

### Households' perception and expectation and India's gold market: Evidence from Reserve Bank of India's Consumer Confidence Survey:

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# Outline

- I. Introduction
- 2. Review of earlier studies and hypothesis formulation
- 3. Data description and descriptive analysis
- 4. Empirical model
- 5. Results and findings
- 6. Discussion
- 7. Conclusion and policy implications

# Synopsis

- Households' perception and expectation about the economic outlook, employment, inflation, income, and spending depict the important impacts on asset prices. Hence, the study aims to establish the relationship between consumer confidence and the gold market in India.
- Our study employs the Reserve Bank of India's (RBI) Consumer Confidence (CC) Survey from 2012-2023, considering current situation index (CSI) and future expectation index (FEI). The CC survey's important dimensions include household **perception** and **expectation** on the current economic condition, employment, prices, inflation, income, and expenditures.
- In order to gauge gold investment in India, we consider investment in gold futures, Bar and Coins, Jewelry, ETF Gold holdings, and overall gold demand. There seems to be an asymmetric association between households' optimism (pessimism) and gold investment in India. The relation is more pronounced during the major economic shift and changes in the gold regime and regulations.
- Households' current perception (CSI) explains gold investment with optimism; a decrease in the current perception led to a rise in the bar and coins investment, jewelry, and overall gold demand. However, the household's future expectation contributes marginally to gold investment (Gold ETF, and Gold futures).

- Indeed, MCX-based gold price and consumer confidence hold important links; a rise in the current situation (future expectation) results in the rise of gold purchase/investment while it holds an asymmetric relation during 2012-14 and 2012-20. Household perception and expectation and the gold market in India have several policy implications:
  - (i) Household's *disciplined investment in Gold* despite the rise in the gold price draws the attention of the policymakers to work more on the financialization of gold products, to reduce need of physical gold.
  - (ii) Further, agencies and financial institutions can work on the financial literacy/capability and financial inclusion to moderate the household's *perception* and *expectation*.

# I. Introduction

- Prices of Gold are dependent on demand and supply in the short run, while in the long run, these are affected by inflation and the marginal cost of gold extraction.
- Supply of gold depends on the current price of gold and the current interest rate, the default risk premium, and the convenience yield.
- Demand for gold is categorized in two ways, namely use-based demand (like for jewellery, Bar and Coin/medals, electrical components etc., and price volatility) and asset based demand as an investment that depends on factors like exchange rate **expectations**, inflationary **expectations**, "fear", the returns on other assets and the lack of correlation with other assets. (Levin and Wright, 2006).

• In Past years, especially after the financial crisis, Gold prices have fluctuated considerably. These fluctuations attracted the interest of researchers and scholars to understand the reasons or the forces that derive the movement of gold prices. Gold is considered an important asset because of its diverse roles like as an investment asset, diversification benefit, financial arbitrage, as a store of value, political unrest, hedge against currency risk, potential safe haven or hedge against inflation (Aye at. al., 2016).

The research question is twofold: (i) Does consumer confidence matter for the gold market? (ii) Do consumers' current situation and future expectations affect the gold market and investing in India?

- Rational Expectation: Decisions regarding "Invest in gold" have their roots in behavioral science which depicts the rational behavior followed by consumers while decision making. Consumers are rational and they take decisions with due care after considering various factors.
- A critical question that we have yet to address is:
  - What are the intuitive and theoretical reasons that can lead one to think that consumer sentiments predict/impact the Gold market.
  - We know sentiments may be **optimistic** or **pessimistic**. Positive sentiments are thought to boost asset prices, while negative sentiments are thought to depress them.

- Strong and persistent sentiments can lead to irrational exuberance, while at the extreme level, these sentiments may be linked to the propensity to speculate (Tiwari at. al., 2022). Diba & Grossman (1984) evidenced that actual price movements of gold did not involve rational bubbles, as the existence of rational bubbles makes time series of gold prices nonstationary while relative prices movements of gold involved rational price bubbles corresponds to market fundamentals.
- For example Bertus and Stanhouse (2001), A rational bubble can arise when the actual market price depends positively on its own expected rate of change, as normally occurs in asset markets. Self-fulfilling expectations of price changes may drive actual price changes independently of market fundamentals; we refer to such a situation as a rational price bubble.

 Consumer Confidence Index (CCI): Household perception and expectations (HPEs) play an important role in India's gold market. Representative of these HPEs is CCI. It represents the consumers' confidence or sentiments about asset pricing, Economic situation, employment, Prices, Inflation, Income, and spending like factors. These factors have their individual impact on the gold segment covering gold Future/spot prices, gold ETFs, Jewellery, gold bars & coins, consumer's gold demand-supply. It is the consumer confidence that induces them to invest in Assets particularly in Gold in various forms.

- RBI releases the quarterly/bi-monthly consumer confidence survey report, which represents India's consumer confidence index. The consumer confidence index is comprised of two sub-indices: the current situation/perception index (CSI) and future expectation index (FEI).
- Current Situation Index (CSI) The consumer's Current situation/Perception index represents the consumer's net responses about the economic situation, income, spending, employment, and the price level for the current period (compared with the previous year).
- Future Expectations Index (FSI) The consumer's Future Expectations index represents the consumer's net responses about the economic situation, income, spending, employment, and the price level for the year ahead.

### Figure-I Consumer confidence and India's gold market



### Consumer confidence (CC) and Asset Price:

- Several measures are used to define sentiments ranging from investors' attitudes (Shleifer and Summers, 1990), investor's reactions (Barberis et al., 1998), propensity to speculate (Baker and Wurgler, 2007), optimism/pessimism (Baker and Wurgler, 2006), and beliefs (Zhang, 2008) etc. in existing literature, with no single consensus. These measures are used as proxies to define sentiments in different ways.
- Based on the majority of empirical studies, measures of proxies for Investors' sentiments may be categorized into three broad categories namely market-based sentiment proxies, survey-based sentiment proxies, and sentiment-based proxies (Aggarwal, 2022).
- Consumer confidence is covered under survey-based sentiment proxy. Several studies have been conducted on the role of sentiments on asset prices or market returns (e.g., Brown and Cliff 2004; Baker and Wurgler 2006, 2007; Kumar and Lee 2006; Baker et al. 2012; Yang and Li 2013). These studies revealed the importance of sentiments in variations of market returns and prices. Hence, we hypothesize

H1: Consumers' current situation (future expectation)

and gold investment are positively (negatively)

associated.

### Economic situation & Employment and Gold market

- Consumer sentiments plays important role in determining the economic situation of country. CSI (Consumer sentiment index) contains leading information useful in forecasting as well as coincident (lagging) information, acting as a mood signal for assessing the changes in economic activity (Kim, 2016). Economic situation of any country is mainly represented by GNP/GDP of that country and various fundamentals factors like prices, exchange rates, government's spending, money supply, interest rates, employment etc. plays important roles in GNP/GDP.
- Investor's perception of economic stability do cause the gold market and prices to fluctuate significantly mainly because gold is a speculative asset also that does not have any fundamental value, unlike other assets such as companies' stocks or properties or other commodities (Kumar, Rao & Srivastava, 2012).

 Any announcement, related to macroeconomic variables may impact the consumer sentiments that lead to gold prices. Macroeconomic variables includes lots of variety. One important variable is employment data reports, which play an important role in gold prices. Employment situation reports labeled as "bad news" cause an increase in the exchange rate and the gold spot rate. (Niyazpour & Tokmakcigglu, 2023). Hence, we hypothesize

> H2: Consumers' current situation (future expectation) in relation to economy and employment contributes positively (negatively) to the gold market

### General Price Level (CPI-Consumer Price Index) inflation and Gold market

- Sentiments of consumers about general prices levels of goods and services plays important role in gold prices. General price level is depicted by Consumer price index that measures the changes over time in the general price level of household goods and services. CPI is macroeconomic indicator of inflation and deflation. The Consumer Price Indices (CPI) for all-India and States/UTs is separately released by Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation every month.
- The Consumer Price Index (CPI) influences government actions on inflation, impacting investments like gold, a safe haven during economic uncertainty and crisis (Baur & McDermott, 2016).

### Investors buy gold to hedge against expected inflation and speculate on rising prices. Gold's long-term inflation-hedging role may be affected by economic structural changes. While it historically acts as an inflation hedge, regional variations exist, with gold's effectiveness differing between currencies and CPIs. Research shows mixed evidence regarding CPI predictability in gold price returns, with exchange rates playing a significant role in driving gold futures commodity prices(Aye at. al., 2016; McCown and Zimmerman, 2007; Wang et al., 2013; Sharma, 2016; Dewi, 2022). Hence, we hypothesize

H3: Consumers' current situation (future expectation) about price and inflation contributes positively (negatively) to the gold market

### Income & Spending and Gold market

- The consumer confidence survey gauges present conditions and future expectations, shaping economic activities and growth rates. Its major components include, income, and spending, which significantly influence consumption behavior, vital for both short and long-term economic analysis, impacting monetary policy, business cycles, savings, capital stock, wages, interest rates, and living standards (Carroll, 2006; Juhro and Iyke, 2020; Öztürk and Stokman 2019; Dees, and Brinca, 2013).
- Consumer confidence index could be used as a vital information source in estimating the direction and magnitude of household consumption expenditure, while Income level and gold returns as control variables provided significant information for durable consumption expenditure (lpek & Akyazi, 2017) Hence, we hypothesize.

H4: Consumers' current situation (future expectation) about income and spending contributes positively (negatively) to the gold market

# 3. Data description and descriptive analysis

- The individual household data for CC from September 2012 to December 2023 were derived from the RBI's consumer confidence survey (CCS), which is conducted quarterly and bi-monthly. This survey includes 6,100 households from 19 major cities in India with diverse demographic characteristics.
- Many studies in the existing literature have employed country-level survey data. For instance, in the context of Denmark, Abildgren (2016) used Danish expenditure and savings survey data; in the context of Australia, Jayasinghe et al. (2020) and Tahir et al. (2022) used an Australian household dataset; and in the US context, Xiao and Porto (2017) used national financial capability study data.

### Table I Variable description and Descriptive Statistics

	C	Correlation	n coefficient			Unit r	oot test				
	CSI	p-value	FEI	p-value	in level	PP-test	in change	PP-test	Source	Frequenccy	Varialbe Type
B_C_DEMAND_TONNES	0.2734	0.069	0.8144	0.000	Has Unit Roo	tNO	Has Unit Root	NO	WGC	Quaterly	Response Variable
CONSUMER_DEMAND_TONNES	0.3269	0.028	0.4357	0.003	Has Unit Roo	tNO	Has Unit Root	NO	WGC	Quaterly	Response Variable
ETF_HOLDINGS_TONN_	-0.2610	0.083	0.5968	0.000	Has Unit Roo	t YES	Has Unit Root	NO	WGC	Quaterly	Response Variable
JWELL_DEMAND_TONNES	0.3074	0.040	0.5954	0.000	Has Unit Roo	tNO	Has Unit Root	NO	WGC	Quaterly	Response Variable
GOLD_SUPPLY	0.2900	0.053	-0.2753	0.067	'Has Unit Roo <sup>.</sup>	tNO	Has Unit Root	NO	WGC	Quaterly	Control Variable
MCX_GOLD_FUTURES	-0.7297	0.000	-0.3459	0.020	Has Unit Roo	t YES	Has Unit Root	NO	MCX	Quaterly	Response Variable
NIFTY	-0.5708	0.000	0.2452	0.105	Has Unit Roo	t YES	Has Unit Root	NO	NSE	Quaterly	Control Variable
Gold Price Premium and Discount	0.1519	0.319	-0.2424	0.109	Has Unit Roo	tNO	Has Unit Root	NO	WGC	Quaterly	Response Variable
WGC_GP_PER10G	-0.7363	0.000	-0.3602	0.015	Has Unit Roo	t YES	Has Unit Root	NO	WGC	Quaterly	Response Variable

Variable (Regressors)	in level	PP-test	in change	PP-test
CSI-Current Situation Index	Has Unit Root	YES	Has Unit Root	NO
FEI-Future Expectation Index	Has Unit Root	YES	Has Unit Root	NO
TICP_ECONOMIC_SITUATION	Has Unit Root	YES	Has Unit Root	NO
TIFE_ECONOMIC_SITUATION	Has Unit Root	YES	Has Unit Root	NO
T2CP_EMPLOYMENT	Has Unit Root	YES	Has Unit Root	NO
T2FE_EMPLOYMENT	Has Unit Root	NO	Has Unit Root	NO
T3CP_PRICES	Has Unit Root	YES	Has Unit Root	NO
T3FE_PRICES	Has Unit Root	NO	Has Unit Root	NO
T4CP_INFLATION	Has Unit Root	NO	Has Unit Root	NO
T4FE_INFLATION	Has Unit Root	NO	Has Unit Root	NO
T5CP_INCOME	Has Unit Root	YES	Has Unit Root	NO
T5FE_INCOME	Has Unit Root	NO	Has Unit Root	NO
T6CP_SPENDING	Has Unit Root	YES	Has Unit Root	NO
T6FE_SPENDING	Has Unit Root	YES	Has Unit Root	NO
T7CP_ESSEN_SPEND	Has Unit Root	YES	Has Unit Root	NO
T7FE_ESSEN_SPEND	Has Unit Root	YES	Has Unit Root	NO
T8CP_NON_ESSEN_SPEND	Has Unit Root	YES	Has Unit Root	NO
T8FE_NON_ESSEN_SPEND	Has Unit Root	YES	Has Unit Root	NO

								CONSUMER_D	
			B_C_DEMAND	JWELL_DEMAN	MCX_GOLD_F	WGC_GP_PER		EMAND_TON	
	CSI	FEI	_tonnes	D_TONNES	UTURES	10G	GOLD_SUPPLY	NES	PD
Mean	89.61	115.81	48.59	141.34	36662.35	33012.17	214.78	189.93	-4.32
Median	96.41	117.66	42.69	146.16	30852.67	28467.85	210.93	190.75	-7.35
Maximum	108.64	133.44	133.14	264.99	59443.00	52191.57	380.19	343.88	117.70
Minimum	49.53	87.70	19.76	43.97	25473.67	23432.73	25.49	63.73	-48.08
Std. Dev.	17.34	9.00	22.50	42.52	10549.53	9094.10	68.72	58.79	26.94
Qtr. Observations	45	45	45	45	45	45	45	45	45
Sum (in Tonnes)			2186.46	6360.20			9665.27	8546.66	

### Figure 2 CSI and FEI



Figure 3 CC and Gold market





When the first gold ETF was launched in 2007 it was a notable success. However, the rising equity market proved too much of a temptation and demand was soon dented. Not until the pandemic caused economic alarm did the ETF market recover and by the end of 2023 gold ETF holdings stood at 38t. (WGC, 2023)

## 4. Empirical model

• Our study attempts to put forth some quantitative evidence on the relationship between Household's perception and expectation and the India's Gold Market in the emerging markets such as India. Based on recent studies (e.g. Barberis et al., 1998; Baker and Wurgler, 2007; Baker and Wurgler, 2006 and Zhang, 2008; Aggarwal, 2022) consumer sentiment and various asset class hold an important relation. Several studies have been conducted on the role of sentiments on asset prices or market returns (e.g., Brown and Cliff 2004; Baker and Wurgler 2006, 2007; Kumar and Lee 2006; Baker et al. 2012; Yang and Li 2013). We depict the empirical specification as follows (also see Figure I the conceptual).

### • $G_t = Intercept + \pi_i X_t + \theta_i \Pi_t + e_t$

- $G_t$  = is the response variables, Gold market variant; e.g.,
  - B\_C\_DEMAND\_TONNES;
  - CONSUMER\_DEMAND\_TONNES;
  - ETF\_HOLDINGS\_TONN;
  - JWELL\_DEMAND\_TONNES;
  - MCX\_GOLD\_FUTURES;
  - WGC\_GP\_PERIOG
- $X_t$  = is the vector of mediating regressors namely, CSI/FEI and sub-dimension of CSI/FEI indexes e.g.,
  - CSI-Current Situation Index; FEI-Future Expectation Index;
    - TICP\_ECONOMIC\_SITUATION; TIFE\_ECONOMIC\_SITUATION;
    - T2CP\_EMPLOYMENT; T2FE\_EMPLOYMENT;
    - T3CP\_PRICES;T3FE\_PRICES;
    - T4CP\_INFLATION; T4FE\_INFLATION;
    - T5CP\_INCOME;T5FE\_INCOME;
    - T6CP\_SPENDING;T6FE\_SPENDING;
    - T7CP\_ESSEN\_SPEND; T7FE\_ESSEN\_SPEND;
    - T8CP\_NON\_ESSEN\_SPEND; T8FE\_NON\_ESSEN\_SPEND
- $\Pi_t$  = is the vector of control regressors namely, Gold Supply and Equity market returns (Nifty).
- We take the natural log transformation of the all-time series variables, and the variables are placed with the first difference in the case of the trending series.

### Table 2 CSI & FEI and Jwellary demand

				2012Q4 -	2014Q3	2014Q4 -	2016Q2	2016Q3 -	2018Q4	2019Q1 -	2020Q3	2020Q4 -	2022QI	2022Q2 -	2023Q3
				8 0	obs	7 (	obs	10	obs	7	obs	6 0	obs	6 0	obs
		Full S	Sample	Bre	ak-I	Bre	ak-2	Bre	ak-3	Bre	ak-4	Bre	ak-5	Brea	ak-6
		Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
	Intercept	1.7	5 3.89	3.36	5.67	-0.65	-2.86	4.13	6.61	4.58	8 10.57	-8.83	-6.16	7.83	3.16
	DLOG(CSI)	-0.13	<mark>3 -2.3</mark> 1	0.85	0.71	-8.76	-13.39	0.25	0.22	. 2.89	6.43	-14.57	-7.99	13.67	5.29
Ŋ	DLOG(FEI)	-0.14	4 -0.17	-1.35	-1.20	4.06	4.34	4.30	5.60	-7.10	-8.24	31.31	10.41	-0.87	-0.22
2	LOG(GOLD_SUPPLY)	0.59	9 7.05	0.30	2.69	1.03	21.49	0.16	5 1.36	0.02	0.26	2.70	9.07	-0.68	-1.45
р Г	DLOG(NIFTY)	-0.12	2 -0.16	1.03	1.30	1.01	2.80	0.77	7 I.54	2.84	9.73	0.95	0.47	8.83	3.70
Ē	Adj. R <sup>2</sup>		0.51												0.81
	F-stat		10.30												7.28
	p-value		0.00												0.00
<b>.</b> .						<u> </u>									
Period		Ŀ	Bi-Perron-Beaks	5		Gold m	arket reform	n policy	.:	L					
20120	24 - 2014Q3	Ł	Break-I			In Augu	st 2013, the	controver	sial 80:20 sc	heme was i	ntroduced				
20140	Q4 - 2016Q2	E	Break-2			In Nove	ember 2015,	three new	schemes w	ere launche	d. The Gold	Deposit Sc	heme (GDS	5) 1999 was	
						relaunc	hed as Gold	Monetisati	on Scheme	(GMS) to m	obilize Golo	held with h	nouseholds	and to redu	ce
						depend Coin w	ence on gol	I Import. N	IOW, GMIS CO	omprises G	DS as well a	S GML (GOI DANI (Tav N	d Metal Loa	in). National	Gold
20140	2014O2 2019O4 Proof 2 Proof 2 Proof 2														
20100	23 - 2018Q4	Ľ	DI Eak-J			2016161			2017-10 361	105 1,					
20190	QI - 2020Q3	E	Break-4			Soverei	gn Gold Boi	nd Scheme	2018–19 sei	ries I were i	ntroduced.				
20200	Q4 - 2022Q1	E	Break-5			Covid-	9, Wav-1&2	2							
20220	Q2 - 2023Q3	E	Break-6			Revamp	ed Gold Mo	onetisation	Scheme (R-0	GMS) April	2021				

### Table 2.1 Economic situation & employment and Jwellary demand

				2012Q4 -	2014Q2	2014Q3	- 2016Q1	2016Q2 -	2017Q4	2018Q1 -	2019Q4	2020QI -	2021Q3	2021Q4 -	2023Q3
				7	obs		7 obs	7	obs	8	obs	7	obs	8 0	obs
		Full S	ample	Bre	eak-I	В	reak-2	Bre	eak-3	Bre	ak-4	Bre	eak-5	Brea	ak <b>-6</b>
		Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
_	Intercept	1.69	3.67	3.34	4 5.86	-2.	40 -2.19	2.08	3 2.64	<b>i</b> 3.54	3.70	6.7	3 45.72	2.89	0.31
Eco	DLOG(TICP_ESI00)	-0.15	-2.44	-0.5	0 -1.03	-4.	<mark>68 -8.28</mark>	5.95	<mark>5</mark> 2.22	-2.42	-2.48	2.12	2 <mark>31.48</mark>	-0.29	-0.08
ňo	DLOG(TIFE_ESI00)	0.40	0.54	0.4	7 0.65	5.	32 4.14	-4.85	5 -1.58	3.93	2.73	-2.9	7 <mark>-44.76</mark>	-1.88	-0.45
mic	LOG(GOLD_SUPPLY)	0.61	6.95	0.3	0 2.83	I.	38 6.91	0.62	2 4.77	0.26	5 I.42	-0.4	5 -15.47	0.39	0.22
Sit	DLOG(NIFTY)	-0.18	-0.25	0.0	3 0.04	3.	81 4.91	-7.07	-2.12	2 1.12	0.60	2.04	4 18.47	4.99	1.33
:uat	Adj. R <sup>2</sup>		0.52												0.55
ör	F-stat		10.40												5.62
-	p-value		0.00												0.00
							2012Q4 - 2	019Q4 2	9 obs	2021Q4 -	2023Q3	8 obs	2021Q4	- 2023Q3 -	8 obs
				Full	Sample		В	reak-I			Break-2			Break-3	
			Estim	ate	t-stat	E	stimate	t-stat	Es	timate	t-stat		Estimate	t-stat	
	Intercept			0.7	70	0.47	2.	05	1.23	ľ	9.86	3.20		5.18	8.09
_	DLOG(T2CP_EMPI0	0)		0.0	)3	0.14	-0.	37	-0.98		2.06	2.21		3.05	4.85
<u> </u>	LOG(T2FE_EMP100)			0.2	27	0.80	0.	08	0.17		2.69	-2.92		-2.84	-2.99
0	LOG(GOLD_SUPPL	Y)		0.5	55	<u>6.54</u>	0.	47	2.95	-(	0.54	-1.36		0.57	0.77
/en	DLOG(NIFTY)	,		-0.	4	-0.21	0.	28	0.37		2.97	2.38		5.28	3.51
len	Adj. R <sup>2</sup>					0.47									0.68
t.	F-stat					10.43									18.43
	p-value					0.00									0.00

### Table 2.2 Prices & Inflation and Jwellary demand

					2012Q4 -	2020QI 30 ot	os 2020Q	2 - 2021Q3 -	- 6 obs	2021Q4 - 202	3Q3 8 obs
			Full Sa	ımple		Break-I		Break-2		Brea	ık-3
		Estima	te 1	t-stat	Estimate	t-stat	Estimate	t-stat	E	stimate	t-stat
	Intercept		1.69	3.8	8	.77 I	.98	-15.41	-1.88	7.23	5.84
	DLOG(T3CP_PRICES100)		-0.01	-0.0	9 (	.05 C	.95	-0.64	-2.19	-1.29	-14.91
	LOG(T3FE_PRICES100)		0.04	0.5	4 (	.09 I	.32	4.21	2.07	0.31	1.51
Pri	LOG(GOLD_SUPPLY)		0.58	9.4	4 (	.54 3	.91	1.06	4.75	-0.64	-3.99
ces	DLOG(NIFTY)		-0.20	-0.2	.6 (	.65 I	.04	-10.14	-2.57	6.99	16.09
	Adj. R2			0.4	6						0.56
	F-stat			10.2	8						17.66
	p-value			0.0	0						0.00
				2012Q4	- 2014Q1 6	2014Q2 - 2	016Q1 8	2016Q2 - 2	2021Q3 2	22 2021Q4	- 2023Q3 8
					obs	ol	os	c	obs		obs
		Full S	ample		Break-I	Brea	ak-2	Bro	eak-3	B	reak-4
		Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
	Intercept	1.56		l.86 4	.79 16	36 1.29	0.56	6 0.5	7 0	).86 <u> </u>	36 0.52
	LOG(T4CP_INFL100)	0.07	(	).35 <mark>-0</mark>	<mark>.49</mark> -3.	84 <mark>0.56</mark>	1.60	<mark>6</mark> 0.3	2 I	1.27 <mark>-0.</mark> 8	85 - I.63
-	LOG(T4FE_INFL100)	0.01	(	0.02 0	.14 0.	83 -1.44	-2.57	<mark>7</mark> 0.1	0 0	).25 -1.3	-0.73
nfla	LOG(GOLD_SUPPLY)	0.59	5	5.84 0	.19 5.	48 I.I6	4.5	I 0.5	6 5	5.35 I.!	53 1.53
tio	DLOG(NIFTY)	-0.08	-(	).12 -2	.18 -5	-0.52	-0.64	4 -0.1	8 -0	).13 3.!	54 1.29
د	Adj. R2		(	).47							0.61
	F-stat		10	).57							18.38
	p-value			0							0.00

### Table 2.3 Income & Spending and Jwellary demand

										2012Q4 - 2	2021Q3	36 obs	2	2021Q4 - 20	23Q3 8 o	bs
						F	ull Sampl	e			Break-I			Bre	ak-2	
					Estim	nate	t-sta	t	Estim	ate	t-stat		Estimate		t-stat	
	Intercept						1.07	(	).29	-	.27	-0.4	0	59.62	2	3.57
	DLOG(T	SCP_INCC	OMEI00)			-	0.37	-(	).96	-0	.50	-1.3	2	-2.40	)	<mark>-1.65</mark>
-	_ LOG(T5F	E_INCOM	1E100)				0.08	(	D. I I	0	.54	0.8	3	-11.48	3	-4.09
6	LOG(GO	OLD_SUPP	PLY)				0.65	!	5.23	0	.65	4.3	7	0.48	3	0.73
	j DLOG(۱	NIFTY)				-	0.13	-(	).19	-0	.41	-0.5	2	3.14	ł	1.43
•	Adj. R2							(	).47							0.59
	F-stat							10	).71							7.87
	p-value							(	0.00							0.00
					2012Q4 -	2015Q1	2015Q2	- 2016Q3	2016Q4	- 2019Q1	2019Q2 -	2020Q3	2020Q4 -	2022QI	2022Q2 - 2	023Q3
					10	obs	e	obs	I	0 obs	6	obs	6	obs	6 0	bs
			Full Sa	ample	Bre	eak-l	Ві	reak-2	В	reak-3	Bre	eak-4	Bre	ak-5	Brea	k-6
			Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate t	-stat
	Intercept		1.64	2.92	3.40	) 4.60	-1.0	)7 -8.06	3.:	30 1.77	5.26	5 3.95	2.99	0 10.13	8.50	2.25
	DLOG(T6CP_S	PEND100)	-0.43	-0.53	-0.14	-0.17	-10.9	98 <mark>-82.15</mark>	3.(	)8 I.34	11.05	5 3.90	23.15	39.73	I.80	0.52
S	DLOG(T6FE_SI	PEND100)	-0.29	-0.65	-0.11	-0.70	10.0	04 <mark>30.09</mark>	-5.0	5 <mark>3 -2.3</mark> 2	-14.29	-6.23	-40.76	<mark>-37.74</mark>	20.51	2.49
pen	LOG(GOLD_	SUPPLY)	0.62	5.78	0.29	2.15	Ι.	I 40.77	0.3	.93	-0.1	-0.41	0.37	6.61	-0.73	-1.03
īdin	DLOG(NIFTY	)	0.01	0.01	0.67	0.53	۱.4	14 18.78	-1.!	59 -1.3 <i>6</i>	4.60	) 3.51	-8.57	-38.46	8.59	3.56
09	Adj. R2			0.48												0.88
	F-stat			10.88												12.31
	p-value			0.00												0.00

### Table 3 CSI & FEI and Bar and Coin Investment

				2012Q4 - 2 o	2014Q1 6 bs	2014Q2 - 26	2020Q3 obs	2020Q4 - 2 o	2022QI 6 bs	2022Q2 - 2 ol	.023Q3 6 bs
		Full S	ample	Bre	ak-I	Brea	ak-2	Bre	ak-3	Brea	ak-4
		Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
	Intercept	-0.0	-0.01	-1.63	-5.10	0.49	0.71	-5.57	-3.95	11.16	51.95
0	DLOG(CSI)	-1.49	-1.90	-8.49	-4.80	-1.41	-2.19	-9.37	-5.23	9.58	42.71
ß	DLOG(FEI)	1.98	<mark>. 2.53</mark>	3.24	3.65	2.49	1.73	24.15	8.17	8.86	26.25
ar	LOG(GOLD_SUPPLY)	0.72	3.55	1.04	17.78	0.60	4.68	1.83	6.26	-1.51	-36.95
ЪГ	DLOG(NIFTY)	-0.33	-0.53	6.10	8.88	-0.34	-0.42	0.83	0.42	5.75	27.75
Ë	Adj. R <sup>2</sup>		0.37	1							0.69
	F-stat		7.40								6.04
	p-value		0.00								0.00

India is ranked as the **second largest global market for bars and coins**, wherein gold holds a significant value and is greatly esteemed. It serves both as a medium for domestic investment and as an embellishment during ceremonial occasions such as weddings and festivals, among others. (WGC, 2023)

### Table 3.1 Economic condition & Employment and Bar and Coin Investment

					2012Q4 -	2014Q1	2014Q2	- 2020Q3	2020Q4 -	2022QI	2022Q2 -	2023Q3
					6 0	obs	20	6 obs	6	obs	6 0	obs
		F	ull Sample		Brea	ak-I	Br	reak-2	Bre	eak-3	Bre	ak-4
		Estimate	t-stat	I	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
-	Intercept	-	0.29	-0.26	-1.83	-3.94	0.6	60 0.8	-0.9	5 -0.87	7.35	2.58
CO	DLOG(TICP_ESI00)	-	1.02	-2.00	-2.67	-3.64	-0.6	57 -1.69	-2.98	3 <mark>-4.03</mark>	۱.97	1.10
nor	DLOG(TIFE_ES100)		1.97	2.76	2.55	3.09	1.6	52 2.0	l 8.70	) <mark>7.05</mark>	0.78	0.65
nic	LOG(GOLD_SUPPLY)		0.77	3.53	1.10	13.20	0.5	<b>59</b> 4.27	0.93	3 4.10	-0.73	-1.39
Sit	DLOG(NIFTY)	-	0.15	-0.27	3.37	5.74	-0.I	9 -0.24	1 0.90	6 0.5 I	2.97	1.97
uat	Adj. R2			0.40								0.65
ion	F-stat			8.09								5.15
	p-value			0.00								0.00
				2012Q4	- 2014Q3	2014Q4 -	2016Q2	2016Q3 - 20	18Q4 201	9QI - 2021(	Q3 2021Q4	1 - 2023Q3
				8	8 obs	7 (	obs	10 ob	S	obs		8 obs
		Full Sar	nple	Bro	eak-l	Brea	k-2	Break-3	3	Break-4	Br	eak-5
		Estimate t-	stat	Estimate	t-stat	Estimate t	-stat E	Estimate t-st	at Estir	nate t-stat	Estimate	e t-stat
	Intercept	0.13	0.07	8.7	2 1.80	12.20	13.99	-29.54	-5.31	1.24 0	.40 4.3	0 0.44
ш	DLOG(T2CP_EMP100)	-0.20	-0.46	0.3	6 0.67	3.61	<mark>8.82</mark>	0.42	0.79	0.19 0	.35 <mark>3.2</mark>	.2 3.28
mp	LOG(T2FE_EMP100)	0.11	0.21	-2.1	<mark>8 -2.00</mark>	-2.86	-14.56	6.59	6.23	0.32 0	.38 0.2	.6 0.11
loy	LOG(GOLD_SUPPLY)	0.59	2.43	1.1	0 6.41	1.05	31.27	0.22	1.82	0.14 0	.57 -0.4	-0.71
'em	DLOG(NIFTY)	-0.04	-0.06	1.7	3 0.66	0.22	1.65	0.12	0.14	1.59 2	47 5.3	0 2.45
ient	Adj. R2		0.31									0.75
	F-stat		5.79									6.46
	p-value		0.00									0.00

### Table 3.2 Prices & Inflation and Bar and Coin Investment

				2012Q4 -	2014Q3	-2014Q4 -	2016Q1	2016Q2 -	2019Q2 obs	- 2019Q3	2021Q3	- 2021Q4	2023Q3
		Full	Sample	Bre	ak-I	Bre	ak_7	Bre	ob3 ak-3	Bre	ak-4	Brea	2k-5
		Fstimate	t-stat	Estimate	t-stat	Estimate	t_stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
	Intercept	3.04	4 3.67	3 98	12 54	-5 46	-3 62	1.83	42	8.91	918	6 88	2 58
		0.0		-021	-6.63	0.05	0.10	-0 49	-1 47	-0.28	-1.23	-0.69	-2.08
	LOG(T3FF_PRICES100)	-0.4	6 -3.04	-0.51	-10.52	0.49	1.29	0.48	2.79	-1.49	-5.43	1.12	2.07
Pr	LOG(GOLD SUPPLY)	0.4	3 4.22	2 0.34	8.15	5 I.37	17.21	0.06	0.25	-0.05	-0.62	-1.30	-4.32
ices	DLOG(NIFTY)	0.3	6 0.46	-1.50	-2.28	-3.64	-3.26	-4.04	-3.39	3.36	3.90	4.92	1.67
•	Adj. R2		0.47	7									0.73
	F-stat		10.62	2									5.81
	p-value		0.00	)									0.00
				2012Q4 -	2014Q1	-2014Q2 -	2016Q1	2016Q2 -	2019Q1	2019Q2 -	2021Q3	2021Q4 -	2023Q3
				6 (	obs	8 0	obs	12	obs	10	obs	8 c	obs
		Full Sample		Break-I		Break-2		Break-3		Break-4		Break-5	
		Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
	Intercept	2.3	I I.63	3 2.32	18.28	B 1.02	1.41	-1.21	-0.84	-0.19	-0.10	6.03	1.61
	LOG(T4CP_INFL100)	-0.19	9 -1.08	3 <mark>-1.05</mark>	-20.93	0.29	0.49	-2.60	-3.56	0.04	0.18	-0.70	-1.09
<del>_</del>	LOG(T4FE_INFL100)	-0.1	5 -0.3 <i>6</i>	6 0.20	9 4.11	-1.13	-1.21	3.56	3.99	0.64	0.95	-0.19	-0.08
ıfla	LOG(GOLD_SUPPLY)	0.48	8 3.98	3 0.73	70.86	0.98	6.23	0.32	1.76	0.28	5.09	0.04	0.03
tior	DLOG(NIFTY)	-0.2	5 -0.3	-3.13	-25.68	-0.18	-0.18	-2.66	-2.83	1.51	1.77	3.90	2.84
٦	Adj. R2		0.42	2									0.66
	F-stat		8.68	3									4.46
	p-value		0.00	)									0.00

### Table 3.3 Income & Spending and Bar and Coin Investment

				2012Q4 -	2014Q1 6	2014Q2 - 2	2016Q2 9	2016Q3 -	2021Q3	2021Q4 - 2	023Q3 8
		Eull	Samolo	Brook	005	Brook 2	03	Brook 3	ODS	Brook 4	72
		Estimato	t stat	Estimato	tstat	Di eak-z	t stat	Estimato	t stat	Estimato	tstat
	Intercept		$2 \qquad 0.01$		$c = \frac{1}{2}$	LSUIMALE					1-SLAL 2 20
		0.0			-6.40	10.73		- <del>1</del> .75	-1.07	53.77	3.30
		-0.7	U -1.40	-7.5		3.85	4.//	-0.33	-0./9	-1.93	-0.71
Ξ		0.0	1 0.02	4.3	5 5./1	-2.81	-6.42	1.32	1.40	-9.56	-2.93
CO	LOG(GOLD_SUPPLY)	0.7	0 3.34	0.94	4 19.23	1.30	19.95	0.39	2.95	-0.45	-1.50
me	DLOG(NIFTY)	-0.0	3 -0.04	i 9.44	4 19.52	2.06	<b>4.99</b>	0.18	B 0.16	3.27	1.42
	Adj. R2		0.34	ł							0.64
	F-stat		6.52	2							5.05
	p-value		0.00	)							0.00
				2012Q4 -	2014Q3 8	2014Q4 -	2020Q3	2020Q4 - 2	2022QI 6	2022Q2 - 2	023Q3 6
				C	obs	24	obs	0	bs	ol	os
		Full	Sample	Break-I		Break-2		Break-3		Break-4	
		Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
	Intercept	0.5	7 0.62	-4.68	-9.43	0.40	0.91	2.04	4.04	6.45	7.66
	DLOG(T6CP_SPEND100)	-0.5	I -0.45	5.6	7 11.10	-2.10	-2.93	19.49	24.04	-8.79	-6.80
S	DLOG(T6FE SPEND100)	-0.5	3 -2.09	-4.12	2 <mark>-9.5</mark> 2	-0.16	-1.34	-30.08	- I 7.94	29.74	8.07
per	LOG(GOLD SUPPLY)	0.6	I 3.40	) 1.6	I I 8.44	0.62	7.58	0.35	3.80	-0.54	-3.41
ndir	DLOG(NIFTY)	0.1	8 0.25	0.80	D I.48	-0.33	-0.39	-8.19	-14.62	4.10	7.11
8 Bl	Adj. R2		0.34	ł							0.75
	F-stat		6.43	3							7.62
	p-value		0.00	)							0.00

# 5. Findings, Discussion

- One of the important finding of the study is that households' current perception shows an asymmetric impact on the jwellary demand, investment in the Bar and Coin, and overall consumer demand for the gold. However, household's future expectation shows positive impact on the India's gold market.
- It is apparent that decrease in the current situation (perception) about the economic condition, employment, prices and inflation, income and expenditure results in more investment in the safe haven asset like gold.
- Further, it is seen that an increase in the future expectation on the above economic indicator leads households to invest more in gold.

# • Moreover, it is surprising the relation is opposite when it comes to the financialization of gold in terms of ETF investing and Gold future investment.

- The positive slope of the CSI index indicates that improvement in the current perception of the households leads to more investment in the gold ETF and gold futures.
- The negative estimate of the FEI index implies that pessimism about the future economic outlook, employment, inflation, income, and expenditure causes an adverse impact on gold-backed products.
- In addition, we find identical results across sub-dimensions of the CSI and FEI index.

# 7. Conclusion, policy implication

- Our findings align with the theory of rational expectation and previous research. The results indicate that the sentiments of consumers have a substantial influence on the gold market, thus proposing that trading strategies grounded in these sentiments may result in considerable profits/returns for the diverse participants of the gold and gold-backed products market.
- Household perception and expectation seem to hold great significance, as India is recognized as one of the most prominent markets for gold bars and coins globally. The demand for gold as an investment is primarily motivated by its safe-haven allure and the potential to transform these commodities into jewelry at a subsequent point in time.
- Global gold producers and consumers can incorporate these sentiments while predicting gold prices. Policymakers can better forecast the level of economic stability by predicting the price bubbles of gold.

- In the past ten years, the government has achieved remarkable success in its efforts to include the unbanked population in the banking system. Additionally, there have been significant reforms in gold policy, including the the 80:20 rule, the introduction of gold bonds, GDS/GMS, GML, and the revitalization of GMS (Revamped-GMS). However, it is crucial to note that these reforms can only achieve their intended outcomes if they are in accordance with the **perceptions** and **expectations** of households.
- It appears that there has been a notable increase in the level of investment in the gold-backed product traded on the MCX, specifically in relation to gold futures and gold ETF. Gold-backed products have limited access, thus necessitating the development of gold-backed financial products that can catalyze the process of financialising gold in India and less reliance on physical gold.

# The contemporary iteration of the GMS enables the retention of gold deposits for a duration of either five or seven years, with a subsequent disbursement of interest in Indian rupees upon the culmination of said term. It is, however, worth noting that a mere six percent of households have knowledge of this particular scheme (WGC, 2023). Consequently, comprehending the process of gold monetization in India is contingent upon the perception and expectations of the Indian households.

- Overall, After considering previous studies and the Research gap, our study makes the following contributions to the literature:
  - First, it tracks the impact of consumer sentiments on the gold market.
  - Second, we used consumer confidence, derived through the Consumer situation index (CSI) and future expectation index (FEI), which captures consumer sentiments about the current macroeconomic and financial situation with their expectations.
  - Third, it investigates whether consumer sentiment holds the predictive ability to predict future price bubbles of gold beyond other predictors.

- Household's **perception** and **expectation** and the gold market in India have several policy implications:
  - (i) The diligent investment of households in Gold, despite the increase in its price, has captured the policymakers' interest, prompting them to focus more on the process of rendering gold products more financial in nature.
  - (ii) Additionally, various agencies and financial institutions have the potential to enhance financial literacy and financial inclusion in order to regulate the perception and expectation of households.

Thanks Feedback & Questions