal insurance systems, and liquidity constraints across tourism, trade, and transport sectors. Siliguri was specifically chosen for this study due to its status as a strategic commercial transit point within the Siliguri Corridor, often referred to as the “Chicken’s Neck” and the gateway to Northeast India and a hub for international trade with Nepal, Bhutan, and Bangladesh (Ghising, 2025; Ghosh, 2018). Apart from being highly sensitive to regional instability and logistics costs, in this tier-2 city,¹ the transition from informal to formal credit markets is incomplete, often leading to “forced thrift”, where households save due to liquidity constraints rather than genuine wealth accumulation. This research investigates how income uncertainty, inflation expectations, and social capital jointly dictate these saving patterns.

This study examines whether liquidity constraints induce “forced thrift” and therefore outweigh genuine wealth-based precautionary saving. By employing specialized metrics like Economic Uncertainty Index (EUI) and Inflationary Pressure Sensitivity (IPS), this study examines how rising costs for food and luxury goods unevenly tighten expenditure budgets across different income groups (Gouel and Guimbard, 2019). Moving beyond standard macroeconomic models that assume a uniform propensity to consume, this paper has used composite indices of economic uncertainty and inflation fear, combined with flow-based (monthly savings rate) and stock-based (income buffer) measures, and highlights

1 Indian urban centres, cities are classified in a tiered fashion as per population size, economic activity, infrastructure, and cost of living (Supply, Roads & Lighting, 2011), and the Government of India uses this tiered approach to determine house rent allowance (HRA) for government employees and devising business expansion strategies and urban development policies (Invest UP, 2023; Reserve Bank of India, 2014).

how risk perceptions and financial frictions reshape local behaviour (Deaton, 1989; Zeldes, 1989). Ultimately, these empirical insights are vital for designing demand-oriented policies that remain effective even during periods of high price volatility and economic instability.

The remainder of this paper is organized into seven sections. *Section 2* reviews the *literature* on precautionary saving, consumption under uncertainty, liquidity constraints, and inflation expectations. *Section 3* identifies the *research gaps* and presents the *study's objectives* and *hypotheses*, followed by the *conceptual framework* and *analytical design roadmap*. *Section 4* describes the *data and methodology*, including the research approach, sampling design, construction of composite metrics, and the analytical tools employed. *Section 5* presents the *empirical results and discussions* in a structured sequence. Section 5.1 outlines the socio-economic profile of the study population. Section 5.2 establishes the precautionary paradox in consumption behaviour using conceptual reasoning and multivariate evidence. Section 5.3 examines the income–savings relationship under liquidity constraints through a moderation framework and identifies the determinants of household savings rates. Section 5.4 evaluates group-level heterogeneity in Marginal Propensity to Consume (MPC) across uncertainty levels and employment types. Section 5.5 addresses endogeneity between precautionary savings and consumer sentiment using a two-stage causal framework, while Section 5.6 integrates objectives, hypotheses, and empirical findings. *Section 6* discusses the broader *theoretical and policy implications*, and *Section 7* concludes with key insights for regional economic stability and discusses the limitations of the study.

2. Literature Review

The relationship between income and consumption originates from Keynes (1937), who argued that consumption increases with income, but at a decreasing rate, forming the basis of the MPC. The life-cycle and permanent income hypotheses later suggested that households' smooth consumption is based on expected lifetime income (Modigliani, 1986). However, empirical evidence, particularly from developing economies, shows that consumption reacts strongly to current income shocks, indicating excess sensitivity due to income risk and limited credit access.

The Buffer-Stock Saving Model explains that households hold target savings to protect against uncertain income (Carroll, 1997). When risk rises, precautionary savings increase and MPC falls. Liquidity constraints reinforce this behaviour, as credit-constrained households depend on self-insurance (Deaton, 1989; Zeldes, 1989). Post-COVID evidence confirms that uncertainty significantly affects consumption, especially among financially vulnerable groups (Baker et al., 2020; Coibion, Gorodnichenko and Weber, 2025). Similar patterns are observed in

emerging economies facing labour instability (Kansiime et al., 2021; Mahmud and Riley, 2021).

Recent studies show that inflation and policy uncertainty strongly shape expectations and spending. Higher inflation uncertainty reduces spending (Kostyshyna and Petersen, 2024), while lower-income households are more sensitive to food price volatility (Armantier et al., 2022; D’Acunto, Malmendier, and Weber, 2023). Inflation expectations often remain above the actual inflation (D’Acunto et al., 2025). In India, economic policy uncertainty influences inflation expectations and precautionary savings (Rooj, Banerjee, and Sengupta, 2025), and liquidity constraints in smaller cities create “forced thrift” (Tyagi et al., 2024). Although uncertainty usually reduces consumption (Nam, Le, and Jeon, 2021), inflation fear may increase essential spending in constrained settings. This mixed evidence motivates testing the “precautionary paradox” in Siliguri.

3. Research Gaps, Objectives, and Hypotheses

3.1. Research Gaps

Existing literature on precautionary saving and uncertainty has largely focused on advanced economies and macro-level aggregates, leaving limited micro-level evidence from *emerging Tier-2 urban settings* like Siliguri, where liquidity constraints, informal employment, and inflation sensitivity interact simultaneously. Moreover, prior studies rarely reconcile the apparent contradiction between the *precautionary saving hypothesis* and the emerging *precautionary paradox* in consumption behaviour under uncertainty. The moderating role of *credit constraints* in shaping the income–savings transmission mechanism also remains underexplored in small-city contexts. Finally, few studies empirically identify the *causal pathway linking uncertainty, savings, and consumer sentiment* using instrumental variable strategies at the household level.

3.2. Research Objectives

In order to address the above mentioned gaps, the present study investigates *how economic uncertainty and inflation sensitivity influence consumption behaviour*, evaluates *heterogeneity in marginal propensity to consume across employment and uncertainty groups*, estimates the *moderated income–savings relationship under liquidity constraints*, identifies the *key determinants of household savings rate*, and establishes the *causal transmission mechanism between precautionary savings and consumer sentiment* in an emerging urban economy such as that of Siliguri.

3.3. Research Hypotheses

Based on the theoretical framework and the context of economic uncertainty in Siliguri's environment, the following testable hypotheses are formulated:

H1: Economic uncertainty significantly reduces MPC.

H2: IPS significantly increases current consumption propensity.

H3: Financial vulnerability significantly affects MPC.

H4: MPC remains stable across varying levels of economic uncertainty.

H5: There is no significant difference in MPC between salaried and non-salaried households.

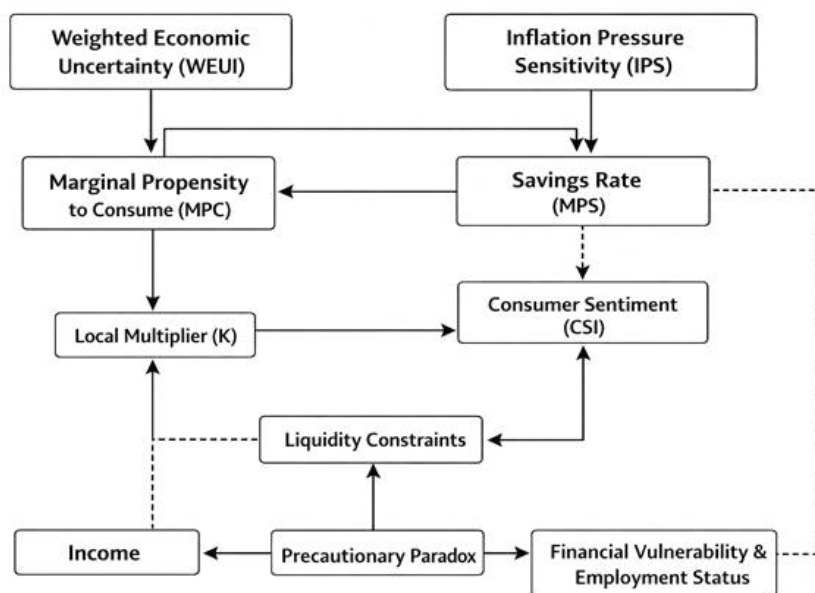
H6: Income positively affects savings rate (Marginal Propensity to Save).

H7: Liquidity constraints weaken the conversion of additional income into savings.

H8: Higher economic uncertainty and inflation fear reduce the overall household savings rate.

H9: Uncertainty-driven precautionary savings exert a negative causal effect on consumer sentiment.

3.4. Conceptual Framework and Analytical Design Roadmap



Source: author's compilation

Figure 1. Conceptual transmission mechanism

Figure 1 presents the conceptual framework guiding the empirical strategy. The framework integrates economic uncertainty, inflation sensitivity, liquidity constraints, and income dynamics into a unified household decision model in the perspective of Siliguri sub-divisional town of West Bengal, India. The framework illustrates both the direct consumption channel (uncertainty influencing MPC) and the indirect precautionary channel (uncertainty increasing savings, which subsequently dampens consumer sentiment). Liquidity constraints moderate the income–savings relationship, while inflation sensitivity and structural household characteristics influence both consumption and saving decisions.

4. Data and Methodology

4.1. Research Approach and Sampling Design

This study adopts an empirical, quantitative research design to analyse household consumption dynamics in Siliguri. A cross-sectional survey was conducted using a stratified random sampling design with a total of 300 households, using Cochran's (1977) formula with at least one earning member, 95% confidence level and a margin of error of 5.6% surveyed across 47 municipal wards of Siliguri (see *Appendix: Study Area Map*), classified into high-density commercial, medium residential, and peripheral/mixed-use categories based on land-use patterns and population density to ensure that the unique economic volatility of this regional trade hub was accurately captured. This size is statistically sufficient for the planned multivariate regression analysis, exceeding the minimum requirements for power suggested by Hair et al. (2018).

Respondents were proportionally allocated across these wards and further stratified by employment categories – Private Salaried, Government/Public Sector Undertaking (PSU) Salaried, Self-employed and Business Owners – based on the city's dominant employment structure as income volatility, which is the core of the Buffer-Stock Theory (Carroll, 1997; Carroll et al., 1992; Mizen, 1994) and which varies significantly across these professional strata. This ensured an adequate representation of formal and informal labour segments relevant for analysing income uncertainty and precautionary saving behaviour.

Data were collected using a structured questionnaire (*Appendix: Questionnaire*) featuring 5-point Likert scales to measure latent constructs such as Weighted Economic Uncertainty Index (WEUI) and IPS. To estimate the MPC, a contingent valuation method was employed, requiring respondents to allocate a hypothetical lump sum of Rs 10,000 between immediate spending and precautionary saving (Keynes, 1937).

4.2. Brief Overview of the Metrics Used

All indices employed in this study were constructed by the author using primary survey data collected in Siliguri. No external composite indices were adopted. Each metric was operationalized through standardized Likert-scale responses and subsequently normalized for empirical analysis.

- (a) *Weighted Economic Uncertainty Index (WEUI)*: The baseline EUI averages perceived job risk, price expectations, and inverted confidence in economic stability. WEUI refines this measure by assigning greater weight to idiosyncratic income risk (job loss), consistent with the precautionary saving theory (Deaton, 1989; Carroll, 1997). It is determined by the following expression:

$$WEUI = \frac{(\text{Weight_JR} \times \text{Job Risk} + \text{Weight_PE} \times \text{Price Exp} + \text{Weight_ECon} \times \text{Econ Confidence})}{\Sigma \text{Weights}}$$

- (b) *Financial Vulnerability Score (FVS)*: This metric captures amplified vulnerability, where uncertainty coincides with weak informal support networks and is calculated by the following:

$$FVS = WEUI \times (6 - \text{Social Capital})^2$$

- (c) *Inflation Fear Index (IFI)*: IFI is a composite measure combining necessity and discretionary price risk expectations for differentiating between necessity inflation and discretionary inflation and thereby reflecting differential welfare exposure to food price volatility (Shiller, 1981; Gouel and Guimbard, 2019). It is given by the expression below:

$$IFI = \left(\frac{\text{Expected Food Price} + \text{Expected Luxury Price items}}{2} \right)$$

- (d) *Real Risk Exposure (RRE)*: This metric is basically an interaction term that demonstrates the synergy between an individual's historical income instability (Income Consistency) and their current perception of uncertainty (EUI) for measuring how past income instability intensifies current uncertainty effects (Carroll, 2001, 2009). It is calculated using the following expression:

$$RRE = \text{Income Consistency} \times \text{EUI}$$

² Reverse (Likert) coding applied for social capital to align the directionality of ordinal indicators (Wooldridge, 2010; DeVellis and Thorpe, 2021), where higher original values indicating stronger social capital are transformed into lower vulnerability weights and vice versa.

- (e) *Risk-Adjusted Vulnerability (RAV)*: Replacing the above-stated RRE, this metric proxies buffer-stock saving needs under borrowing constraints (Zeldes, 1989; Deaton, 1989) by identifying households where high uncertainty meets an inability to borrow. It is determined using the following:

$$RAV = WEUI \times (6 - \text{Liquidity Constraints})^3$$

- (f) *Consumption Sentiment Index (CSI)*: It is a composite indicator of current and forward-looking spending intentions about the consumption of durable (cars, home/kitchen appliances) and non-durable (food, utilities) items where spending on durable items is *discretionary* as driven by the wealth effect and on non-durables is *actual behaviour* as driven by daily survival (Deaton, 1992). Here CSI represents the aggregate/general demand propensity or consumption sentiment of the households of Siliguri and is evaluated by the following:

$$CSI = \left(\frac{\text{Spending on Durable Items} + \text{Spending on Non-Durable items}}{2} \right)$$

- (g) *Inflationary Pressure Sensitivity (IPS)*: Derived from Engel's Law, this metric weights inflation fear by income capacity, capturing heterogeneous welfare sensitivity to price shocks (Gouel and Guimbard, 2019). While the IFI measures how much a person thinks prices will rise in the future, the IPS, being a socio-economic construct, measures the impact of that fear based on financial strength. It is calculated using the following expression:

$$IPS = IFI \times \left(1 - \frac{\text{Respondent's current monthly income}}{\text{Highest income recorded in survey sample}} \right)$$

4.3. Brief Overview of Analytical Tools and the Procedure Used

The analytical framework utilizes Multiple Linear Regression (MLR) to test the impact of RAV on MPC. Furthermore, moderation analysis is applied to determine how liquidity constraints influence the savings–income relationship, reflecting the “forced thrift” phenomenon (Zeldes, 1989). Data processing was performed using MS Excel employing Robust Standard Errors to account for heteroscedasticity inherent in cross-sectional household data (Deaton, 1989). Ethical protocols, including informed consent and data anonymity, were strictly maintained during

3 Reverse (Likert) coding applied for liquidity constraints to align the directionality of ordinal indicators (Wooldridge, 2010; DeVellis and Thorpe, 2021), where higher original values indicating better liquidity access are transformed into lower vulnerability weights and vice versa.

the field phase. To address potential endogeneity between savings behaviour and consumption intentions, this study employs a two-stage least squares (2SLS) approach since the relationship between precautionary savings and consumption plans is often plagued by simultaneity bias for income being partitioned into either consumption or savings that are determined concurrently. Financial literacy is utilized as an instrumental variable, as it satisfies the relevance condition by influencing wealth accumulation (Lusardi and Mitchell, 2014) while remaining exogenous to immediate consumption shocks. This methodology allows for a consistent estimation of the causal impact of the precautionary motive on regional aggregate demand in Siliguri.

5. Results and Discussions

5.1. Socioeconomic Profile of the Study Population

The demographic distribution of the respondents in Siliguri (N = 300) reflects a diverse urban landscape characterized by significant representation from the trade and services sectors. As shown in *Table 1*, the sample is primarily composed of business owners (38%) and self-employed individuals (28%), manifesting Siliguri's status as a commercial transit hub where informal and semi-formal employment dominates. Income distribution shows that 45% of households earn above Rs. 60,000 per month, yet a substantial proportion (44%) report facing active liquidity constraints, highlighting a potential gap between nominal wealth and immediate credit access. Geographically, the respondents are well distributed across high-density commercial (35%) and residential wards (40%), ensuring that data capture the varied consumption pressures of the city's urban core.

Table 1. *Socioeconomic profile of respondents of Siliguri*

Variable	Category	n	%
Municipal ward	High-density commercial (15 wards)	105	35.0
	Medium residential (20 wards)	120	40.0
	Peripheral/mixed-use (12 wards)	75	25.0
Employment status	Business owner (trade/tourism)	114	38.0
	Self-employed / gig workers	84	28.0
	Private salaried	66	22.0
	Govt. / PSU salaried	36	12.0
Monthly income	High (> Rs. 60,000)	135	45.0
	Mid (Rs. 25,000–60,000)	90	30.0
	Low (< Rs. 25,000)	75	25.0

Variable	Category	n	%
Liquidity constraint	Yes	132	44.0
	No	168	56.0
Social capital	Available	180	60.0
	Not available	120	40.0
Financial awareness	Yes	165	55.0
	No	135	45.0

Source: author's survey

5.2. Precautionary Paradox in Consumption Behaviour: Conceptual and Multivariate Evidence

This subsection examines whether rising economic uncertainty suppresses or stimulates current consumption. Using non-parametric correlation measures, the analysis evaluates the association between WEUI, IPS, and MPC. The findings of correlation analysis, as presented in *Table 2*, show a strong positive link between WEUI and MPC among households in Siliguri, challenging the traditional precautionary saving hypothesis (Carroll, 1997). Instead of cutting back, households tend to increase current spending during uncertainty. This pattern aligns with inflation-expectation mechanisms (Mishkin, 2007), where expected price rises prompt earlier purchases. The positive association between IPS and MPC indicates that inflation concerns, rather than job insecurity, mainly shape consumption decisions. Consistent with liquidity constraint arguments (Campbell and Mankiw, 1989), constrained households may advance essential spending to preserve real consumption, supporting a precautionary paradox. Thus, hypothesis H1 is rejected and H2 is confirmed.

Table 2. *Correlation between economic uncertainty, inflation sensitivity, and MPC*

Variables	Spearman's ρ (Rho)	Kendall's τ (Tau)	Significance
WEUI – MPC	0.714, $p < 0.001$	0.563, $p < 0.001$	Significant
IPS – MPC	0.173, $p = 0.003$	0.138, $p = 0.001$	Significant

Source: author's compilation

Precautionary Paradox: Multivariate Evidence

A multiple linear regression model was estimated using cross-sectional survey data from 300 households in Siliguri to examine the influence of RAV on households' MPC, controlling for monthly income. While the bivariate findings indicate a positive WEUI–MPC association consistent with a precautionary paradox, according to the findings of *Table 3* below, the baseline multivariate model depicts

that RAV has no significant effect on MPC, whereas monthly income has a strong negative impact, confirming income-constrained consumption. The high intercept suggests subsistence-oriented spending. In the extended model, replacing RAV with the broader FVS and adding employment status reveals that vulnerability significantly raises MPC, while income continues to reduce it; employment security also increases consumption propensity (Han and Kwon, 2020). The improved explanatory power implies that in Siliguri uncertainty influences spending through financial stress and job-linked income security, encouraging present consumption over precautionary saving (Bertolini and Moiso, 2020). In hypothesis validation context, H1 is not supported, but H3, H4, and H5 are supported.

Table 3. *Determinants of MPC: Baseline and extended models (N = 300)*

Variables	Baseline Model	Extended Model
Intercept	0.704*** (0.028)	0.622*** (0.031)
RAV	0.003 (0.003)	—
Financial vulnerability score (FVS)	—	0.016*** (0.004)
Monthly income	-8.35e-07*** (0.001)	-8.73e-07*** (0.001)
Employment status	—	0.0621*** (0.019)
Observations	300	300
R ²	0.660	0.718
Adjusted R ²	0.654	0.709
F-statistic	28.31***	35.72***

Source: author's compilation

Notes: Standard errors in parentheses. *** p < 0.001.

5.3. Income–Savings Relationship under Liquidity Constraints (Moderation and Determinants)

To assess whether the conversion of income into savings varies across households or credit access has any intervening role, a hierarchical regression-based moderation model was employed with marginal propensity to save (MPS) as the dependent variable while monthly income as the primary explanatory variable and liquidity constraint as a moderating factor through an interaction term. The moderation regression results are furnished below in *Table 4*, which shows that monthly income has a positive and significant effect on the marginal propensity to save among households in Siliguri, in line with intertemporal consumption theory (Carroll, 2009; Carroll and Kimball, 2008; Modigliani, 1986). Liquidity constraints also independently increase savings, supporting precautionary self-insurance behaviour (Carroll, 1997). However, the interaction term is negative and significant, indicating that stronger liquidity constraints reduce the ability

of households to convert additional income into savings. This supports liquidity constraint theory (Deaton, 1989; Zeldes, 1989). The model explains substantial variation ($R^2 = 0.633$). Thus, H6 and H7 are supported: income raises savings, but credit constraints weaken this relationship.

Table 4. *Income–savings relationship under liquidity constraints (moderation model)*

Variables	Model (Moderation)
Intercept	0.058 (0.0420)
Monthly income	1.70e−06*** (0.001)
Liquidity constraint	0.063*** (0.012)
Interaction: income × liquidity constraint	−2.50e−07*** (0.002)
Observations	300
R^2	0.633
Adjusted R^2	0.626
F-statistic	30.04***

Source: author's compilation

Notes: Standard errors in parentheses. *** $p < 0.001$.

Determinants of Household Savings Rate: Multivariate Evidence

A multiple regression model was undertaken to identify the strongest drivers of household savings rate, incorporating IPS, RAV, and monthly income as simultaneous predictors. The multivariate regression results displayed in *Table 5* demonstrate that monthly income significantly increases household savings rate, supporting income-based life-cycle predictions. IPS exerts a statistically significant negative effect, indicating that inflation sensitivity erodes effective saving capacity, suggesting that inflation expectations may crowd out real saving capacity (Bachmann et al., 2013). RAV is negative but statistically insignificant, suggesting that vulnerability does not independently determine savings once income and inflation sensitivity are controlled (Lusardi, 2012; Lusardi and Mitchell, 2014). In terms of hypothesis validation, these findings support H6, as income positively influences savings. Hypothesis H8 is supported also since inflation sensitivity significantly reduces savings rates. In contrast, H9 is not supported, as risk-adjusted vulnerability does not exert a statistically significant independent effect in the multivariate specification.

Table 5. *Determinants of household savings rate (multivariate model)*

Variables	Model (Savings Rate)
Intercept	20.254*** (1.607)
Inflationary pressure sensitivity (IPS)	−0.971** (0.469)
Risk-adjusted vulnerability (RAV)	−0.082 (0.073)
Monthly income	0.058** (0.003)
Observations	300
R ²	0.790
Adjusted R ²	0.783
F-statistic	40.29***

*Source: author's compilation*Notes: Standard errors in parentheses. *** $p < 0.001$.

5.4. Assessing Group-Level Heterogeneity in Marginal Propensity to Consume (MPC)

To evaluate whether consumption behaviour varies across structurally distinct household groups, this section examines heterogeneity in the MPC along two dimensions: economic uncertainty (high, low) and employment type (salaried, non-salaried). Group-level comparisons allow the assessment of whether uncertainty exposure or income stability meaningfully alters aggregate consumption responses. This approach strengthens the behavioural interpretation of MPC by identifying whether structural characteristics generate differential consumption sensitivity or whether consumption remains broadly stable across socioeconomic categories in Siliguri.

5.4.1. Between High vs Low Economic Uncertainty

To assess whether economic uncertainty alters aggregate consumption behaviour, households in Siliguri were divided into low and high uncertainty groups using the mean EUI as the threshold. Mean MPC and corresponding fiscal multipliers were then compared to identify group-level heterogeneity in consumption response. *Table 6* furnished below shows uncertainty category-wise mean values of MPC and fiscal multipliers as well, which together indicate negligible variation in MPC (0.650–0.652) and multiplier values (2.86–2.87) across uncertainty groups, suggesting that high economic uncertainty does not significantly dampen consumption. This pattern supports the precautionary paradox, wherein liquidity constraints and subsistence needs outweigh precautionary saving motives (Keynes, 1937; Campbell and Mankiw, 1989; Carroll, 1997). The findings are consistent with fiscal multiplier literature, showing stronger demand effects when households

are credit constrained (Auerbach and Gorodnichenko, 2012; Kaplan et al., 2014). Overall, group-level evidence confirms stable, subsistence-driven consumption behaviour in Siliguri, even under heightened uncertainty. The findings support H4, confirming that economic uncertainty does not significantly reduce MPC at the group level.

Table 6. *Mean MPC and fiscal multiplier by uncertainty level*

Uncertainty Category	Mean MPC	Fiscal Multiplier (1/1-MPC)
Low uncertainty	0.652	2.870
High uncertainty	0.650	2.863

Source: author's compilation

5.4.2. Between Salaried and Non-salaried Households

To examine whether employment structure influences consumption behaviour, an independent samples t-test was conducted to compare the mean MPC between salaried and non-salaried households (business owners and self-employed) in Siliguri. This analysis aims to identify whether income stability translates into differential consumption vulnerability. T-test results, as tabulated in *Table 7*, indicate no statistically meaningful difference in MPC between salaried and non-salaried households. Effect sizes are negligible and findings remain consistent under unequal variance assumptions, confirming robustness. This suggests that consumption behaviour in Siliguri is broadly similar across employment categories. The absence of divergence implies that liquidity pressures and subsistence needs may constrain saving behaviour irrespective of income stability, aligning with evidence that credit frictions and inflation expectations shape household consumption more strongly than employment type (Kaplan et al., 2014; Carroll et al., 2017; Coibion et al., 2022). The findings support hypothesis H5, confirming the absence of significant MPC differences across employment categories.

Table 7. *Independent samples t-test: MPC by employment type*

Group	Mean MPC		Variance	
Salaried households	0.650		0.019	
Non-salaried households	0.655		0.055	
Pooled variance	—		0.037	
Test Specification	t-stat	df	p-value (Two-Tail)	Effect r
Equal variances assumed	0.222	296.00	0.825	0.013
Unequal variances assumed	0.221	237.76	0.824	0.014

Source: author's compilation

5.5. Precautionary Savings and Consumer Sentiment: A Two-Stage Causal Framework

To avoid simultaneous influence (reverse causality) between household savings and consumer sentiment in the context of Siliguri, a 2SLS model is administered. Financial Awareness (financial literacy) is used as an instrument for savings, following evidence that literacy affects saving behaviour but not short-term spending mood directly (Lusardi and Mitchell, 2014; Stock and Watson, 2020). Results of Stage I and Stage II are presented in *Table 8* given below. Results of Stage I of the 2SLS model show that WEUI significantly reduces savings, confirming that uncertainty generates liquidity pressure and precautionary adjustments (Carroll, 1997; Bloom, 2009). The first-stage F-statistic (> 10) confirms instrument relevance (Stock and Yogo, 2005). Stage II indicates that predicted (instrumented) savings significantly reduce consumer sentiment ($\beta = -0.084$, $p < 0.001$). This confirms a precautionary transmission channel: higher uncertainty-driven savings dampen spending intentions, consistent with intertemporal choice theory (Bloom et al., 2018; Carroll and Kimball, 2008; Deaton, 1989; Deaton, 1992). WEUI-driven significant reduction of household savings in the first stage validates H8 according to which uncertainty directly influences precautionary saving behaviour. In the second stage, the instrumented (predicted) savings rate exerts a negative and highly significant effect on consumer sentiment (Wächter and Kramer, 2025), confirming H9 that precautionary savings causally dampen spending intentions

Table 8. *Savings–sentiment relationship (2SLS results)*

Variables	Stage I. Savings Rate	Stage II. Consumer Sentiment (CSI)
Intercept	29.123*** (1.149)	5.410*** (0.186)
Financial awareness (instrument)	−1.244 (0.909)	—
Weighted economic uncertainty (WEUI)	−3.685*** (0.321)	—
Predicted savings rate	—	−0.084*** (0.009)
Observations	300	300
R ²	0.709	0.694
F-statistic	66.52***	77.86***

Source: author's compilation

Notes: Standard errors in parentheses. *** $p < 0.001$.

5.6. Integrated Mapping of Objectives, Hypotheses, and Empirical Evidence

The empirical analysis conducted across the preceding sub-sections provides a multidimensional view of household behaviour in Siliguri. The following *Table 9* synthesises these findings, indicating the status of each hypothesis based on the observed statistical significance. The integrated mapping result confirms a dual behavioural structure: while uncertainty generates a precautionary paradox in consumption, it simultaneously strengthens precautionary savings, which in turn suppress consumer sentiment. The structured progression from descriptive heterogeneity to causal identification ensures internal coherence between theoretical propositions and empirical validation.

Table 9. *Conspectus of hypothesis validation results*

Hypothesis No	Empirical Test	Covering Section	Outcome	Economic Implication
H1	Multivariate OLS (MPC Regression)	5.2	Rejected	Evidence of a “precautionary paradox” where risk drives spending.
H2	Extended-MPC-based OLS	5.2	Supported	Price hike expectations trigger anticipatory consumption.
H3	Extended-MPC-based OLS	5.2	Supported	Subsistence-driven spending dominates in vulnerable groups.
H4	Group-level analysis of mean	5.4	Supported	Consumption is sticky due to essential needs / credit frictions.
H5	Robustness test, savings regression	5.4	Supported	Broad economic volatility overrides employment-type stability.
H6	Savings regression, moderation OLS	5.3	Supported	Validates the Keynesian/Life-Cycle income-saving link.
H7	Interaction model	5.3	Supported	Credit frictions diminish the benefits of higher income.
H8	2SLS Stage I	5.5	Supported	Uncertainty causes liquidity pressure, eroding savings capacity.
H9	2SLS Stage II	5.5	Supported	Confirms a negative transmission from saving to outlook.

Source: author's compilation

6. Discussion

Evidence from Siliguri departs from standard consumption theory and points to a dual behavioural pattern in household decision-making. At the consumption margin, higher economic uncertainty (WEUI) and inflation perception (IPS) are associated with a higher MPC, reflecting a “precautionary paradox” rather than conventional precautionary saving (Carroll, 1997). Instead of cutting consumption when risk rises, as suggested by the life-cycle framework, households appear to increase purchases, likely driven by inflation expectations and fear of rising prices (Coibion et al., 2022; D’Acunto et al., 2023). In a context of liquidity constraints and subsistence-oriented spending, the urgency to secure essential goods outweighs the motive to accumulate buffers. Once income and vulnerability controls are introduced, behaviour aligns more closely with liquidity-constraint models (Campbell and Mankiw, 1989; Kaplan et al., 2014). The consistently high MPC (≈ 0.65) across employment categories further indicates a structurally demand-driven local economy, where short-run spending remains resilient despite weaker long-run sentiment (2SLS results).

Savings behaviour, however, conforms more closely to intertemporal theory. Higher income significantly increases savings, consistent with life-cycle and buffer-stock models (Modigliani, 1986; Carroll and Kimball, 2008). Liquidity constraints raise precautionary savings but dampen the marginal effect of additional income, supporting constrained optimization arguments (Deaton, 1989; Deaton, 1992; Zeldes, 1989). Inflation sensitivity erodes effective saving capacity (Bachmann et al., 2013). Instrumental-variable estimates show that uncertainty raises savings, and higher savings reduce consumer sentiment, confirming a precautionary transmission channel (Bloom, 2009; Bloom et al., 2018; Wächter and Kramer, 2025). Together these findings reconcile immediate consumption acceleration with longer-term demand moderation within a unified framework.

From a policy standpoint, anchoring inflation expectations and enhancing income stability are crucial to avoid distortionary consumption responses. Since precautionary savings remain limited, demand-side fiscal stimulus is likely to retain effectiveness in such economies. However, sustainable stability requires stronger price management and deeper formal credit access to shift households from defensive saving towards productive financial planning.

7. Conclusions

This study offers micro-level evidence that household behaviour in Siliguri reflects a dual pattern: a precautionary paradox in consumption alongside precautionary adjustment in savings. In this key urban corridor, rising economic uncertainty and

perceived inflationary pressure prompt households to advance consumption rather than accumulate buffer stocks. Empirical results show that in a credit-constrained tier-2 setting, concern over rising prices dominates long-term consumption smoothing, keeping the MPC (≈ 0.65) high and stable across employment groups. Income emerges as the principal structural driver of savings, while liquidity constraints and inflation expectations shape behavioural responses. The 2SLS estimates further indicate that uncertainty-induced savings reduce consumer sentiment, revealing a two-channel adjustment mechanism within a constrained urban economy.

From a policy perspective, stabilizing inflation expectations and ensuring steady income flows are essential to prevent distorted consumption patterns, especially when precautionary savings are limited and fiscal stimulus remains effective. For long-term stability, stronger price control measures and improved access to formal credit are necessary to move households from defensive saving towards more productive financial planning. The cross-sectional design limits dynamic life-cycle inference and, although the 2SLS-based instrumental approach mitigates reverse causality, instrument validity rests on behavioural assumptions regarding financial awareness. The geographic focus on a single tier-2 city may constrain external validity, and self-reported measures of savings and sentiment may involve reporting bias. Future research should utilize longitudinal data to examine the evolution of this paradox, as financial infrastructure matures within the regional economy. Additionally, using panel data and experimental designs across multiple urban regions, forthcoming studies would strengthen causal identification and generalizability.

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Appendix

Survey Questionnaire

1. What is your approximate total monthly household income (after taxes)?
2. What is your Employment Status?
3. How likely is it that you or a family member will lose their primary income source in the next 12 months? (Job Risk)
4. How much do you expect general consumer prices (inflation) to rise in the next 12 months? (Expectation on Price-hike)
5. How confident are you in the stability of the national economy over the next 12 months? (Perceived Confidence on Economic Stability)
6. Do you have access to emergency credit (bank loans/credit cards)? (Liquidity Constraints)
7. Can you rely on friends/family for financial help? (Social Capital)
8. By what percentage have you increased your monthly savings contribution (relative to income) over the last 6 months? (Savings Rate)
9. What is your planned change in spending on non-essential durable goods (e.g. car, home renovation) in the next 6 months? (Spending on Durable Items)
10. Compared to the last 6 months, how has your spending on non-durable goods (e.g. groceries, services) changed? (Spending on Non-durable Items)
11. If your income suddenly increased by 10%, what fraction of that increase would you save/invest? (Proxy of MPS)
12. Over the last 5 years, how would you describe the consistency of your annual real income? (Income Consistency)
13. Do you actively follow a detailed monthly budget (tracking all income and expenditure)? (Level of Financial Awareness)
14. How many months could your current savings sustain your household's basic expenses if all income stopped? (Income Buffer)

15. Over the next 12 months, how much do you expect the price of essential food items to change? (Expected Price Change of Food Items)
16. Over the next 12 months, how much do you expect the price of non-essential luxury items to change? (Expected Price Change of Non-essential Luxury Items)
17. When receiving an unexpected earning, do you prefer to spend it immediately or save/invest it for the future? (Income-Disposing Preference)

Study Area Map: Siliguri, West Bengal, India

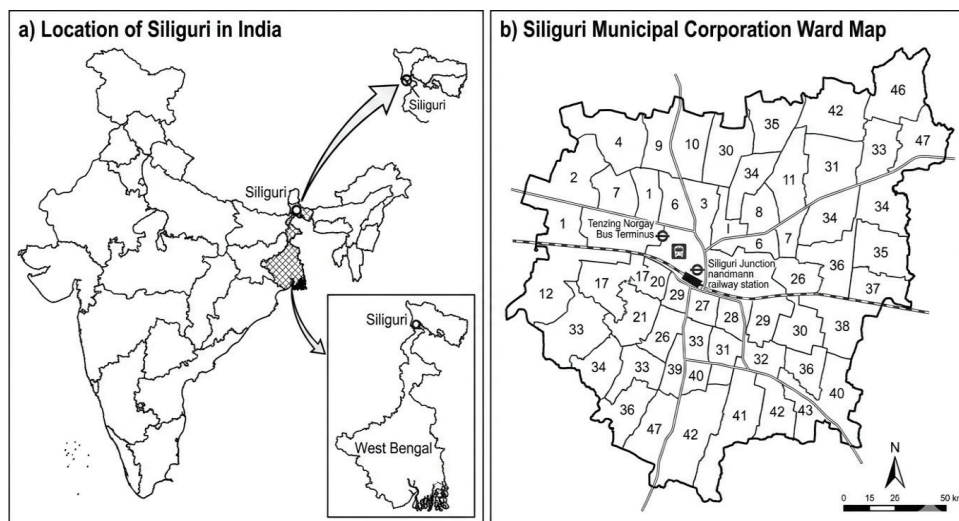


Figure 1. Study Area: a) Location map of Siliguri within West Bengal and India; b) Detailed map of Siliguri Municipal Corporation showing 47 wards.

Source: www.bing.com/images, www.shutterstock.com,
Official Website of Siliguri Municipal Corporation