An Empirical Analysis of the Performance of Luxury Watch Portfolios among High-Net-Worth Individuals in India During the COVID-19 Pandemic

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Abstract:
This study empirically evaluates luxury watches owned by high-net-worth individuals (HNIs) in India as unconventional alternative assets providing diversifying benefits. During the COVID-19 pandemic, the major stock exchanges in India, NSE and BSE, faced negative returns and high volatility, igniting numerous conservative investors to divest from traditional investments and retain alternative assets, such as luxury watches, due to their low correlation to financial markets. Owing to supply chain disruptions and demand forces, the overall secondary watch market prices surged throughout this period, creating high economic value for investors. Through hypothesis testing and attribution analysis, this paper evaluates the performance of watch portfolios owned by 57 HNIs, comprising of 464 watches, to investigate whether luxury watches are viable investments during economic downturns within the domain of alternative investments. Hence, this study employs suitable attribution tools such as Sharpe ratio, M2 Alpha, Treynor Measure and Jensen's Alpha to understand the strength of their performance. Using academic literature, market data and primary data, this study found that luxury watches provided substantial portfolio diversification benefits and outperformed traditional assets like the NIFTY50 and gold in terms both nominal and risk adjusted returns during the pandemic. Brands such as Patek Philippe, Rolex, and Audemars Piguet achieved the highest performance, as Patek Philippe demonstrated superior risk-return trade-offs. Despite challenges such as valuation complexities and liquidity constraints, luxury watches provided remarkable upside potential, benefiting from a high retention rate due to their unique emotional features. Ultimately, the findings suggest that luxury watches can be viable alternative investments considering that 65% of these HNIs viewed their watch purchases as investment opportunities.

Keywords – Luxury Watches, High-Net-Worth Individuals, Portfolio Performance Analysis, Hypothesis Testing, COVID-19 Pandemic, Asset Allocation, Portfolio Diversification, Alternative Investments

1. INTRODUCTION

In highly dynamic and competitive financial markets in a developing country such as India, it is essential for investors and institutions to constantly discover, invest, divest or maintain different assets in order to hold competitive portfolios. Especially over the course of the COVID-19 pandemic, several well-informed investors began divesting from traditional holdings and retained alternative assets to sustain the drastic economic and financial impact. As evidenced by (Popescu, 2020), which analysed investor views on the impact of COVID-19 on the size of their planned commitments towards alternative investments in 2020, 63% investors expected 'no change' in their investment commitment, while 16% investors expected to 'increase' their investment commitments. Within alternative investments, tangible assets, such as gold and real estate, had a higher retention rate than intangible assets, such as hedge fund and private equity holdings. A popular and sensible option for numerous risk-averse investors was gold and related commodities, which serves as a conventional investment during economic down winds. As highlighted by (Baur & McDermott, 2016), gold has been a 'safe haven' for investors in periods of financial distress and uncertainty such as after the September 11, 2001, terrorist attacks and the Lehman Brothers' bankruptcy in 2008. Universally, gold has exhibited investor behavioral bias due to its historical presence as a currency, store of value, its effective use as a financial stabilizer and a national resource management strategy. This was evidenced by the momentous rise in the prices of gold in India throughout the pandemic. Gold, being a tangible commodity of high economic value and rich inherent properties, is utilized in multiple industries such as the medical, cosmetics, electronics, automotive, fashion, gems and jewelry, defense and aerospace industries (The Natural Sapphire Company, n.d.). A relatively lesser-known industry, which uses gold as a component in their products, is the luxury watch industry. Although gold is widely used as a precious material in luxury watch production, the industry also uses platinum, silver, stainless steel and titanium to produce high-quality timepieces (Faster Capital, 2024). However, the introduction of titanium, platinum and stainless steel as watch components is relatively new compared to silver and gold. According to (Afuang, 2018), more than half of the annual global production of gold is used by the watch and jewelry industries, with a significant portion consumed by Switzerland's luxury watch market. Therefore, it is one of the most used materials in the luxury watch market across Europe, Japan, United States and United Kingdom, as result making luxury watches a high yielding investment during recessionary periods as witnessed during the COVID-19 pandemic. In addition to analyzing overall portfolio performance, this paper investigates the relation of gold, and the luxury watch market performance to understand its role in enhancing the predictability of luxury watch prices.

1.1 COVID-19 Pandemic Impact on Financial Markets

The COVID-19 pandemic, as described by (World Health Organisation, 2019), was a global outbreak of coronavirus, an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). After being detected in China in December 2019, the infection quickly spread across borders and affected the global population with a death toll exceeding 7 million, creating worldwide uncertainty and panic. To contain the spread, the Indian government imposed a nationwide lockdown on 24th March 2020, which disastrously impacted the country's economic and financial state. According to (Dhingra & Ghatak, 2021), the Indian economy suffered a 24.4% decline in GDP during the period between April to June 2020 and contracted further by 7.4% from July to September 2020. The recovery rate remained weak throughout the rest of the year, making 2020 the worst year for economic contraction in the country's history. The inflation rate rose by nearly 2% during March 2020 and subsequently individual income dropped approximately by 40%. Through an event study, comparative analysis and panel data regression, (Rao, Goyal , Kumar, Hassan, & Shahimi, 2021) examined the impact of the pandemic on India's financial market. It established that the Indian financial market volatility had breached the circuit two times in March 2020 alone, which hadn't occurred in the last 12 years, while the

Sensex (BSE Index) dropped by approximately 12.72% on 23rd March 2020. Evidently, the stock market witnessed a panic sell off of stocks as the country confirmed COVID-19 infection cases. The key findings in (Chaudhary, Bakhshi, & Gupta, 2020), which analysed returns of the Bombay Stock Exchange (BSE) market index, Sensex, during COVID-19, found lower and negative mean daily returns coupled with high standard deviation, which contributed to a negatively skewed and highly leptokurtic return distribution. This proved that investing in Indian and global financial markets, including debt markets, in the short run during the pandemic was highly risky and uncertain in nature, igniting investors to seek and retain alternative investment options.

In 2021, several states in India underwent partial or complete lockdowns repeatedly, which in turn detrimentally impacted the economy further and created an atmosphere similar to that of 2020. In the first quarter of 2021, GDP recorded a 23.9% de-growth, followed by a 7.5% drop in the second quarter (NABARD, 2021). After two years and three waves of COVID-19, the economy and different sectors started recovering in the second quarter of 2022, registering an 8.7% growth in GDP (NABARD, 2022).

A key economic insight during the pandemic was the inflation rate. In India, the inflation rate during the pandemic peaked at 7.6% in November 2020, resulting in a sharp decrease in the general purchasing power. Consequently, amid an economic recession in a highly volatile market, investors found it essential to protect their investments against inflation in the long run. According to (Himanshu, Ritika, Mushir, & Suryavanshi, 2021), the pandemic induced investors to reallocate their portfolios towards a more conservative portfolio. Using primary data, the analytic hierarchy process (AHP) was used to rank investment preferences of respondents and results ranked insurance, gold, bank deposits and public provident funds (PPF) as the most preferred investment avenues in India with high local and global weights. These investment avenues are typically preferred during periods of financial crisis, however, the transition from risky assets to less risky assets was not always observed (Himanshu, Ritika, Mushir, & Suryavanshi, 2021). With a majority of investors shifting towards a risk-averse outlook during this period, it is important to analyse the alternative securities retained by them in the process against the inflation rate.

1.2 Luxury Watch Market

Luxury watches have evolved from their origins as wristwatches in the late 19th century to the sophisticated smartwatches of the 21st century. This transformation has created an industry with one of the highest global turnover rates, especially in the secondary watch market (Watches of Distinction, n.d.). With unique craftsmanship and the use of high value commodities and materials, luxury watches are some of the most expensive retail products in the world. According to (Spherical Insights LLP, 2024), the luxury watch market was valued at USD 40.7 billion in 2022 and is projected to grow to USD 63.6 billion by 2032 with a CAGR of 4.5%. As listed by (Morgan Stanley, 2022), the market is primarily dominated by five key players based on their revenue turnover and retention rate:

1.2.1 Rolex

Founded in 1905 in London, United Kingdom by Hans Wilsdorf, Rolex has evolved into one of the most prestigious luxury watch brands in the world. Initially, the company operated under the name Wilsdorf & Davis after which it relocated to Geneva, Switzerland in 1919 (Rolex, n.d.). As of 2022 and 2023, Rolex dominates the Swiss watch market with a 30.3% market share and a sales figure of USD 11.2 billion in 2023 (Morgan Stanley & LuxeConsult, 2023). According to (Corso, n.d.), Rolex is ranked as the first most sought-after secondhand luxury watch brand in the world.

1.2.2 Patek Philippe

Founded in 1839 by Antoine Norbert de Patek and Adrien Phillippe, Patek Phillippe is a family-owned Swiss luxury watch and clock manufacturer, headquartered in Geneva, Switzerland. Patek Phillippe watches are renowned for their intricacy and craftsmanship, offering hand-finished timepieces at premium quality (Patek Phillippe Geneva, n.d.). As of 2022 and 2023, Patek Phillippe holds a 5.6% Swiss watch market share with a sales figure of USD 2.05 billion in 2023 (Morgan Stanley & LuxeConsult, 2023). According to (Corso, n.d.), Patek Phillippe is ranked as the second most sought-after secondhand luxury watch brand in the world.

1.2.3 Audemars Piguet

Established in 1881 in Le Brassus, Switzerland by Jules Louis Audemars and Edward Auguste Piguet, Audemars Piguet specializes in creating complex watch movements and is known to be expensive owing to the company's low production volumes (Audemars Piguet, n.d.). As of 2022 and 2023, Audemars Piguet holds a 4.9% Swiss watch market share with a sales figure of USD 2.7 billion in 2023 (Morgan Stanley & LuxeConsult, 2023). According to (Corso, n.d.), Audemars Piguet is ranked as the third most sought-after secondhand luxury watch brand in the world.

1.2.4 Omega

Constituted in 1848 in La Chaux-de-Fonds by Louis Brandt, Omega is known for its unique designs, precious materials, intricate movements and other complications, making it one of the most reliable timepiece manufacturers in the world (Omega Watches , n.d.). As of 2022 and 2023, Omega holds a 7.5% Swiss watch market share with a sales figure of USD 2.9 billion worldwide in 2023 (Morgan Stanley & LuxeConsult, 2023). According to (Corso, n.d.), Omega is ranked as the fourth most sought-after secondhand luxury watch brand in the world.

1.2.5 Cartier

Founded in 1847 in Paris, France by Louis-Francois Cartier and his brother Joseph, Cartier watches symbolize timeless luxury and exquisite craftsmanship, making it an emblem of opulence and class throughout the 19th century (Cartier , n.d.). As of 2022 and 2023, Cartier holds a 7.5% Swiss watch market share with a sales figure of USD 3.5 billion in 2023 (Morgan Stanley & LuxeConsult, 2023). According to (Corso, n.d.), Cartier is ranked as the fifth most sought-after secondhand luxury watch brand in the world.

As with the Swiss market, these brands are dominating the Indian market with their strong brand reputation and limited supply, ultimately creating scarcity to broaden the demand and supply gap. Hence, secondary market prices differ from the primary market due to excessive demand, which is boosted by the brands' exclusivity. Especially during the COVID-19 pandemic, the secondary market witnessed a surge in prices due to global supply chain disruptions, factory and mine closures, movement restrictions and surges in raw material prices, which created shortages and delays in production (Fortune Business Insights). Additionally, excessive demand was boosted by the increase of disposable income, which was created due to the reduction of expenditure amid lockdown periods. Nevertheless, towards the end of the pandemic, secondary market prices plunged by nearly 40% in March 2022, driven by weak global demand and the increased upward pressure faced by the Swiss franc causing low volumes of exports (Jordan, 2020). However, Rolex, Audemars Piguet and Patek Phillippe still maintained positive value retention rates on average (Friesen, 2024).

Traditionally, luxury timepieces were solely procured through authorized dealers at uniform prices, however, in recent years second-hand luxury watches are traded globally on numerous e-secondary market platforms, such as Chrono24 and WatchCharts. Although, such platforms struggle to verify authenticity, this improves liquidity and creates a marketplace. These companies and marketplaces play a crucial role in the growth of luxury watches as ‘investments’ rather than solely as retail products. Drawing back to procurement from authorized dealers, customary protocol to acquire a luxury watch encourages clients to build a relationship with the company in addition to demanding a significant initial capital investment. These stipulations create significant a barrier for individuals with low- and middle-incomes to acquire luxury watches. Therefore, luxury watches are typically purchased by high-net-worth individuals (HNIs). In India, HNIs are placed into one of three categories (Surana, 2024):

- High-Net-Worth Individuals: liquidity of < Rs. 5 crores
- Very-High-Net-Worth Individuals: liquidity of Rs. 5 crores – Rs. 25 crores
- Ultra-High-Net-Worth Individuals: liquidity of > Rs. 25 crores

1.3 Luxury watches as Alternative Investments

Historically, luxury watches were solely regarded as status symbols rather than investments because their composition mainly consists of precious metals and materials. Nevertheless, in recent years, these watches are becoming opportunistic long-term alternative investment avenues due to their high value retention and appreciation. An alternative investment is a financial asset that does not fall under the conventional asset classes, such as stocks, bonds or cash and are typically illiquid and unregulated investments as described by (Lauren Landry, 2021). Alternative investments provide diversifying benefits to portfolios by including assets, such as real estate, wine, stamps, fine art, commodities, precious metals, hedge funds, private equity, venture capital, cryptocurrency and derivatives, to help combat volatile markets and prepare for recessions. As defined by (Investopedia, 2023)**,** diversification is a risk management strategy that creates a mix of various investments, with low correlations among each other, to reduce overall portfolio volatility. Like real estate, luxury watches fit into the definition of alternative investments due to the multiple factors impacting their price and valuation and low correlation to traditional financial markets.

Specifically, during the COVID-19 pandemic, numerous tangible alternative investments, such as gold and real estate, provided protection against inflation and minimized negative economic impact on portfolio performance (Dixon, 2021). During times of rising prices, commodities tend to outperform both stocks and bonds. As defined by (Investopedia, 2022), inflation protection refers to investments that provide a hedge against the rise in prices of goods and services over time. This extended to luxury watches as well, however, it was limited to specific brands (The Affluent CEO, 2023).

To gain a deeper insight on luxury watches as alternative investments during the pandemic, this paper examines the portfolio performance of 57 high-net-worth individuals (HNIs) across Mumbai, India, which is the financial capital of India and houses the highest number of HNIs across the country. Using portfolio performance metrics to assess the competitiveness and performance of luxury watches as alternative investments in times of economic distress, this paper attempts to fill gaps within this domain of financial research. Furthermore, this paper uses hypothesis testing to determine whether the population luxury watch portfolios outperformed gold and the NIFTY50 index based on their average returns during the study period. Through a correlation and regression analysis using time series data, this paper attempts to explain the extent to which luxury watches provide diversifying benefits to portfolios, by comparing their performance to different economic and financial market indicators as well as commodity prices.

2. LITERATURE REVIEW

Investment patterns and behavior of individuals with significant capital, specifically during COVID-19, has been an interest of many practitioners and researchers in the field of finance. Focusing on luxury watch investment, it is important to examine its contribution to the objectives regarding wealth creation of high-net-worth individuals. Through the review of pre-existing publications, this section aims to thoroughly discuss the nature of luxury watch investments, their overall relationship to financial markets and their volatility, especially during the pandemic. Relevant literature is explored, and their strengths and limitations are critically evaluated in this section.

In a comprehensive review, (Diamond Source NYC, 2021) highlights the factors contributing to Rolex's appreciation and superior performance during the pandemic. The article discussed several pandemic outcomes, which collectively increased the value of Rolex's luxury watch collection as an investment during tough economic periods. In general, luxury watch prices exhibit a strong positive correlation with gold prices, and during economic downturns, gold futures typically outperform other securities, as witnessed by their performance during the Influenza pandemic of 1918 and 1968. Taking this into consideration, many individuals were incentivized to retain assets exhibiting stability and resilience amidst declining financial markets and asset values. Additionally, Rolex as a brand with a strong reputation, symbolizes stability and status itself, making it a trustworthy investment. Amidst the commencement of pandemic lockdowns, investors began reallocating funds toward luxury watches due to the increase in disposable income, particularly facilitated by online delivery channels. Moreover, as a part of stabilizing the economy, interest rates were reduced, thereby easing borrowing circumstances, which in turn aids the purchase of luxury watches. Furthermore, this engendered several psychological benefits to investors including stability, reliability, relief, and normality amid uncertainty.

(CNBC, 2021) reported that the luxury watch shortage due to the pandemic fueled the growth of a USD 20 billion secondary market and is estimated by McKinsey to expand to USD 30 billion by 2030. It also notes the growth in digital secondhand watch marketplaces and auction platforms due to the pandemic. A prominent example of a digital platform is German-based Chrono24, which raised an additional 100 million euros from investors, including General Atlantic and Aglae Ventures. Several other companies such as Chronext, Watchfinder, WatchBox, WatchMaster and eBay are also competing for a market share. Together these platforms aim to create depth and promote transparency in luxury watch markets internationally.

The expansion of investment-driven demand for luxury timepieces is further analyzed in (Monochrome, 2020), which discusses the anticipated COVID-19 impact on the second-hand luxury watch market. Based on data from Chrono24, the research emphasizes on the significant impact experienced by luxury watches from the leading brands Rolex, Audemars Piguet, and Patek Philippe. This impact has been primarily caused by disruptions in the supply chain, decrease in tourism, and constraints on supply availability due to the reduction or halt in manufacturing operations. It is also noteworthy that a projected decline of 25% in overall sales accompanied by a negative correlation between second-hand luxury watch prices and various financial markets and securities were anticipated.

To understand watch-specific characteristics and factors that determine their prices, it is imperative to consider the empirical results discovered in (Sjöstedt & Mannerford). As part of this study, hedonic regression, also known as hedonic demand theory, is used to estimate the influence of various watch characteristics on their prices. The characteristics inputted in the model are continuous and feature variables, brand variables, style variables, crystal and movement type variables and case and bracelet material variables. Their sample included brands like Audemars Piguet, Patek Philippe, and Rolex and their data was compiled from WatchCharts. The results found that the brand names of Audemars Piguet, Patek Philippe and Vacheron Constantin had a positive impact on the price, while Rolex did not have this effect. From this study, it can be inferred that luxury watch prices are determined not only by physical factors but also by their utility and psychological appeal.

While examining the impact of pricing on brand reputation, (Jörn Kleinhans & Kathryn A. LaTour, 2021) identified that several luxury products, including handbags, luxury watches and wine, were sold by their respective brands for lower than secondary market prices. This enhanced the brands' reputation as several customers scrutinised and inspected the quality of products traded on secondary markets. However, in some cases when prices on the secondary market were lower than official prices offered by the brand, it would adversely impact their reputation. Given reputation has long term value for firms, their hypothesis was that brands, which are visible on secondary markets, should underprice their products compared to secondary markets. This strategy is widely seen amongst luxury watch brands, such as Rolex, Patek Philippe and Audemars Piguet. It also provides a fresh perspective that these brands also play a major role in the appreciation and value building of the watch over time.

(Torcello, n.d.) indicates that the investment patterns of HNWIs is shifting towards alternative investments, providing higher value due to their emotional and social characteristics. These unique features are making art, collectibles and other tangible assets popular investment choices. Their low correlation to traditional asset classes makes them the ideal hedge against inflation and important elements of a HNWIs diversification strategy. Art and collectibles are demonstrating great potential to outperform equities. Furthermore, art and other collectibles indexes have grown 64% faster than the MSCI World index since 2003. According to a survey conducted by them, the key motivation to purchase art is due their emotional and social value for 60% of respondents. From their research, it is safe to infer that this asset class is expanding to include other luxury products with a desirable risk and reward ratio due to their distinctive characteristics.

However, luxury consumption during the pandemic fell by nearly 10% as evidenced by (Ni, Luxury Consumption During Economic Crisis , 2020), which analysed the impact of an economic crisis on the luxury market. With a 30% share, Japan is dominating the luxury market with most consumers profiled as having overseas education, upper living and working conditions. Most purchases were motivated by their social identity, materialism and uniqueness of the luxury product. However, during an economic crisis, the study identified that many consumers were reluctant to spend more on premium products leading in a negative relationship with uniqueness and materialism, causing a spending decline. Nonetheless, a financial crisis strengthened the driver of social group influence, as it displayed a positive relationship in luxury good consumption. The key takeaway from this study is that the motivation for purchases of luxury goods shrunk significantly, making watches a unique kind of luxury product as demand rose despite the economic condition.

With a focus on antique luxury watches, (Balasaki, 2018) analyses the financial performance and benefits of investing in antique watch collectibles. The findings suggest that most watches got their value from their physicality and historic significance. Furthermore, the study explores the return opportunities, portfolio diversification benefits and correlation with other asset classes. This study found that antique watch collectibles provide not only financial returns and diversification benefits but also satisfy investors' passions. A key driver of their value is their high demand, making them profitable investments.

Viewing the luxury second-hand market through a different lens, (Olivier Abtan, 2018) promotes luxury brands to support secondary markets as it leads sustainability. Moreover, the report also provides insights on the factors influencing the secondary market prices, highlighting that the brand prestige, watch condition, rarity and supply chain impact the price significantly.

3. OBJECTIVES OF THE STUDY

In recent years, luxury watches have emerged as a robust asset class among HNIs, particularly during recessionary periods with high market volatility. Due to its major impact on financial markets, the COVID-19 pandemic provides a unique context to evaluate the sustainability of investment strategies and financial models. This research aims to analyze the performance of luxury watch portfolios among HNIs in India during this unpredictable period. This section lists the objectives of the investigation conducted in this paper:

- To analyze the demographic profile of the sample of Indian HNIs owning watch portfolios throughout the COVID-19 pandemic in order to make inferences about the HNI population in India in this reference.
- To offer valuable insights for investors and portfolio managers on the viability of luxury watches as an alternative asset in times of market and economic stress.
- To ascertain which watch brand was the most beneficial to retain during the COVID-19 pandemic.
- To evaluate the extent of wealth protection provided by luxury watch investments to HNI portfolios during the COVID -19 pandemic by empirically testing unrealized and realized real returns of their portfolios as well as the watch retention rates.
- To demonstrate and analyze the performance of the secondary luxury watch market and HNI watch portfolios during COVID-19 using attribution analysis to ascertain whether they made optimal investments during the pandemic.
- To compare the return and risk profiles of these portfolios with traditional asset classes during the same period, specifically against equities and gold in India.
- To understand the performance of the secondary luxury watch market performance against economic and financial indicators, such as inflation rates, exchange rates and gold prices during the pandemic.
- To investigate whether luxury watch investments during the pandemic provided inflation protection and diversification benefits while fulfilling the desired risk exposure and preferences of HNIs.
- To use hypothesis testing to ascertain whether annualized weighted average watch portfolio returns outperformed gold and NIFTY50 annualized average returns.

4. SCOPE & LIMITATIONS OF THE STUDY

This section outlines the scope and limitations of this study. The findings are constrained by the following assumptions and sample-related factors:

- This study primarily focuses on the Indian high net worth individual (HNI) population and hence may not accurately reflect the global HNI population as judgmental sampling was used. The results, therefore, are more relevant to the behavior of Indian HNIs and may not be directly applicable to international markets.
- The secondary market data for luxury watches is sourced from Chrono24 and WatchCharts, both of which are subscription-based websites with restricted access. This limitation may result in a dataset

that is not fully accessible to users who have not paid for access, hence potentially excluding other significant market participants.

- Watch price quotations used in this study serve as approximations of their average market value and therefore may not fully capture the real-time fluctuations in the market of individual transactions. This paper is partially restricted by the inherent lack of transparency in the luxury watch market. Many markets in different parts of the world may have different quotations of prices.
- Although efforts were made to account for the condition of the watches, such as inquiring whether they were in good condition with the original box and papers, there remains a high degree of subjectivity. The interpretation of watch condition could significantly vary among respondents, impacting the accuracy of the data. Condition greatly impacts the quotation of the watch in the secondary market.
- The hypothesis tested in this paper are based on both qualitative and quantitative assessments. Although one of the hypotheses is qualitative in nature, it is only meant to ease the analysis and interpretation as this paper quantitatively examines 5 watches and their collective index.
- The analysis is confined to only 5 luxury watch brands with an index created solely from these brands. This approach simplifies the market into a scenario where only 5 watch brands exist, potentially overlooking the broader dynamics of the luxury watch market.
- For this study, it is assumed that the HNIs have exposure to international markets, enabling them to buy and sell luxury watches globally. This assumption may not hold true for all participants in the real world.
- This study also assumes that HNIs acquired their watch portfolios with a strategic focus on maximizing returns and efficiency, treating these assets as part of a well-thought-out investment plan rather than only luxury consumption.

5. RESEARCH HYPOTHESIS

This section formulates two quantitative hypotheses and one qualitative hypothesis evaluating the performance of the 57 luxury watch portfolios primarily against the performance of gold and the NIFTY50 index, during the study period between 31st August 2019 to 31st March 2022 (COVID-19 period). In further sections, these hypotheses are tested by analyzing various portfolio performance metrics and considering macro variables.

Quantitative Hypotheses

In this hypothesis, the annualized weighted average return (denoted by γ) of the sample portfolios is empirically tested against that of the NIFTY50 index (H1) and gold (H2) to make inferences about the population mean. Given that NSE had a higher trade volume than BSE during the study period, the NIFTY50 is chosen as one benchmark index. During the study period, NIFTY50 demonstrated an annualized average return of ~15.7%, while gold demonstrated an annualized average return of ~12.2% in India. Through hypothesis testing, this study tested the following hypotheses at a confidence level of 99% using z-test scores as the sample size is greater than 30:

Null Hypothesis ($H1_0$): $\mu_\gamma \leq 15.7\%$

Alternative Hypothesis ($H1_A$): $\mu_\gamma > 15.7\%$

Null Hypothesis ($H2_0$): $\mu_\gamma \leq 12.2\%$

Alternative Hypothesis ($H2_A$): $\mu_\gamma > 12.2\%$

Hypotheses 1 and 2 enables this study to formulate Hypothesis 3 as a qualitative hypothesis because they attempt to ascertain whether the population mean of portfolios (denoted by μ) is fairly represented by this studies' sample mean.

Qualitative Hypothesis

The scope of Hypothesis 3 extends to the performance of the specific brand indexes and overall watch index created. It is analyzed using the principles derived from the Modern Portfolio Theory (MPT) and its attribution tools, such as the Sharpe ratio, Treynor Measure, Jensen's Alpha, M^2 and M^2 Alpha. This hypothesis helps ascertain the watch brand that was most profitable to retain during the COVID-19 pandemic.

Null Hypothesis ($H3_0$): The risk-adjusted performance of luxury watch portfolios among HNIs during COVID-19 is equal to or underperformed against risk-adjusted performance of gold and the NIFTY50 index during the COVID-19 pandemic.

Alternative Hypothesis ($H3_A$): The risk-adjusted performance of luxury watch portfolios among HNIs during COVID-19 outperformed risk-adjusted performance of gold and the NIFTY50 index during the COVID-19 pandemic.

6. RESEARCH METHODOLOGY

6.1 Population and Sample

The sample for this study represents the population of Indian high-net-worth individuals (HNIs), who were luxury watch owners during the COVID-19 pandemic period. The sample composed of 57 HNIs residing in the city of Mumbai, the financial capital of India. According to (Now, 2023), approximately 60,000 HNIs reside in Mumbai, making it India's richest city. Hence, the respondents appropriately represent a majority of Indian HNIs. In this investigation, 'HNIs' include all individuals in any of the categories established by (Surana, 2024) introduced in Section 1.2 of this paper.

6.2 Sources and Collection of Data

6.2.1 Primary Source

For the collection of portfolio data, 57 quantitative surveys featuring close-ended questions were conducted in person over a 1-month period in May 2024. The survey was composed of 15 questions divided into three sections, designed to collect the respondent's demographic profile, watch portfolio composition and subjective views on luxury watches as alternative investments. Most of the subjective questions were structured using the 4-Point Likert Scale to assess their opinions and attitudes towards a matter. The survey collected the following data under each section:

- **Demographic profile:** Name, age, gender, occupation, annual income, net worth, investment experience and whether they were watch collectors or enthusiasts
- **Watch portfolio composition:** Number of watches owned, motivation, brand name, model name (ref. no.), purchase year and month, purchase price, source, whether they sold the watch during the study period, sale price (if sold), maintenance costs (if any) and condition of each watch in their portfolio
- **Subjective views:** Whether luxury watches provided diversification benefits, inflation protection or had any challenges being alternative assets

Through the survey, details of a cumulative of 464 watches were listed in HNI portfolios, comprising of the top 5 watch brands exclusively, which were processed and used in further analysis.

6.2.2 Secondary Source

For this investigation, daily secondary watch market data of each luxury watch model listed in each HNI's portfolio is collected cumulatively from both (WatchCharts, n.d.) and (Chrono24, n.d.). These companies provide comprehensive and exhaustive data related to numerous watch models in a variety of brands and provide market insights for watch enthusiasts. With the ultimate aim of promoting transparency in the watch market as well as creating an active online marketplace for second-hand luxury watches, the websites of WatchCharts and Chrono24 feature price estimates of numerous second-hand luxury watches. Prices are computed by factoring in risk, value retention, region, liquidity, performance, condition, demand, etc. of the watch, enabling them to value listings and track price movements on the secondary market. The second-hand luxury watch market is referred to as secondary watch market throughout this paper.
Monthly data is collected for the period between August 2019 to March 2022 and is used for analyzing the portfolio performance and to test the hypotheses.

6.3 Data Processing

With the focus being on the top 5 luxury watch brands, for further analysis of the Indian watch market, historical price data for each luxury watch was converted from USD (as quoted on WatchCharts and Chrono24) to INR. The approximate purchase price, repair costs and selling costs (if any) were adjusted for inflation till 1 August 2019 using historical inflation data (annual CPI %) available on (www.worldbank.org) and the purchase year and month provided by the HNIs. Historical monthly luxury watches' price data for the period between 1 August 2019 till 31 March 2022 (31 data points for each luxury watch) were used for analysis and testing. Monthly prices for each watch were used to compute an aggregate index for each brand and the overall market, compiled from the HNI portfolios, weighted by their inflation adjusted purchase price. Additionally, the dataset of each portfolio was aggregated, weighted by their luxury watch holding; to form a weighted average index representing all portfolios[1]. This dataset was used to analyze the market data as well as to conduct portfolio performance analysis and hypothesis testing. Furthermore, to clarify, this dataset also consists of each portfolio's composition and characteristics.

7. RESULTS & DISCUSSION

7.1 Descriptive & Inferential Statistics of Sample

In order to appropriately analyze the luxury watch market performance during COVID-19, it is essential to examine the demographic profile and composition of the sample under study. The sample was solely composed of 57 HNIs with Indian citizenship, primarily residing in Mumbai, of which ~72% are male and the remaining ~28% are female. According to the respondents, their occupation, annual income and net worth did not undergo any significant change[2] from the beginning of the study period (September 2019 – March 2022) till present. Average age was ~54 years, ranging from 32 - 71 years old, with the highest number of respondents within the 50 - 60-year age bracket. As exhibited by Figure 1, ~35% of HNIs identified their occupation as business owners or entrepreneurs, ~28% held corporate positions, ~11% were professionals, ~18% were self-employed, ~5% had retired and ~3% were investors.

[1] This weighted average is only designed to facilitate graphical representations in further sections.
[2] As defined by this paper, a significant change occurred when a respondent shifted outside their current (2024) bracket(s).

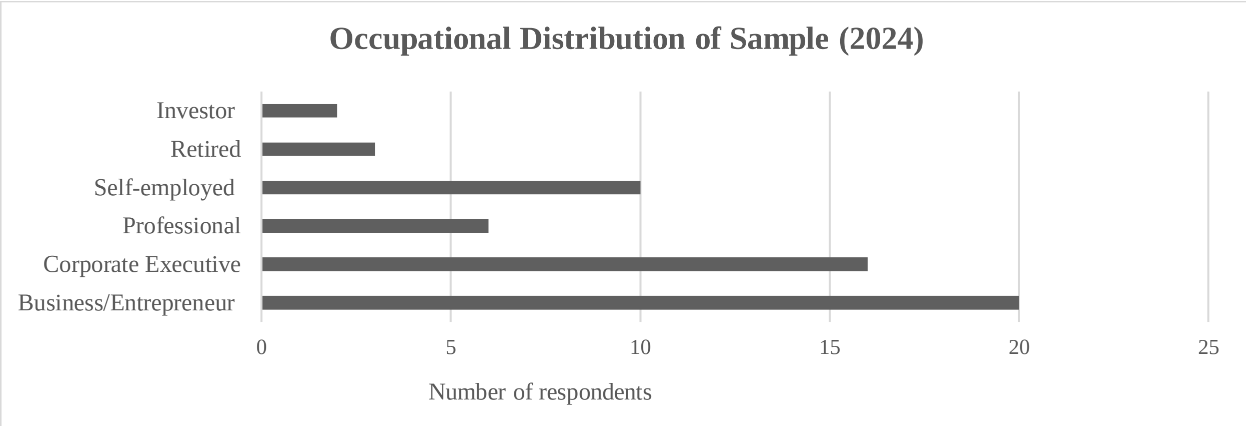

Figure 1: Occupational Distribution of Sample (2024)

Due to the relatively low number of investors, the average investment experience was 11.95 years. Moreover, the modal annual income bracket and modal net worth bracket were ₹5 crores - ₹10 crores and ₹75 crores - ₹100 crores respectively. Their distribution is exhibited in Figures 2 and 3.

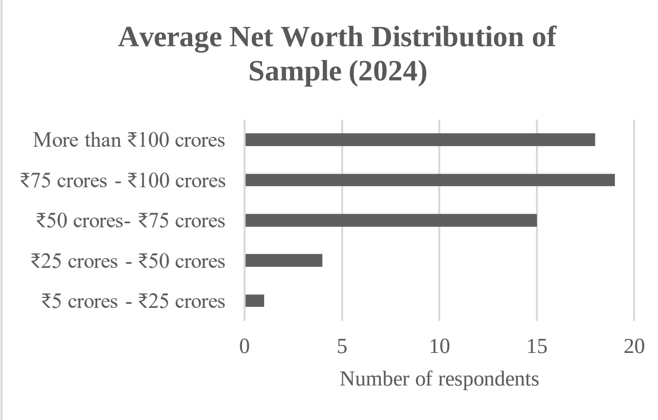

Figure 2: Average Net Worth Distribution of the Sample (2024)

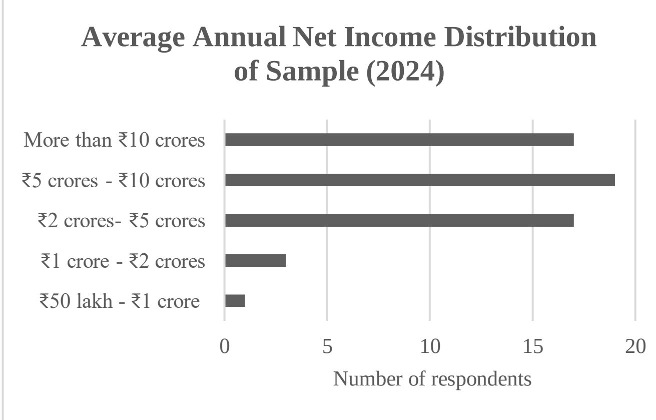

Figure 3: Average Annual Net Income Distribution of Sample (2024)

The aggregate number of watches from all five luxury watch brands in each HNI's portfolio totaled to 464. Out of these watch purchases, ~65% were viewed as investment opportunities, ~17% were motivated by the watches' status symbol and prestige, ~9% were purchased as personal rewards, and the remaining ~9% were motivated by the respondents' hobbies and passions. Correspondingly, only ~11% of respondents considered themselves to be watch enthusiasts or collectors.
The responses to close-ended questions, structured using the 4-Point Likert Scale, on whether luxury watches played a diversifying role amid the pandemic and whether they provided any inflation protection are exhibited in Figures 4 and 5.

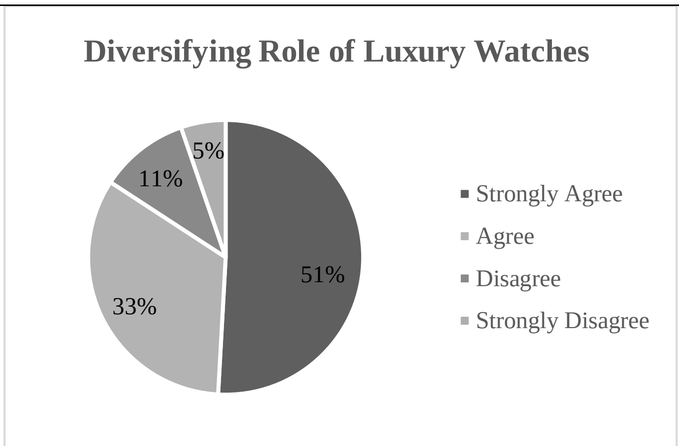

Figure 4: Distribution of Responses

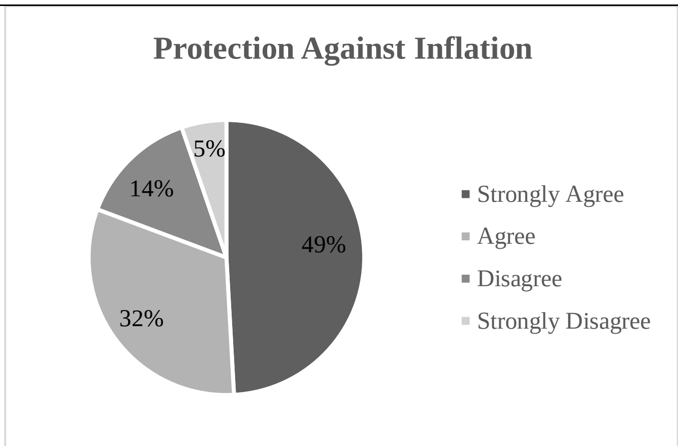

Figure 5: Distribution of Responses

Figure 6 summarizes opinions of respondents regarding the challenges faced by investing in luxury watches. ~47% respondents were concerned with limited liquidity of the watches, ~28% had authenticity concerns, ~12% found luxury watches difficult to value, ~2% faced higher costs associated to maintenance and repair costs, ~2% faced limited diversification benefits and ~9% faced high market fluctuations.

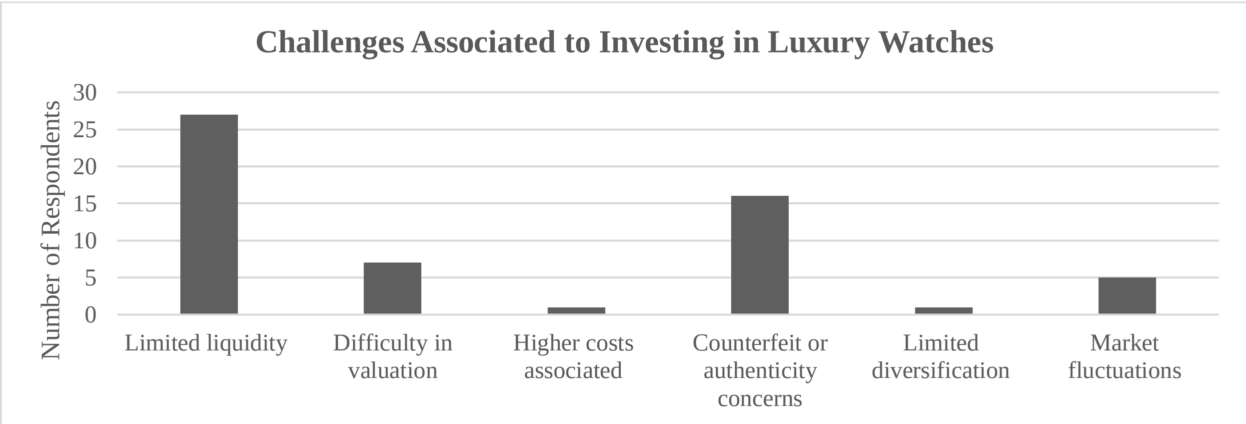

Figure 6: Distribution of Responses

7.2 Results of Portfolio Performance Analysis

Before analyzing the performance of HNI luxury watch portfolios using the dataset procured from secondary market platforms, it is essential to understand their design and composition. First, as shown in Figure 7, the collection consists of a total of 464 luxury watches, including 218 Rolex, 39 Patek Philippe, 89 Audemars Piguet, 77 Omega, and 41 Cartier watches. According to the dataset, the modal luxury watch model was the Rolex 18238 Day-Date President with a frequency of 17 watches. Furthermore, the luxury watches were primarily sourced from authorized dealers, secondary market sellers, auctions, or acquired through inheritance or as gifts. As exhibited by Figure 8, 298 watches were procured from authorized dealers, 145 were purchased on the secondary market, 7 were gifted, 3 were auctioned, 9 were inherited and the rest were procured from other sources. Approximately 80.9% of these luxury watches were procured from outside India.

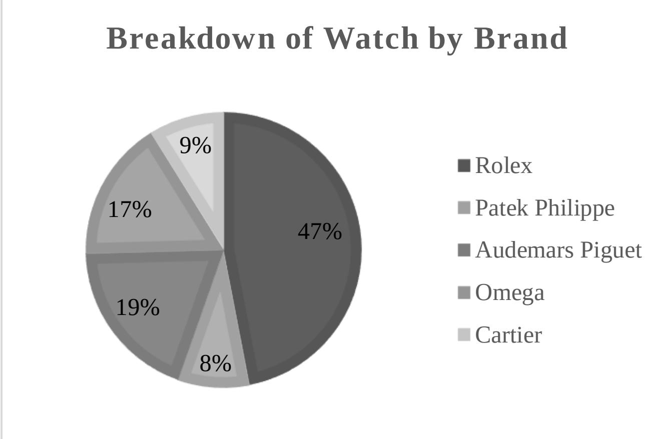

Figure 7: Breakdown of Watches by Brand

Figure 8: Sources of Watches

According to the sample, the average investment in luxury watches made by HNIs in India was ~₹1,03,30,000.00. Furthermore, correlation analysis found relationships between total investment in luxury watches made by respondents and their age, annual income and net worth, displaying positive correlation coefficients of 0.5276, 0.5999 and 0.7563 respectively. However, investment experience of the respondent and number of watches they owned displayed a negative correlation coefficient of -0.8529.

Figure 9 illustrates the distribution of procurement years, showing that most luxury watches (51 watches) were acquired in 2018.

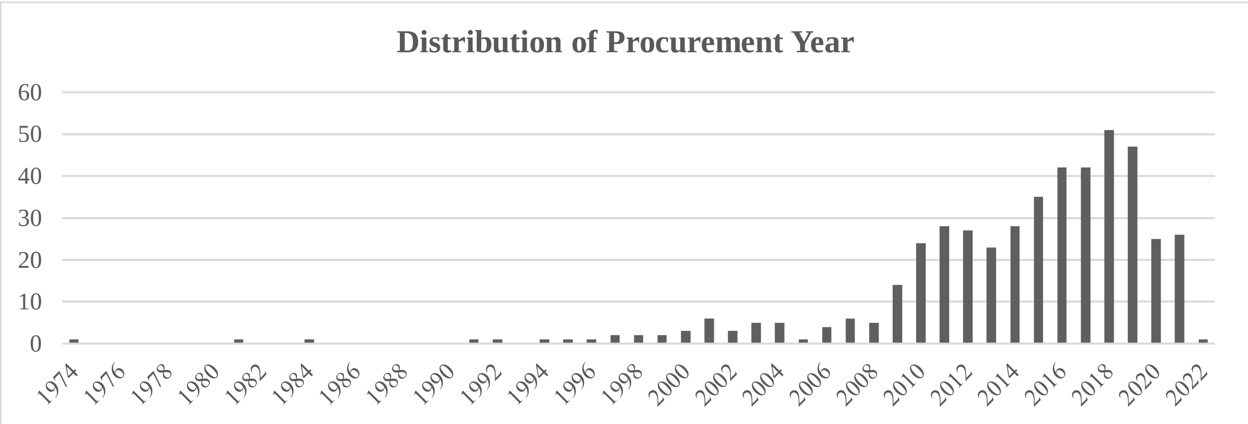

Figure 9: Distribution of Procurement Year[3]

Collectively, 16 watches were sold during the study period, resulting in a retention rate of 96.552% among HNIs during the pandemic. The sales during this period totalled to ~₹7,95,20,000.00, with an average realised return of 89.282% after an average holding period of 9.8 years. The amount of additional servicing and repair costs totalled to ~₹19,56,800.00, which represents 0.76% of the total inflation-adjusted purchase prices for all watches. According to the respondents, 97.63% of watches remained in good condition with their original box and papers during the study period and hence this is assumed for the collection of price data.

[3] This paper does not consider purchases after 31 March 2022 as defined by the study.

Table 1 summarises the average monthly returns by brand during the study period, indicating that Patek Philippe had the highest average monthly return among the five brands.

Brand	Average Monthly Return
Rolex	4.175%
Patek Philippe	5.018%
Audemars Piguet	4.185%
Omega	1.922%
Cartier	1.512%

Table 1: Average Monthly Return by Brand

To further investigate these monthly returns and the extent of supply shortage in the market, this paper studies the exchange rate movements of USD, INR and HKD against CHF. Since Switzerland is the leading luxury watch exporter in the industry, the Swiss Franc (CHF) is used as the base currency (Statista, 2022). Meanwhile, since Hong Kong and the United States are leading importers in the industry, the Hong Kong Dollar (HKD) and United States Dollar (USD) respectively are used as price currencies (Statista, 2022). Although India is not a leading importer of luxury watches, the Indian Rupee (INR) is used as a price currency due to its sample significance. Figures 10, 11 and 12 feature the adjusted closing prices of each of the currency pairs while Figure 13 exhibits the relative percentage change in their adjusted closing prices during the study period (https://finance.yahoo.com/).

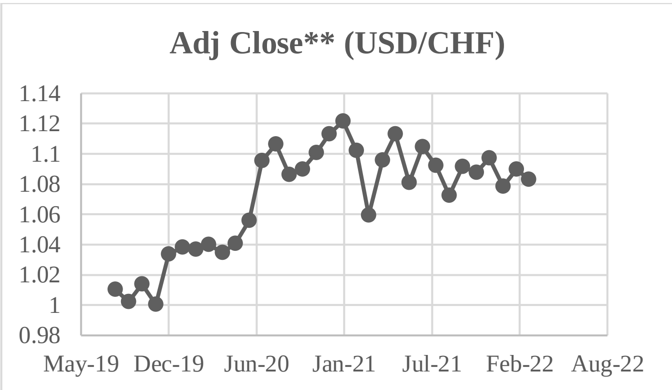

Figure 10: Adjusted Closing Price of USD/CHF

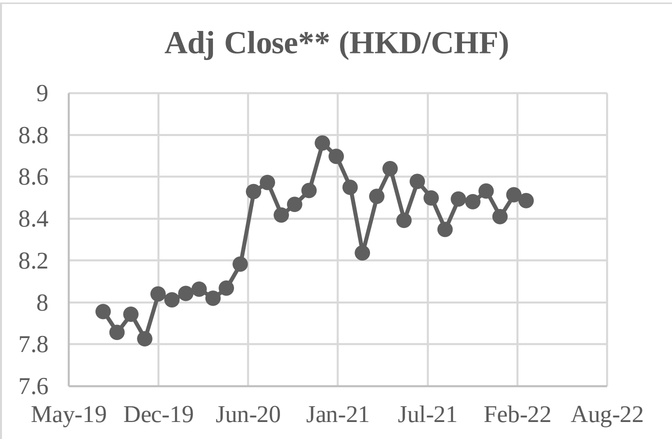

Figure 11: Adjusted Closing Price of HKD/CHF

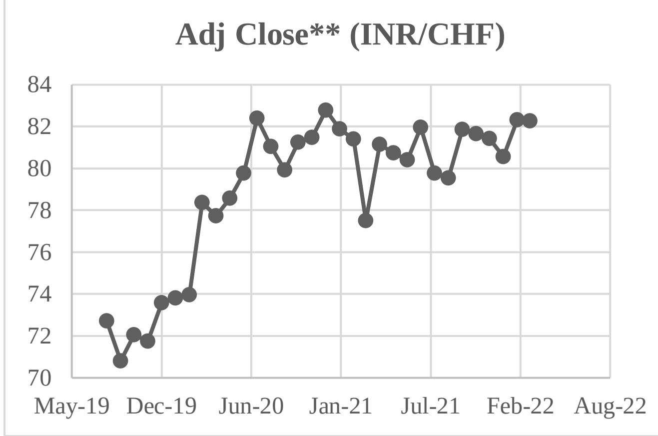

Figure 12: Adjusted Closing Price of INR/CHF

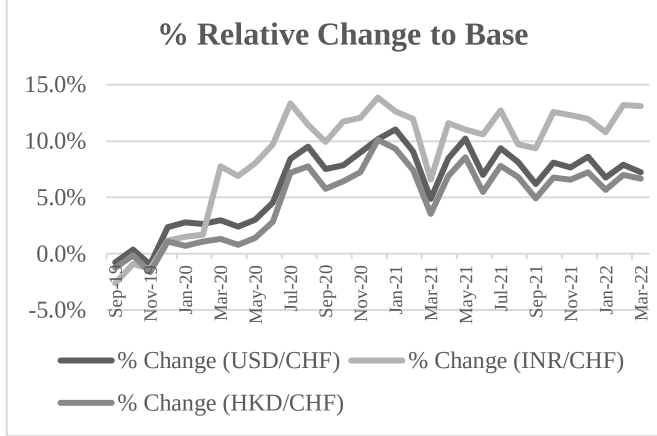

Figure 13: % Relative Change to Base

The figures above indicate that the value of the base currency (CHF) appreciated consistently against the three price currencies (USD, HKD & INR) during this period. These figures help explain the changes in global import and export volume during the pandemic leading to constrained conditions and significantly widened the demand and supply gap in the global luxury watch market.

To assess the performance of these watch portfolios in real terms, the monthly returns of each brand and the overall watch market are compared against the monthly inflation rate in India. Figure 14 presents the absolute monthly excess returns[4] for the study period.

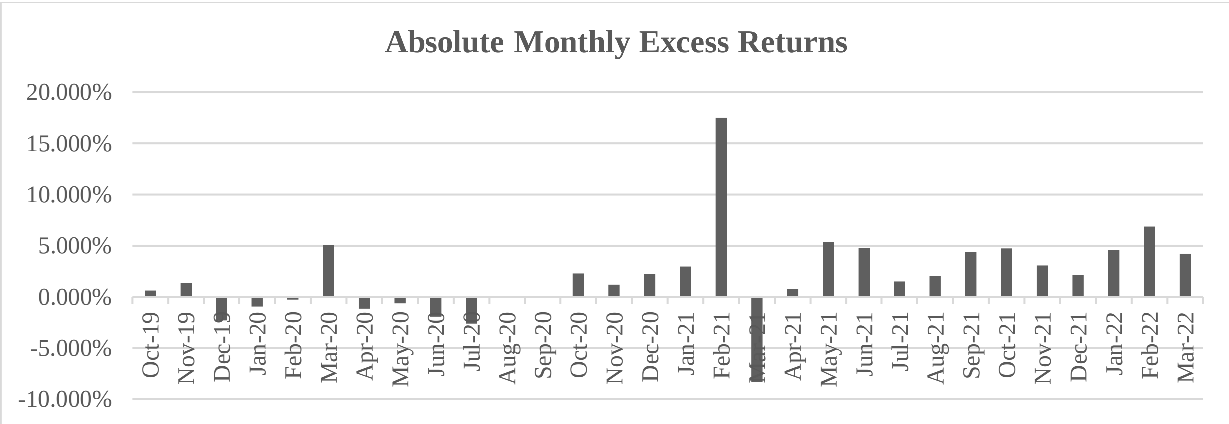

Figure 14: Absolute Monthly Excess Returns of the Overall Market Against Inflation Rate

Notably, Patek Philippe watches outperformed the inflation rate by the highest margin compared to the other four watch brands.

Computed using the dataset and an inflation rate of ~7.0% as on 31 March 2022, the annualized nominal and real returns of this period are demonstrated on Figure 15 and Table 2. Patek Philippe had the highest nominal return at 59.1%, translating to the highest real return, while Cartier had the lowest nominal return at 6.1%. These results are compared to NIFTY50, gold, and other watch brands.

[4] Here, excess return refers to the difference between overall watch market returns and the inflation rate in India at a point in time.

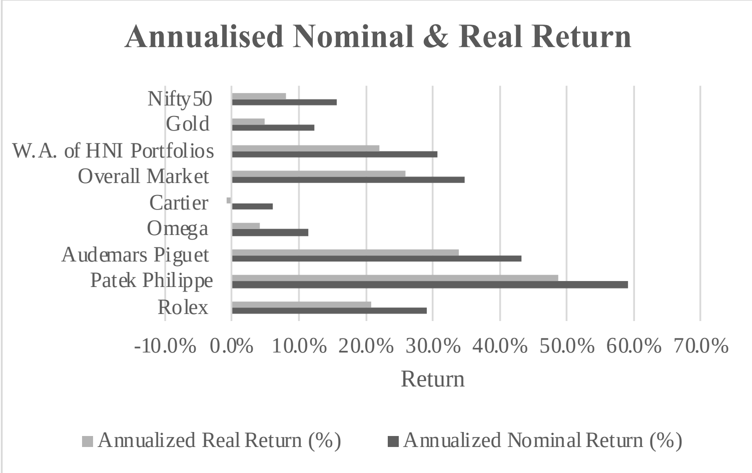

Figure 15: Annualized Nominal & Real Return[5]

Table 2: Annualized Nominal & Real Return

	ANR[6]	ARR[7]
Rolex	**29.2%**	**20.7%**
Patek Philippe	**59.1%**	**48.7%**
Audemars Piguet	**43.2%**	**33.8%**
Omega	**11.4%**	**4.1%**
Cartier	**6.1%**	**-0.8%**
Overall Market	**34.7%**	**25.9%**
W.A. of HNI Portfolios	**30.6%**	**22.1%**
Gold	**12.2%**	**4.9%**
NIFTY50	**15.7%**	**8.1%**

By testing Null Hypotheses 1 and 2 using a right-tailed z-test, the annualised weighted average return for the watch portfolios, is tested against the annualised nominal returns of gold as well as the NIFTY50 index. As the number of portfolios is 57 and is greater than 30, the z-test is employed rather than the t-test. The hypotheses test whether the population weighted average watch portfolio return was greater than that of the NIFTY50 and gold in India during the pandemic. NIFTY50 and gold had annualised nominal returns of 15.7% and 12.2%, while the weighted average of HNI portfolios exhibited an annualised nominal return of 30.6%. By inputting their standard deviation, the Z-score for Null Hypothesis 1 (NIFTY50) was ~2.94 and the Z-score for Null Hypothesis 2 (gold) was ~3.63. At a 99% confidence level, the critical value is ~2.33. Hence, Null Hypothesis 1 and 2 can both be rejected. Therefore, this allows for inferences to be made in the paper with regards to outperformance of the portfolios against the NIFTY50 and gold on average. The annualised nominal return for each brand is similarly tested at a confidence level of 95% which yields a critical value of ~1.75. Table 3 demonstrates the Z-scores for each brand against both gold and the NIFTY50.

[5] Real Return reflects the end of period return.
[6] Annualized Nominal Return.
[7] Annualized Real Return.

Brand	Z- Score Against Gold	Reject or FTR	Z- Score Against NIFTY50	Reject or FTR
Rolex	4.81	Reject	3.82	Reject
Patek Philippe	6.02	Reject	5.58	Reject
Audemars Piguet	5.62	Reject	4.99	Reject
Omega	-0.64	FTR	-3.42	FTR
Cartier	-12.76	FTR	-20.01	FTR

Table 3: Z-Score Against Gold and NIFTY50

Furthermore, the standard deviation of their monthly returns is displayed in Figure 16 and Table 4. Correspondingly, Patek Philippe had the highest standard deviation of 0.587, while Cartier had the lowest standard deviation of 0.036, compared to NIFTY50, gold, and other watch brands.

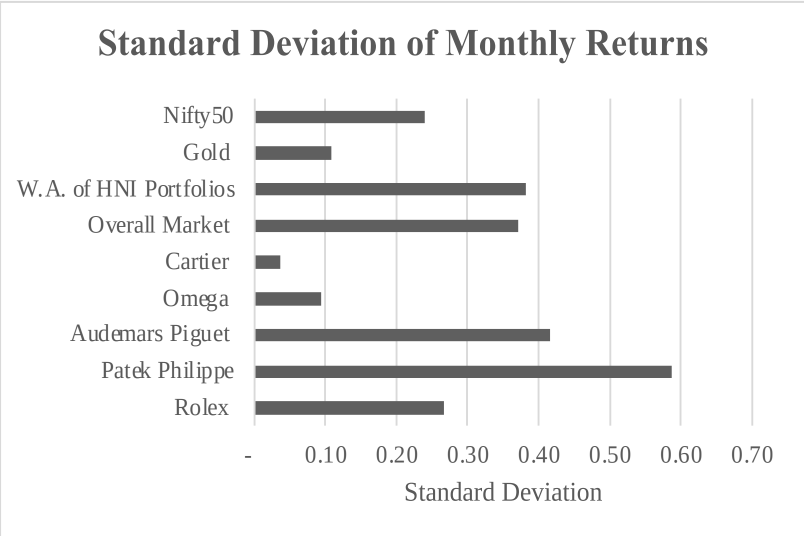

Figure 16: Standard Deviation of Monthly Returns

Table 4: Standard Deviation of Monthly Returns

	Standard Deviation of Monthly Returns
Rolex	0.266
Patek Philippe	0.587
Audemars Piguet	0.415
Omega	0.094
Cartier	0.036
Overall Market	0.371
W.A. of HNI Portfolios	0.383
Gold	0.108
NIFTY50	0.240

To evaluate the strength of the portfolio performance, the Ordinary Least Squares (OLS) regression model is used to compute the beta values of their monthly excess returns[8] against those of NIFTY50 and gold.

[8] Here, excess returns are defined as returns above the risk-free rate of 6.219% and fit the context of this analysis

As these relationships exhibit linear associations, the OLS regression model was an appropriate model for computation. Figure 17 demonstrates these values, noticeably, Patek Philippe had the highest beta of ~2.397 against NIFTY50 and gold, while Cartier had the lowest beta of ~0.256 against them.

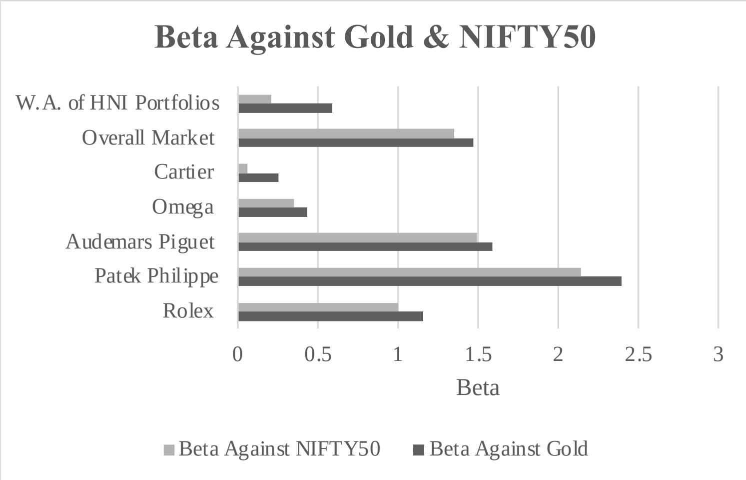

Figure 17: Beta Against Gold & NIFTY50

	Beta Against Gold	Beta Against NIFTY50
Rolex	**1.156**	**0.998**
Patek Philippe	**2.397**	**2.145**
Audemars Piguet	**1.591**	**1.491**
Omega	**0.432**	**0.350**
Cartier	**0.256**	**0.061**
Overall Market	**1.474**	**1.349**
W.A. of HNI Portfolios	**0.589**	**0.209**

Table 5: Beta Against Gold & NIFTY50

Using the 3-year Indian government bond yield as on 01/10/2019 of 6.219% as the risk-free rate, various attribution tools were used to calculate the overall performance of these portfolios during the study period. The Sharpe ratio and Treynor measure[9] quantify the risk-adjusted performance considering total risk and systematic risk, respectively. Although the Sharpe ratios were less than 1, Patek Philippe exhibited the highest Sharpe ratio of 0.900, while the weighted average HNI portfolio returns had the highest Treynor measure of 1.167 against the NIFTY50. Being less than 0, Cartier had the lowest Sharpe and Treynor measures. Figure 18 and Table 6 presents a comparison of the ex-post Sharpe ratios and Treynor measures.

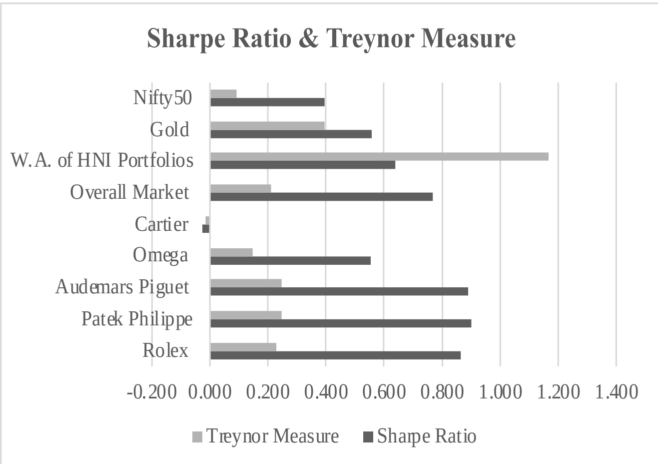

Figure 18: Sharpe Ratios & Treynor Measures

[9] Beta used in the computation of the Treynor Measure is against the NIFTY50.

	Sharpe Ratio	Treynor Measure
Rolex	0.863	0.230
Patek Philippe	0.900	0.246
Audemars Piguet	0.890	0.248
Omega	0.555	0.149
Cartier	-0.025	-0.015
Overall Market	0.768	0.211
W.A. of HNI Portfolios	0.638	1.167
Gold	0.558	0.395
NIFTY50	0.396	0.095

Table 6: Sharpe Ratio & Treynor Measures

To interpret the performance further, these measures are used to compute their M^2 ratios, M^2 Alphas and Jensen's Alphas against both gold and NIFTY50. Figures 19 and 20 and Table 7 display these measures as a comparison between gold and the market index. Most luxury watch brands exhibited high M^2 ratios with positive M^2 Alphas against both gold and the NIFTY50 index. M^2 ratio has the same ranking as the Sharpe ratio, comparing returns to another benchmark, such as gold, broadens the scope of this study. Hence, Figures 19 and 20 graphically display these measures compared to the different benchmarks.

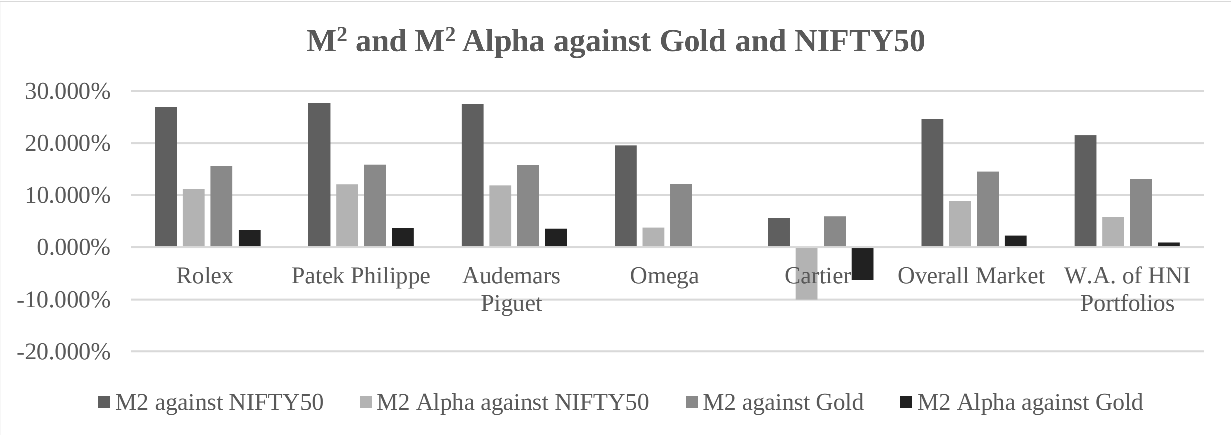

Figure 19: M^2 and M^2 Alpha Against Gold and NIFTY50

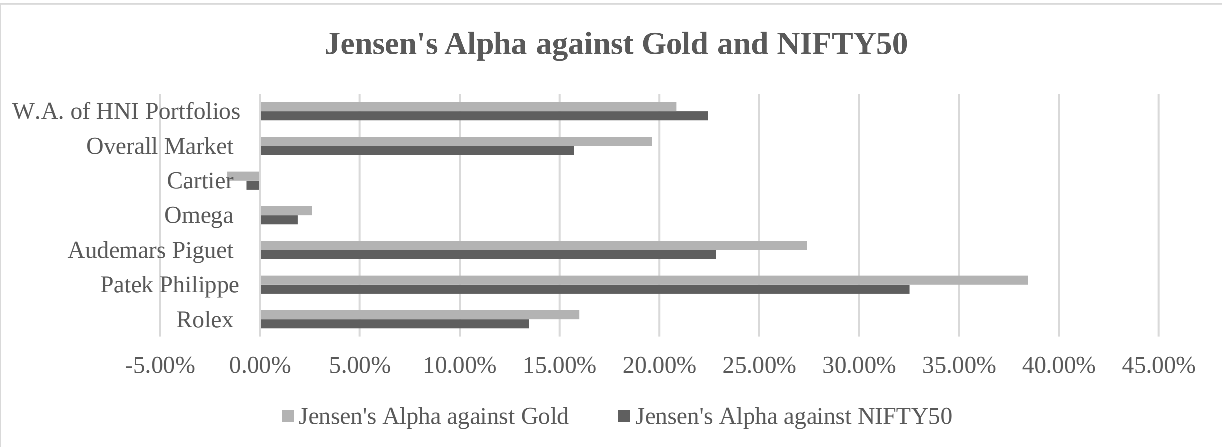

Figure 20: Jensen's Alpha Against Gold and NIFTY50

Patek Philippe demonstrated the highest Jensen's Alpha against gold and NIFTY50 at 38.47% and 32.54% respectively. However, Cartier displayed negative Jensen's Alphas against both benchmarks. Table 7 summarises the attribution analysis for further interpretation in Section 8.

	M2 against NIFTY50	M2 Alpha against NIFTY50	M2 against Gold	M2 Alpha against Gold	Jensen's Alpha against NIFTY50	Jensen's Alpha against Gold
Rolex	26.899%	11.199%	15.520%	3.286%	13.48%	15.99%
Patek Philippe	27.800%	12.099%	15.925%	3.691%	32.54%	38.47%
Audemars Piguet	27.545%	11.845%	15.810%	3.577%	22.82%	27.39%
Omega	19.520%	3.819%	12.201%	-0.033%	1.90%	2.62%
Cartier	5.612%	-10.089%	5.946%	-6.288%	-0.67%	-1.63%
Overall Market	24.639%	8.938%	14.503%	2.269%	15.72%	19.64%
W.A. of HNI Portfolios	21.514%	5.814%	13.098%	0.864%	22.42%	20.86%

Table 7: Summary of Attribution Analysis

8. CONCLUSION

This section aims to draw conclusions from the results of the empirical analysis presented in Section 7 of this paper. The research underlines the emergence of luxury watches as effective alternative investments, offering a mix of diversification benefits, financial returns and sentimental value to investors. Nevertheless, these assets face numerous liquidity, valuation and authenticity concerns across global markets, quite similar to those faced by the real estate market. This section attempts to decompose the investment behavior and preferences of high-net-worth individuals (HNIs) in India by highlighting the key drivers responsible for the growing interest in luxury timepieces as assets during the pandemic.

Through analysis, it is safe to infer that luxury watch investors in India largely fall within the category of middle-aged men who either hold senior corporate positions or are business owners. Generally, these individuals exhibit higher-than-average disposable income and net worth, which enabled them to make substantial investments in luxury assets during times of economic uncertainty. An important factor which motivated their interest in luxury watches was their role as a hedge against market volatility and inflation. The demand for alternative assets, particularly gold, expanded significantly during the early stages of the pandemic, which caused many HNIs to have the impression that luxury watches could both preserve and potentially appreciate in value due to its tangible characteristic. Similar to gold, watches were perceived and treated as a 'safe haven' assets, which was appealing during the heightened economic and financial uncertainty caused by the pandemic.

Craftmanship, materials and limited production runs, which are intrinsic characteristics of luxury watches, were determinant factors of their value as investments. Further scarcity created by lockdowns and supply chain disruptions drove up demand during the pandemic. Additionally, while inflation increased drastically in India (~7% in March 2022), luxury watches promised a relatively greater level of stability compared to traditional assets. Several investors retained tangible assets that could safeguard their wealth and purchasing power in times of inflationary pressures and volatile currency markets. As a result, the pandemic enhanced the status of luxury watches as collectibles and as an inflation hedge. As compared to other alternative assets such as artworks or cryptocurrencies, luxury watches offered a unique combination of aesthetic physicality and utility. Investors appreciated their versatility and portability, making them valuable to HNIs with the intention of holding assets that are not only esteemed but also easily transferable. This research also uncovered a common investment psychology among Indian HNIs, which blended both financial and emotional motives of owning these assets. Nearly 65% of HNIs in the sample cited investment-related reasons for buying luxury watches, viewing them as valuable additions to a well-diversified investment portfolio. Nevertheless, the research also found a significant retention rate of ~96.552% among watch owners, suggesting that luxury watches were also held for personal and emotional reasons beyond those of financial. The sentimental drivers, often linked to the watches' heritage, brand significance or as heirlooms, encouraged long term retention patterns, thereby influencing market liquidity and turnover. For investors without any formal background in financial management, luxury watches represented an accessible and understandable form of investment. This study found a strong negative correlation coefficient (-0.8529) between investment experience and total investment in luxury watches. This indicates that those without formal financial education are more likely to invest in watches due to their tangible nature and emotional appeal, in contrast to the complexity and abstract nature of other financial securities. This investment behavior strongly resonates with that of gold investments.

A major concern with luxury watch investments is liquidity. Although the second-hand watch market is growing, it remains largely informal and brokered with significant variances in valuation depending on factors like condition, authenticity, market trends, watch aesthetic and legacy. There is no centralized or regulated exchange for luxury watches unlike traditional financial assets such as bonds, stocks and commodities, leading to several inefficiencies concerning its trade. These make it difficult for investors to exit positions quickly and denies them the opportunity to determine the value of their holdings. This brings about the challenge of valuation, which is further exaggerated by the large variance in brands and models. Within every brand, models can vary greatly depending on their rarity, condition and composition, this variety makes it difficult for accurate valuation. The hedonic regression studies and literature by (Sjöstedt & Mannerford) support this outcome, considering that the valuation of watches is affected by numerous subjective factors like design, legacy, brand reputation, utility, watch characteristics and features. Additionally, the risk of counterfeiting adds to the difficulty in valuation, particularly for new investors or those investors purchasing from secondhand markets. Counterfeit watches can distort market valuations to a great extent, making it imperative for investors to ensure authenticity through appraisers. These costs, in addition to the various maintenance costs associated with owning the watch, is another investment feature making luxury watches distinctive assets.

Additionally, the research also found that certain luxury watch brands outperformed others in terms of their nominal as well as their risk-adjusted returns. Categorically, Patek Philippe watches had the highest average monthly nominal returns of ~5.018%, outperforming the other brands. However, these higher returns associated with their watches came with heightened volatility, suggesting that while these watches offer substantial returns, they are riskier investments on average and may not be suitable for all investor types. Furthermore, supply constraints driven by the pandemic coupled with the increase in demand among HNIs, contributed to the overall appreciation in price and trade-volume of luxury watches. Notably, the prices of Rolex, Audemars Piguet and Patek Philippe watches experienced significant increases, surpassing the cumulative nominal returns of the NIFTY50 during the same period. This highlights the bold potential of luxury watches to outperform traditional equity indices during times of market stress. However, like all investments, prior to purchasing luxury watch purchases, investors must conduct thorough and informed analysis keeping in mind their risk capacity. This is important because even particular Rolex and Patek Philippe watch models underperformed relative to traditional securities, despite a strong on-average performance.

Contrastingly, brands like Cartier and Omega to an extent, underperformed relative to their peers, achieving bottom-line negative risk-adjusted returns, indicating the importance of brand and model selection within a luxury watch portfolio. Although Cartier has a strong brand image, its models did not appreciate as significantly as others during the pandemic, citing negative nominal and real returns with low volatility. This underperformance highlights the importance of distinguishing between brands when considering luxury watches as an investment vehicle.

From a risk-adjusted point of view, Patek Philippe was the most attractive brand, showcasing the highest Sharpe ratio (~0.9) among all brands studied. This is equivalent to asserting that their watches offer superior returns per unit of risk compared to both NIFTY50 and gold as well as other watch brands. Correspondingly, Audemars Piguet and Rolex also outperformed the NIFTY50 and gold in terms of their risk-adjusted returns, making them appealing alternatives for HNIs seeking to diversify their portfolio. These findings are confirmed further by other attribution measures such as the Treynor measure and Jensen's Alpha, which consistently ranked Patek Philippe, Audemars Piguet and Rolex as the top-performing brands. Hence, this study reinforced the importance of diversification in luxury watch portfolios leading to offer superior risk-return tradeoffs compared to traditional securities. The ability of a diversified watch portfolio to mitigate risk while providing extensive upside potential, as indicated by M2, suggests that luxury watches can play a strategic role in wealth protection for HNIs, with a focus on accommodating the elevated risk tolerance typical of HNIs.

Another important insight from the study is the role of sentiment and long-term retention in the luxury watch market. With nearly 97% of the watches studied in good condition with their original box and papers, suggests that most investors are dedicated to maintaining their assets. This maintenance contributes to the preservation and even appreciation of the watches' value over time. Hence, sentimental attachment as well as the prospect of increased capital gains propels many HNIs to retain their watches for longer periods, therefore reducing overall market liquidity while enhancing value retention.

The COVID-19 pandemic presented an unprecedented and unique landscape that improved the performance of luxury watch investments due to inflationary pressures, supply disruptions and increased demand. The study rejected the null hypotheses, that luxury watch portfolios, on average, underperformed traditional assets like gold and the NIFTY50. The rejection of these null hypotheses highlights their viability alternative investments in times of economic strain. However, as the luxury watch market continues to grow further, developments are required to address fundamental challenges like liquidity and market transparency. The establishment of regulated and rules-based secondary market platforms for trading luxury watches could improve their liquidity, valuation, transparency, authenticity and accessibility to a wider range of investors. Future research could explore the potential for these regulated secondary markets or authentication technologies to enhance trust and liquidity in this upcoming investment class.

In the alternative investment spectrum, luxury watches are emerging as valuable assets particularly during periods of economic volatility such as the COVID-19 pandemic. Their ability to preserve wealth, provide portfolio diversification and carry emotional appeal, make them a lucrative option for HNIs in India to explore for opportunities even post-pandemic. However, investors must bear in mind their limitations, ensuring that they invest in brands and models with proven records of appreciation and financial gain.

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