A Comparative Analysis of Stock Market Performance in USA, China, Japan, and India (2020–2025): Risk, Return, and Global Investment Insights

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Abstract

This paper presents a comparative analysis of the equity market performance of four major global economies: USA, China, Japan, and India, over a five-year period from June 2020 to June 2025. Using MSCI country-specific indices as proxies, the study evaluates and contrasts these markets based on weekly return data through various performance metrics. These metrics include descriptive statistics, return measures, risk-adjusted indicators (such as the Sharpe Ratio and Jensen's Alpha), exchange rate impacts, rolling volatility, and maximum drawdown analysis. The results reveal that India delivered the highest average and risk-adjusted returns with the lowest volatility. In contrast, China displayed negative returns and the highest market instability. The U.S. and Japan demonstrated relatively stable performance with moderate drawdowns and positive correlation with other markets. Furthermore, the study accounts for exchange rate fluctuations to assess USD-adjusted returns for global investors, highlighting the considerable erosion in Japanese returns due to currency depreciation. This study contributes to the global portfolio management literature by providing performance differentials, risk-adjusted returns, and currency-adjusted outcomes, thereby acting as a guide for investment strategies and diversification decisions across developed and emerging markets in light of recent shifts and evolving trends in global equity markets.

Keywords: Stock market, Comparative Analysis, Risk & Returns, Emerging and Developed Markets, MSCI Indices

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1. Introduction

With globalization and advances in financial technology, investing across international markets have become significantly more accessible to both institutional and retail investors. This has opened up opportunities for investors to invest across different markets, taking advantage of higher returns and diversification. In this case, understanding of different markets becomes important so that one can make an informed decision about where to invest their funds. This paper aims to solve this problem by comparing the stock markets of four major economies - USA, China, Japan, and India.

The five-year period from June 2020 to June 2025 is particularly significant for such a comparison. This period captures the recovery from the COVID-19 pandemic shock, divergent monetary policy cycles across major economies, escalating geopolitical tensions, and a sharp divergence in economic outcomes. During this period, the Indian equity market delivered a holding period return of 140.6% and a CAGR of 19.2%, making it one of the strongest performing major markets globally. The U.S. market returned 95.4% (CAGR: 14.3%) and Japan returned 84.2% (CAGR: 13.0%). In contrast, China posted a negative return of -23.7%, reflecting the impact of its property sector crisis, regulatory tightening, and subdued domestic consumption. These divergent outcomes make this period an exceptionally rich one for comparative analysis.

Prior research has documented performance differentials across global markets. Gupta et al. (2020), analyzing seven markets from 2007 to 2017 using descriptive statistics and VAR models, found that India's market outperformed both the U.S. and other Asian markets in terms of returns. Similarly, Magas (2007), in a longitudinal study of international equity investing spanning 1997 to 2007, confirmed the theoretical benefits of global diversification but cautioned that rising market correlations and persistent currency risks could erode these benefits over time. However, both of these studies predate the COVID-19 pandemic and do not account for the structural shifts that have reshaped global equity markets since 2020. This study addresses that gap by providing an updated, post-COVID comparative analysis for the period 2020 to 2025.

The selection of these four specific markets is also deliberate and justified on several grounds. Regarding country selection, rather than covering a large number of markets

superficially, this study deliberately limits its scope to four markets in order to enable a more rigorous and multi-dimensional analysis - covering return measures, risk-adjusted metrics, exchange rate impact, rolling volatility, and maximum drawdown within a single framework. Within this constraint, the four markets are chosen to represent a genuinely diverse sample. The USA and Japan represent developed economies, while China and India represent the two largest emerging economies by GDP. This ensures that the comparison spans both ends of the development spectrum. Beyond the developed-emerging divide, each market also brings distinct characteristics. Japan is widely known for its unique market behaviour driven by decades of near-zero interest rates, yen carry trade dynamics, and high domestic institutional ownership, making it an important case to include. China, on the other hand, represents the high-risk end of the emerging market spectrum and has gone through significant structural challenges over the last five years including a property sector crisis, regulatory tightening on private enterprise, and geopolitical tensions making it an important stress test case. India represents the high-growth emerging market with strong domestic consumption and rising retail investor participation. The USA anchors the sample as the world's largest and most liquid equity market.

This paper addresses the following research questions: (1) Which market delivered the highest risk-adjusted returns during 2020–2025? (2) How do exchange rate fluctuations affect returns for USD-based global investor? (3) What are the downside risk characteristics of each market in terms of rolling volatility and maximum drawdown? To answer these questions, MSCI country indices are used as proxies for each market, ensuring methodological consistency across all four economies. The analysis employs descriptive statistics, Sharpe Ratio, Jensen's Alpha, exchange rate-adjusted returns, 12-week rolling volatility, and maximum drawdown analysis. The key findings indicate that India delivered the highest risk-adjusted returns across all measures, while China underperformed significantly. Japan's strong local currency returns were substantially eroded by yen depreciation when viewed from a USD perspective.

The rest of this paper is organised as follows: Section 2 reviews the existing literature. Section 3 identifies the research gap and states the objectives of the study. Section 4 describes the methodology, including data sources, index selection, and the analytical framework. Section 5 provides details on the indices used. Section 6 presents the results

and discussion across all parameters. Section 7 concludes with key findings and investment implications.

2. Literature Review

The existing research on global stock markets provides valuable insights into comparative performance, market integration, and the return dynamics of developed versus emerging economies. The studies reviewed here are organised around three themes that are directly relevant to this paper: comparative market performance across countries, the integration of global markets and its implications for risk and return, and the performance characteristics of emerging versus developed markets.

2.1. Comparative Market Performance

A significant body of research has examined how stock markets of different countries perform relative to each other. Gupta et al. (2020) analyzed seven stock markets from 2007 to 2017 using descriptive statistics and VAR models and concluded that Indian markets outperformed both U.S. and other Asian markets in returns. This finding is particularly relevant to the present study, which examines whether Indian market outperformance is continued and strengthened during recent 2020 to 2025 period. Similarly, Mukherjee (2007), in a comparative study of six major exchanges, found increasing integration between Indian markets (BSE/NSE) and global counterparts such as NYSE and TSE, while also documenting return differentials across these markets. Gajera (2020), expanding the analysis to 16 global indices, confirmed that despite geographic and economic differences, significant correlation exists in daily returns across markets; a finding that raises question of whether correlated markets can still deliver meaningfully different risk-adjusted returns, which this study directly examines.

Collectively, these studies establish that performance differentials across global markets are real and measurable. However, they are largely limited to the pre-COVID period and do not employ a unified index framework across all four markets covered in this study.

The use of MSCI indices for all four countries in the present study addresses this methodological limitation by ensuring that the comparison is made on a consistent basis.

2.2. Market Integration and Its Implications for Risk and Return

A separate but related set of research focuses on the degree to which global markets have become integrated, and what this means for investors. Lobo and Wong (2006), employing a Fractionally Integrated Vector Error Correction Model with multivariate GARCH, revealed complex interdependence patterns among the U.S., Indian, and Chinese markets. Their research identified U.S. market dominant role in influencing other markets while also showing reciprocal effects between Indian and Chinese markets. Ademmer et al. (2022) provided more recent evidence of growing interconnectedness, showing that spillovers from U.S. market to both eurozone and emerging economies had intensified following the 2008 financial crisis. Yi and Tan (2009), examining post-liberalization integration in Singapore and Malaysia, found that market linkages were more pronounced when measured against regional and global benchmarks rather than individual country indices, suggesting that systematic risks are better captured through composite indices.

These integration findings carry a direct implication for the present study. If markets are increasingly correlated, then return differentials across them must reflect genuine differences in risk-adjusted performance rather than simply different exposures to unrelated local factors. This is precisely what this study examines through Sharpe Ratio and Jensen's Alpha; whether India and other markets delivered returns that were superior not just in magnitude but also after accounting for the level of risk taken and the global market benchmark. The growing integration documented by these studies also reinforces the relevance of maximum drawdown analysis, since Ademmer et al. (2022) showed that shocks can transmit rapidly across borders, making downside risk assessment increasingly important for global investors.

2.3. Developed vs Emerging Market Dynamics and Currency Risk

A third important area of literature examines the performance characteristics specific to emerging versus developed markets, and the role of currency risk in international

investing. Magas (2007), in a longitudinal study of international equity investing from 1997 to 2007, confirmed the theoretical benefits of global diversification while noting that increasing market correlations and persistent currency risks could diminish these advantages over time. This observation is directly tested in the present study, where exchange rate-adjusted returns are computed for all four markets to assess whether the benefits of investing in high-return markets like India are preserved after accounting for currency movements. Roszkowska and Langer (2019) demonstrated that emerging markets like Poland offered greater potential for abnormal returns compared to advanced markets like the U.S., particularly when accounting for size and profitability factors. This raises the question of whether emerging markets like India and China delivered similar outperformance during 2020 to 2025, or whether the COVID and post-COVID environment disrupted this pattern.

At a more specific level, Nagarkar and Rao (2017), in a sector-level study of pharmaceutical companies in India, found that domestic firms consistently outperformed multinational corporations in terms of financial returns. While this study focuses on a specific sector rather than the broader market, it reinforces the broader point that returns differentials, whether at the sector or market level are driven by structural differences in business models, growth drivers, and risk exposures. The present study extends this logic to the aggregate market level, comparing index-level performance across four economies.

3. Research gap and objectives

While the above studies provide valuable insights into global equity market performance, there are several gaps remaining that this study seeks to address. First, most existing comparative studies are limited to the pre-COVID period. The 2020 to 2025 period represents a structurally distinct phase in global markets; characterised by pandemic-driven dislocations, aggressive monetary policy shifts, rising geopolitical tensions, etc. No existing study has examined the comparative performance of these four markets specifically within this period.

Second, existing studies rarely employ a unified index framework across all four markets simultaneously. The use of different indices or data sources across studies makes direct

comparison difficult. The present study uses MSCI indices for all four countries, which are constructed using the same methodology - market capitalization weighting covering approximately 85% of the free float-adjusted market, ensuring that the comparison is genuinely like-for-like.

Third, most studies examine either return metrics or risk metrics, but do not combine them with currency-adjusted outcomes and downside risk measures in a single framework. The present study addresses this by integrating return analysis (HPR, CAGR), risk-adjusted return measures (Sharpe Ratio, Jensen's Alpha), exchange rate-adjusted USD returns, and downside risk analysis (rolling volatility and maximum drawdown) within a single comparative study, aiming to provide a comprehensive understanding.

Given this background, the objectives of this paper are: (1) to compare the risk and return profiles of the equity markets of USA, China, Japan, and India over the period June 2020 to June 2025 using MSCI indices; (2) to evaluate risk-adjusted performance using Sharpe Ratio and Jensen's Alpha across the four markets; (3) to assess the impact of exchange rate fluctuations on USD-adjusted returns for global investors; and (4) to analyse downside risk through 12-week rolling volatility and maximum drawdown analysis. Through these objectives, this study aims to provide a practical guide for investors and researchers seeking to understand recent trends and performance differentials across these four major equity markets.

4. Methodology

Stock markets of these four economies are compared using Indices. To ensure uniformity and similarity in comparison, MSCI index of all four countries was selected.

Time Frame & Data Collection – Analysis is performed on the weekly data of 5 years from 30 June 2020 to 30 June 2025, which helps in analyzing the recent trend in the market. Historical data related to prices is collected from 'Investing.com'. Other historical data, such as risk-free rate, MSCI ACWI price, and exchange rate, used in the specific sections are also extracted from 'Investing.com'.

The data was analyzed based on various parameters such as:

4.1. Statistical Description

This section includes mean, median, maximum, minimum, percentiles, standard deviation, and mean deviation, coefficient of variation, skewness, kurtosis, Jarque-Bera test, and correlation. Weekly returns for each index are computed as:

$$R_t = (P_t / P_{t-1}) - 1 \quad (1)$$

where R_t is the return in week t, P_t is the closing price at end of week t, and P_{t-1} is the closing price at end of the previous week.

Coefficient of Variation (CV) is computed as:

$$CV = Standard\ Deviation / Mean\ Return \quad (2)$$

CV measures the risk per unit of return. A lower CV indicates a more efficient return profile relative to risk.

Jarque-Bera (JB) test statistic is used to assess normality of the return distribution:

$$JB = n \times [(S^2 / 6) + (K^2 / 24)] \quad (3)$$

where n is the number of observations, S is the skewness, and K is the (raw kurtosis minus 3). The p-value is obtained from a chi-squared distribution with 2 degrees of freedom. A p-value below 5% indicates the distribution is non-normal.

Pearson's correlation coefficient is used to measure the linear relationship between the weekly returns of two markets:

$$\rho(X,Y) = Cov(X,Y) / (\sigma_X \times \sigma_Y) \quad (4)$$

where Cov(X,Y) is the covariance between the weekly returns of markets X and Y, and σ_X, σ_Y are their respective standard deviations.

4.2. Return Analysis

General Return Measures: Holding Period Return (HPR) measures the total return generated over the full five-year study period:

HPR = (Ending Price / Beginning Price) – 1 (5)

Annualized Return (CAGR) standardizes the holding period return to an annual basis:

CAGR = (Ending Price / Beginning Price)^(1/n) – 1 (6)

where n is the number of years (5 years in this study).

Risk-Adjusted Returns: The following Risk-adjusted returns measures are estimated:

- **Sharpe Ratio:** Sharpe Ratio measures the risk premium earned per unit of total risk (standard deviation). Generally, the higher the Sharpe ratio, the more attractive the risk-adjusted return. The formula is:

Sharpe Ratio (Weekly) = (Rp − Rf) / σp (7)

where:

R_p = mean weekly return of the index

R_f = weekly risk-free rate, derived by dividing the annualized 10-year government bond yield of the respective country by 52

σ_p = standard deviation of weekly returns

For risk-free rate, 10-year government bonds of respective countries are taken into account. For fair comparison, average return of government bond (over last 5 years) is taken, instead of picking the data at the start or end of the analyzed period, as during last 5 years, interest rate has increased significantly especially for the USA, where the rate in June 2020 was around 0.66% that rose to 4.23% which is significant to deteriorate the fair comparison. The weekly Sharpe Ratio is annualized using:

Sharpe Ratio (Annual) = Sharpe Ratio (Weekly) × √52 (8)

- **Jensen Alpha:** Jensen Alpha is used to measure the excess return earned by an index (in our case) over and above the returns implied by the capital asset pricing

model (CAPM). If the alpha is positive, it means that the asset outperforms the market or benchmark.

For computing market returns and beta coefficients, we adopted the MSCI All Country World Index (ACWI) as our primary benchmark. Unlike the MSCI World Index, which covers only developed markets (DMs), the ACWI provides comprehensive exposure to both developed (23 countries) and emerging markets (24 countries), including all four focus markets of this study (USA, Japan, China, and India).

So, Beta (β) for each country index is estimated by regressing the weekly index returns against the weekly returns of the MSCI All Country World Index (ACWI):

$$\beta = Cov(R_i, R_m) / Var(R_m) \quad (9)$$

where R_i is the weekly return of the country index and R_m is the weekly return of the MSCI ACWI. Beta is estimated using ordinary least squares (OLS) regression.

CAPM-implied expected return is:

$$E(R=) = R_f + \beta \times (R_m - R_f) \quad (10)$$

Jensen's Alpha is then computed as:

$$\alpha = R_i - E(R_i) = R_i - [R_f + \beta \times (R_m - R_f)] \quad (11)$$

where R_i is the actual mean weekly return of the index. The weekly alpha is annualized as:

$$Annual\ Alpha = (1 + Weekly\ Alpha)^{52} - 1 \quad (12)$$

Exchange Rate Risk Assessment: To assess performance from the perspective of a USD-based offshore investor, local currency returns are adjusted for exchange rate fluctuations using the following formula:

$$USD\text{-}Adjusted\ Return = (1 + Local\ Currency\ Return) \times (1 + F_XChange) - 1 \quad (13)$$

where $FxChange$ represents the percentage depreciation of the local currency against the USD over the study period (June 2020 – June 2025), calculated as:

$$FxChange = (E_0 / E\_T) - 1 \quad (14)$$

where E_0 is the exchange rate (local currency per USD) at the start and E_T at the end. Since rates are expressed as "local currency per 1 USD", a rise means local currency depreciation. So this correctly captures the depreciation from USD investor's perspective.

4.3. Risk Analysis

- **12-Week Rolling Volatility:** Rolling volatility is computed as the standard deviation of weekly returns over a trailing 12-week (approximately 3-month) window:

$$12\text{-week rolling volatility} = STDEV(R_{t-11}, R_{t-10}, ..., R_t) \quad (15)$$

where R_t is the weekly return at time t. This rolling measure captures how volatility evolves over the study period, unlike the single overall standard deviation which provides only a static snapshot.

- **Maximum Drawdown Analysis:** A maximum drawdown (MDD) represents the largest observed decline in the value of an investment from its peak to its subsequent lowest point, before a new peak is attained. It quantifies the maximum downside risk of an investment portfolio across a given period (in our case, it's 5 years). The drawdown at each point in time is calculated as:

$$Drawdown = (P_t - Peak\_t) / Peak\_t \quad (16)$$

where P_t is the index price at time t and $Peak\_t$ is the highest index price observed from the start of the period up to time t (running maximum). The Maximum Drawdown is:

$$MDD = min(Drawdown) \ \ for\ all\ t\ in\ the\ study\ period \quad (17)$$

The recovery period is measured as the number of calendar days from the trough date to the date when the index first returns to its pre-drawdown peak value.[2]

5. About the Index

The use of MSCI Indices will ensure consistency and fair comparison as selection methodology is quite similar for all. The MSCI USA Index measures the performance of the large and mid cap segments of the US market. With 547 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the US.

The MSCI China Index captures large and mid-cap representation across China A shares, H shares, B shares, Red chips, P chips, and foreign listings (e.g. ADRs). With 558 constituents, the index covers about 85% of this China equity universe. The MSCI Japan Index is designed to measure the performance of the large and mid-cap segments of the Japanese market. With 183 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in Japan.

The MSCI India Index is designed to measure the performance of the large and mid-cap segments of the Indian market. With 158 constituents, the index covers approximately 85% of the Indian equity universe.

Table 1: Index Description

Country	Index	Method	No. of Constituents	Highest Weight Sector
USA	MSCI USA	Market Cap.	547	Information Technology (32.95%)
CHINA	MSCI China	Market Cap.	558	Consumer Discretionary (28.91%)
JAPAN	MSCI Japan	Market Cap.	183	Industrials (24.11%)
INDIA	MSCI India	Market Cap.	158	Financials (29.64%)

Source: Author analysis

6. Results and Discussion

6.1. Statistical Description

The summary of descriptive statistics of returns of four stock markets of USA, China, Japan, and India for the period of five years from June 2020 to June 2025 is shown in

[2] The complete dataset and calculations are available with the author, available upon request.

Table 2. It includes mean, median, maximum, minimum, percentile, standard deviation, mean deviation, coefficient of variation, skewness, kurtosis, and Jarque-Bera test.

Table 2: Statistical Description of Weekly Returns

	MSCI			
Statistical Tool	**USA**	**CHINA**	**JAPAN**	**INDIA**
Mean	0.29%	-0.04%	0.26%	0.36%
Median	0.43%	-0.23%	0.29%	0.56%
Max	7.60%	16.90%	8.34%	7.68%
Min	-9.15%	-9.60%	-10.28%	-5.69%
95%percentile	4.10%	5.93%	3.84%	3.16%
5%percentile	-3.37%	-6.08%	-2.95%	-3.39%
Standard deviation	0.0238	0.0373	0.0235	0.0202
Mean deviation	1.81%	2.90%	1.78%	1.59%
Coefficient of variation	8.3067	-105.6479	8.9322	5.6348
Skewness	-0.0924	0.3684	-0.2949	-0.3015
Excess kurtosis	1.1589	1.4283	1.6205	0.5584
No. Of observation	260	260	260	260
Jarque-Bera test	14.919	27.981	32.218	7.316
P-value	0.06%	0.00%	0.00%	2.58%

Source: Author Compilation

It was seen for the sampled period in Table 2 that the Indian Stock Market has the highest mean return of 0.359% whereas China has posted a negative mean return of -0.035%. The max, min, and percentiles show the range of deviation, which is an indication of volatility. Based on that, China has highest max and min figures showing high volatility, and same can be seen in standard deviation. India has been least volatile with a standard deviation of 0.0202 and China was most volatile with 0.0373 during this period. Mean deviation is very similar to standard deviation, which shows that on an average return will deviate by this much percent from the mean return. So, in case of India on average, an individual return will deviate ±1.591% from the mean return of 0.359%, which is lowest among other compared countries. Skewness shows the symmetry of the distribution, so if skewness is zero, it means data is normally distributed. China is positively skewed, whereas all others are negatively skewed. Among all, USA is closest to normal distribution.

Kurtosis explains the peakness or flatness of a distribution compared to normal distribution. If kurtosis is positive, it means distribution has peakness; otherwise, negative kurtosis means flatness of distribution. All four countries have peakness compared with normal distribution, but it is lowest in case of India, standing at 0.5584. The Jarque-Bera test show that data is not normally distributed, which is generally the case with index and stock price data.

Table 3: Correlation Matrix [all are based on weekly figures]

RETURN CORRELATION	USA	CHINA	JAPAN	INDIA
USA	1			
CHINA	0.263	1		
JAPAN	0.528	0.321	1	
INDIA	0.47	0.269	0.457	1

Source: Author Compilation

Table 3 presents the return correlation matrix of four countries' stock exchanges. All the countries have a positive correlation with each other. That means the stock indices are moving in the same direction; if one index is going in a positive direction, then the other on average will also go towards positive direction. Japan has the highest positive correlation with USA of 0.528. Secondly, India and USA have a positive correlation of 0.470. Generally, it is believed that the Japanese market behaves differently in comparison to other markets because of its unique characteristics, but this correlation trend shows that Japan has shown a high degree of positive correlation with other markets during this period.

6.2. Return Analysis

6.2.1. General Return Measures

Returns are the primary objective of any investment. Holding period return tells the total return generated during the period (in our case, 5years). As per Table 4, India has offered the highest return of 140.6% in past five years, whereas China has posted negative return during this period. After observing the return of China on annual basis, the major downturn in China was during 2021 to 2023 with negative returns of -27.7%, -18.5%, and

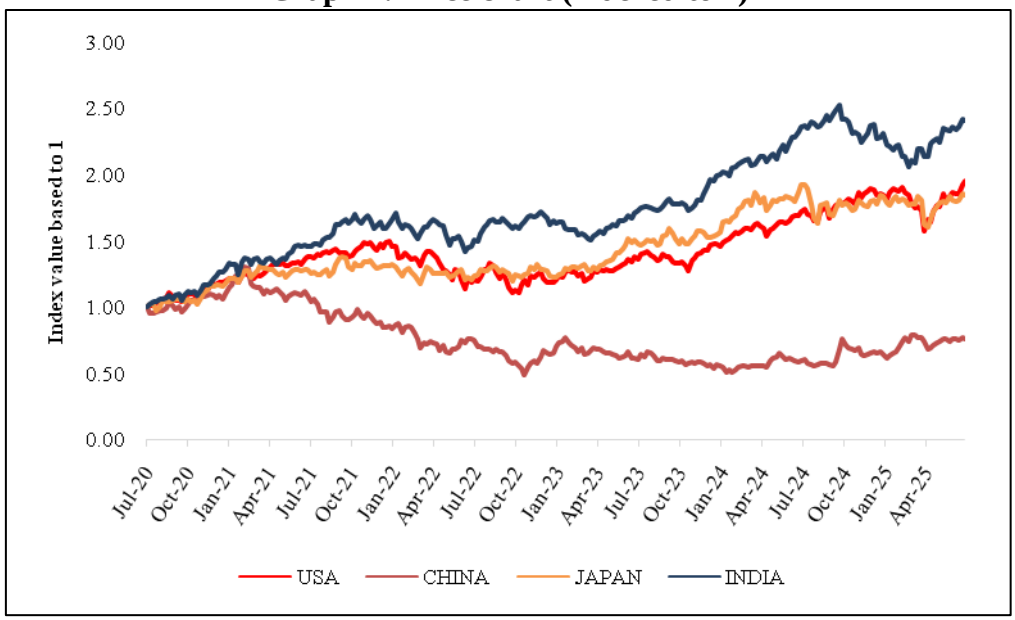
-26% respectively. A similar trend can be seen in annual CAGR, where Indian markets have grown at a rate of 19.2% CAGR.

Table 4: Return Measures

Particulars	USA	CHINA	JAPAN	INDIA
HOLDING PERIOD RETURN	95.40%	-23.70%	84.20%	140.60%
ANNUAL RETURNS (CAGR)	14.30%	-5.30%	13.00%	19.20%

Source: Author Compilation

Graph 1: Price chart (indexed to 1)



Source: Author Compilation

6.2.2. Risk-Adjusted Returns

Sharpe Ratio

Risk is another major component that needs to be paired with return while comparing, as normally all investors are risk-averse, who want to generate maximum return for a given level of risk. As per Table 5, India delivered the highest risk-adjusted performance among the four markets during the study period (2020–2025), with an annual Sharpe Ratio of 0.82, followed by Japan (0.78) and USA (0.69). This indicates that, after adjusting for risk, the Indian and Japanese markets offered superior returns per unit of volatility.

Table 5: Sharpe Ratio

Country	Weekly			Weekly	Annual
	Mean Return	Risk-free return	Standard Deviation	Sharpe Ratio	Sharpe Ratio
USA	0.29%	0.06%	0.0238	0.0958	0.6909
CHINA	-0.04%	0.05%	0.0373	-0.0231	-0.1665
JAPAN	0.26%	0.01%	0.0235	0.1079	0.7783
INDIA	0.36%	0.13%	0.0202	0.1132	0.8165

Source: Author Compilation

Jensen Alpha

As per Table 6, USA has the biggest beta of 1.08, showing the highest beta relative to the MSCI ACWI Index, mainly due to its dominant weight in the benchmark (around 64%). In contrast, India displayed low beta, reflecting limited co-movement with global trends. One reason for this is also the very small weightage in the index. Same can be seen in R-squared values, which are 93%, 16%, 38%, and 31% respectively for USA, China, Japan, and India. Low R-squared of China and India can also be interpreted as movements in these markets are coming from non-global drivers, which can be used for portfolio diversification. So overall, India has significantly outperformed the market with a Jensen Alpha of 8.65% (annual). This low correlation of Indian market and high return can be a good way to diversify the portfolio, reducing the risk because of low correlation with overall global market and high return, considering the emerging economy and stability.

Table 6: Jensen Alpha

Country	Weekly					Weekly	Annual
	Index Return	Risk Free Rate	Market Return	Beta	CAPM	Jensen Alpha	Jensen Alpha
USA	0.29%	0.06%	0.26%	1.0827	0.28%	0.01%	0.51%
CHINA	-0.04%	0.05%	0.26%	0.7122	0.20%	-0.24%	-11.51%
JAPAN	0.26%	0.01%	0.26%	0.6859	0.18%	0.08%	4.33%
INDIA	0.36%	0.13%	0.26%	0.5326	0.20%	0.16%	8.65%

Source: Author Compilation

6.2.3. Exchange Rate Risk Assessment

All return data used for this paper were initially computed in local currencies - MSCI USA in USD, MSCI China in HKD, MSCI Japan in JPY, and MSCI India in INR. Therefore, to assess exchange rate risk from the standpoint of a global (USD-based) investor, we have converted local returns in USD terms.

Table 7: Exchange Rate Risk Assessment

Particulars	USA (USD)	CHINA (HKD)	JAPAN (JPY)	INDIA (INR)
Mean	1	7.802	132.097	79.786
Standard Deviation	0	0.034	18.091	4.572
Max	1	7.85	160.83	87.627
Min	1	7.75	103.2	72.4
Return adjustment for exchange rate risk				
FX Change (Currency Depreciated by)	0.00%	-1.24%	-26.06%	-12.06%
Total Returns of Index	95.40%	-23.72%	84.16%	140.63%
USD Adjusted Returns	95.40%	-24.67%	36.17%	111.63%

Source: Author Compilation

As per Table 7, JPY exhibited the highest volatility (σ = 18.091), mainly because of interest rate divergence between Japan and USA (as the U.S. maintained high interest rates while Japan kept rates near zero, leading to yen depreciation). HKD remained stable (σ = 0.034) due to its USD peg.INR showed moderate volatility (σ = 4.572). The same can be viewed in FX Change, where JPY has depreciated by 26.06% in the last five years. USD has appreciated against all currencies (except itself), reducing foreign investor returns. USD adjusted return of Japan has drastically dropped from 84.16% to 36.17%. India returns have also fallen, but it still offers the highest return of 111.63%, making it remain highly attractive to USD-based investors.

6.3. Risk Analysis

6.3.1. 12-Week Rolling Volatility

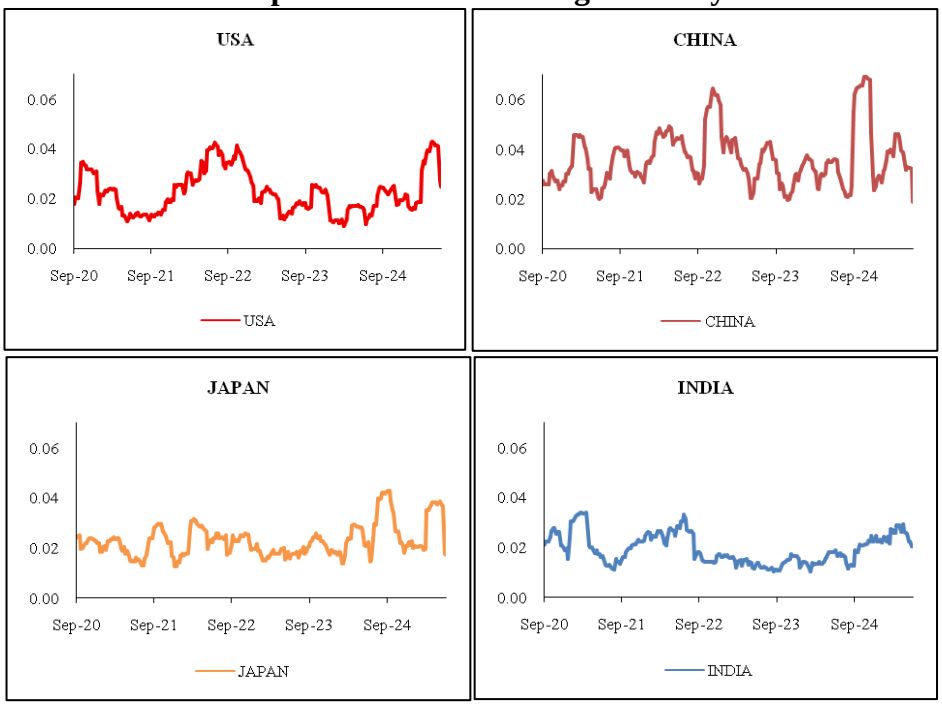
Observing Graph 2 showing 12-week rolling volatility, China seems to be most volatile, then USA, Japan, and India, respectively. Even the overall volatility also shows a similar result. China has a standard deviation of 0.0373, USA 0.0238, Japan 0.0235, and India 0.0202. So, India exhibited the lowest rolling 12-week volatility among all four indices during 2020–2025, suggesting a relatively stable return pattern despite being from an emerging market.

6.3.2. Maximum Drawdown Analysis

In USA (MSCI USA), the index peaked in late December 2021 before entering a sustained decline. The trough occurred in mid-October 2022, with a maximum drawdown

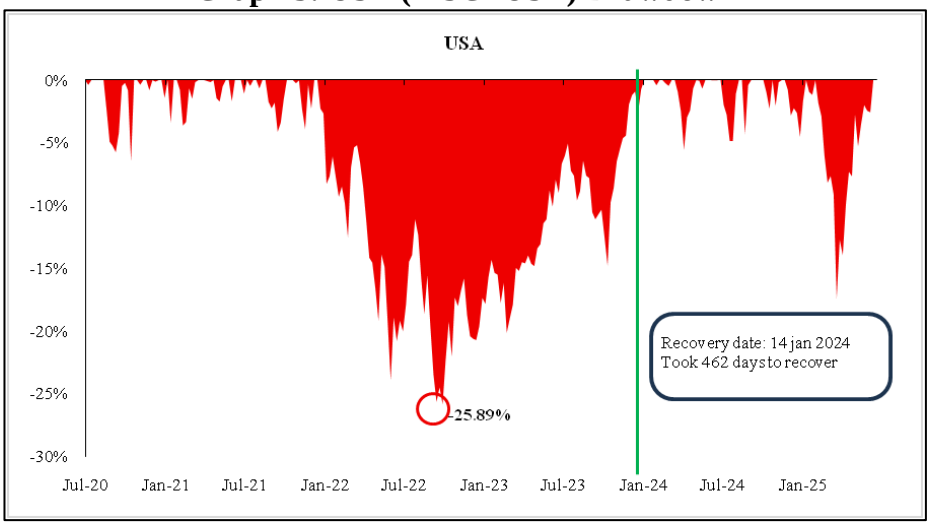
of -25.89% from the peak. Recovery to the pre-drawdown level was achieved by mid-January 2024, resulting in a 462-day recovery period. This protracted drawdown aligns with the Federal Reserve's aggressive monetary tightening cycle and elevated inflation during 2022–2023.

Graph 2: 12-Weeks Rolling Volatility



Source: Author Compilation

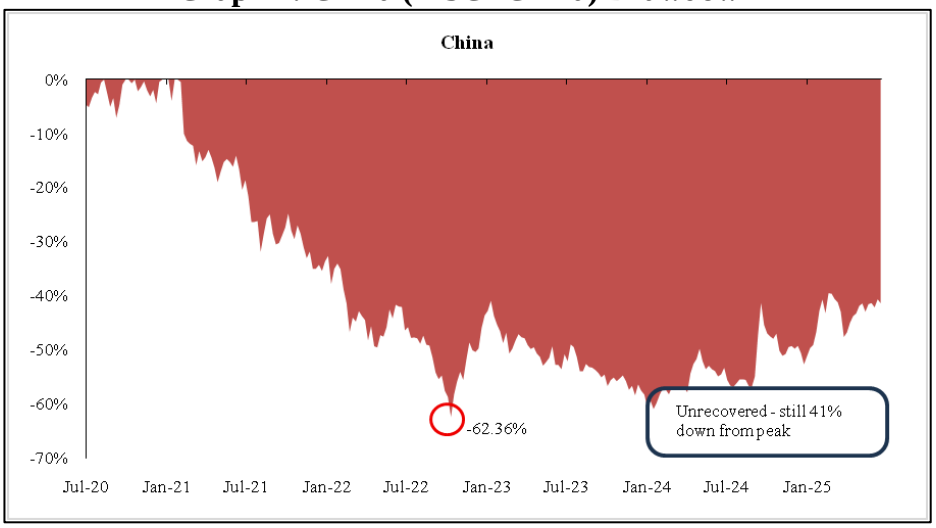
Graph 3: USA (MSCI USA) Drawdown



Source: Author Compilation

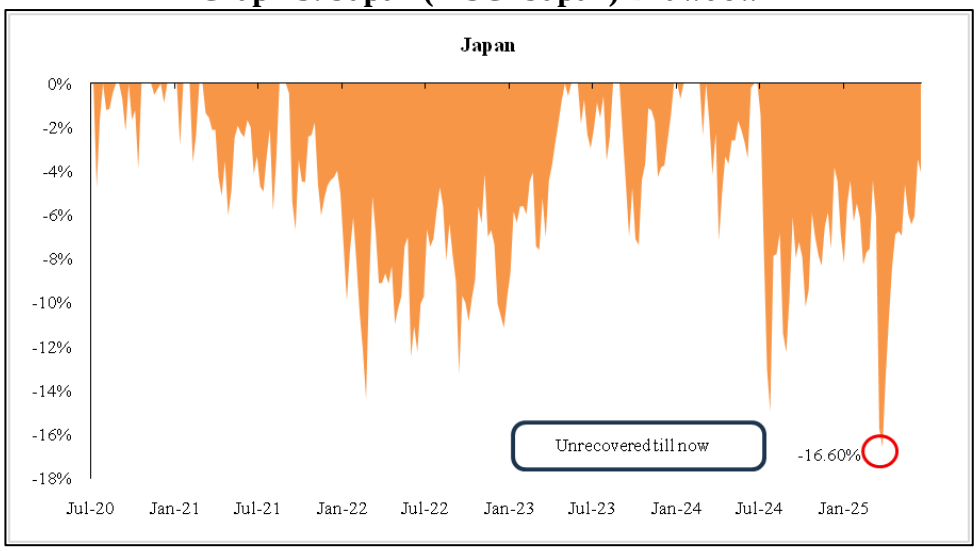
The Chinese market (MSCI China) reached its peak in the first week of February 2021, followed by a decline where the index bottomed in late October 2022 with a historic drawdown of -62.36%. Even after 980 days as of June 2025, the market remains 41.36% below its peak. The Chinese market performed very poorly in the last five years in comparison to other markets because of reasons like suppressed demand, property sector crisis, and geopolitical reasons.

Graph 4: China (MSCI China) Drawdown



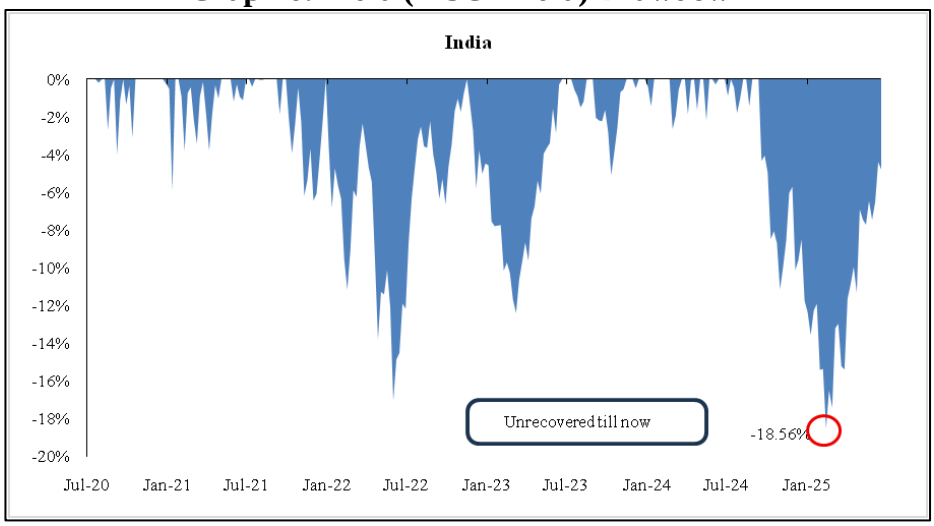
Source: Author Compilation

Graph 5: Japan (MSCI Japan) Drawdown



Source: Author Compilation

Graph 6: India (MSCI India) Drawdown



Source: Author Compilation

The MSCI Japan index peaked on 7 July 2024 before declining to a trough of -16.60% by April 2025. As of June 2025, the market remained 4.06% below its peak. Japan reached its drawdown very recently, around 3 months ago, so non-recovery in this short period is not substantial. Similarly, the Indian market (MSCI India) reached its peak in late September 2024, followed by a drawdown of -18.56% in late February 2025. Although this fall has not fully recovered, it is still 4.80% down, which is not substantial considering it's only 4 months from the drawdown point. So overall, USA, Japan, and India performed quite well with comparatively low down risk, whereas China has performed poorly during the last five years.

Table 8: Maximum Drawdown Summary

Country	Max Drawdown	Trough Date	Recovery Date	Days to Recover	% down as of June 2025
USA	-25.89%	09-10-2022	14-01-2024	462	-
China	-62.36%	23-10-2022	Unrecovered	-	-41.36%
Japan	-16.60%	06-04-2025	Unrecovered	-	-4.06%
India	-18.56%	23-02-2025	Unrecovered	-	-4.80%

Source: Author Compilation

7. Conclusion

This paper analyzed the equity markets of four major economies, namely USA, China, Japan, and India, using representative indices over a five-year period (June 2020 to June 2025). The key findings are as follows: (1) India exhibited the highest mean return and

the lowest volatility (standard deviation), while China recorded a negative mean return and the highest volatility among the four markets. (2) Japan showed a relatively high correlation with other markets, particularly with the USA, with a correlation coefficient of 0.528 during the period. (3) The annualized returns (CAGR) for the USA, China, Japan, and India were 14.3%, -5.3%, 13.0%, and 19.2%, respectively. (4) Risk-adjusted return measures also support these findings, with India achieving both the highest Sharpe Ratio and the highest Jensen's Alpha among the selected markets. (5) Exchange rate fluctuations had a considerable impact on USD-based investor returns. Japan's local return of 84.16% declined to 36.17% after adjusting for the USD-JPY exchange rate. In contrast, India's return fell from 140.63% to 111.63%, yet remained the highest among all the analyzed markets. (6) The maximum drawdown analysis revealed that the USA experienced a -25.89% drawdown, taking 462 days to recover. China had the most severe drawdown at -62.36%, which remained unrecovered as of June 2025. Japan and India experienced more moderate drawdowns of -16.60% and -18.56%, respectively.

So overall, the Indian equity markets have delivered exceptional performance during the analyzed period, characterized by high returns and relatively low volatility. Several structural and economic factors contribute to this performance. Firstly, India remains the fastest-growing major economy, with a projected GDP growth of 6.2% according to the International Monetary Fund (IMF). Unlike China, India has demonstrated resilience with no major geopolitical disruptions, thereby reducing country-specific risk. Another key driver of high returns has been the increased participation of domestic retail investors (both directly and through mutual funds), which has provided support and cushion during downturns. Furthermore, foreign institutional investors have also shown strong interest in Indian equities, drawn by the country's growth prospects and attractive return potential.

China's equity market performance over the last five years has been extremely poor, attributed to several key factors. Real GDP growth fell to between 2% and 5% after the COVID-19 shock, driven by weak household consumption because of the absence of direct household stimulus during and after the COVID-19 pandemic. Local government debt reached nearly 45% of GDP, limiting fiscal flexibility. The property sector saw a sharp downturn, with construction activity declining by more than 50%. At the same time, a shift toward state-led industrial policy and tighter regulatory control reduced private sector confidence and foreign investment inflows. China relies heavily on exports, which

heightened sensitivity to global trade tensions. These structural and policy-driven factors collectively constrained market performance during the period.

While past performance does not guarantee future returns, it remains a valuable barometer for assessing market behaviour and guiding investment decisions. This paper has tried to present the same by clearly analyzing and demonstrating this through a comparative analysis of equity markets during the period 2020 to 2025.

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Conflict of Interest

The author declares no conflict of interest in connection with the research, authorship, or publication of this paper.

Data Availability

The data used in this study were sourced from Investing.com and the MSCI website, both of which are publicly accessible.

Ethics Approval

This study uses publicly available secondary data and does not involve human subjects, animal research, or any sensitive personal information. Therefore, formal ethics approval is not applicable.

Author's Contribution

This paper is solely authored by Aaditya Kumar Bagri. The author was responsible for conceptualisation, data collection, analysis, and writing of the manuscript in its entirety.

References

- Ademmer, M., W. Horn, and J. Quast. 2022. "Stock Market Dynamics and the Relative Importance of Domestic, Foreign, and Common Shocks." *International Journal of Finance and Economics* 27 (4): 3911–3923. https://doi.org/10.1002/ijfe.2194
- Chen, H., B. J. Lobo, and W. K. Wong. 2006. *Links between the Indian, U.S. and Chinese Stock Markets.* Working Paper No. 0602. Singapore: Department of Economics, National University of Singapore. https://nt2.fas.nus.edu.sg/ecs/pub/wp/wp0602.pdf
- Gajera, A. 2020. "A Study on Comparative Analysis of Major Stock Indices of the World." *IARS' International Research Journal* 10 (1): 1–8. https://www.redalyc.org/articulo.oa?id=663873428006
- Gupta, A., S. Juneja, and R. K. Gupta. 2020. "Descriptive Statistics and VAR Estimation: Comparative Analysis of Stock Market Returns of USA and Asian Countries." *Pezzottaite Journals* 9 (1): 3710–3716.
- Magas, I. 2007. "The Changing Benefits of Global Equity Investing: Developed and Emerging Markets, 1997–2007." *Acta Oeconomica* 57 (4): 343–362. https://doi.org/10.1556/AOecon.57.2007.4.2
- Mukherjee, D. 2007. "Comparative Analysis of Indian Stock Market with International Markets." *Great Lakes Herald* 1 (1): 39–71.
- Nagarkar, J., and P. Rao. 2017. "Equity Price Performance of the Pharmaceutical Industry: A Comparative Analysis of Select Global and Indian Companies Using Stock Market Indices." *Indian Journal of Public Health Research and Development* 8 (4): 817–821. https://doi.org/10.5958/0976-5506.2017.00435.1
- Roszkowska, P., and L. K. Langer. 2019. "(Ab)Normal Returns in an Emerging Stock Market: International Investor Perspective." *Emerging Markets Finance and Trade* 55 (12): 2809–2833. https://doi.org/10.1080/1540496X.2018.1531241
- Yi, Z., and S. L. Tan. 2009. "An Empirical Analysis of Stock Market Integration: Comparison Study of Singapore and Malaysia." *Singapore Economic Review* 54 (2): 217–232. https://doi.org/10.1142/S021759080900332X

Other Sources

- Asia Society Policy Institute. 2025. *Decoding China's Economic Slowdown.* Roundtable Summary Report. https://asiasociety.org/sites/default/files/inline-files/ASPI_CCA_EconSlowdown_EcoRdtable_paper%20rev.pdf (Accessed June 2025).
- Investing.com. 2025. Historical Market Data. https://www.investing.com/ (Accessed June 2025).
- Investopedia. 2025. Financial Terms and Definitions. https://www.investopedia.com/ (Accessed June 2025).
- MSCI. 2025. Index Factsheets. https://www.msci.com/ (Accessed June 2025).
- NISM. 2025. *Research Analyst Certification Examination Workbook.* https://www.nism.ac.in/research-analyst-certification-examination/ (Accessed June 2025)
- Wall Street Prep. 2025. Financial Concepts and Definitions. https://www.wallstreetprep.com/ (Accessed June 2025)