

The Digital Gold Dilemma: A Comparative Analysis of Gold ETFs and Sovereign Gold Bonds for Indian Investors

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Abstract

This study conducts a comprehensive comparative analysis of Gold Sovereign Bonds (SGBs) and Nippon Gold BeES, one of India's oldest and most traded gold exchange-traded funds (Gold ETFs). Using ten series of SGBs held to maturity and ten matched investment periods for Nippon Gold BeES—adjusted for the 2019 split—the study evaluates performance based on Compound Annual Growth Rate (CAGR) and absolute returns. The findings indicate that while both instruments offer substantial long-term wealth appreciation, SGBs consistently generate comparatively higher absolute returns due to the additional 2.5% annual interest component and exemption from capital gains tax upon maturity. In contrast, Gold ETFs, though highly liquid and market-linked, exhibit slightly lower net returns after accounting for annual expense ratios of up to 1% and tax implications. The analysis reveals that, despite market volatility, SGBs outperform ETFs in most matched periods from 2015 to 2025. The study identifies limitations such as the use of only Nippon Gold BeES among ETFs and a restricted sample of 10 SGB series, suggesting that broader sampling may lead to different outcomes. Future research can extend this comparison to multiple Gold ETF schemes, additional SGB tranches, and risk-adjusted performance metrics to derive more generalizable insights.

Keywords: Sovereign Gold Bonds (SGBs); Gold ETFs; Nippon Gold BeES; CAGR; Absolute Returns; Split Adjustment; Expense Ratio; Capital Gains Tax.

1. Introduction

Gold has historically been India's most important asset class, fulfilling roles from cultural necessity to economic hedge. The introduction of Gold ETFs in 2007 and SGBs in 2015 provided efficient, paperless alternatives to physical gold, addressing issues of storage, purity, and making charges. Gold ETFs are regulated by SEBI and are backed by physical gold, offering high liquidity. SGBs are issued by the RBI on behalf of the Government of India, offering a sovereign guarantee and an additional interest component. This study seeks to systematically dissect these two instruments to determine their relative efficacy in meeting different investor goals.

Gold Exchange Traded Funds (Gold ETFs) are market-linked instruments that allow investors to hold gold in electronic form through a demat account. Each ETF unit represents a specific quantity of physical gold, ensuring purity and transparency without the hassle of storage or security issues. They offer high liquidity, as they can be bought and sold on stock exchanges at real-time prices, making them suitable for short- and medium-term investors. However, Gold ETFs do not provide any interest income and carry an annual expense ratio, which slightly reduces returns over time. Their performance depends solely on gold price movements, and capital gains are taxable at the time of sale.

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Sovereign Gold Bonds (SGBs), issued by the Reserve Bank of India on behalf of the Government of India, are long-term gold investment instruments with sovereign backing. They offer a unique combination of gold price appreciation and a fixed interest rate of 2.5% per annum, providing an additional return not available in other gold investments. SGBs have an 8-year maturity period, with an early exit option after the 5th year, and capital gains on redemption at maturity are completely tax-free. They involve no storage or making charges and can be traded on exchanges, though liquidity may vary. SGBs suit long-term investors seeking safety, tax benefits, and stable returns linked to gold prices.

Launch of Nippon India ETF Gold BeES: Nippon India ETF Gold BeES was launched on **8 March 2007**, making it one of the first and most popular Gold Exchange Traded Funds (ETFs) in India. The objective of the fund is to closely track the domestic price of gold by investing in **99.5% pure physical gold**. As an open-ended ETF, it allows investors to buy and sell units on the stock exchange just like shares, providing a convenient and affordable way to invest in gold without needing to hold the metal physically. Over the years, Gold BeES has grown significantly in size and popularity due to its transparency, liquidity, and cost-effective structure.

2019 Face Value Split of Gold BeES: On **19 December 2019**, Nippon India ETF Gold BeES underwent a major corporate action—a **face value split from ₹100 to ₹1 per unit**, effectively a **100:1 split**. This means each unit held before the split was converted into 100 units after the split, while the total value of the investor's holding remained unchanged. The purpose of this split was to make the ETF more accessible and affordable for retail investors by reducing the price of each unit and improving trading liquidity. The scheme continued to track gold prices exactly as before, with no change in the underlying assets or investment objective.

2. Literature Review

The literature review examines existing empirical studies related to gold investment behavior, performance evaluation of modern gold instruments, and comparative analyses of ETFs and SGBs. The synthesis of these studies supports the need for a structured investigation into the structural differences and risk-adjusted returns between Gold ETFs and Sovereign Gold Bonds.

Sujit et al. (2024) explored investor awareness and preferences regarding digital gold, physical gold, and Gold ETFs among 150 respondents in Bengaluru using random sampling. Employing Chi-square and correlation analysis, the study found that digital gold emerged as the most preferred mode due to its convenience and accessibility compared to traditional physical gold. The research emphasised behavioural dimensions of investment choice but did not examine the return or risk characteristics of gold investment instruments.

Surendra (2025) conducted an extensive descriptive and comparative study using monthly data from November 2015 (the launch of SGBs) to June 2025. The study computed essential performance metrics—including CAGR, standard deviation, and Sharpe Ratio—across major Gold ETFs and all SGB series. By evaluating long-term risk-return efficiency, this research highlights SGBs and ETFs as robust "paper gold" alternatives. However, it provides broad market-wide insights rather than a focused structural and operational comparison between the two instruments.

Gaikwad and Petkar (2025) examined factors influencing gold investment choices, contrasting physical gold with alternative investment mechanisms such as Gold ETFs and SGBs. Their study compared these options on parameters like pricing, returns, regulatory requirements, and economic indicators such as gold import quantities. While the study sheds light on the macroeconomic context of gold investments, it does not directly compare the risk-adjusted performance of SGBs and ETFs over shared timeframes.

Vaishna (2024) evaluated the historical performance and risk characteristics of the five leading Gold ETFs by analysing returns across different periods, volatility measures such as standard deviation and beta, and liquidity indicators like trading volume and bid-ask spread. Although the study provides a detailed understanding of ETF behaviour, it does not incorporate SGBs into the comparative framework.

Praveer et al. (2025) focused on the growing preference for Gold ETFs over physical gold from April 2019 to October 2023. Using Pearson correlation, Granger causality tests, and sentiment analysis from investor forums, the study identified key drivers of increased ETF adoption. The research included an analysis of seven rapidly expanding ETFs (HDFC, ICICI, LIC, Nippon, SBI, UTI, and Kotak). Despite offering insights into ETF–gold price interactions and investor sentiment, it did not assess SGB performance or structural differences.

Research Gap

The literature collectively highlights increasing investor interest in alternative gold investments, behavioural patterns influencing preference, and performance attributes of Gold ETFs. However, two major gaps emerge:

1. Lack of integrated analysis of structural and operational differences
Existing studies discuss ETF characteristics, SGB market evolution, and investor preferences separately, but do not comprehensively compare the regulatory design, issuance process, market backing, liquidity, and cost structure of SGBs versus Gold ETFs.
2. Insufficient direct comparison of risk-adjusted returns across a common time horizon
While some studies analyse ETF performance or SGB returns independently, few provide a quantitative side-by-side assessment using standardized metrics such as CAGR and Sharpe Ratio over identical periods. A focused evaluation is needed to

determine which instrument offers superior risk-adjusted performance for Indian investors.

Objectives of the Study

- To compare the average absolute returns of Gold Sovereign Bonds (GSB) and Nippon Gold BeES (GETF) in order to understand whether one investment instrument provides higher return performance than the other.
- To provide insights for investors on whether return performance should influence their choice between GSB and Gold ETFs, or whether other factors such as liquidity, taxation, and investment horizon are more relevant.

3. Research Method

Research Design

The study follows a mixed-method research design that integrates descriptive and quantitative analysis. The descriptive component examines the structure, taxation, and cost characteristics of Sovereign Gold Bonds (SGBs) and Nippon India ETF Gold BeES. The quantitative component evaluates and compares their performance using return-based metrics.

Data Collection

The analysis uses data from 10 SGB series issued between 2015–16 Series I and 2017–18 Series III, all of which complete their full 8-year maturity by October 2025. For each of these series, the issue price and the redemption price at maturity (or RBI's published redemption value) were collected.

NAV data for Nippon India ETF Gold BeES, India's oldest and most liquid Gold ETF, was sourced directly from the Nippon India Mutual Fund website. NAV values were matched precisely with the issue dates and maturity dates of the 10 SGB series, ensuring a uniform and comparable time horizon for both instruments.

Analytical Tools Used

Compounded Annual Growth Rate (CAGR):
Used to measure the annualized rate of return for both SGBs and the Gold ETF over the identical time horizon.

Absolute Return (%):

Used to quantify total return over the full investment period for each SGB series and for the matching Nippon gold ETF NAV data.

ANOVA Test

Applied to statistically test whether there is any significant difference between the CAGR and Absolute returns of SGBs and the Gold ETF across the matched time periods.

Metrics Used

Gold ETF NAVs (Nippon India ETF Gold BeES)
SGB issue prices, interest income (2.5% annually),
and RBI-published redemption prices

Hypotheses

H0: There is no significant difference in the mean absolute returns between Gold Sovereign Bonds (GSB) and Nippon Gold BeES (GETF).

H1: There is a significant difference in the mean absolute returns between GSB and GETF.

4. Data Analysis

Gold investment in India is available through multiple avenues, each offering different levels of safety, liquidity, taxation benefits, and costs. While traditional physical gold continues to remain popular, modern investment options such as Sovereign Gold Bonds (SGBs), Gold ETFs and mutual funds, and digital gold provide investors with more convenient and secure alternatives. The table below presents a comparative overview of these four major forms of gold investment in India, highlighting their key features such as storage, regulation, charges, interest, taxation, and liquidity. This comparison helps investors understand the strengths and limitations of each option and choose the format that best aligns with their financial goals and risk preferences.

Table 1: Comparison of SGB, Physical Gold, Gold ETFs, Mutual Funds and Digital Gold in India

Comparison of SGB, physical gold, gold ETFs and mutual funds and digital gold in India				
Parameters	SGB	Physical gold	Gold ETF and mutual funds	Digital gold
Storage	Stored in government facilities. Very low risk of theft.	Risk of theft	Stored in vaults. Low risk of theft	Stored in vaults. Low risk of theft
Regulator	RBI, and by extension, Government of India	Not regulated	SEBI, and by extension, Government of India	Not regulated
Charges	No making charges, GST, or expense ratio	Making charges from 8% to 35%. GST of 3%. No expense ratio.	No making charges or GST. Expense ratio up to 1% is allowed.	No making charges. GST of 3% and commissions are applicable. No expense ratio.
Interest	Fixed at 2.5% per annum	No interest payments	No interest payments	No interest payments
Taxation	No tax on capital gains. Interest is taxed at slab.	Tax on capital gains	Taxed as per investor's Income Tax Slab (Post-April 2023 rule changes, regardless of holding period).	Tax on capital gains
Liquidity	Can be sold on stock exchanges if held in demat form. Can be sold back to the RBI	Can be sold physically to jewelers anytime	Units can be sold back to the asset management company	Can be liquidated instantly

	at specified intervals.			
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(Source: Own Compilation)

Table 2: CAGR and Absolute Return Comparison of Sovereign Gold Bond Series

GOLD SOVERIGN BONDS						
Series	Issue Date	Issue Price	Redemption Date	Redemption Price	CAGR	Absolute Return%
2015-I	30-Nov-15	2,684	30-11-2023	6,132	10.87	128.46
2016-I	08-Feb-16	2,600	28-02-2024	6,271	11.63	141.19
2016-II	29-Mar-16	2,916	28-03-2024	6,601	10.75	126.37
2016-17 Series I	05-Aug-16	3,119	05-08-2024	6,938	10.5	122.44
2016-17 Series II	30-Sep-16	3,150	30-09-2024	7,517	10.8	127.21
2016-17 Series III	17-Nov-16	3,007	17-11-2024	7,788	12.63	160
2016-17 Series IV	17-Mar-17	2,943	17-03-2025	8,624	14.37	193
2017-18 Series I	12-May-17	2,951	9/5/2025(10,11,12 are holidays)	9,486	15.72	221
2017-18 Series II	28-Jul-17	2,830	28-07-2025	9,924	16.97	250.67
2017-18 Series III	16-Oct-17	2,956	16-10-2025	12,567	19.83	325.14

(Source: Own Compilation)

CAGR calculations do not include interest payments and are post-tax, since capital gains tax

arising on redemption of SGB to an individual are exempted

Table 3: CAGR and Absolute Return Assessment of Nippon Gold BeES after Adjusting for Unit Split

NIPPON GOLD BeES							
SL.NO.	Issue Date	NAV	Redemption Date	NAV	NAV After Considering The Split	CAGR	Absolute Return %
1	30-Nov-15	2321.567	30-11-2023	53.1545	5315.45	10.91	128.96
2	08-Feb-16	2603.006	28-02-2024	52.5907	5259.07	9.19	102.04
3	29-Mar-16	2664.579	28-03-2024	56.8305	5683.05	9.93	113.28
4	05-Aug-16	2974.478	05-08-2024	58.5703	5857.03	8.84	96.91
5	30-Sep-16	2891.642	30-09-2024	63.3212	6332.12	10.29	118.98
6	17-Nov-16	2726.493	17-11-2024	62.1618	6216.18	10.85	127.99
7	17-Mar-17	2618.198	17-03-2025	73.5681	7356.81	13.78	180.99
8	12-May-17	2572.907	09-05-2025	80.3547	8035.47	15.29	212.31

9	28-Jul-17	2582.03	28-07-2025	81.8416	8184.16	15.51	216.97
10	16-Oct-17	2697.793	16-10-2025	105.315	10531.5	18.56	290.38

(Source: Own Compilation)

The one-way ANOVA test was conducted to compare the mean absolute returns of Gold

Sovereign Bonds (GSB) and Nippon Gold BeES (GETF). The following are the results of ANOV

Table-4: Summary Statistics of ANOVA

Groups	Count	Sum	Average	Variance
GSB	10	1795.48	179.548	4605.17
GETF	10	1588.801	158.8801	4066.722

(Source: Own Compilation)

Table-5: Source of Variation in ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2135.818	1	2135.818	0.492584	0.491753	4.413873419
Within Groups	78047.03	18	4335.946			
Total	80182.85	19				

(Source: Own Compilation)

The results show that the mean return of GSB (179.55) is slightly higher than that of GETF (158.88); however, this difference is not statistically significant. The ANOVA output reports an F-value of 0.4926, which is much lower than the critical F-value of 4.4139, and the corresponding p-value of 0.4917 is greater than the 0.05 significance level. Therefore, we fail to reject the null hypothesis, indicating that there is no significant difference in the average absolute returns between GSB and GETF. This suggests that, based on the available sample data, both investment options offer statistically similar return performance, and investors may consider other factors such as liquidity, tax benefits, and investment horizon while choosing between them.

5. Conclusion

The study examined the null hypothesis that there is no significant difference in the mean absolute returns between Gold Sovereign Bonds (SGBs) and Nippon India Gold BeES (Gold ETF). Based on the analysis of 10 SGB series that completed their full 8-year maturity, the findings show no

statistically significant difference in returns when only price appreciation is considered. However, when factors such as the **2.5% annual interest on SGBs**, the **expense ratio of up to 1% on Gold ETFs**, and the **capital gains tax treatment** are included, SGBs tend to deliver superior effective returns compared to the Gold ETF. This indicates that SGBs may offer a more advantageous long-term investment outcome for conservative and tax-efficient investors.

6. Scope for Further Study

This study is limited to **10 SGB series** and only one gold ETF **Nippon India Gold BeES**, which is the oldest and most liquid in the Indian market. If additional SGB series or other Gold ETFs from different fund houses (such as HDFC, ICICI Prudential, SBI, Kotak, and Aditya Birla) are included, the comparative results may differ due to variations in expense ratios, tracking error, liquidity, and fund management practices. Future research could expand the sample size, incorporate multiple ETFs, analyse risk-adjusted metrics such as volatility and Sharpe ratio, and examine

investor behaviour, early redemption patterns, and secondary market pricing to provide a more comprehensive assessment of gold investment options in India.

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