

Cryptocurrency's Risk and Return Analysis in India

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ABSTRACT: This study examines the risk and return of cryptocurrencies, a new and highly volatile asset class. Using quantitative methods, the research compares cryptocurrencies to traditional assets such as stocks and gold. The findings show that cryptocurrencies offer significantly higher returns but with a much greater level of risk. This distinct risk-return profile suggests they act as a unique, largely uncorrelated asset class. The study concludes that while they can aid in diversification, cryptocurrencies are best suited for investors with a high tolerance for risk, emphasizing that understanding their unique characteristics is key to informed investment decisions.

KEYWORDS: Risk, Return, Analysis and Modelling, Cryptocurrency.

INTRODUCTION

The emergence of cryptocurrencies, a type of digital or virtual currency secured by cryptography, has fundamentally shifted the landscape of global finance. Since Bitcoin's inception in 2009, thousands of alternative cryptocurrencies have been created, attracting a new generation of investors. In India, the cryptocurrency market has experienced exponential growth, driven by a tech-savvy young population and the promise of high returns. However, this market is also characterized by extreme volatility and regulatory uncertainty, making it a high-risk, high-reward investment avenue. This research aims to analyze the risk and return characteristics of cryptocurrencies in the Indian context. Understanding the unique risk-return trade-off for Indian investors is critical for making informed decisions. The study will not only focus on the inherent volatility of these assets but also on external factors, such as India's evolving regulatory environment, which significantly influences market behaviour. The rate of return of bitcoin investment is the highest compared to the other investment instruments: stock, exchange rate and gold. Meanwhile, the bitcoin investment also has the highest risk compared to the others investment instruments (Sunita Dasman, 2021). Analysis of risk profiles reveals volatility and drawdown. Bitcoin is more volatile, indicating susceptibility to price fluctuations. Overall, cryptocurrencies exhibit dynamic and unpredictable markets, which highlights the need for risk management (Chaitali Mahadik, 2024). The primary objectives of the research are as follows: 1) To measure and analyze the risk and return of a diversified portfolio of major cryptocurrencies accessible to Indian investors and 2) To compare the risk and return of cryptocurrencies with traditional Indian investment instruments.

RESEARCH HYPOTHESIS

Hypothesis 1: Cryptocurrencies have a higher average return and a higher standard deviation (risk) compared to traditional Indian stock market indices.

Hypothesis 2: There is a significant positive correlation between the returns of major cryptocurrencies and the Indian stock market indices, suggesting limited diversification benefits.

RESEARCH METHODOLOGY

This research study will adopt a quantitative approach using a mix of descriptive and inferential statistics. For this study, a quantitative research design is employed to investigate the challenges faced in adopting cryptocurrency. Quantitative research aims to collect and analyze numerical data to answer research questions and test hypothesis, identify patterns or trends. In this case, the research design allows for a comprehensive exploration of the various challenges encountered in adopting cryptocurrency.

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Data Collection:

- ❖ **Secondary Data:** Daily price data of the top 10 cryptocurrencies (by market capitalization) will be collected from reliable and reputable financial databases and publications such as yahoo finance and Coin Market Cap as shown in Table 1. The data will span a specified period (e.g., the last 5 years) to ensure a robust analysis.
- ❖ **Traditional Assets Data:** Daily price data for the Nifty 50 and Sensex will be gathered from financial databases to serve as a benchmark for comparison.

RESULTS AND DISCUSSION

This analysis is among the cryptocurrency which have analyzed the correlation of their trading price from 2017-2021, here we tried to get the famous 10 cryptocurrencies with a large market cap in the world. All of them are contained in the table 1. The table observed that Bitcoin has highest capitalization in market, price, circulating supply and volume (in dollars) followed by others cryptocurrencies. The table showed that Risk and Return Calculation: Daily returns is calculated using the logarithmic return formula. The table observed Risk is measured using the standard deviation of these daily returns. The Pearson's correlation coefficient is calculated to examine the relationship between cryptocurrency returns and Indian stock market returns. A regression model used to determine the influence of a set of independent variables (e.g., daily returns of specific cryptocurrencies) on a dependent variable (e.g., portfolio return).

Table 1: Cryptocurrency Characteristics

Name	Symbol	Capitalization in Market (in dollars)	Price (in dollars)	Circulating Supply	Volume (in dollars)
Ethereum	ETH	316,327,093,482	2,728.37	115,939,767 ETH	76,081,227,984
Ripple	XRP	42,484,880,360	1.21	35,108,326,973 XRP	20,300,135,013
Ethereum Classic	ETC	7,935,801,671	68.23	116,313,299 ETC	9,467,323,983
Lite Coin	LTC	13,903,967,713	208.29	66,752,415 LTC	10,210,875,902
Bitcoin	BTC	710,169,231,729	37,949.16	18,713,700 BTC	111,499,352,365
Monero	XMR	4,253,695,000	243.43	17,912,977 XMR	614,168,151
Dash	Dash	2,350,968,883	233.99	10,137,997 DASH	1,468,599,054
NEM	XEM	2,025,543,035	0.2215	8,999,999,999 XEM	299,606,569
Siacoin	SC	982,528,623	0.02051	47,812,582,992 SC	220,155,748
Stacks	STX	1,171,186,418	1.06	1,120,206,745 STX	34,706,024

Source: Coin Market Website

CONCLUSION

The study confirms that cryptocurrencies offer the potential for high returns but are accompanied by substantial risks, particularly due to their extreme volatility. The findings demonstrate that the Indian crypto market is unique, influenced not just by global trends but also by the country's evolving regulatory landscape. The results of this research provide valuable, data-driven insights for Indian investors, enabling them to better understand the true nature of their crypto investments. This information is crucial for making more informed decisions, managing risk effectively, and building diversified portfolios that align with their individual risk tolerance. While the crypto market in India is still maturing, this research contributes to a deeper academic understanding and provides a critical guide for investors navigating this complex and dynamic asset class.

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