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EXAMINATION OF LEVERAGE EFFECT AMONG INDIA AND GLOBAL GOLD EXCHANGE TRADED FUNDS

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ABSTRACT

ETFs are exchange-traded funds, which are an increasingly popular investment vehicle that builds a diversified portfolio of investment assets. We empirically analyze the volatility and return spillovers between exchange-traded funds (ETF) and the corresponding Indian benchmark indices. Data were collected between January 2014 and March 2023. The results were obtained by using the EGARCH model. This analysis provides valuable information for investors interested in investing in ETFs as it can help them make informed decisions based on the historical performance of different ETFs. The return for QNIFTY is higher, and investors willing to make a profit in ETF trading can look for this pair of ETFs and suggest avoiding LIQUID BEES, as this has given a higher negative return, and QUANTUM GOLD found a higher standard deviation for investors to take high risk.

Keywords: Exchange-Traded Funds, Portfolio, volatility, EGARCH.

Examination of Leverage effect among India and Global GOLD Exchange Traded Funds

1. INTRODUCTION

ETFs are exchange-traded funds, an increasingly popular investment vehicle that offers investors a convenient and cost-effective way to build diversified portfolios of investment assets. E-TFs are made to follow the performance of a particular index or asset class, providing investors with exposure to a broad range of assets in a single trade. Unlike mutual funds, which are bought and sold after the trading day at the net asset value (NAV), ETFs trade throughout the day on an exchange, allowing investors to buy and sell shares in real time. ETFs were first introduced in the United States in the early 1990s as a way for institutional investors to gain exposure to broad market indices such as the S&P 500 or the NASDAQ-100. Since then, the popularity of ETFs has grown dramatically, with a wide range of available ETFs offering exposure to various asset classes, such as stocks, bonds, commodities, and currencies. According to the Investment Company Institute, global assets invested in ETFs surpassed $8 trillion by 2021.

ETFs are also highly diverse. Investors gain exposure to a broad range of assets by investing in an ETF, which can help reduce portfolio risk. Some ETFs are designed to track specific sectors or industries, whereas others are exposed to entire markets or regions. This allows investors to tailor their investments according to their individual goals and risk tolerance. Exchange-traded funds (ETFs) have recently gained popularity among Indian investors because of their low cost, diversification benefits, and readability. The Bombay Stock Exchange (BSE) is one of the premier exchanges in India and is home to many ETFs .As of September 2021, there were a total of 104 ETFs listed on the BSE, with assets under management (AUM) of over INR 3.8 lakh crore. These ETFs cover asset classes and investment strategies including equity, debt, gold, international exposure, and sectoral funds.

Equity ETFs are the most popular category on the BSE, with 58 funds accounting for INR 1.9 lakh crore AUM. Nifty 50 ETFs are the most traded and preferred among investors, with 17 funds tracking the Nifty 50 index. The BSE Sensex ETFs, which follow the 30 companies comprising the BSE Sensex index, are also popular among investors. The debt ETF segment is also growing, with 18 funds accounting for INR 22,636 core AUM. ETFs invest in various debt securities, including the government, corporate bonds, and money market instruments. Some popular debt ETFs on the BSE include the Bharat Bond ETF, Nippon India ETF Nifty CPSE Bond Plus SDL- 2024, and UTI Nifty Bond ETF. Gold ETFs are another popular category of BSE, with nine funds tracking the price of gold. ETFs invest in physical gold and provide investors with an efficient way to invest in gold without the hassle of storing it. The AUM of gold ETFs on the BSE exceeds INR 14,000 crore. In addition to the above categories, the BSE offers international ETFs, sectoral ETFs, and smart beta ETFs. International ETFs provide exposure to global markets, while sectoral

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ETFs allow investors to invest in specific sectors such as banking, pharma, and infrastructure. Smart beta ETFs follow a rule-based approach to investing and aim to provide better returns than traditional market cap-weighted ETFs.

In conclusion, ETFs have become an essential part of the investment landscape, offering investors a simple and cost-effective way to invest in diversified portfolios of assets. Whether a beginner or a seasoned investor, ETFs can be an attractive investment option when building a well-diversified portfolio.

2. LITERATURE REVIEW

(Yen & Ha, 2023)The results demonstrate that the pandemic shocks influence the system-wide dynamic connectedness. (O'Neill & Rajaguru, 2023)High-frequency lead-lag relations show arbitrage opportunities, although these tend to be short-lived and only material in market dislocation.(Oertel et al., 2022)The risk management of transitory risk for tangible assets has gained significant interest among researchers and market participants, especially in the past ten years. (Yildirim & Masih, 2018) The findings indicate that Asian investors have better portfolio diversification opportunities with the US markets, followed by the European markets. (Sosa et al., 2019), our study analyzes the volatility of Bitcoin by employing and comparing symmetric and asymmetric GARCH model extensions (threshold ARCH (TARCH) and exponential GARCH (EGARCH)). (Chen & Huang, 2010) The spillover effects from returns are excellent for Hong Kong, followed by Singapore. (Leung & Ward, 2015) The results suggest that market-traded LETFs do not effectively track a leveraged position in gold over a long horizon (Thangamuthu et al., 2022). The structural breakpoint was identified as March 23, 2020, per the breakpoint unit root test to examine and compare the results pre-and-post COVID-19. (Sabu & Bhat, 2022), (Hou & Li, 2015) .This empirical analysis yields a few interesting results: there is a one-way feedback of volatility transmission from the CSI 300 index futures to spot returns; this paper aims to investigate the volatility transmission and dynamics in China Securities Index (CSI) 300 index futures market. (Siddiqui & Roy, 2020) For developed markets, like the United States, the spot market improves its information transmission role with a time horizon, while the exact opposite holds for the Chinese market. This study investigates the amplitude and direction of the movement of information between the spot and futures indices. (Jhunjhunwala & Sethi, 2022) This study documents that irrespective of the market conditions, foreign ETFs, particularly those from Asia–Pacific and European regions, tend to exacerbate co-movement. The current research examines how domestic and foreign exchange-traded funds (ETFs) tracking Indian equities affect the return correlations of their underlying constituents(Vardar & Aydogan, 2019) The empirical results reveal the existence of positive unilateral return spillovers from the bond market to the Bitcoin market. (Yavas & Rezayat, 2016) The findings include the significant co-movement of returns among all country ETFs. This study investigates the linkages between equity exchange-traded fund (ETF) returns and the transmission of volatilities in the USA, Europe, and key emerging countries' stock markets. (The Yin, 2022) Empirical results show that the price informativeness of listed firms has a significantly positive association with information disclosure by unlisted bond issuers in the same industry. (Zhang & Yin, 2022) The findings include the existence of significant co-movement of returns among all country ETFs; however, despite increasing interdependencies among the global stock markets, there are still excellent opportunities for diversification. This study investigates the linkages between equity market-traded fund returns and the transmission of volatilities in the USA, Europe, and key emerging countries' stock markets. (Laghari & Chengang, 2019) Empirical evidence finds an inverted U-shaped relationship between working capital and corporate performance and exhibits similar evidence for financially constrained firms. (Bhargava et al., 2012) The number of studies seeking to determine appropriate methods for calculating and evaluating value-at-risk methodologies has increased substantially in the past five years.

3. RESEARCH DESIGN

Objectives:

1. To analyze the volatile nature of sustainability ETFs of BSE.
2. We empirically examine the volatility and returns spillovers between Exchange-traded funds (ETF) and the corresponding Indian benchmark indices.

4. METHODOLOGY

Data were collected from January 2014 to March 2023 using the BSE, NSE ,and Yahoo Finance. Kurtosis is a metric used to determine whether the distribution peaks or is flat. A kurtosis value higher than the normal distribution indicates a more peaked distribution (leptokurtic) and a lower kurtosis value indicates a more balanced distribution (platykurtic). From the data, some ETFs have a high kurtosis value, such as GOLD BEES (2266.488) and RETCLOSE_PRICE (1812.951), whereas others have a lower kurtosis value, such as LIQUID BEES (238.9921) and SXRTF HDFC.

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Table 1: list of ETFS for the study

ETFS	ETFS
BANK BEES	LIQUID BEES
CPSE	MOM100
GOLD BEES	MON100
HANG SENG	NIPPON
ICICI GOLD	PSU BANK
ICICI NIFTY100	QNIFTY
ICICI NIFTY	QUANTUM GOLD
IDBI GOLD	SBI SENSEX
JUNIOR BEES	SXRTF HDFC
KOTAK NIFTY	UTI NIFTY

5. DATA ANALYSIS AND INTERPRETATION

This study analyzes the leverage and spillover effects of the stock index and ETF returns as well as the volatility of those returns. The first difference in the natural logarithm is used to compute the returns of the ETFs and their corresponding indices. To ascertain whether the GARCH effect is present in ETF and index returns, this study uses the ARMAGARCH model. This study uses the EGARCH model developed by Nelson (1991) in conjunction with the ARMA specification for ETF and index returns to identify asymmetric volatility or leverage effects. This information can be displayed using graphs, charts, or tables. These graphical representations make it simple and quick to identify patterns and trends in the data.

Analyze closing prices: The closing prices can be analyzed to identify any upward or downward trends in inventory or ETF. This can be done by visually inspecting the graph or calculating the slope of the line connecting closing prices over the sample period.

.It seems that you have provided the output of Augmented Dickey-Fuller (ADF) tests for four different ETFs or exchange-traded funds for both their closing prices and return series. ADF tests are commonly used in financial and economic analyses to verify the stationary state of time-series data.

The ADF exam involves computing a t-statistic that measures the importance of the trend and intercept terms in a linear regression model of the time series. The bare assumption of the test is that the time series has a unit root, meaning that it is nonstationary, while alternatively, it is assumed to be stationary. The p-value associated with the t-statistic was compared against a chosen significance level to determine whether to reject or fail to reject the null hypothesis.

Looking at the results you provide, for all 20 ETFs, the ADF test for the closing price with no trend indicates non-stationarity, as the t-statistic is less harmful than the critical values or the p-value is greater than the significance level. However, the ADF test indicates stationarity for the return series, as the t-statistic is more damaging than the critical values, or the p-value is less than the significance level.

The table you provide seems to be a regression output with monthly data for 20 exchange-traded funds (ETFs) and a constant term. Each row corresponds to an extra month and each column provides the coefficient estimates and p-values for the variables. The coefficient estimates represent the expected change in the dependent variable (presumably a market index or related measure) for a one-unit increase in the corresponding independent variable (ETF). For example, in January, a one-unit growth in GOLD BEES is expected to increase the dependent variable by 0.2 units, all else equal. The p-values indicate the statistical significance of the coefficient estimates; a p-value less than 0.05 is typically considered statistically significant.

It is worth noting that there are some negative coefficients in the table, implying a negative relationship between the dependent variable and the corresponding ETF relationship. The constant term (C(13)) is also unfavorable and statistically significant, indicating that the general trend of the dependent variable is negative over the sample period. However, it is easier to draw definitive conclusions from the table with additional information about the dependent variable and sample period.

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Table 2: Descriptive Statistics

	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
BANK BEES	-0.04	0.08	5.15	-40.61	1812.95	300000000	0.000
CPSE	0.03	0.06	1.38	-0.42	11.16	6269	0.000
GOLD BEES	-0.18	0.00	9.63	-47.42	2266.49	492000000	0.000
HANG SENG	-0.16	0.00	6.98	-23.34	735.97	30005155	0.000
ICICI GOLD	-0.19	0.02	7.08	-30.87	981.09	83161298	0.000
ICICI NIFTY100	0.04	0.07	2.62	-0.02	17.14	14388	0.000
ICICI NIFTY	0.06	0.10	2.29	1.34	41.20	111510	0.000
IDBI GOLD	0.04	-0.01	1.88	-0.04	18.91	16938	0.000
JUNIOR BEES	0.05	0.13	1.31	-0.65	8.50	2975	0.000
KOTAK NIFTY	-0.06	0.10	4.96	-44.11	2041.52	390000000	0.000
LIQUID BEES	0.00	0.00	0.00	0.01	238.99	2482946	0.000
MOM100	0.07	0.11	2.62	-0.22	6.27	882	0.000
MON100	-0.04	0.08	5.35	-38.12	1644.79	237000000	0.000
NIPPON	-0.05	0.08	4.89	-45.09	2119.23	431000000	0.000
PSU BANK	-0.10	0.00	6.19	-27.99	1040.06	81796436	0.000
QNIFTY	0.11	0.12	1.56	-0.05	8.19	1121	0.000
QUANTUM GOLD	-0.15	0.00	8.22	-46.94	2224.56	4670000.0	0
SBI SENSEX	0.049	0.0555	1.64481	-0.4627	18.2977	21755.5	0
SXRTF HDFC	-0.000	0.0738	7.27663	-18.5325	810.213	38225770	0
UTI NIFTY	0.0711	0.0576	1.86213	-0.78377	19.9181	16803.55	0

Interpretations:

The sample period's descriptive statistics findings from January 2014 to April 2023 for the return series are performed, and the results indicate that the mean return is higher for QNIFTY (0.108435) and a higher negative return for LIQUID BEES (-9.35E-07). The maximum value was found for ICICI NIFTY (26.46926), and the minimum value was observed for BANK BEES (-230.144). The mean returns have a significant standard deviation for the GOLD BEES (9.633335) and a lower standard deviation for the LIQUID BEES (0.001588). Skewness is more harmful to NIPPON (-45.09243). Negative skewness indicates that the distribution's tail is longer on the negative side than on the positive side. For ICICI NIFTY and LIQUID BEES, the skewness is positive, indicating that the tail of the distribution is longer on the positive side than on the opposite side. Alternatively, the distribution may be skewed to the right. This means that there are more observations on the left side of the distribution and fewer on the right side. The Kurtosis value is positive and greater than 1, indicating leptokurtic. In descriptive statistics, kurtosis measures the “peakedness” or “flatness” of a distribution compared to the normal distribution. A distribution with high kurtosis has a sharp peak and heavy tails, whereas a distribution with low kurtosis has flatter height and lighter seats. A distribution with positive kurtosis is called leptokurtic. Leptokurtic distributions have sharper peaks and heavier tails than normal distributions. The Jarque-Bera test probability value is less than 0.05, indicating that the data are not generally distributed, as the JB test produces a test statistic compared to a critical value. Suppose the test statistic is greater than the critical value. In this case, the claim that the data are false comes from a normal distribution is rejected, indicating that the information is not normally distributed.

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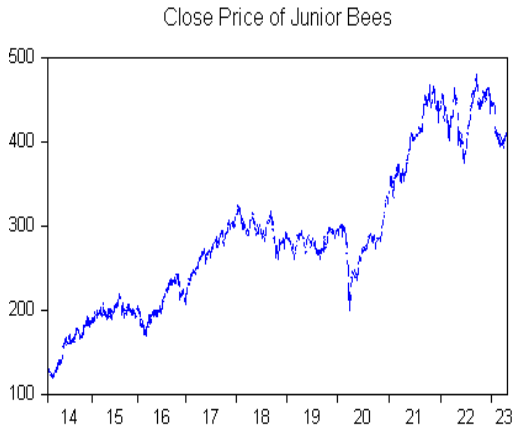

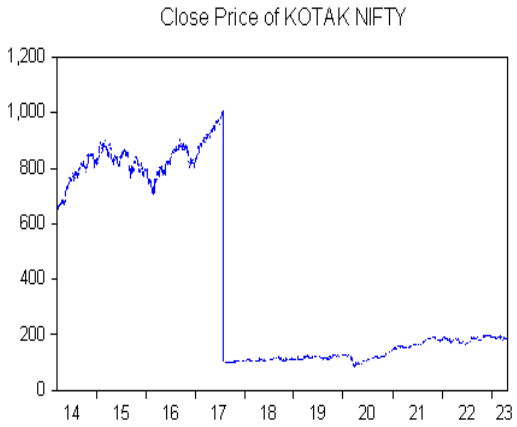

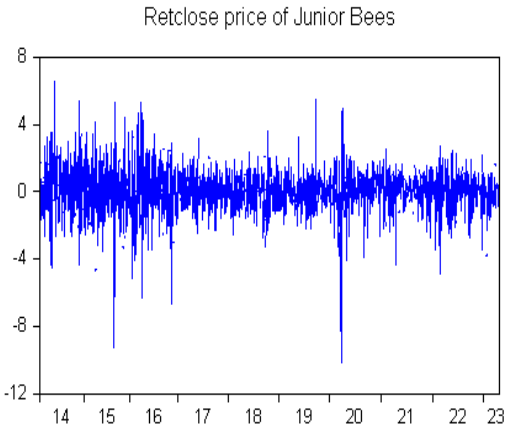

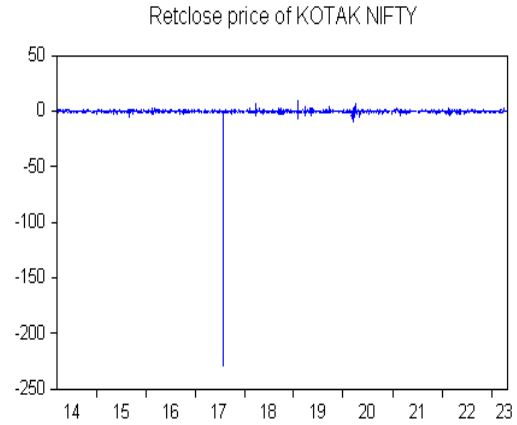

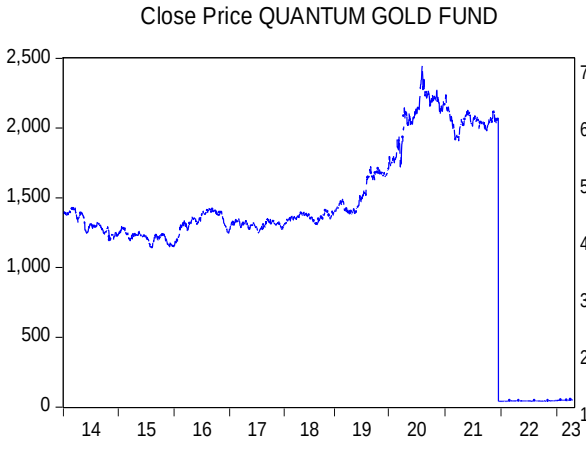

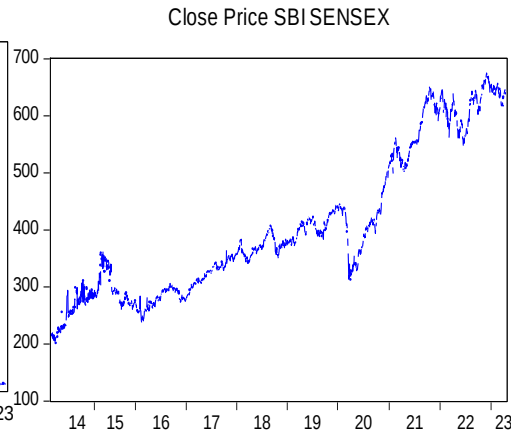

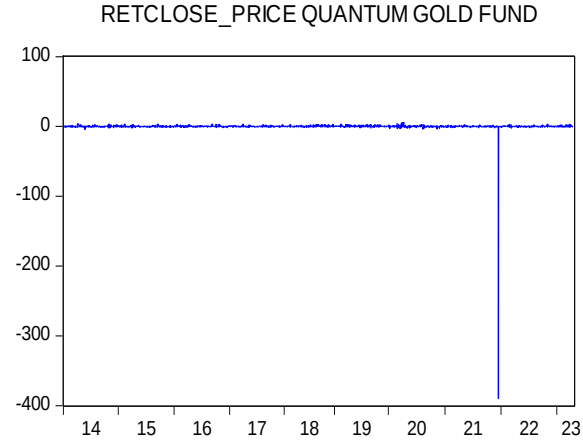

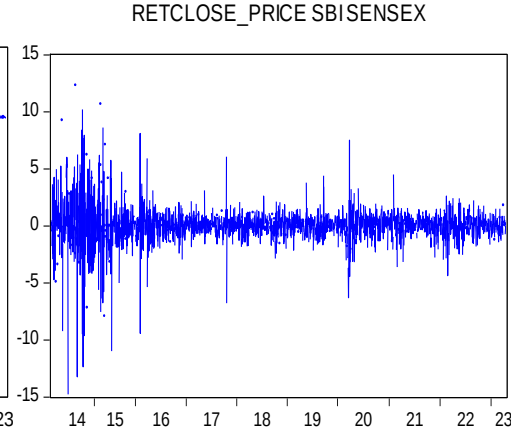

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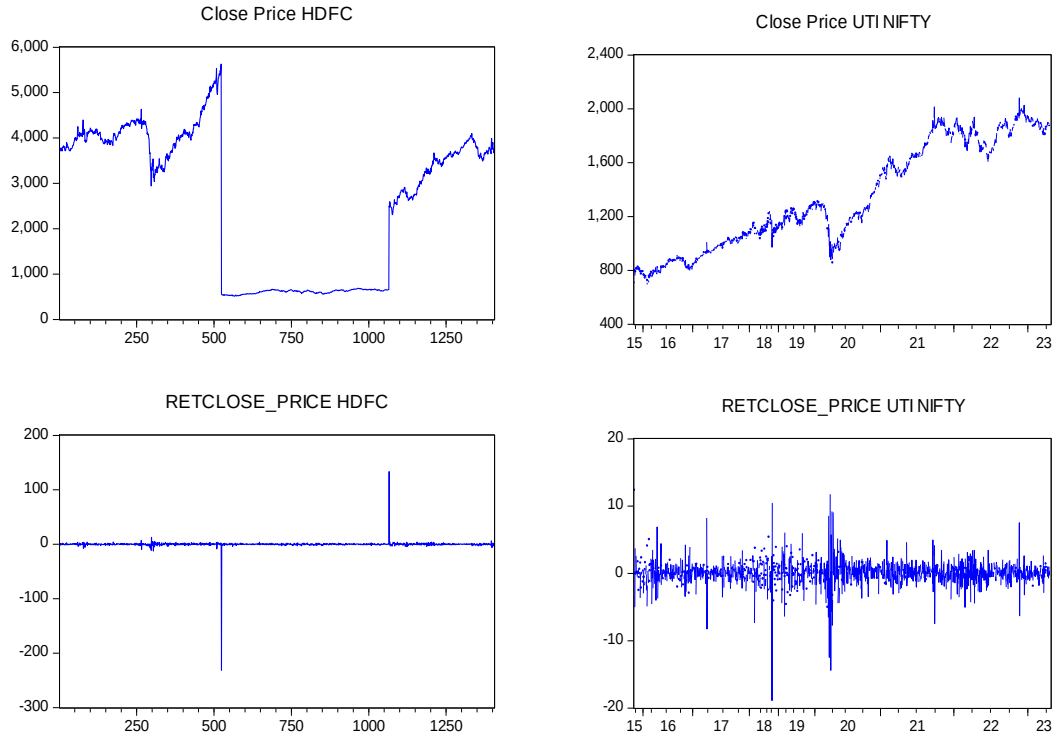

Table 2: test of stationary

Stationary test results using ADF test					
		CLOSE PRICE		RETURN SERIES	
SN	ETF fund name	*t-Statistic*	*Prob.**	*t-Statistic*	*Prob.**
1	BANK BEES	-1.422	0.5729	-46.892	0.0001
2	CPSE ETF	-0.580	0.8725	-44.236	0.0001
3	GOLD BEES	-1.114	0.7125	-47.989	0.0001
4	HANG SENG BEES	-1.320	0.6224	-40.985	0.0000
5	ICICI GOLD ETF	-2.029	0.2746	-45.241	0.0001
6	ICICI NIFTY 100	-0.398	0.9071	-27.969	0.0000
7	ICICI NIFTY	-0.945	0.7740	-35.888	0.0000
8	IDBI GOLD ETF	0.471413	0.9857	-39.648	0.0000
9	JUNIOR BEES	-1.231	0.6630	-51.480	0.0001
10	KOTAK NIFTY	-1.431	0.5687	-47.456	0.0001
11	LIQUID BEES NIPPON INDIA	-31.739	0.0000	-16.260	0.0000
12	MOTILAL OSWAL MIDCAP 100 ETF (MOM 100)	-0.835	0.8086	-33.503	0.0000
13	MOTIAL OSWAL NASDAQ 100 ETF (MON 100)	-1.863	0.3502	-47.315	0.0001
14	NIPPON	-1.247	0.6561	-48.088	0.0001
15	PUBLIC SECTOR UNDERTAKING (PSU) BANK	-1.034	0.7432	-44.681	0.0001
16	QNIFTY	-1.720	0.4208	-29.897	0.0000
17	QUANTUM GOLD FUND	-1.111	0.7136	-47.570	0.0001
18	SBI SENSEX	-0.416	0.9041	-63.067	0.0001
19	SXETF HDFC	-1.762	0.3995	-37.788	0.0000
20	UTI NIFTY	-0.803658	0.8173	-33.5585	0.0000

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Source: Authors calculation

The ADF test is conducted on the 20 ETFs; the statistics and probability value for closing prices and return series are shown in Table 2. If the ADF statistic is less harmful than the critical values or if the p-value is more significant than a chosen significance level (such as 0.05), then the null hypothesis of a unit root cannot be rejected. It implies that the time series is non-stationary and has a unit root. The ADF results show that the series is non-stationary for the closing prices. For the returns series, the ADF statistic is more damaging than the critical values, or if the p-value is less than the chosen significance level, then the null hypothesis of a unit root can be rejected. We imply that the time series is stationary and has no unit root.

Table 3: Results of Leverage effect for Indian ETFs

Variable		BANK BEES	CPSE ETF	GOLD BEES	HANG SENG BEES	ICICI GOLD ETF	ICICI NIFTY 100	ICICI NIFTY	IDBI GOLD ETF	JUNIOR BEES	KOTAK NIFTY
Jan	Coeff.	0.21	-0.03	0.20	0.65	-2.81	0.14	0.12	0.43	-0.06	1.04
	Prob.	0.11	0.72	0.00	0.00	0.00	0.16	0.01	0.00	0.38	0.38
Feb	Coeff.	0.06	0.05	0.31	0.87	-2.81	0.00	-0.09	0.16	-0.06	0.95
	Prob.	0.47	0.59	0.00	0.00	0.00	0.98	0.16	0.11	0.49	0.32
Mar	Coeff.	0.30	-0.01	0.15	0.57	-2.29	0.09	0.03	-0.98	0.10	0.92
	Prob.	0.00	0.91	0.00	0.00	0.00	0.43	0.62	0.00	0.19	0.09
Apr	Coeff.	0.28	0.15	0.35	0.53	-2.11	0.09	0.14	0.50	0.10	1.10
	Prob.	0.01	0.07	0.00	0.00	0.00	0.45	0.01	0.01	0.20	0.32
May	Coeff.	0.38	0.00	0.15	0.39	-2.91	0.00	0.03	0.10	-0.03	1.14
	Prob.	0.00	0.97	0.03	0.05	0.00	0.98	0.49	0.44	0.71	0.22
Jun	Coeff.	0.11	-0.11	0.25	0.69	-2.43	1.11	-0.05	0.24	-0.09	1.06
	Prob.	0.33	0.20	0.00	0.01	0.00	0.00	0.35	0.03	0.27	0.44
Jul	Coeff.	0.35	-0.02	0.20	0.41	-2.68	0.56	0.15	0.14	0.14	-1.14
	Prob.	0.00	0.84	0.01	0.19	0.00	0.00	0.00	0.12	0.09	0.00
Aug	Coeff.	0.19	0.14	0.32	-0.09	-2.64	0.40	0.16	0.24	0.36	1.10
	Prob.	0.02	0.07	0.00	0.52	0.00	0.00	0.00	0.02	0.00	0.33
Sept	Coeff.	-0.04	0.06	0.08	0.26	-3.04	0.19	0.11	0.13	-0.10	0.98
	Prob.	0.69	0.45	0.29	0.32	0.00	0.00	0.01	0.28	0.13	0.37
Oct	Coeff.	0.46	0.18	0.24	0.92	-2.82	0.21	0.05	0.17	0.08	1.12
	Prob.	0.00	0.05	0.00	0.00	0.00	0.02	0.58	0.16	0.33	0.32
Nov	Coeff.	-0.11	-0.10	-0.13	0.98	-1.39	-0.05	0.04	0.17	0.07	1.11
	Prob.	0.04	0.25	0.00	0.00	0.03	0.38	0.53	0.18	0.34	0.41
Dec	Coeff.	-3.87	0.02	-1.81	-8.03	-2.91	0.14	-0.02	0.18	0.05	1.05
	Prob.	0.00	0.84	0.00	0.00	0.00	0.04	0.81	0.02	0.51	0.39
C(13)	Coeff.	-0.19	-0.18	-0.37	1.52	3.89	-0.23	-0.12	-0.07	-0.11	3.08
	Prob.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C(14)	Coeff.	0.36	0.27	1.15	1.68	-0.75	0.42	0.15	0.19	0.16	0.09
	Prob.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
C(15)	Coeff.	0.16	-0.03	0.96	0.71	-0.70	-0.01	-0.09	0.21	-0.08	0.60
	Prob.	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00
C(16)	Coeff.	0.96	0.95	-0.10	0.11	0.00	0.97	1.00	0.93	0.98	-0.03

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	Prob.	0.00	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.92

Source: Authors calculation

Table 4: Results of Leverage effect for Global ETFs

		Liquid Bees	Mom 100	Nasdaq 100	Nippon	Psu) Bank	Qnifty	Quantum Gold	SBI Sensex	Sxetf Hdfc	Uti Nifty
		Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef	Coef
Jan	Coef	0.00	-0.06	-1.15	0.34	-1.44	0.04	0.37	-0.01	-0.13	0.09
	Prob	0.08	0.53	0.00	0.00	0.03	0.67	0.00	0.81	0.03	0.38
Feb	Coef	0.00	-0.08	-1.59	0.15	-1.04	-0.06	0.38	-0.04	-2.21	-0.21
	Prob	0.00	0.43	0.00	0.00	0.01	0.58	0.00	0.58	0.00	0.04
Mar	Coef	0.00	0.06	-0.89	0.37	-1.21	-0.12	0.18	0.10	-0.48	-0.26
	Prob	0.07	0.56	0.03	0.00	0.02	0.27	0.00	0.08	0.00	0.00
Apr	Coef	0.00	0.23	-1.57	0.29	-1.56	0.03	0.41	0.16	-6.41	0.11
	Prob	0.16	0.08	0.00	0.00	0.03	0.86	0.00	0.06	0.00	0.34
May	Coef	0.00	0.20	-1.47	0.46	-0.40	-0.05	0.20	0.16	0.49	0.25
	Prob	0.03	0.15	0.00	0.00	0.41	0.73	0.00	0.02	0.05	0.01
Jun	Coef	0.00	0.05	-1.13	0.20	-1.22	-0.15	0.30	0.04	0.25	0.06
	Prob	0.03	0.74	0.10	0.00	0.05	0.34	0.00	0.54	0.00	0.57
Jul	Coef	0.00	0.13	0.23	0.40	-0.88	0.18	0.25	0.19	0.36	0.14
	Prob	0.01	0.33	0.58	0.00	0.05	0.18	0.00	0.00	0.00	0.30
Aug	Coef	0.00	0.19	0.88	0.25	-0.88	0.29	0.32	0.14	0.32	0.16
	Prob	0.03	0.09	0.01	0.00	0.21	0.00	0.00	0.02	0.00	0.19
Sept	Coef	0.00	0.20	-2.46	0.26	-1.63	-0.05	0.26	0.04	0.26	0.13
	Prob	0.00	0.04	0.00	0.00	0.00	0.61	0.00	0.47	0.00	0.16
Oct	Coef	0.00	0.08	-1.71	0.24	-0.04	0.15	0.32	0.19	0.34	0.05
	Prob	0.07	0.52	0.00	0.00	0.92	0.12	0.00	0.01	0.00	0.63
Nov	Coef	0.00	0.14	-1.31	0.31	-0.89	0.10	0.05	0.13	0.29	0.30
	Prob	0.43	0.33	0.00	0.00	0.19	0.42	0.11	0.09	0.00	0.00
Dec	Coef	0.00	0.02	-1.79	-2.43	-2.32	0.01	-3.65	0.02	0.28	0.14
	Prob	0.11	0.83	0.00	0.00	0.00	0.93	0.00	0.67	0.00	0.30
C(13)	Coef	-3.58	-0.14	3.34	-0.48	3.85	-0.09	-0.48	-0.22	-0.23	-0.22
	Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C(14)	Coef	0.53	0.21	-0.53	1.81	-0.46	0.12	1.60	0.31	0.47	0.44
	Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C(15)	Coef	-0.26	-0.01	-0.56	1.05	-0.40	-0.09	1.46	0.01	0.30	-0.04
	Prob	0.00	0.72	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.13
C(16)	Coef	0.77	0.99	0.01	0.05	-0.05	1.00	0.14	0.99	0.94	0.89
	Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Source: Authors calculations

6. RESULTS DISCUSSION:

1) The mean return is higher for QNIFTY (0.108435) and a higher negative return for LIQUID BEES (-9.35E-07). The Maximum value is found for ICICI NIFTY (26.46926), and the minimum value is observed for BANK BEES (-230.144). The standard deviation in the mean returns is found to be high for GOLD BEES (9.633335) and lower standard deviation for LIQUID BEES (0.001588).
2) For BANK BEES, the Coefficient values of March, April, May, July, August, October, November, and December have probability values less than (p-value<0.05), indicating the significant
3) For CPSE ETF, .The coefficient value of October has a probability value of less than (p-value<0.05), indicating a significant difference in the return series.
4) For GOLD BEES, the Coefficient value of except September, all months having probability value less than (p-value<0.05), indicating the significant difference in the return series.
5) For HANG SENG BEES, the Coefficient values of January, February, March, April, June, October, November, and December have probability values less than (p-value<0.05), indicating the significant difference in the return series.
6) For ICICI GOLD ETF, the Coefficient value of all months from January to December has a probability value of less than (p-value<0.05), indicating the significant difference in the return series.
7) For ICICI NIFTY, the Coefficient values of January, April, July, and September have a probability value of less than (p-value<0.05), indicating a significant difference in the return series.
8) For IDBI GOLD ETF, the Coefficient values of January, March, April, June, and December have a probability value of less than (p-value<0.05), indicating a significant difference in the return series.
9) For JUNIOR BEES, the Coefficient value of August has a probability value of less than (p-value<0.05), indicating the significant difference in the return series.
10) For KOTAK NIFTY, the Coefficient value of July has a probability value of less than (p-value<0.05), indicating a significant difference in the return series.
11) For LIQUID BEES NIPPON INDIA, the Coefficient values of February, May, June, June, August, and September have a probability value of less than (p-value<0.05), indicating the significant difference in the return series.
12) For PSU BANK, the Coefficient values of January to April and June, July, September, and December have probability values less than (p-value<0.05), indicating a significant difference in the return series.
13) For QNIFTY, the Coefficient values of August have a probability value of less than (p-value<0.05), indicating a significant difference in the return series.
14) For SBI SENSEX, .The Coefficient value of except May, all months January to December have a probability value less than (p-value<0.05), indicating a significant difference in the return series.
15) For SXETF HDFC, the Coefficient value of except May, all months January to December are a probability value less than (p-value<0.05), indicating the significant difference in the return series.
16) For UTI NIFTY, .The coefficient values of February, March, May, and November have a probability value of less than (p-value<0.05), indicating a significant difference in the return series.

7. SUGGESTIONS

1) The return for QNIFTY is higher, and investors willing to profit in ETF trading can look for this pair of ETFs and suggest avoiding LIQUID BEES as this has given a higher negative return. QUANTUM GOLD found a higher standard deviation for investors who can take high risks.
2) The SXETF HDFC was found to be an upward trend and low volatile and has potential for investment strategy for investors shortly.
3) For BANK BEES, the Coefficient value of March, April, May, August, October, and December returns are different from other months since investors can design portfolios by looking at these months.
4) The Coefficient value of January, February, March, April, June, October, and December returns are high for HANG SENG BEES investors who are ready to buy for these months.
5) Gold ETFs can be a diversification tool in your investment portfolio. Since gold prices tend to move in the opposite direction of the stock market, holding a gold ETF can help to reduce overall portfolio risk.
6) Long-term investment: Investing in gold ETFs can be a good option for long-term investment goals, such as retirement planning or wealth creation.

7) Investing in a Nifty ETF like Kotak Nifty ETF can provide investors with diversified exposure to the Indian equity market since it tracks the performance of 50 of the most extensive and most liquid stocks listed on the NSE.
8) Investing in a Nifty ETF like Kotak Nifty ETF can be a good option for long-term investment goals, such as retirement planning or wealth creation.
9) Nippon India Liquid BeES can be a good option for investors seeking a low-risk, short-term investment option with relatively stable returns. However, it is essential to carefully research the fund's holdings, performance, fees, and overall market conditions before investing.
10) The closing price of MON100, NIPPON PSU BANK indicates a downward trend, and the return series shows the low volatility investors are short positions on the funds.

8. CONCLUSION

Overall, this analysis provides valuable information for investors interested in investing in ETFs, as it can help them make informed decisions based on the historical performance of different ETFs. The return for QNIFTY is higher, and investors willing to profit in ETF trading can look for this pair of ETFs and suggest avoiding LIQUID BEES, as this has given a higher negative return. QUANTUM GOLD found a higher standard deviation for investors who could take high risks.

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