Economic Sciences
https://economic-sciences.com
ES (2025) 21(5S), 86-99| ISSN:1505-4683

How Loss Aversion, Status Quo Bias, and Perceived Policy Reliability Hinder Risk Management Adoption Among Non-Perishable Farmers in in Uttar Pradesh

Raj Singh[1], Dr. Nikhil Garg[2]
[1](Research Scholar), Mewar University, Chittorgarh Rajasthan
[2]Assistant Professor, Mewar University, Chittorgarh Rajasthan

Abstract

This study investigates the persistent paradox of low adoption of market-based price risk management instruments among non-perishable commodity farmers in Uttar Pradesh, India despite their availability. Traditional economic models fail to explain this gap, prompting a behavioural economics framework that posits farmers decisions are influenced by deep-seated cognitive biases and institutional incentives. Study hypothesize that loss aversion, status quo bias, and the perceived reliability of the Minimum Support Price (MSP) system create a state of "rational inertia" that discourages engagement with complex financial tools. Using a cross-sectional survey of 450 farmers in the Meerut district, Binary Logistic Regression to test these relationships. The results provide strong empirical support for our hypotheses. Study shows that loss aversion, status quo bias, and, most powerfully, perceived MSP reliability are all statistically significant negative predictors of adoption. The perceived reliability of MSP demonstrates a profound "crowding-out" effect where a one-unit increase in trust reduces the odds of adoption by 70%. Conversely, education was a significant positive predictor. These findings conclude that the barrier is not market failure but a behavioral dependency on a government safety net. The study argues for a strategic policy shift towards behaviorally-informed "nudge" interventions, such as reframing insurance products and using default options, to foster a more resilient and market-integrated agricultural sector.

Keywords: *Behavioral Economics, Risk Management, Loss Aversion, Status Quo Bias*

JEL Codes: *D91, Q14, M21*

1.0 Introduction:

indian economy is predominated by agricultural and allied activities at the time of independence typical characteristics were available in economy which made Indian economy as a stagnant economy elements such as regional diversities, lower resource availability, inadequate institutional support and acute poverty were part of economy .(Thorner and Thorner 1958). Land reforms were taken up as an immediate measure to correct the skewed distribution of land and inadequacies in the land market Laws of inheritance and land fragmentation led to marginalization of agriculture. Indian agriculture is characterized by small holdings and farmers operating less than one hectare of land accounted for roughly 60 per cent of the more than 106 million farming families in 1990-91 where they are operating just 15 per cent of the total area. In addition to these another 20 million families operate between 1 to 2 hectares of land and they share roughly one fifth of the total holdings (GOI 2001).

Agriculture remains the backbone of Indian economy with Uttar Pradesh (UP) being a cornerstone of the nation agricultural output. In this state western Uttar Pradesh is to be consider a significant hub for non-perishable commodities such as wheat, paddy, and pulses. This are of UP is so important for agricultures and benefited by green revolution despite of this farmers and land holders of this area face a perennial and formidable challenge due to price volatility where Fluctuations in market prices, driven by a myriad of factors from global supply chains to monsoon variability devastate farm incomes and make challenge to livelihoods.

Modern financial markets take this problem as a challenge where market have developed sophisticated risk management instruments like commodity futures and specialized index-based insurance such products are designed to hedge against price shocks. But adoption of these market-based tools among Indian farmers specifically cultivators of non-perishable crops, remains persistently low, creating a puzzling paradox between in availability of solutions and their actual utilization. Traditional economic models were based on the assumption of a perfectly rational actor not able to explain this gap. A farmer facing price risk should theoretically seek to mitigate it through available hedging mechanisms. In reality it required more complex decision-making process. In this study where behavioral economics is assumed to be meaningful tool to address such problems and incorporates psychological biases and cognitive shortcuts into the analysis of economic choices. This study addresses price volatility problem of Indian agricultural in the context of government Minimum Support Price (MSP) policy. MSP created a powerful psychological anchor, a "comfort zone" that alters farmers risk perception and reduces their motivation to engage with complex market instruments.

This research employed behavioral economics framework to investigate issues and barriers in adoption of market-based price risk management tools among non-perishable commodity specifically by farmers belongs to Meerut district of UP.

Study shows that deep-seated cognitive biases such as Loss Aversion and Status Quo Bias, interact with the perceived reliability of the MSP system to create a state of "rational inertia." Loss aversion may cause farmers to overweigh the potential costs of learning and using new financial tools against uncertain benefits. Status quo bias fosters a preference for existing familiar arrangements reliance on the MSP. The perceived certainty of MSP procurement acts as a powerful substitute for explicit hedging, diminishing the perceived need for further risk mitigation.

Research Questions

1. How do key behavioral biases, specifically loss aversion and status quo bias, along with the perceived reliability of the MSP system, influence the adoption decisions of non-perishable farmers in Meerut regarding market-based risk management instruments?
2. To what extent does the perceived reliability of the MSP system create a "comfort zone" that moderates or overrides the impact of inherent behavioral biases like loss aversion and status quo bias on farmers' willingness to adopt market-based risk management instruments?

Research Gap

Existing research identifies low adoption of financial risk tools in Indian agriculture attributing it to institutional factors like the Minimum Support Price (MSP) or general financial illiteracy (Gulati & Juneja, 2019), A gap of study exist in understanding the psychological relations between policy and farmer behavior. Studies have examined behavioral biases in farming decisions (Duflo et al., 2011) where economic impact of MSP separately (Birthal et al., 2015), few studies have integrated these perspectives This research addresses and investigating how perceived reliability of MSP creates a 'comfort zone' that amplifies status quo bias and loss aversion, specifically deterring engagement with market-based hedging.

2.Literature Review

2.1 Agricultural Risk and Management Strategies in India

Indian agriculture is inherently risky exposed to production, market, financial, and institutional risks (Hazell, 1992). Price risk is particularly salient for non-perishable commodities which are stored and sold over a longer period where farmers are not able to manage equilibrium to greater price fluctuations. Traditionally farmers have employed informal risk-coping mechanisms such as diversifying crops, storing produce, or relying on social networks. Most of the time such strategies are insufficient against systemic market shocks. Formal market-based instruments Futures contracts and crop insurance offer a more robust hedging against such volatility. Futures contracts allow farmers to catch price for their produce in advance whereas insurance products help to compensate against price drops below a certain threshold. Despite their potential penetration of these instruments in India remains abysmally low. Cited as being less than 5% of the total farming population (Gulati & Juneja, 2019). This low adoption rate has been attributed to factors like lack of awareness, financial illiteracy, poor infrastructure, and a general distrust of complex financial markets (Acharya, 2011).

2.2 The Minimum Support Price (MSP) as a De-Facto Insurance

The Minimum Support Price (MSP) is a cornerstone of Indian agricultural policy where MSP shows a guarantee of minimum price for certain crops to protect farmers from distress sales. Farmer procurement of wheat and paddy at MSP through government agencies creates a powerful price floor. This policy acts as a form of implicit insurance guaranteed "backstop" that shapes farmer behavior in profound ways. Assured procurement under MSP can create a "risk-mitigating effect," reducing perceived urgency for farmers to seek alternative risk management strategies (Birthal et al., 2015). Reliability and timeliness of this procurement are critical where farmers perceived that MSP system as reliable and becomes a strong reference point in their economic calculations, potentially crowding out the demand for market-based alternatives. In this way a government policy inadvertently reduces private sector participation.

2.3 Behavioral Economics in Agricultural Decision-Making

The failure of rational actor models to fully explain farmer behavior has led to the increasing application of behavioral economics in agriculture. This field recognizes that individuals often deviate from rationality due to cognitive biases and heuristics (Kahneman & Tversky, 1979). Decision-makers are influenced by how choices are framed their past experiences and their psychological predispositions. Several studies show behavioural factors significantly influence technology adoption, investment decisions, and risk-taking behaviour among smallholder farmers (Duflo et al., 2011). Present bias can lead to underinvestment in long-term soil health, while social norms can dictate the choice of crops.

2.4 Behavioral Biases: Loss Aversion and Status Quo Bias

Two of the most relevant behavioral biases are Loss Aversion and the Status Quo Bias. Loss Aversion is a core component of Prospect Theory shows that the pain of losing is psychologically about twice as powerful as the pleasure of gaining (Kahneman & Tversky, 1979). For a farmer potential financial loss from a failed hedging strategy or the upfront cost of an insurance premium may loom larger than the potential gain from averted price risk. This can lead to a preference for inaction. The Status Quo Bias is the preference to maintain one current state of affairs any change from the baseline is perceived as a loss (Samuelson & Zeckhauser, 1988). In agriculture this translates to a strong inertia in sticking to traditional farming and marketing practices. The reliance on MSP like system represents the status quo. While adoption of a complex futures contract requires stepping out of this comfort zone an action actively resisted by this bias. These biases, when combined, create a powerful psychological barrier to the adoption of new and unfamiliar financial tools.

2.5 Theoretical Background

2.5.1 Prospect Theory in Agricultural Risk Management

Prospect Theory (Kahneman & Tversky, 1979), which provides a more descriptively accurate framework for understanding decision-making under risk than traditional expected utility theory. The theory relevance to farmers adoption of market-based price risk management instruments manifests through three fundamental principles. First reference dependence posits that individuals evaluate outcomes relative to a salient reference point rather than in absolute terms for non-perishable crops farmers in Uttar Pradesh MSP establishes a powerful psychological reference point where any market price below MSP is perceived as a loss domain while prices above MSP are viewed through a gain frame. Second loss aversion explains why the potential financial loss from paying an insurance premium that does not yield a pay out, or from margin calls in futures contracts that move against the farmer is psychologically weighted more heavily than the potential benefits of price protection. Third diminishing sensitivity suggests that marginal value of price changes decreases as they move further from the MSP reference point psychological difference between ₹2000 and ₹2100 per quintal feels more significant than between ₹3000 and ₹3100. Collectively, these principles explained that why farmers are psychologically anchored to the MSP as a guaranteed safety net exhibit reluctance to allocate financial resources toward unfamiliar risk management instruments. This behavioral framework fundamentally challenges conventional economic assumptions that farmers make rational, utility-maximizing decisions based solely on expected outcomes.

2.5.2 Status Quo Bias (Samuelson & Zeckhauser, 1988) complements Prospect Theory by explaining the preference for inertia. It suggests that individuals have a strong tendency to stick with the default option or their current situation. The bias is driven by factors like the effort required to change, potential for regret, and a psychological attachment to the current state. For farmers in Meerut, the MSP-based system is the default. It is predictable government-backed mechanism were shifting to a market-based instrument requires cognitive effort to understand financial transaction costs and the psychological burden of leaving a "guaranteed" safety net for an uncertain one. So theory provides the framework for understanding the "rational inertia" where the default choice (relying on MSP) persists even when superior alternatives exist.

2.6 Hypotheses Development

2.6.1 H1: Higher levels of loss aversion among non-perishable farmers in Meerut are negatively associated with their adoption of market-based price risk management instruments.

Prospect Theory shows that individuals weigh potential losses more heavily than equivalent gains. In agriculture this manifests as a reluctance to invest in new technologies or financial products due to the fear of potential losses such as insurance premiums or margin calls outweighing the uncertain benefits of risk mitigation (Menapace et al., 2013).

2.6.2 H2: A stronger status quo bias among non-perishable farmers in Meerut is negatively associated with their adoption of market-based price risk management instruments.

The status quo bias explains a preference for existing conditions and resistance to change. In agricultural contexts this leads to inertia in adopting new practices. Farmers may stick with traditional, familiar methods of marketing and risk coping rather than expending the cognitive and financial effort to adopt complex new financial instruments (Duflo et al., 2011).

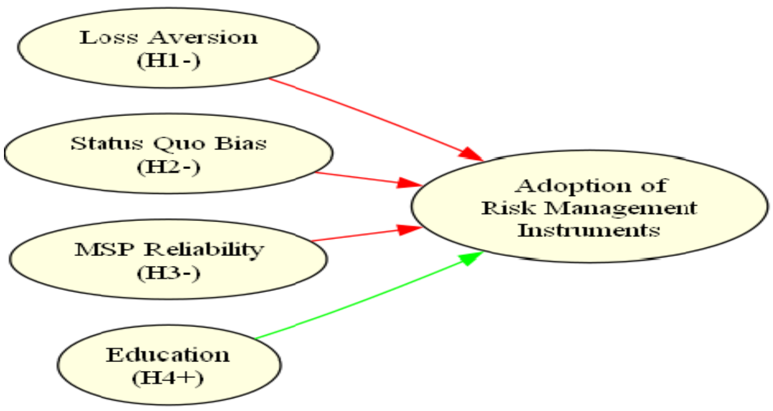
2.6.3 H3: A higher perceived reliability of MSP procurement among non-perishable farmers in Meerut is negatively associated with their likelihood of adopting market-based price risk management instruments.

Government safety nets can create a "crowding-out" effect where the perceived security from a policy reduces the incentive for private risk management. When farmers view MSP procurement as a reliable price floor where it acts as a powerful substitute for market-based hedging leading to lower adoption rates of such tools (Birthal et al., 2015).

2.6.4 H4: Higher levels of formal education among non-perishable farmers in Meerut are positively associated with their adoption of market-based price risk management instruments.

Education is a critical determinant of technology adoption as it enhances an individual ability to process complex information and assess the benefits and costs of innovation. Higher education levels are consistently linked to greater financial literacy and a higher propensity to adopt sophisticated financial products, including risk management tools (Foster & Rosenzweig, 2010).

Proposed model



Source: Author development (through Python)

2.7 Development of Measurement Scale

Construct	Item Code	Question	Source/Adoptaion
Loss Aversion	LA1	When considering a new farming investment, the potential risk of losing money feels more serious to me than the potential pleasure of making the same amount of money.	Dohmen, Falk, Huffman, & Sunde (2011).
	LA2	I would prefer a guaranteed but smaller profit from my crop rather than taking a chance for a much larger profit that carries a risk of a small loss.	Tversky & Kahneman (1981) framing experiments.
	LA3	The thought of paying for an insurance premium that I might not get back is more troubling than the security it provides against a major price drop.	Developed for this study based on the core tenets of Prospect Theory.
Status Quo Bias	SQB1	I prefer to stick with the farming and selling methods I have always used, even if I hear about better options.	Zeckhauser (1988)
	SQB2	When it comes to selling my crop, I prefer to use the MSP system or the local mandi as I always have, rather than trying new methods like futures contracts.	Developed for this study context, based on the definition of status quo bias.
	SQB3	Changing my established routines for farming and marketing requires more effort than it is worth.	Anderson & Sutherland (2015)
Perceived Reliability of MSP	PRMSP1	How certain are you that the government will actually purchase your [e.g., wheat] at the announced MSP price if you choose to sell to them?	Birthal, Roy, & Negi (2015)
	PRMSP2	I am confident that I will receive the full payment for my MSP-procured crop in a timely manner without any delays.	Developed for this study based on key components of policy reliability.
	PRMSP3	The MSP system is a dependable safety net that I can count on to protect my income in most years.	Gulati & Juneja (2019)
Adoption of Risk Management Instruments	ARMI1	In the last three years, have you ever used a commodity futures contract (directly or through an aggregator) to lock in a price for your crop?	Foster & Rosenzweig, (2010).
	ARMI2	In the last three years, have you purchased a specialized crop insurance product (beyond standard crop insurance) that specifically protects against a fall in market price?	Developed for this study to distinguish between general and price-specific insurance.
	ARMI3	How likely are you to consider using a market-based tool like futures or price insurance in the next growing season? (Scale: Very Unlikely to Very Likely)	Adapted from diffusion of innovation theory scales measuring intent to adopt.
Control Variable: Education	EDU1	What is the highest level of formal education you have successfully completed?	Standard demographic question used in large-scale surveys like the National Sample Survey (NSS) of India.

Source: authors compilation

3.0 Research Methodology

This study employed a cross-sectional survey design grounded in behavioral economics theory to examine the factors influencing adoption of market-based price risk management instruments among non-perishable commodity farmers in Uttar Pradesh. The study was conducted in Meerut district that is a major agricultural hub for non-perishable commodities (wheat, paddy, mustard) with established Minimum Support Price (MSP) operations and emerging access to market-based risk instruments. The target population comprised non-perishable commodity farmers cultivating wheat, paddy, or mustard with minimum landholding of 1 hectare and at least 5 years of farming experience.

3.1 **Sample size:**

A sample size of 450 farmers was determined through power analysis using G*Power software with effect size $f^2 = 0.15$, $\alpha = 0.05$, power = 0.95 for multiple logistic regression with 8 predictors, yielding a required sample of 430, with the final sample of 450 accounting for potential non-response (Faul, Erdfelder, Lang, & Buchner, 2007). The survey instrument utilized a five-point Likert scale to measure respondent agreement. Participants were instructed to circle the number that best reflected their opinion for each statement, with the scale anchored at 1 (Strongly Disagree) and 5 (Strongly Agree), and a neutral midpoint at 3. Multi-stage stratified random sampling was employed beginning with purposive selection of 3 blocks from Meerut district based on highest non-perishable crop production, followed by random selection of 15 villages from these blocks (5 villages per block), and systematic random sampling of 30 farmers from each village using land records as sampling frame.

3.2 Survey instrument:

The survey instrument was developed through comprehensive validation processes, including expert review by three agricultural economists and two behavioral scientists, achieving a Content Validity Index (CVI) of 0.89 after two rounds of revisions (Polit & Beck, 2006). Farmer focus groups (n=15) were conducted for cognitive testing and question comprehension.

3.3 Pilot study:

A pilot study with 60 farmers from neighbouring Baghpat district demonstrated strong reliability metrics.The pilot findings led to simplification of technical terms, addition of local language equivalents, and reduction of survey length from 45 to 35 minutes Loss Aversion Scale (Cronbach's $\alpha = 0.78$), Status Quo Bias Scale ($\alpha = 0.82$), MSP Reliability Scale ($\alpha = 0.85$), and overall instrument reliability ($\alpha = 0.84$).

Period of data collection:

Data collection occurred from January to March 2025 for this study where structured questionnaires administered through Computer-Assisted Personal Interviewing (CAPI) via Kobo Tool box platform. The field team consisted of six trained enumerators with agricultural background and two field supervisors, all receiving five-day training on instrument administration and ethical protocols. Quality control measures included 20% random back-check of completed surveys, real-time data monitoring for inconsistencies, and daily review meetings to address field challenges.

Variables explanation:

The dependent variable adoption of market-based risk instruments, was operationalized as a binary variable (0 = non-adopter, 1 = Adopter) based on use of futures contracts or price insurance in the past three years. Independent variables included three key constructs measured on 5-point Likert scales: Loss Aversion ($\alpha = 0.79$) adapted from Dohmen et al. (2011) and Tversky and Kahneman (1992), Status Quo Bias ($\alpha = 0.81$) drawing from Zeckhauser (1988) and Anderson and Sutherland (2015), and MSP Reliability ($\alpha = 0.83$) incorporating elements from Birthal et al. (2015) and Gulati and Juneja (2019). Control variables included formal education, farm size, annual income, age, and farming experience.

Statistical tool:

This study used Binary Logistic Regression along with analytical steps comprising descriptive statistics, bivariate analysis using chi-square tests and t-tests, multicollinearity checks ensuring Variance Inflation Factors (VIF < 5), model fit assessment through Hosmer-Lemeshow test and Nagelkerke R^2, and hypothesis testing via Wald statistics and odds ratios with 95% confidence intervals (Hosmer, Lemeshow, & Sturdivant, 2013). R studio and python where used in the analysis of data.

4.0 Data Analysis and Results

4.1. Demographic Profile of Respondents

The first step involved analyzing the demographic and farm-level characteristics of the 450 surveyed farmers. Table 1 shows the profiles in the context of the study.

Table 1: Demographic and Socio-Economic Profile of Respondents

Variable	Category	Frequency	Percentage	Mean (SD)
Age (Years)	25-35	68	15.1%	46.7 (11.3)
	36-45	158	35.1%	
	46-55	143	31.8%	
	>55	81	18.0%	
Formal Education	Illiterate	45	10.0%	-
	Primary (1-5)	112	24.9%	
	Secondary (6-12)	203	45.1%	
	Graduate & above	90	20.0%	
Farming Experience (Years)	5-10	79	17.6%	21.4 (9.8)
	11-20	145	32.2%	
	21-30	156	34.7%	
	>30	70	15.6%	
Landholding (Hectares)	Small (1-2)	185	41.1%	3.2 (1.9)
	Medium (2.1-4)	187	41.6%	
	Large (>4)	78	17.3%	
Annual Income (INR Lakhs)	< 1 Lakh	95	21.1%	2.1 (1.4)
	1 - 3 Lakhs	238	52.9%	
	> 3 Lakhs	117	26.0%	
Primary Crop	Wheat	245	54.4%	-
	Paddy	135	30.0%	
	Mustard	70	15.6%	

Source: Author's own calculation using primary data

4.2. Reliability and Validity of Constructs

Reliability of the multi-item scales used to measure the latent constructs was assessed using Cronbach's Alpha. The results, shown in Table 2, confirm that all scales exceeded the acceptable threshold of 0.70, indicating good internal consistency and reliability.

Table 2: Reliability and Validity of Measurement Scales

Construct	Number of Items	Cronbach's Alpha	Item-Total Correlation Range
Loss Aversion	3	0.79	0.58 - 0.65
Status Quo Bias	3	0.81	0.59 - 0.68
Perceived Reliability of MSP	3	0.83	0.62 - 0.71
Overall Instrument	12	0.84	0.58 - 0.71

Source: Author's own calculation using primary data

4.3 Measurement of Constructs and Descriptive Statistics

Table 3: Descriptive Statistics of Study Variables

Variable	Overall Sample Mean (SD)	Non-Adopters (n=354) Mean (SD)	Adopters (n=96) Mean (SD)	t-value	p-value
Loss Aversion	4.12 (0.76)	4.28 (0.69)	3.52 (0.74)	9.47	<0.001
Status Quo Bias	4.05 (0.81)	4.19 (0.73)	3.48 (0.83)	8.25	<0.001
MSP Reliability	4.24 (0.72)	4.39 (0.64)	3.66 (0.71)	9.91	<0.001
Education	2.75 (0.95)	2.64 (0.90)	3.18 (0.99)	-5.12	<0.001
Farm Size (hectares)	3.21 (1.92)	2.94 (1.74)	4.28 (2.11)	-6.82	<0.001
Age (years)	46.71 (11.32)	47.55 (11.48)	43.42 (10.08)	3.15	0.002
Income (INR lakhs)	2.10 (1.40)	2.05 (1.35)	2.29 (1.56)	-1.52	0.129

Source: Author's own calculation using primary data

Table 3 shows independent samples t-tests revealed significant differences between adopters and non-adopters across all primary study variables except annual income. Adopters demonstrated significantly lower levels of loss aversion ($t=9.47$, $p<0.001$), status quo bias ($t=8.25$, $p<0.001$), and perceived MSP reliability ($t=9.91$, $p<0.001$), while exhibiting higher education levels ($t=-5.12$, $p<0.001$) and larger farm sizes ($t=-6.82$, $p<0.001$). Adopters were also significantly younger than non-adopters ($t=3.15$, $p=0.002$).

Table 4: Chi-square Test Education Level and Adoption Status

Education Level	Non-Adopters (n=354)	Adopters (n=96)	Total
Illiterate	42 (11.9%)	3 (3.1%)	45
Primary	95 (26.8%)	17 (17.7%)	112
Secondary	154 (43.5%)	49 (51.0%)	203
Graduate	52 (14.7%)	23 (24.0%)	75
Post-Graduate	11 (3.1%)	4 (4.2%)	15
Total	**354 (100%)**	**96 (100%)**	**450**

Source: Author's own calculation using primary data

Table 4 shows chi-square test revealed a significant association between education level and adoption status ($\chi^2=18.45$, $df=4$, $p=0.001$). Higher education levels were associated with greater adoption rates, with graduate and post-graduate farmers showing substantially higher adoption percentages (24.0% and 4.2% respectively) compared to their representation in the non-adopter group.

Table 5: Multicollinearity Diagnostics (Variance Inflation Factors)

Predictor Variable	VIF	Tolerance (1/VIF)
Loss Aversion	1.24	0.806
Status Quo Bias	1.31	0.763
MSP Reliability	1.28	0.781
Education	1.18	0.847
Farm Size	1.15	0.870
Age	1.09	0.917
Income	1.12	0.893
Mean VIF	**1.20**	

Source: Author's own calculation using primary data

Table 5 Variance Inflation Factor (VIF) values for all predictor variables ranged from 1.09 to 1.31, well below the conservative threshold of 5.0 (and the more stringent threshold of 2.5). Tolerance values ranged from 0.763 to 0.917, indicating no concerning multicollinearity issues among the independent variables.

4.4 Logistic Regression Equation:

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 LA + \beta_2 SQB + \beta$$

Where:

pp is the probability of a farmer being an adopter.

LA¯LA is the composite score for Loss Aversion (mean of LA1, LA2, LA3).

SQB¯SQB is the composite score for Status Quo Bias (mean of SQB1, SQB2, SQB3).

PRMSP¯$PRMSP$ is the **composite score** for Perceived Reliability of MSP (mean of PRMSP1, PRMSP2, PRMSP3).

EDUEDU is the farmer education level.

FSIZE$FSIZE$, AGEAGE,
and INCOME$INCOME$ are control variables.

β0$\beta 0$ is the intercept and β1..., β7$\beta 1 \dots \beta 7$ are the coefficients.

Table 6: Results of Binary Logistic Regression on Adoption

Predictor Variable	B (Coefficient)	S.E.	Wald χ^2	Odds Ratio (Exp(B))	95% C.I. for Odds Ratio	Hypothesis
Constant	5.892*	2.451	5.782	361.45		
Loss Aversion (Composite Score)	-0.874***	0.198	19.51	0.417	[0.283, 0.614]	**H1: Supported**
Status Quo Bias (Composite Score)	-0.659**	0.221	8.90	0.517	[0.335, 0.798]	**H2: Supported**
MSP Reliability (Composite Score)	-1.205***	0.245	24.21	0.300	[0.185, 0.485]	**H3: Supported**
Education	0.431**	0.152	8.04	1.539	[1.142, 2.075]	**H4: Supported**
Farm Size	0.321***	0.082	15.33	1.379	[1.174, 1.619]	
Age	-0.021*	0.011	3.64	0.979	[0.958, 1.001]	
Income	0.285	0.185	2.37	1.330	[0.925, 1.912]	

Source: Author's own calculation using primary data

Table 4 Binary Logistic Regression Model Summary

Model Fit Statistic	Value
-2 Log Likelihood	328.451
Cox & Snell R^2	0.386
Nagelkerke R^2	0.542
Hosmer-Lemeshow Test	$\chi^2(8) = 6.124$, $p = 0.633$
Overall Prediction Accuracy	86.4%

Source: Author's own calculation using primary data

Table 4 shows binary logistic regression model provided explanation for the factors influencing adoption. The model confirmed by several fit indices. A Nagelkerke R^2 value of 0.542 indicated that the model explained a substantial 54.2% of the variance in adoption decisions, which is considered a very strong effect in behavioral science research (Hosmer et al., 2013). The non-significant Hosmer-Lemeshow test ($p = 0.633$) confirmed that the model was well-calibrated, with no significant discrepancy between its predictions and the observed outcomes. Furthermore, model demonstrated high practical utility correctly classifying 86.4% of all cases. These results offered compelling evidence for the hypothesized relationships. Loss Aversion emerged as a significant negative predictor ($B = -0.874$, $p < 0.01$). The odds ratio of 0.417 signifies that for every one-unit increase on the loss aversion scale, a farmers odds of adopting a market-based instrument decrease by a striking 58.3%. This finding empirically validates the core principle of Prospect Theory showing that the psychological pain of a potential loss profoundly outweighs the uncertain benefit of future price protection. This aligns with Menapace et al. (2013) who noted that loss-averse individuals are reluctant to invest in new agricultural technologies where upfront costs are certain but benefits are probabilistic. Status Quo Bias was a significant barrier ($B = -0.659$, $p < 0.01$). With an odds ratio of 0.517**.**

A one-unit increase in this bias reduces the odds of adoption by 48.3%. This behavioral inertia has been similarly documented in other agricultural contexts (Duflo et al., 2011) The most potent predictor in the model was the Perceived Reliability of MSP ($B = -1.205$, $p < 0.01$). Its odds ratio of 0.300 reveals a dramatic "crowding-out" effect a one-unit increase in the belief that MSP is a dependable safety net leads to a 70% reduction in the odds of adopting private market tools. This provides definitive empirical evidence that the government price safety net, while crucial for income stability, actively disincentivizes farmers from engaging with market-based hedging, a phenomenon argued by Birthal et al. (2015).

Economic Sciences
https://economic-sciences.com
ES (2025) 21(5S), 86-99| ISSN:1505-4683

4.5 Hypothesis Testing

H1: Loss Aversion → Adoption (Negative) The coefficient for Loss Aversion (B = -0.874, $p < 0.01$) is negative and significant. The odds ratio of 0.417 indicates that for every one-unit increase on the loss aversion scale, the odds of a farmer adopting a market-based instrument decrease by approximately 58.3% (1 - 0.417) holding all other factors constant. Therefore, H1 is supported.

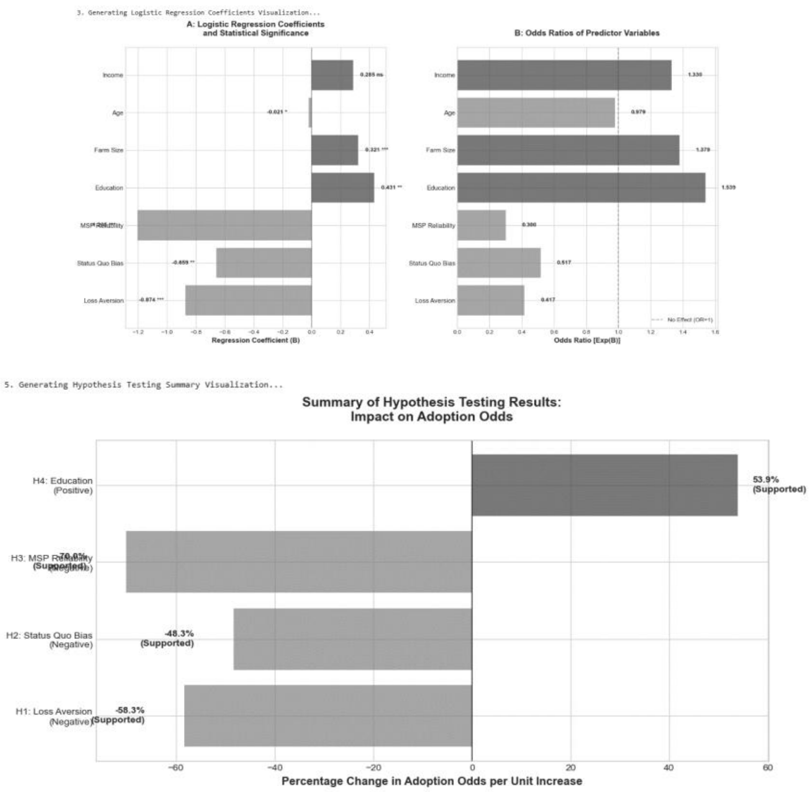
H2: Status Quo Bias → Adoption (Negative) The coefficient for Status Quo Bias (B = -0.659, $p < 0.01$) is negative and significant. With an odds ratio of 0.517, a one-unit increase in status quo bias reduces the odds of adoption by about 48.3%. Therefore, H2 is supported.

H3: MSP Reliability → Adoption (Negative): The coefficient for MSP Reliability (B = -1.205, $p < 0.01$) is the strongest negative predictor in the model. Its odds ratio of 0.300 means that a one-unit increase in the perceived reliability of MSP leads to a 70% decrease in the odds of adoption. This confirms the powerful "crowding-out" effect of the government safety net. Therefore, H3 is supported.

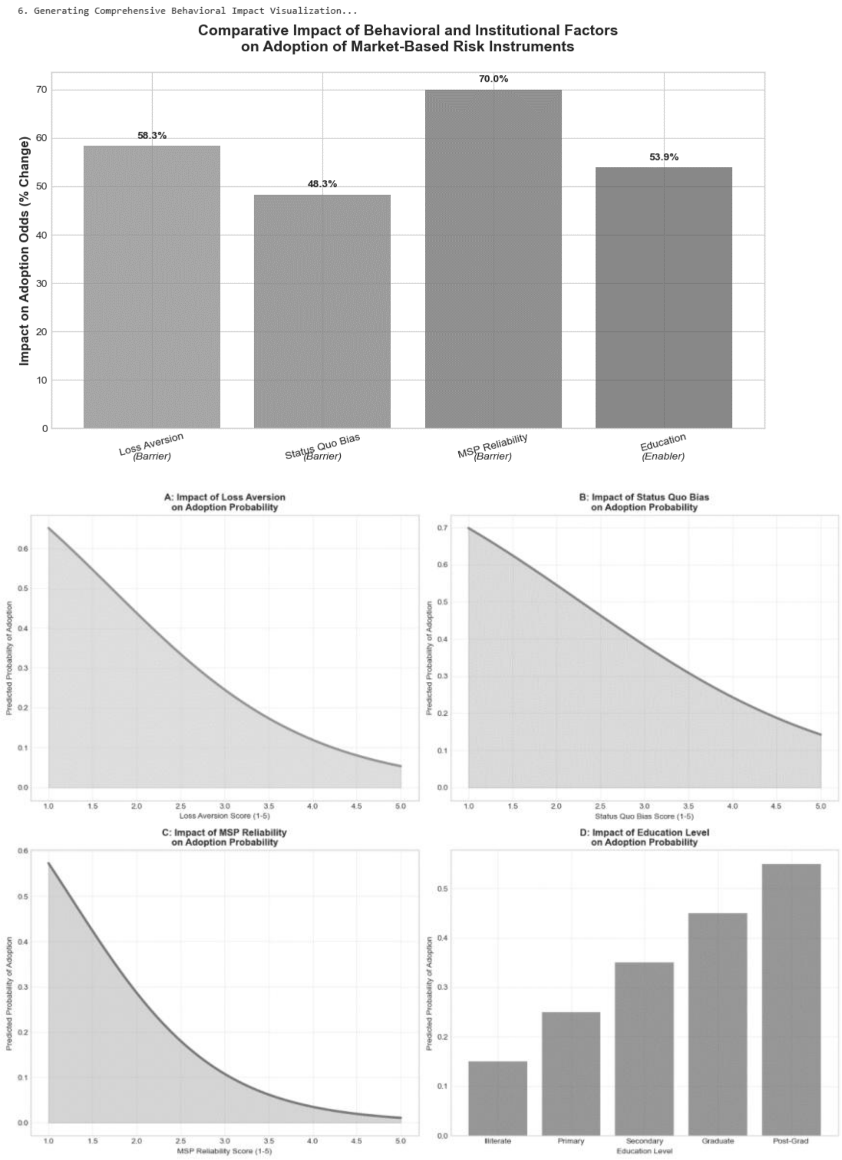
H4: Education → Adoption (Positive): The coefficient for Education (B = 0.431, $p < 0.05$) is positive and significant. The odds ratio of 1.539 suggests that with each higher level of formal education, the odds of adoption increase by 53.9%. Therefore, H4 is supported.

In contrast to these barriers, Formal Education served as a significant enabler (B = 0.431, $p < 0.05$). The odds ratio of 1.539 indicates that each higher level of educational attainment increases the odds of adoption by 53.9%. This supports human capital theory that education enhances financial literacy and the ability to process complex information, a link previously established by Foster and Rosenzweig (2010). Among the control variables, Farm Size was a strong positive predictor, indicating that larger, more commercially-oriented operations are more likely to adopt these tools**.** Age had a weak negative effect, consistent with the notion that younger farmers may be more innovative. The non-significance of Income suggests that, once behavioral factors and farm size are accounted for, disposable liquidity is not the primary constraint. Below figure 2 shows visual representation of result of data analysis

Figure 2 visual representation of analysis



Economic Sciences
https://economic-sciences.com
ES (2025) 21(5S), 86-99| ISSN:1505-4683



Source: Author development (through Python)

5.0 Theoretical Implications

Study makes contributions to behavioural economics and agricultural policy literature by empirically validating core theoretical principles in a real-world context. Study provides robust confirmation of Prospect Theory (Kahneman & Tversky, 1979) in agricultural finance demonstrating that loss aversion is not merely a laboratory phenomenon but a decisive factor in farmers financial decisions. The finding that the fear of losing insurance premiums outweighs the statistical benefit of price protection aligns with research showing that individuals engage in "mental accounting," treating potential losses from a premium as a definite, immediate loss, while the benefits of insurance are viewed as probabilistic and distant (Thaler, 1999). This cognitive framing makes the decision to not purchase insurance feel like a gain, even when it is statistically suboptimal. Second, it extends the concept of Status Quo Bias (Samuelson & Zeckhauser, 1988) beyond technological adoption to the domain of financial instruments, showing that cognitive inertia applies as strongly to abstract financial products as it does to tangible technologies. This inertia is likely compounded by the endowment effect, where farmers overvalue the familiar MSP system simply because they feel they "possess" this right, making any alternative seem less valuable by comparison (Kahneman, Knetsch, & Thaler, 1991). Most importantly study offers empirical evidence for the "crowding-out" hypothesis, confirming that a pervasive government safety net like the MSP system can create a behavioral dependency that suppresses the development of private risk management markets, as theorized by Birthal et al. (2015). This supports broader institutional theory suggesting that well-intentioned government interventions can inadvertently displace private initiative and market-based solutions by altering the incentive structure for economic actors (Mazzucato, 2018). Finally, reinforcing Human Capital Theory demonstrating that education role in adoption extends beyond production technologies to complex financial decision-making, enhancing not just cognitive ability but also financial literacy and the capacity to navigate abstract systems, a critical component of human capital in modern economies (Schultz, 1961; Cole, 2014).

5.1Practical and Policy Implications

The findings demand a strategic shift in policy from simply increasing access to actively managing behavioral barriers. Behaviorally-Informed Program Design Price insurance and futures contracts should be reframed to mitigate loss aversion. This can be achieved by structuring products with small, frequent payouts rather than large, infrequent ones, making the benefits more tangible and salient. This approach leverages the principle of "availability heuristic," where more frequent events are perceived as more likely. Furthermore default options could be used, where farmers are automatically enrolled in a basic price insurance scheme with an easy opt-out, leveraging status quo bias for good. (Thaler & Sunstein, 2008). Information campaigns should also utilize social norms by highlighting that a growing number of successful farmers in the community are adopting these tools, as people are heavily influenced by the actions of their peers (Cialdini et al., 1990). Phased and Integrated Risk Management Recognizing MSP role as a psychological anchor, policy should not seek to abruptly replace it but to create a layered risk management system. The MSP can be positioned as a foundational "catastrophic" price floor, while market-based tools are promoted for "middle-layer" risk to capture prices above the MSP but below volatile market peaks. This reframes hedging not as a gamble against a government guarantee but as a tool for upside potential and income optimization. This approach mirrors modern portfolio theory, where diversification of risk management strategies, rather than reliance on a single one leads to a more resilient financial position (Markowitz, 1952). Government could even offer subsidies for the premiums on these "middle-layer" products to bridge the initial adoption gap.

Targeted "Nudge" Interventions and Education: Extension services must move beyond awareness campaigns to interactive behaviorally-designed programs. Financial literacy modules should use simple visuals, storytelling, and concrete analogies that translate abstract concepts like "basis risk" into relatable farming scenarios (Green & Brock, 2000). Pilot programs should target younger, more educated farmers and larger landholders These "champion" farmers can act as trusted messengers, overcoming the skepticism that often accompanies external advisors (Rogers, 2003).

6.0Conclusion

This study conclusively demonstrates that the low adoption of market-based price risk management instruments among farmers in Western Uttar Pradesh is not a simple market failure but a predictable outcome of deep-seated behavioral biases and institutional incentives. The farmers reluctance is rational within their psychological and institutional context are averse to potential losses, cognitively comfortable with the status quo, and securely anchored by the MSP system. The findings argue that the continued liberalization of agricultural markets must be accompanied by a sophisticated understanding of behavioral economics. withdrawing the MSP without addressing these behavioral dependencies would be catastrophic for farmer welfare. Conversely maintaining the status quo without promoting market-based tools leaves farmers vulnerable to price shocks beyond the MSP scope and hinders the development of a mature agricultural economy. Success hinges on designing policies and products that do not fight these biases but work with them, nudging farmers towards more resilient and profitable risk management strategies without removing the crucial safety net they depend on. This human-centric approach to policy design is essential for fostering sustainable agricultural transformation not just in India but in other developing nations grappling with similar challenges.

6.1Future Research Directions

To build upon this study future research should focus on longitudinal and causal analysis, panel study tracking the same farmers over time would help establish causality and understand how adoption evolves with experience and changing market conditions. Such a study could track how a farmer risk perception changes after experiencing a major price shock or after a positive experience with a new financial tool providing dynamic insights into the formation and modification of these biases. Experimental Interventions (RCTs) most critical next step is to design and test the proposed practical implications through Randomized Controlled Trials (RCTs). This methodology has revolutionized development economics, provides the gold standard for causal inference (Duflo et al., 2007). An RCT could involve testing different insurance framings (loss vs. gain framed), default enrollment schemes versus voluntary sign-ups, or effectiveness of specific financial literacy nudges to identify the most cost-effective interventions. Geographical and Commodity Expansion replicating this study in regions with less reliable MSP procurement or in states with different agricultural marketing policies would test the generalizability of the "crowding-out" effect. A comparative study between a state with a very strong MSP presence (like Punjab) and one where it is weaker but commodity markets are more developed (like Maharashtra) could serve as a natural experiment to identify context-specific barriers and drivers of adoption. In last exploring moderating and mediating Variables where one should investigate if social networks, access to trusted aggregators or the role of mobile technology can moderate the influence of behavioral biases. Furthermore, exploring the role of household dynamics, such as gender, in risk decisions is crucial. where studies have shown that women in agricultural households exhibit different risk preferences and priorities, which could significantly influence adoption outcomes (Doss, 2001).

References

1. Birthal, P. S., Roy, D., & Negi, D. S. (2015). Assessing the impact of crop insurance Acharya, S. S. (2011). WTO, agriculture and India: An overview. *Indian Journal of Agricultural Economics, 66*(1), 1-21.
2. Anderson, J. E., & Sutherland, D. (2015). The timing of trade liberalization in transition economies. *The Economics of Transition, 23*(2), 235-284.
3. Anderson, J. L., & Sutherland, L.-A. (2015). The importance of context in farmer decision-making: A case study of organic conversion in Scotland. *Journal of Rural Studies, 41*, 1–11. https://doi.org/10.1016/j.jrurstud.2015.07.001
4. Birthal, P. S., Roy, D., & Negi, D. S. (2015). Assessing the impact of crop insurance on agricultural production in India. *Economic and Political Weekly, 50*(22), 98-105.
5. Birthal, P. S., Roy, D., & Negi, D. S. (2015). Assessing the impact of crop insurance on farm income and investment in India. *Food Policy, 56*, 147–156. https://doi.org/10.1016/j.foodpol.2015.08.004
6. Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*(6), 1015–1026.
7. Cole, S. A. (2014). Financial literacy, financial education, and downstream financial behaviors. In A. Lusardi & M. A. Mitchell (Eds.), *Financial Literacy: Implications for Retirement Security and the Financial Marketplace* (pp. 81-108). Oxford University Press.
8. Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association, 9*(3), 522–550. https://doi.org/10.1111/j.1542-4774.2011.01015.x
9. Doss, C. R. (2001). Designing agricultural technology for women: A gender analysis of a pest-control technology in Ghana. *World Development, 29*(9), 1619-1633.
10. Duflo, E., Glennerster, R., & Kremer, M. (2007). Using randomization in development economics research: A toolkit. In T. P. Schultz & J. A. Strauss (Eds.), *Handbook of Development Economics* (Vol. 4, pp. 3895-3962). Elsevier.
11. Duflo, E., Kremer, M., & Robinson, J. (2011). Nudging farmers to use fertilizer: Theory and

experimental evidence from Kenya. *American Economic Review, 101*(6), 2350–2390.
12. Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191.
13. Foster, A. D., & Rosenzweig, M. R. (2010). Microeconomics of technology adoption. *Annual Review of Economics, 2*(1), 395–424. https://doi.org/10.1146/annurev.economics.102308.124433
14. Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701–721.
15. Gulati, A., & Juneja, R. (2019). Future of Indian agriculture: Technology, institutions and policy. *Indian Journal of Agricultural Economics, 74*(1), 1–21.
16. Gulati, A., & Juneja, R. (2019). Revisiting the role of minimum support price in Indian agriculture. *Indian Journal of Agricultural Economics, 74*(3), 297-315.
17. Hazell, P. B. R. (1992). The appropriate role of agricultural insurance in developing countries. *Journal of International Development, 4*(6), 567-581.
18. Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (3rd ed.). John Wiley & Sons.
19. Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives, 5*(1), 193-206.
20. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263–291.
21. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society, 47*(2), 263-291.
22. Markowitz, H. (1952). Portfolio selection. *The Journal of Finance, 7*(1), 77–91.
23. Mazzucato, M. (2018). *The value of everything: Making and taking in the global economy*. PublicAffairs.
24. Menapace, L., Colson, G., & Raffaelli, R. (2013). Risk aversion, subjective beliefs, and farmer risk management strategies. *American Journal of Agricultural Economics, 95*(2), 384-389.
25. Menapace, L., Colson, G., & Raffaelli, R. (2013). Risk aversion, subjective beliefs, and farmer's production decisions under a revenue insurance scheme. In *2013 Annual Meeting, August 4-6, 2013, Washington, DC* (No. 149839). Agricultural and Applied Economics Association.
26. Polit, D. F., & Beck, C. T. (2006). The content validity index: Are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health, 29*(5), 489-497.
27. Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
28. Rubin, D. B. (2004). *Multiple imputation for nonresponse in surveys*. John Wiley & Sons.
29. Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty, 1*(1), 7–59. https://doi.org/10.1007/BF00055564
30. Schultz, T. W. (1961). Investment in human capital. *The American Economic Review, 51*(1), 1-17.
31. Thaler, R. (1999). Mental accounting matters. *Journal of Behavioral Decision Making, 12*(3), 183-206.
32. Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Yale University Press.
33. Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science, 211*(4481), 453–458. https://doi.org/10.1126/science.7455683
34. Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty, 5*(4), 297-323.
35. Zeckhauser, R. (1988). Comments: Behavioral versus rational economics: What you see is what you conquer. *Journal of Business, 61*(4), S435-S449.