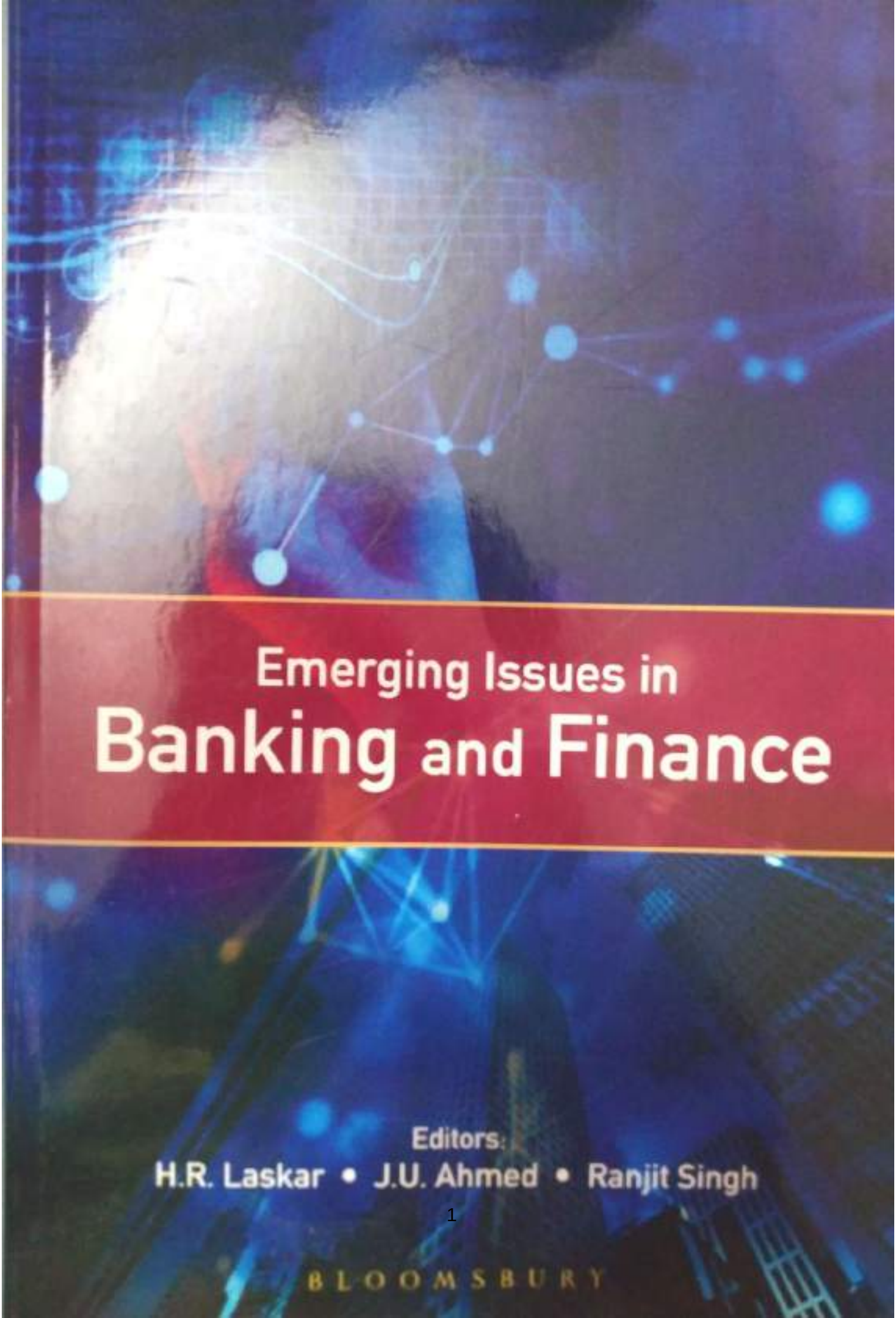

Emerging Issues in
Banking and Finance
Editors:
H.R. Laskar • J.U. Ahmed • Ranjit Singh
BLOOMSBURY

Emerging Issues in Banking and Finance

Editors

DR. H.R. LASKAR
PROF. J.U. AHMED
PROF. RANJIT SINGH

BLOOMSBURY
NEW DELHI • LONDON • OXFORD • NEW YORK • SYDNEY

BLOOMSBURY INDIA
Bloomsbury Publishing India Pvt. Ltd
(A wholly owned subsidiary of Bloomsbury UK)
Second Floor, LSC Building No. 4, DDA Complex,
Pocket C – 6 & 7, Vasant Kunj,
New Delhi 110070

BLOOMSBURY, BLOOMSBURY PRIME and the Diana logo are
trademarks of Bloomsbury Publishing Plc

First published in India 2023
This edition published 2023

ISBN: 978-93-56403-03-1
2 4 6 8 10 9 7 5 3 1

Typeset by Fortune Graphics, Naraina, New Delhi
Printed and bound in India by Replika Press Pvt. Ltd

To find out more about our authors and books, visit
www.bloomsbury.com and sign up for our newsletters

Contents

A Study of Risk Analysis of Crypto Currency in Relation to Other Asset Classes

Leena Kapse

DMSR, G.S. College of Commerce and Economics, Nagpur
E-mail: mailtoleenakapse26@gmail.com

Abstract: *Crypto currency is becoming more and more popular around the world because investors are being drawn in by the high rates of return, even though it is quite volatile and risky. The risk-adjusted returns on crypto currencies remained very appealing to investors. Some individuals do not want to miss out on any chances to invest in crypto currencies. Their goal is to diversify their holdings. For this, careful comparison and analysis must be conducted before incurring any investment-related risks. This paper aims to clarify the degree of risk associated with crypto currency investments relative to other asset classes such as equities, derivatives, bonds, gold, etc.*

A massive price appreciation and tremendous crash reflect both investors' enthusiasm and frustration. To take corrective measures, such extreme volatility needs to be studied. Crypto currency risk needs to be properly evaluated in comparison to other financial assets. Research-based information has been gathered for this study. In this study, the beta is used to assess the risk attached to an asset. Beta (β) helps to measure a security or portfolio's volatility, or systematic risk, in relation to the market as a whole. A beta is a statistic used to assess an investment's relation to the market as a whole. It serves as a measure for the stock's systematic risk and can be used to assess how risky a stock is in relation to market risk. To get the best return from the risk, it is essential to analyze it. The portfolio manager's return will be maximized with the help of this study and overall assessment.

Keywords: *Beta, Systematic Risk, Crypto Currency, Risk Analysis, Asset Class*

Introduction

Bitcoin was the first crypto currency, and it continues to be the most well-known, popular, and valuable, accounting for over 46% of the market capitalization of all crypto currencies as of February 2018. However, as of June 2022, there were over 19000 digital currencies available on the market, and more than 40 of those had a market capitalization of over $1 billion (Brokerage, 2022). In 2009, Satoshi Nakamoto invented the first blockchain network and published a paper explaining bitcoin. Using a peer-to-peer version of electronic currency, which may be used as an internet payment that can be made without going through a banking institution, one party can pay another directly. A cryptocurrency is a form of digital money that can be

used for transactions over a computer network and is not backed or managed by a single centralized body like a bank or government (Nakamoto, 2008).

A recent crypto currency exchange KuCoin survey revealed that during the first half of 2022, about 115 million Indians either traded or held cryptocurrencies. The study also revealed that young investors continued to be more interested in cryptocurrency compared to older investors in the most recent quarter, despite 2022 being a very terrible year for the cryptocurrency sector. The survey noted that despite the government's strict attitude on digital assets, the Indian crypto-tech market is anticipated to reach $241 million by 2030. (KuCoin into the Cryptoverse India Report Reveals Optimistic Prospects for Market Growth, 2022).

It is evident that the adoption of crypto currencies is proceeding quite successfully in nations all around the world. This condition made it necessary to examine the risks involved in it.

Examining if cryptocurrency returns behave similarly to those of other asset classes can help one grasp what cryptocurrencies stand for. This study looks at how the cryptocurrency market acts in comparison to the stock market and other asset classes. For this we will study risk and return of crypto currency and other assets. The main risk associated with trading cryptocurrency is its volatility.

Investors must constantly consider the risk involved in any investment. This risk has two components. Concerns relating to assets include systemic risk and unsystematic risk.

Systematic risk is a type of total risk that arises from a variety of external reasons, such as sociological, political, and economic factors. Systematic risk cannot be diversified. This shows that management of an organization cannot avoid, reduce, or manage this kind of overall risk. Systematic risk is mostly brought on by market, purchasing power, and interest rate risks. Inflation, price changes, interest rate variations, increases in unemployment, etc. are typical instances of this sort of risk (Thakur, n.d.).

On the other hand, unsystematic risk is a type of total risk that arises from a variety of internal reasons that take place within an organization. Hazards that are unpredictable can be varied. This shows that a company's management can control, lessen, or even totally eliminate some risks.

The systematic risk carried by a stock is measured by its beta. Beta (β) is a statistic used to compare a securities or portfolio's systematic risk to that of the market as a whole.

By examining an asset's sensitivity to the market, an investor can determine risk. To examine an asset's risk in relation to the market, one might measure an asset's beta with respect to its market.

This study uses beta to measure systematic, and unsystematic risk to analyze the rate of return on investing in cryptocurrencies and other classes. The statistical indicator of a stock's volatility in relation to the entire market is called beta. As a measure of an asset's sensitivity to market returns, its non-diversifiable risk, its systematic risk, or its market risk, beta is also known as financial elasticity or associated relative volatility. Measuring beta can provide information on market volatility and liquidity at the level of a specific asset. Calculating Beta of relative asset classes can make one understand the risk involve in numerical terms. The risk involve in cryptocurrency as well as other relative classes will be calculated and compared for inferential remarks.

Research Objective

1. To measure the level of volatility between market return and selected stock return, cryptocurrencies, bonds, derivatives, and gold.
2. To evaluate the financial risk associated with investing in cryptocurrencies and other assets by using beta.
3. To compare crypto currency investment with other asset classes.
4. To determine the return and risk involved in crypto currency.
5. To arm investors with better insight on Crypto and other investment options.

Limitations

1. This study is based on only 5 years of Data and for few asset classes we have taken only 1 year of data.
2. We considered Beta as the only parameter for risk analysis.

Research Metodology

Due to the analytical nature of this paper, verified secondary source data were utilized.

1. **Source of Data:** The National Stock Exchange website was the source of the information. CoinMarketCap website, Yahoo Finance website.
2. **Methods of Study:** Beta can be calculated by using Regression, Slope and Covariance analysis. In this research paper I have used covariance analysis as it seems relatively simple and easy to interpret.

Beta Analysis

Beta is a measure that indicates how much a stock will fluctuate in response to movements in the general stock market. When a stock's returns are compared to the benchmark index, such as the NSE NIFTY 500, a pattern

that demonstrates the stocks exposure to market risk emerges. This enables the investor to choose between a riskier stock with a high correlation to the market (beta above 1) and a less volatile one (beta below 1).

The below Table 1 shows the rules to be followed for interpretation of beta. (A.Saranya, 2013).

Table 1: The Rules to be Followed for Interpretation of Beta

Situation	*Interpretation: Correlation of Stock with Market Portfolio*
$\beta < 0$	An inverse correlation of stock with the market return. The Stock is less volatile compared to the market
$0 < \beta < 1$	Positively correlated
$\beta = 1$	Perfect correlation, Average risk, It suggests that the stock follows the same direction of the market
$\beta > 1$	Stock is Riskier than average, A positive correlation, but would have price movements of greater magnitude.
$\beta = 0$	Uncorrelated with the market return. No associated risk

- **Period of Analysis:** Crypto currency, stocks, bonds, derivatives, and gold were examined from September 25th, 2017 to September 25th, 2022.
- **Sample Size:** Three stocks and crypto currencies are used for analysis with three different market capitalization namely small cap, mid-cap and large cap. For in-depth analysis we have taken a scheme of bond as well as an option contract. These asset classes have also been compared to gold. It has been studied how the market return and the return on each individual asset correlate to each other.

Analysis and Interpretation

This research paper's analysis was conducted using the 5 years market index return and individual asset return. Market capitalization in case of stock market: Companies classified as large-cap have a market cap of at least ₹20,000 crore. The market capitalization of mid-cap enterprises, however, ranges from ₹5,000 crore to less than ₹20,000 crore. The market capitalization of small-cap enterprises is less than ₹5,000 crore (Securities, n.d.)

Market capitalization in case of Crypto Currency: The market capitalization is the entire monetary value of all cryptocurrencies, or all coins that have been created through mining. The total number of coins that have been mined in the cryptocurrency industry is multiplied by the current price of a single coin to determine market cap.

The market cap of large-cap cryptocurrencies is greater than $10 billion. The market capitalization of mid-cap cryptocurrencies range from $1 billion

to $10 billion. The market capitalization of small-cap cryptocurrencies is less than $1 billion (Coinbase, n.d.).

To calculate beta in Excel we have Downloaded historical security prices of respective assets and the market return as well. Further we calculated the percentage change of both the asset and the market on a daily basis.

Beta is the covariance between the assets return (r_p) and the index return of respective asset (r_b), divided by the index variance (over a period of five years).

$$\beta_p = \frac{\text{Cov}(r_p, r_b)}{\text{Var}(r_b)}$$

Table 2: Beta (β) Value of Crypto Currency from Bitcoin USD (BTC-USD)

Here we can use Bitcoin as a benchmark for calculating beta (Taçoğlu).

S. No.	*Capitalization*	*Name*	*Beta (β)*
1	Large-Cap	Ethereum USD (Market Cap 160.312B)	0.997576448
2	Mid-Cap	Dogecoin USD (Market Cap 8.044B)	0.075380367
3	Small-Cap	KuCoin Token USD (Market Cap 868.622M)	0.907826101

Table 3: Beta (β) Value of Stock from NIFTY 500 (CRSLDX)

S. No.	*Capitalization*	*Name*	*Beta (β)*
1	Large-Cap	Reliance Industries Limited (RELIANCE.NS)	1.08785227
2	Mid-Cap	Larsen & Toubro Infotech Limited (LTI.NS)	0.813860884
3	Small-Cap	PVR Limited (PVR.NS)	1.026704323

Table 4: Beta (β) Value of Bond

Vanguard Total Bond Market Index Fund Investor Shares (VBMFX)

Treasury Yield 10 Years (TNX)

Name	*Beta (β)*
Treasury Yield 10 Years (TNX)	0.08600007

Table 5: Beta (β) Value of Derivatives Calculation for One Year

S&P 500 MINI SPX OPTIONS INDEX (XSP)

HDFC Liquid Fund – Direct Plan – Growth Option (0P0000XW89.BO)

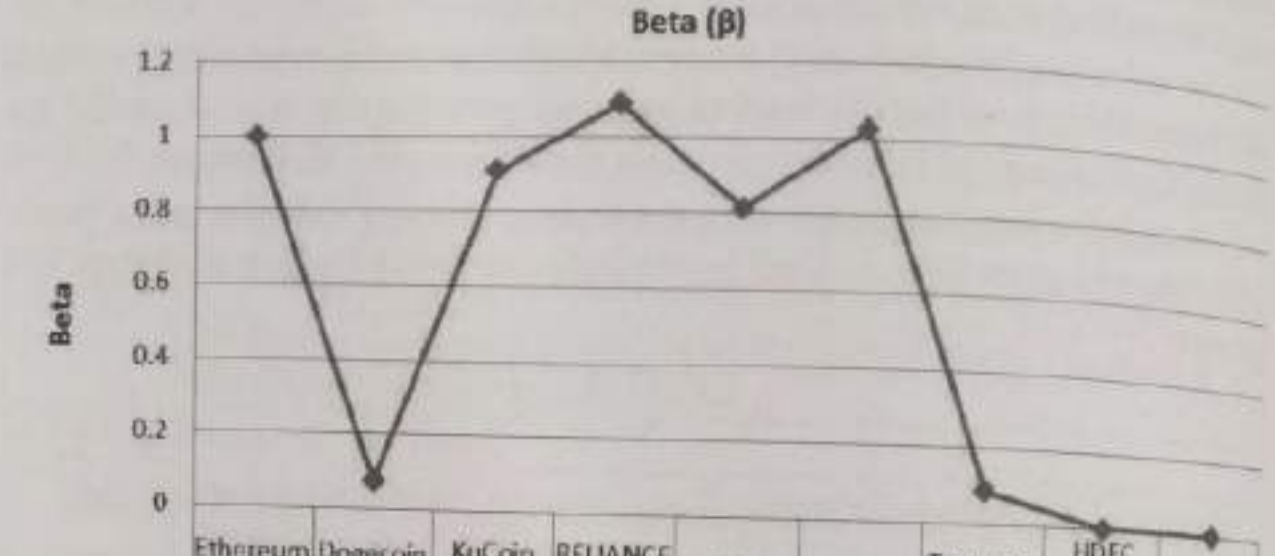
Name	*Beta (β)*
HDFC Liquid Fund – Direct Plan – Growth Option	0.000685476

Table 6: Beta (β) Value of Gold

Gold has zero beta as it carries no market risk and provides a mean return that is similar to that of a Treasury Bill. (McCown, 2006)

Name	*Beta (β)*
Gold	0

Findings and Interpretation



	Ethereum	Dogecoin	KuCoin Token	RELIANCE	LTI	PVR	Treasury Yield	HDFC Growth Option	Gold
	1	2	3	4	5	6	7	8	9
Beta (β)	0.997576	0.07538	0.907826	1.087852	0.813861	1.026704	0.086	0.000685	0

The above chart shows the volatility of asset in comparison of the overall market. The beta (β) values are as follows:

S. No.	*Name*	*Beta (β)*	*Approximate for Analysis and Interpretation*
1	Ethereum	0.997576448	1.00
2	Dogecoin	0.075380367	0.08
3	KuCoin Token	0.907826101	0.91
4	RELIANCE	1.08785227	1.09
5	LTI	0.813860884	0.81
6	PVR	1.026704323	1.03
7	Treasury Yield	0.08600007	0.09
8	HDFC Growth Option	0.000685476	0.00
9	Gold	0	0.00

Asset Classes that have Beta value as zero or very close to zero are Gold (0), HDFC Growth Option (0), Treasury Yield (0.09), Dogecoin (0.08). In other words, regardless of how the market performs, the value of these assets remains constant. It indicates that there is no associated risk with it because it is unrelated to the market and is not influenced by market movement. Investment risk is low.

Asset Classes that have Beta value as 1 or close to one are Ethereum (1.00), KuCoin Token (0.91), RELIANCE (1.09), LTI (0.81), PVR (1.03). In other words, these assets typically move in with the market. It demonstrates how volatile these assets are in relation to the market. Assets and the market have a perfect correlation, as shown. A moderate level of risk exists.

Considering the above analysis we can say that the stock is moving in the same direction as the market.

Conclusion

Based on this study, we may draw the conclusion that beta valuation is essential for comprehending the market risk associated with an asset. Investors should therefore research before purchasing any financial instruments. We can see in data analysis part that Dogecoin's beta values do not significantly differ from that of bonds, option derivatives, and gold, which ultimately suggests that they are less risky.

If we use Ethereum and KuCoin Token as another example, these crypto currencies are just as risky as stocks like RELIANCE, LTI, and PVR, which ultimately proves that the so called 'Too Risky Tag' of cryptocurrency is a flawed affair.

The analysis of this research paper clearly shows that market analysis of digital currencies functions in the same way as other asset classes on the market.

Sugestions

1. Investors can use Beta for the determination of Risk involved in Cryptocurrency.
2. People should not reject cryptocurrency on the basis of the vague assumption of it being too risky.

References

A. Saranya, G.R. (2013). A Critique of Beta Estimation Through. *GRA – Global Research Analysis*, 2.

Brokerage, S. (2022, June 14). *Cryptocurrencies: What Are They?* Retrieved 09 25, 2022, from www.schwab.com; https://www.schwab.com/learn/story/cryptocurrencies-what-are-they

Coinbase (n.d.). *Coinbase*. Retrieved from Coinbase: https://www.coinbase.com/learn/crypto-basics/what-is-market-cap#:~:text=In%20crypto%2C%20market%20cap%20is,asset%20is%20likely%20to%20be.

KuCoin into the Cryptoverse India Report Reveals Optimistic Prospects for Market Growth (2022, August 23). Retrieved September 25, 2022, from www.kucoin.com; https://www.kucoin.com/blog/kucoin-into-the-cryptoverse-india-report-reveals-optimistic-prospects-for-market-growth

McCown, J.R. (2006). Is Gold a Zero-Beta Asset? Analysis of the Investment Potential of. *McCown, James Ross and Zimmerman, John R., Is Gold a Zero-Beta Asset? Analysis of the Investment Potential of Precious Metals (July 24, 2006)*. Available at SSRN: https://ssrn.com/abstract=920496 or http://dx.doi.org/10.2139/ssrn.920496

Nakamoto, S. (2008). *Bitcoin: A Peer-to-Peer Electronic Cash System*. Retrieved September 25, 2022, from www.bitcoin.org: https://bitcoin.org/bitcoin.pdf

Securities, K. (n.d.). *Kotak Securities*. Retrieved from Kotak Securities: https://www.kotaksecurities.com/ksweb/share-market/difference-between-large-small-mid-cap-in-share-market

Taçoglu, C. (n.d.). *Beta (Coefficient)*. Retrieved september 25, 2022, from www.academy.binance.com/; https://academy.binance.com/en/glossary/beta-coefficient

Thakur, M. (n.d.). *EDUCBA*. Retrieved from EDUCBA: https://www.educba.com/systematic-risk-vs-unsystematic-risk/