2100NEWS

Navigating the Waves:

An Empirical Analysis of the Crypto Ecosystem

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Abstract

This extensive and detailed review of the crypto ecosystem covers various topics, from fundamental reasons for writing, structure, and dynamics of the crypto market to specific characteristics of Bitcoin and other digital currencies. I analyze the crypto ecosystem with empirical data and emphasize the importance of understanding the investment properties and dynamics of the crypto market, especially compared to traditional financial markets.

The work includes technical analysis, indices, performance metrics, and practical insights into portfolio management and investment strategies. It addresses the impact of institutional investors' trading dynamics in the crypto realm and highlights misconceptions about the crypto market. The need for accuracy and objectivity in explaining and understanding cryptocurrencies and their markets is emphasized.

Key elements of the research include understanding Bitcoin and its role in the crypto ecosystem, analysis of various types of crypto assets and their characteristics, empirical data and analysis of crypto indices, and comparisons with traditional financial markets and investment strategies. The influence of institutional investors and trading dynamics, portfolio management, and quantitative methods for assessing risk and profitability are also discussed.

Reasons and Basis for This Writing

Due to the prevalence of generalized and often biased information and opinions about the crypto environment in most media, I have prepared a review supported by empirical data. All the views in this composition are based on the collection and analysis of data over the last six years. These data, summarized in the ecosystem, serve as the foundation for this writing.

We are talking about 24 records of market data per week for 27,500 different coins and tokens in the 2100News database. Our contribution includes ratings for over 2500 coins or tokens (DAOQE), 6500 contributions in daily reports, and 250 weekly reports on the 2100News portal, along with calculated market indices and indicators for over five years.

I aimed to conduct a thorough and analytical study of the crypto ecosystem, focused on various aspects, from empirical data to the specific characteristics of Bitcoin, AltCoins, and infrastructure projects. I also want to emphasize the importance of understanding the investment properties and dynamics of the crypto market, especially compared to traditional financial markets.

An essential aspect of the analysis is highlighting misconceptions about the crypto market, aiming to provide a more balanced and realistic understanding of this rapidly developing financial sector. The work emphasizes the need for accuracy and objectivity in explaining and understanding cryptocurrencies and their markets.

Key elements of the research are:

- Understanding Bitcoin and its role in the crypto ecosystem.
- Analysis of different types of crypto assets and their characteristics.
- Empirical data and analysis of crypto indices.
- Comparisons with traditional financial markets and investment strategies.
- The influence of institutional investors and trading dynamics.
- Portfolio management and quantitative methods for assessing risk and profitability.

I hope this research can be a handy resource for investors who want to understand the complexity of crypto markets and develop informed investment strategies. It can also serve as an educational tool for those seeking a deeper understanding of the dynamics and trends in digital currencies.

The Crypto Ecosystem

To understand the crypto ecosystem, predict its mechanisms, and use it for our benefit, we must dissect it into components during analysis, study them and their connections, and find methods for deriving benefits. The properties of the crypto ecosystem can be viewed from various angles, and the following are descriptions of components and characteristics that investors should know and understand. This composition, aimed at investors, omits technological perspectives on blockchain, which are well and correctly discussed in the literature, as there are many records and information on this area.

Among the information about the crypto ecosystem, many unfounded generalizations stem from clichés and "opinions" written in recent years rather than what the data show. Therefore, even artificial intelligence in answering questions from this area often fails to separate the wheat from the chaff.

First, let's look at the components we have dissected the crypto ecosystem into for analysis purposes:

Bitcoin as a Monetary Asset

Bitcoin has retained a competitive advantage in representing a genuinely non-sovereign monetary asset of the crypto ecosystem. Investors looking for a digital asset as a store of value will naturally choose the one with the most extensive, safest, most decentralized, and most liquid network.

As the first genuinely scarce digital asset ever invented, Bitcoin has the advantage of being the first and has maintained this advantage over time. There is the Bitcoin network or payment system and the coin or asset. Since its inception - the publication of

the white paper in 2008, Bitcoin has aimed to solve the problem of a "pure version of P2P electronic cash." Its network was designed to be decentralized and secure, allowing value to be sent without trusting an intermediary.

- The Bitcoin network is incompatible with other blockchain networks, and Bitcoin coins are not interchangeable with other tokens. Therefore, bitcoin coins are scarce, while digital tokens generally are not.
- The main driver of the value of Bitcoin coins is scarcity and a reliable upper limit of issuance.
- Bitcoin is best understood as a monetary asset in the crypto ecosystem.
- Bitcoin will likely remain the main monetary asset of the crypto ecosystem, and it is unlikely that another digital asset will replace Bitcoin in this role.

Altcoins

The open-source nature of Bitcoin allows individuals to easily copy, modify, and build upon Bitcoin's source code for their coins and projects. This has led to the creation of a massive number (reaching thousands) of alternative coins, or "Altcoins," causing confusion for newcomers in this space and sometimes leading to incorrect claims that Bitcoin is not rare because there are hundreds of other digital assets.

Non-Bitcoin coins strive to prove other applicable cases for their technology. They aim to find the right balance for a specific level of fundamental distribution and face extensive competition in developing and improving functionality.

Bridges

These can be compared to cross-border connections linking the crypto ecosystem with other external environments and internally connecting different blockchain systems.

Stablecoins

Stablecoins represent a form of bridge or connection between crypto and fiat currencies. Essentially, they are mappings of assets from the real world into the virtual world, facilitating conversion and transition from one to the other. For example, Tether is the largest crypto world equivalent and mapping of the dollar as a fiat currency.

Interoperability

Interoperability is crucial for connecting different blockchain systems and will be a vital development for the success of the digital asset ecosystem., assuming that multiple chains will prevail due to various fundamental compromises and use cases.

For instance, people use tokens on platforms for ease of use and utility, assigning them value because they represent a specific dollar amount or can be exchanged for other goods and rewards. However, tokens outside their native environment have little or no value.

Other Digital Assets with Characteristics Similar to Venture Capital

Ethereum also began as a white paper, originally published in 2013 by co-founder Vitalik Buterin. Ethereum includes more capabilities, especially the ability to execute more complex transactions. Ethereum is a blockchain with a fully developed Turing-complete programming language built-in. This allows the Ethereum blockchain network to host and execute "smart contracts," which can be used to program various types of applications. This is why some refer to the Ethereum network as a "distributed world computer." Its blockchain network enables the issuance of various tokens and acts as a platform for building multiple applications, including decentralized financial (DeFi) applications, games, and social media tools, etc.

Determining Key Components of the Crypto Ecosystem

The crypto ecosystem can be dissected for analysis purposes based on various criteria, including its primary division, issuance timeline, size division, division based on characteristics in 2100news Crypto Indices, and other divisions:
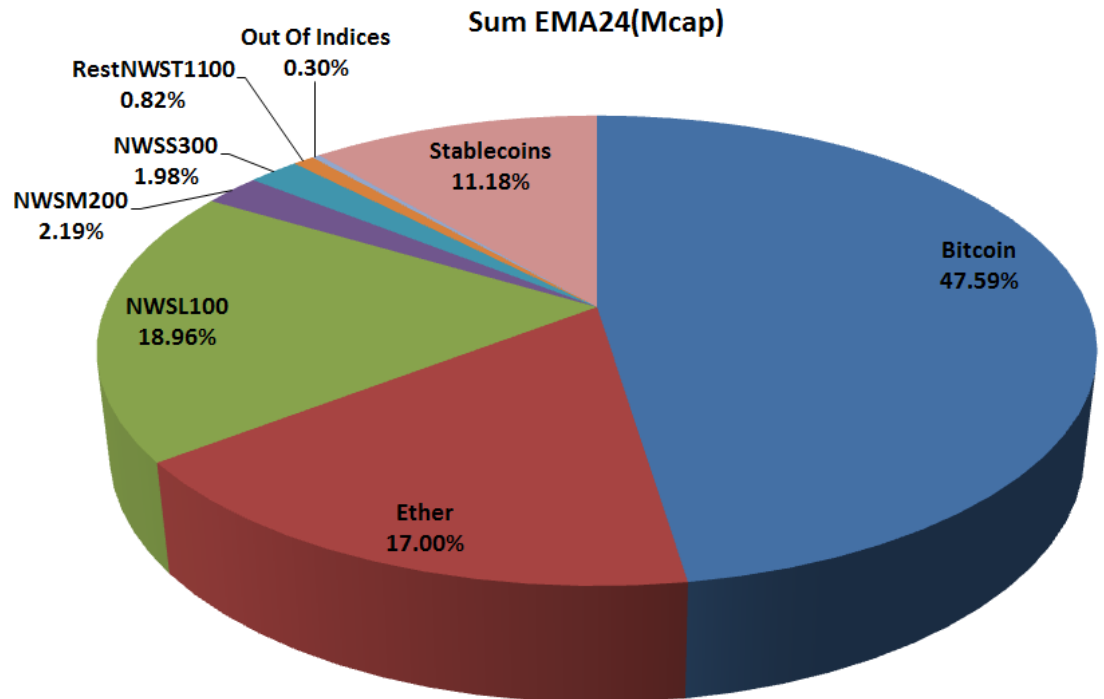
1. Primary Division:
   a. Currencies: Here, the most important and recognizable is Bitcoin, followed by others that have lagged in the market battle, like Litecoin, Bitcoin Cash, Dogecoin, and various forks of these.
   b. Ether (Ethereum): Enabled the development of smart contracts on the Ethereum network.
   c. Infrastructure: Projects with their blockchains, such as Solana, Cardano, and Binance.
   d. Other Services (Applications): Encompassing a range of applications built on or around these cryptocurrencies and blockchains.
2. Issuance Timeline:
   a. Older Projects are in the scale-up phase, where the product-market fit has been established, and the focus is now on increasing or rapidly expanding their operations.
   b. New Startups: Recently established companies venturing into the crypto space.
3. Size Division:
   The size is defined in terms of market capitalization (the number of issued coins multiplied by the average price). Due to the high volatility of prices, this is

calculated from the average of twenty-four measurements in one week (four on a workday, two per day on weekends).

This categorization helps us understand the diverse nature of the crypto ecosystem, which ranges from well-established currencies to emerging startups and from foundational infrastructures to varied applications, all contributing to the dynamic landscape of digital assets.

Sum EMA24(Mcap)

Out Of Indices 0.30%
RestNWST1100 0.82%
NWSS300 1.98%
NWSM200 2.19%
NWSL100 18.96%
Stablecoins 11.18%
Bitcoin 47.59%
Ether 17.00%

4. Division Based on Characteristics in 2100news Crypto Indices:
These indices measure the crypto ecosystem in various dimensions: market size, other characteristics (tokens, coins, Ethereum tokens), named factor indices, and indices that form the basis for crypto strategies. For more detailed information, you can visit the website: **2100news Indices**.

5. Other Divisions:
There are other categorizations, but from my perspective, some are too crude (e.g., altcoin vs. shitcoin) or overly influenced by marketing trends (e.g., DeFi, NFTs).

Structure of the Crypto Ecosystem:

The crypto market has come a long way since Bitcoin's inception, with over 27,500 different coins and tokens issued since 2016, as recorded in the 2100News database. The actual number might be higher, as not all met the criteria for inclusion in the database.

Of these, approximately 10,000 are actively traded daily, while the remaining 17,500 have faded from visibility, lacking trading data on exchanges.

One can examine a series of rectangles representing different market segments to get a comprehensive view of the crypto ecosystem. The following diagram showcases the main components of the crypto ecosystem.

The rectangles' areas represent the component's size (average market capitalization over one week), illustrating the relative proportions of elements within the ecosystem.

This structure and division provide a comprehensive view of the crypto ecosystem, highlighting the extensive variety and dynamics of the digital assets market. It encompasses everything from mainstream cryptocurrencies like Bitcoin to lesser-known tokens, reflecting this sector's diverse nature and rapid evolution.

These rectangles and their color coding effectively illustrate the fluid nature of the crypto market, where coins and tokens constantly shift in rank and value, reflecting this sector's dynamic and evolving nature. The outlined structure visualizes the market's segmentation, emphasizing Bitcoin and Ethereum's dominance and the significance of
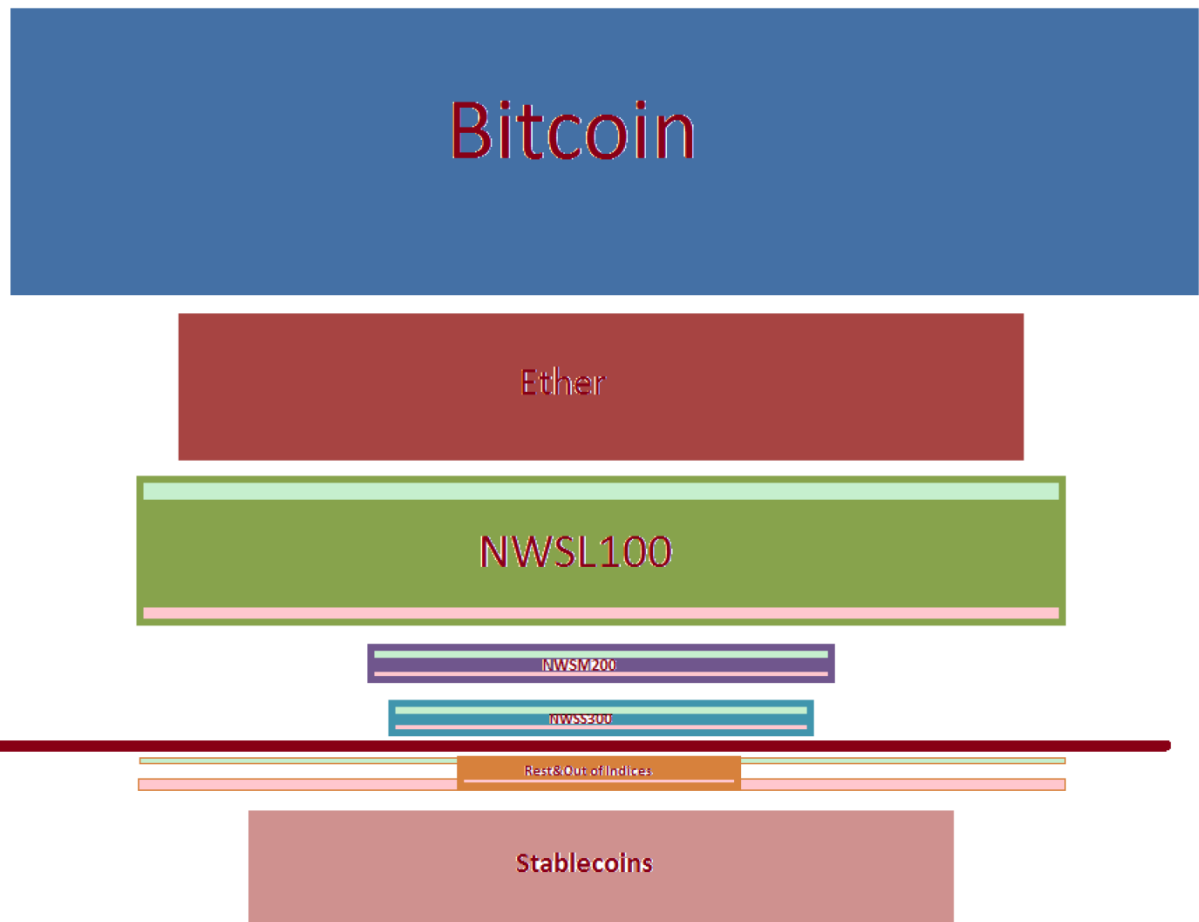
various market capitalization levels.

1. Bitcoin represents nearly half of the entire crypto ecosystem's size. The first rectangle illustrates it.

2. Ethereum accounts for one-sixth of the crypto ecosystem. The second rectangle represents it.

3. Top 100 Coins and Tokens by Market Capitalization (NWSL100). This segment constitutes about one-fifth of the crypto ecosystem. They are illustrated by a tri-colored third rectangle. The composition of this group is dynamic, with a revision of the index every fourteen days. In a year, about 72% of coins or tokens retain their position, while 28% are replaced by others. The value of new entrants is colored green, and those leaving the index are colored pink.

4. Middle Capitalization Coins and Tokens (NWSM200) are represented by the smaller fourth rectangle than the first three. Includes 200 coins or tokens ranked from 103rd to 302nd in terms of market size. Annually, 60% maintain their position, while 40% are replaced. Similar to the NWSL100, the value of new entrants is green, and those leaving are pink. The values of incumbents, new entrants, and those leaving are comparable.

5. Small Capitalization Coins and Tokens (NWSS300). The fifth in the series (another small rectangle) includes 300 coins or tokens ranked from 303rd to 602nd. Constitutes about one-fifth of the crypto ecosystem. Annually, around half maintain their place while the rest are replaced. The value dynamics within this group are similar to those in the previous categories, with green for new entrants and pink for leavers.

   After this group, in our opinion, comes the dividing line for investing, marked red. This sentence refers to a conceptual dividing line in the crypto ecosystem. The red line indicates a point beyond which the assets are considered either too risky, too speculative or not sufficiently established for traditional investment strategies. This could be a guideline to advise investors on navigating the complex and varied landscape of the crypto market, helping them identify which segments might align with their investment goals and risk tolerance.

6. Small Market Cap Coins and Tokens (Ranked Lower than 603rd), represented by the sixth and smallest rectangle in the series. **Comprises over 9,400 coins or tokens, accounting for just over one percent of the entire crypto ecosystem**. Like the previous categories, new entrants are in green, and those leaving are in pink. The values of incoming and outgoing entities are significantly larger than the incumbents, reflecting this segment's high turnover and dynamic nature.

7. Stablecoins are represented by the seventh rectangle. Constitutes approximately one-tenth of the crypto ecosystem. Primarily consists of digital versions of fiat currencies (mainly the US dollar), the largest being Tether (USDT). Acts as a transactional bridge or link between the traditional financial world (where currencies like dollars, euros, etc., are used) and the crypto ecosystem.

When examining the structure of the crypto ecosystem in terms of size and other characteristics, the following observations can be made: Bitcoin occupies the

most significant portion of the ecosystem, serving as a non-sovereign monetary asset. It is followed by Ethereum, which forms a significant part of the market, along with projects utilizing smart contracts on the Ethereum blockchain. Scale-up Projects are often part of the top 100 coins (NWSL100) and represent a substantial segment. Although not as dominant as Bitcoin or Ethereum, they are significant due to their rapid growth and development. Despite being numerous (almost twenty times more in number), these small startup companies contribute to the vitality of the crypto ecosystem. While few achieve siginficant success, their presence and continuous innovation are crucial for the ecosystem's dynamism and diversity.

This detailed breakdown offers a comprehensive view of the various components that make up the crypto ecosystem, highlighting each segment's different roles and importance, from dominant players like Bitcoin and Ethereum to smaller, more volatile entities and the stabilizing role of stablecoins.

Movements Within the Structure - Fluctuations

For example, we can assess and analyze structural movements by observing changes in indices' constituents over a year. You can also view these changes at 2100News Indices. For the vitality of the crypto ecosystem, it is essential that every year a large number of newly established startups issuing crypto tokens try to make a breakthrough with innovations and energy. In the last twelve months, more than 5500 new tokens and coins have been registered in the 2100News database. These are usually tiny startup companies, with an average market capitalization of around half a million dollars. In this part, the crypto ecosystem is essential as a breeding ground for startup companies. However, more than 3500 such entities per year may have only lived for a year or maybe a few years before disappearing from the radar. The net growth in the crypto ecosystem is 2000 new companies or token issues.

Probability of Success for Newly Issued Coins or Tokens

	NWSL100	NWSM200	NWSS300	OUTofIndices&REST	Inflow
NWSL100	72	17	3	2	
		17	3	8	**28**
NWSM200	25	119	25	11	
	25		25	31	**81**
NWSS300	2	50	150	81	
	2	50		98	**150**
OUTofIndices&REST	1	14	122	3.628	
		13	113	5.535	**5.661**
Outflow	**28**	**81**	**150**	**3.722**	1.939

The movement within the structure or transitions between size classes are shown in the table above. Interestingly, the probability for a newly issued token from a startup company to break into the top ranks is as follows:

1. Among the top 100 large capitalizations, only 0.3 of newly issued tokens succeed, with an average price jump of 200 times
2. Among the top 200 medium capitalizations, only 0.9% of the tokens succeed, with an average price jump of 40 times.
3. Among the top 300 small capitalizations, only 1.6%, which is less likely than betting on a single number in roulette. The average price jump in such a breakthrough is ten times.
4. On the other hand, the probability that such a token will not succeed is around 40%, similar to the likelihood of getting heads in a coin toss.

It should be noted that these probabilities have caused many disappointments, misunderstandings, and comments., but it is nothing special and is characteristic of angel investments in startups. As many tokens are issued for various projects but are of minor value (only 0.3% of the crypto ecosystem), they create completely erroneous perceptions. Journalists often write about successes or disasters because such writing attracts readers. It should be added that marketing approaches in issuing new coins also cloud the picture, leading to an abundance of writings about victories, defeats, and disappointments online.

The probabilities indicate that investing in a single token is a gamble where you will likely lose everything with a likelihood similar to a coin toss, and with a minimal probability of less than 3%, of earning well. It reflects a lack of understanding if you engage in this thinking that it's all a scam. Celebrating your success if you make it is akin to attributing skill to winning the lottery.

To conclude this paragraph, it **should be emphasized that this is not the essence of investing in crypto. Due to a misunderstanding of angel investing, the crypto ecosystem is not a pyramid scheme, and startups are not a bunch of fraudsters**. After all these years, we can confidently assert that the borderline for investing is nearly at the level of small capitalizations, somewhere up to the 600th coin or token in size.

Changes in the Size of the Crypto Ecosystem

During periods of increased popularity of crypto assets, more fiat money starts flowing into the crypto ecosystem, causing higher prices expressed in fiat currencies. It can be speculated that there is also a reverse connection, where in periods of rising cryptocurrency prices, they become more popular and trigger additional inflows into

the crypto ecosystem. Consequently, declining exchange rates start outflows from the crypto ecosystem into fiat currencies.

Inflows from fiat currencies into the crypto ecosystem are mainly of three types:

1. Investors looking for a digital asset as a store of value, will naturally choose one with the largest, safest, decentralized, and liquid network, such as Bitcoin.
2. If investors seek indirect investment related to the traffic or value of the network of a scale-up or startup company.
3. If users pay for services performed by crypto companies (applications, network fees, etc.)

Most fiat money flows into the crypto ecosystem because of Bitcoin. If fiat money flows disproportionately and its target is Bitcoin as a store of value, Bitcoin's dominance increases.

For the growth of large, medium, and small capitalizations, the feeding source is many startups that issue crypto tokens and try to break through with innovations and energy. This is an inexhaustible source. We estimated the size of this source in the following table. The table is interpreted to mean that new tokens, which replace the old ones among the large capitalizations (NWSL100), represent an inflow of 16 billion dollars (inflow column). The old ones take away 14 billion dollars (outflow row), meaning that this "thermics" brings NWSL100 a surplus of two billion dollars yearly. Similar conclusions can also be made for medium (NWSM200) and small capitalizations (NWSS300).

	NWSL100	NWSM200	NWSS300	OUTofIndices&REST	Inflow
NWSL100	152.276.469.462	2.505.790.773	311.409.044		**16.031.316.625**
		8.836.158.770	1.178.154.503	6.017.003.353	
	73	16	3	8	
NWSM200	10.813.775.256	13.831.673.412	2.460.570.055		**10.484.948.005**
	4.734.510.597		2.462.042.728	3.288.394.680	
	24	122	26	28	
NWSS300	3.218.886.409	4.688.332.105	10.927.825.832		**10.958.528.132**
	208.337.037	5.039.563.267		5.710.627.828	
	3	50	155	90	
OUTofIndices&REST		935.722.064	6.798.366.462		**7.734.088.525**
		12	116		
Outflow	**14.032.661.665**	**8.129.844.941**	**9.570.345.561**	**15.016.025.861**	

2100News Indices

More than five years ago, we first wanted to determine the appropriate criteria for measuring crypto markets. The indices measure the crypto ecosystem in various directions: market size, characteristics (tokens, coins, Ethereum tokens), named factor indices, and indices that are the basis for crypto strategies listed on exchanges (CETF). The 2100NEWS digital asset indices aim to provide investors with precise criteria for cryptocurrencies and to compare the financial performance of managing digital assets. The management of the indiex is carried out passively by predefined parameters, such as the frequency of rebalancing, the method of selecting digital assets, the weights of digital assets, etc. This means that management is quantitative and essentially automatic, using data and a set of rules.

Investment Characteristics of Crypto Asset Groups Represented by 2100News Crypto Indices

The investment characteristics of groups of crypto assets that make up the 2100News crypto indices can be quantitatively described using standardized investment performance measures in the context of portfolio management and investment analysis. These measures help investors and managers evaluate the performance, risk, and return characteristics of investment portfolios and determine how well a portfolio performs compared to specific benchmarks or expectations, considering different levels of risk and market volatility.

Since we are moving in a quagmire without clear and accepted measures, where every seller praises their merchandise, the CFA Institute and CFA charter holders, have created order in this area over the past few decades. Given the relative youth of the crypto ecosystem, there is a lot of descriptive eloquence about returns or, on the other hand, speculative talk about risks. Therefore, I present the characteristics and performance of crypto using these measures. We must emphasize that we can only use return correlation because prices are not stationary and independent.

Several key statistics were used for the analysis, which are shown in the following table:

- **Correlation** shows how the Return of one investment moves in comparison to another. A high correlation means that returns move together, which is less favorable for diversification.
- **The Beta coefficient** measures the sensitivity of an investment to market movement. A value above 1 means the investment is more volatile than the market, and a value below 1 means less volatile.

- **Standard Deviation (SD)** shows how widely returns fluctuate around the average and is a measure of risk.
- **Max DrawDown** shows the largest drop in the value of an investment over a certain period, which is an essential indicator of risk.
- **Annual Return** shows the average yearly rate of Return on an investment.
- **Jensen's Alpha** indicates how much more or less an investment brings compared to the expected return based on its beta risk.
- **Sharpe and Treynor Ratios** measure the return of an investment relative to the unit of risk taken.

Meas/ind	NWST1100	NWS30	NWSL100	NWSM200	NWSCO100	NWSET100	NWSBE	BTCUSD	ETHUSD
Correlation	1.00	1.00	0.95	0.90	0.94	0.91	0.98	0.79	0.72
beta	1.00	0.99	1.07	1.01	1.12	1.00	0.95	0.78	0.92
beta-	1.00	0.97	1.15	1.15	1.19	1.13	0.90	0.74	0.96
beta+	1.00	1.01	0.98	0.84	1.03	0.86	1.02	0.79	0.80
beta "bullish"	1.00	1.00	0.94	0.89	0.93	0.89	0.98	0.78	0.69
beta "bearish"	1.00	0.99	1.12	1.10	1.15	1.10	0.94	0.74	0.99
Yearly SD	70.29%	69.77%	79.83%	78.30%	83.76%	77.81%	68.41%	68.61%	90.02%
Yearly SD "Bullish"	68.98%	68.59%	78.20%	75.89%	82.14%	75.85%	67.57%	69.09%	89.90%
Yearly SD "bearish"	74.20%	73.28%	85.14%	85.99%	88.89%	84.34%	70.57%	65.70%	89.57%
Max DrawDown 5y	79.98%	78.94%	85.96%	87.63%	88.92%	83.35%	77.06%	76.67%	78.44%
Yearly Return	33.42%	31.57%	8.44%	19.79%	5.44%	15.97%	43.86%	40.27%	55.61%
Jensen's Alpha	0.00%	-1.54%	-27.48%	-13.88%	-31.91%	-17.59%	11.97%	14.36%	24.75%
Sharp ratio	0.48	0.45	0.11	0.25	0.06	0.21	0.64	0.59	0.62
Treynor ratio	33.42%	31.86%	7.85%	19.64%	4.87%	15.90%	45.97%	51.94%	60.21%

- *The standardized measures are used based on data for five years, from November 1, 2018, to October 31, 2023, collected in the 2100News databases.*

- *The benchmark for comparison is the broadest index, NWST1100, which consists of 1100 coins and tokens, including Bitcoin and Ethereum.*
- *Data analysis showed that there is a statistically significant difference in behavior on days when NWST1100 ends the day higher in value (these days are contained in the beta+ label) compared to days when it ends lower than the previous day (beta- label).*
- *Similarly, behavior significantly differs during the period from November 9, 2021, to November 21, 2022, when the biggest drop in MaxDrawDown occurred in the last five years (marked as "bearish" in the table) compared to the rest of the period (marked as "bullish").*

Summarizing some conclusions from the above table:

1. As expressed by standard deviation, the risk is higher in the falling period than in the rising period, with smaller capitalizations being more risky.
2. Bitcoin and indices that contain a large part of Bitcoin such as the broadest index NWST1100, blue chips NWS30, and the Bitcoin and Ethereum index NWSBE have comparable risk around 70%.
3. Over the entire five-year period, Ethereum has been the most profitable, with an average annual return of 55.61%, adding that it's also the most risky. Still, it has the best-rewarded unit of accepted risk – having the highest Treynor coefficient and the second-highest Sharpe coefficient. The correlation of returns and Jensen's Alpha indicate other significant positive drivers, different from market waves (ebbs and flows of the crypto ecosystem).
4. Alongside Bitcoin, the combination of Bitcoin and Ethereum, which form the NWSBE index, also provides a good profitability reward for the unit of accepted risk.
5. The other group consists of the NWST1100 and NWS30 indexes. Interestingly, we can achieve financial effects like owning 1100 with just thirty coins and tokens. They have similar average annual returns and rewards for the unit of accepted risk (Treynor and Sharpe coefficients) and similar maximum declines in the period.
6. The third group of indexes, comprising large and medium capitalizations such as NWSL100, NWSM200, NWSCo100, and NWSET100 indexes, is riskier, with higher standard deviations, maximum declines in five years, and higher betas. They also have lower average annual returns and a poorer reward for the accepted unit of risk (Sharpe, Treynor). Jensen's Alpha shows other significant negative drivers that differ from the crypto ecosystem's market waves.

From these conclusions, it can be summarized that over five years, Bitcoin, Ethereum, and two indexes, NWSBE and NWS30, have proven suitable for a buy-and-hold strategy. The third group of indexes, mentioned in point six, is an excellent tactical investment in longer periods of growth when the NWST1100 index is above the 200-day average. The period for such a better investment is marked with an ellipse in the image below, and **it's essential to sell such a tactical investment when transitioning to a falling period.**

Intermarket Analysis – Changes in Relationships within the Crypto Ecosystem
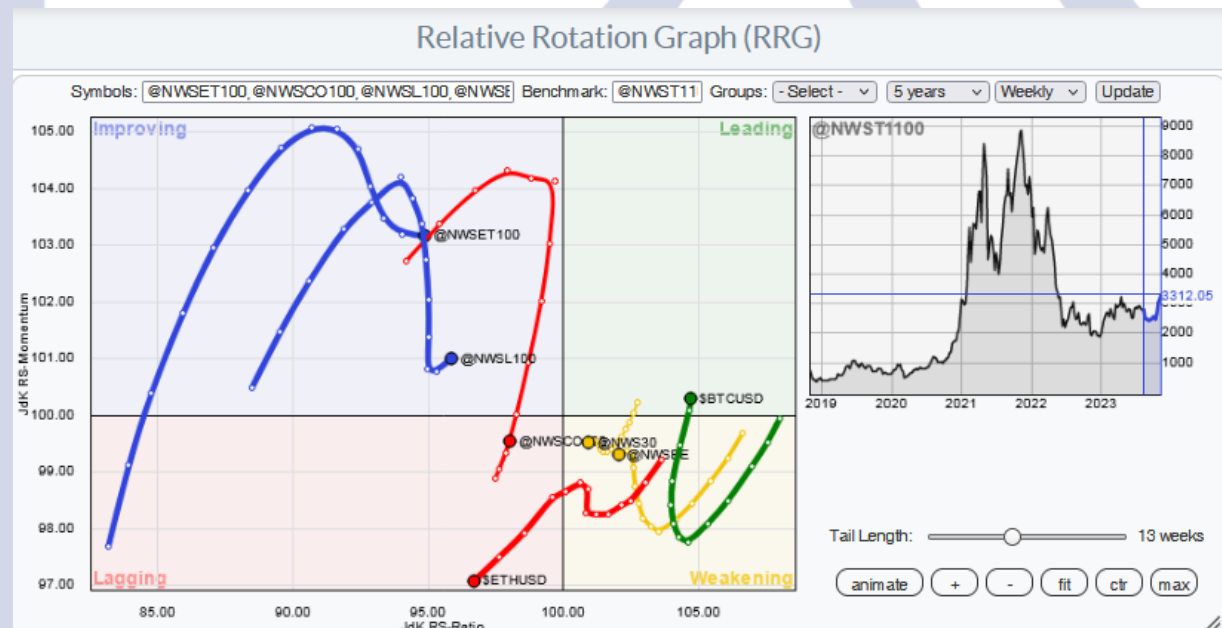
It's crucial to understand the dynamic nature of the relationships between different components of the crypto ecosystem. This includes the fluctuating price relationships among indices, Bitcoin, and Ethereum, such as between Bitcoin and the NWSCo100 coin index or Ethereum and the NWSET100 index of tokens issued on the Ethereum network. These relationships are not fixed but vary over time, and their rotation can be observed through an animation on a Relative Rotation Graph (RRG).

An important insight from this analysis is that viewing these relationships from a perspective that is too short-term or static on a single graph can lead to bias and incorrect decisions. For example, there's a common belief that Bitcoin is the best investment, especially during downturns. Indeed, Bitcoin tends to be a better investment in bear markets. However, as soon as the market shifts to a bullish phase, investments in indices representing groups of crypto assets with higher beta (as indicated in the table) start outperforming Bitcoin. They must compensate for the lag created during the bear market period.

This highlights the importance of considering the dynamic and cyclical nature of the crypto market, especially when making investment decisions. Analyzing and understanding these changing relationships and market phases is essential to optimize investment strategies effectively.

Comparisons with Capital Markets

When comparing the crypto ecosystem to capital markets, we can examine this relationship in three aspects: size, statistical properties, and time dynamics. Here's a look at some key comparisons:

Comparison of Market Capitalizations:

The skepticism and criticism surrounding cryptocurrencies often stem from misunderstandings or a lack of detailed information. Critics frequently label the crypto market as a "pyramid scheme" or fraud, undermining its significance and impact. To counter these arguments looking at empirical comparisons with traditional capital markets, which most of the population widely accepts and understands, is beneficial.

Index		ΣMcap	ΣVolume
NWSBE	3,828.3882	740,615,484,415	6,527,038,608
NWS30	2,402.1430	904,186,054,149	8,463,902,416
NWSL100	894.0974	218,801,668,245	3,042,750,064
NWSM200	1,404.5374	24,845,789,740	1,439,401,529
NWSS300	1,178.2889	23,218,693,755	565,019,380
NWST1100	2,568.9557	1,016,086,343,700	11,918,663,896
NWSCo100	819.1233	117,083,336,439	1,931,055,776
NWSET100	1,182.6073	110,907,437,590	1,696,946,862

The combined market capitalization of the cryptocurrencies listed in various indices and their daily trading volume on exchanges provide concrete figures that can be directly compared with traditional financial markets. This comparison helps in understanding the scale and liquidity of the crypto market. Here are some key empirical comparisons of cryptocurrency market capitalizations and their daily trading volumes with those in the capital markets:

1. In the NWSBE index, which consists only of Bitcoin and Ether, the combined market capitalization is around $740 billion. This size is comparable to Berkshire Hathaway Inc. (BRK-B), managed by Warren Buffett, the ninth-largest stock in the broad U.S. S&P 500 index. Notably, the trading volume of Bitcoin and Ether across all exchanges is six times larger than that of Berkshire Hathaway, with the volume on Binance alone equaling Berkshire Hathaway's total trading volume across all stock markets.
2. The NWSL100 index, comprising the 100 largest coins and tokens excluding Bitcoin and Ether, is similar in size to Adobe, ranked 25th in the S&P 500.
3. The NWSCo100 index mainly includes infrastructure coins representing services in the crypto ecosystem or extending into other segments. It's important to note that the crypto environment is primarily a niche for financial services, representing $13 trillion in the global DJW index. NWSCo100 has about $120 billion in capitalization, which is less than 1%. The coins in this index represent various services, including:
   a) exchange services (BNB, OKB),
   b) Ether-BTC connectivity (WBTC),
   c) blockchain interoperability (Polygon),
   d) external data linkage to blockchains (ChainLink),
   e) meme coins evolving into payment services (Shiba Inu),
   f) and payment cards, cashback, and payment services (Cronos).

Statistical Comparison with Capital Markets:

The analysis of crypto assets compared to traditional capital market assets such as the S&P 500 index, which covers almost half of the world's wealth in capital markets has revealed some interesting insights. These comparisons help us understand where the crypto ecosystem stands in terms of mainstream financial metrics and how it's evolving as a distinct asset class.

These comparisons shed light on the relative size and performance of the crypto market in contrast to established capital markets. They provide a framework for understanding where the crypto ecosystem stands in terms of mainstream financial metrics and how it's evolving as a distinct asset class.

Meas/ind	NWST1100	NWSM200	NWSCO100	NWSET100	NWSBE	BTCUSD	ETHUSD	DJW	SPX500
Correlation	0.32	0.32	0.31	0.32	0.31	0.29	0.30	0.95	1.00
beta	1.04	1.17	1.20	1.14	0.98	0.91	1.23	0.76	1.00
beta-	1.25	1.36	1.37	1.36	1.20	1.28	1.73	0.79	1.00
beta+	0.66	0.72	0.81	0.80	0.61	0.61	0.97	0.72	1.00
beta "bullsih"	0.77	0.89	0.89	0.85	0.71	0.71	1.00	0.75	1.00
beta "bearsih"	1.86	1.97	2.10	2.01	1.77	1.49	1.91	0.79	1.00
Yearly SD	70.29%	78.30%	83.76%	77.81%	68.41%	68.61%	90.02%	17.43%	21.65%
Yearly SD "Bullish"	68.98%	75.89%	82.14%	75.85%	67.57%	69.09%	89.90%	16.78%	21.09%
Yearly SD "bearish"	74.20%	85.99%	88.89%	84.34%	70.57%	65.70%	89.57%	19.68%	23.67%
Max DrawDown 5y	79.98%	87.63%	88.92%	83.35%	77.06%	76.67%	78.44%	34.25%	33.92%
Yearly Return	33.42%	19.79%	5.44%	15.97%	43.86%	40.27%	55.61%	5.00%	8.88%
Jensen's Alpha	24.16%	9.43%	-5.20%	5.85%	35.19%	32.23%	44.69%	-1.79%	0.00%
Sharp ratio	0.48	0.25	0.06	0.21	0.64	0.59	0.62	0.29	0.41
Treynor ratio	32.05%	16.97%	4.54%	14.02%	44.90%	44.46%	45.23%	6.54%	8.88%

The analysis of the crypto ecosystem using standardized measures over five years, from November 1, 2018, to October 31, 2023, with data gathered from 2100News databases, and comparing it with the capital market index SXP500, reveals significant insights:

1. **Risk Measured by Standard Deviation:** The risk, as indicated by standard deviation, is higher during downturns than in periods of growth, with smaller capitalizations being more risky.
   Bitcoin and indices with a significant Bitcoin component (like NWST1100 and NWSBE) have a comparable risk level (standard deviation around 70%), but this is 3.5 times higher than the risks in capital markets, where SXP500 has a standard deviation of 21.65%.
2. **Maximum Drawdown:** The largest drawdown in capital markets (global DJW index and American SXP500) in the last five years was around 34%. For crypto assets, the drawdown was at least 2.5 times greater, ranging between 76% and almost 90%.
3. **Correlation with Capital Markets:** The returns of crypto asset groups represented by 2100News indices, Bitcoin and Ether, are poorly correlated with capital markets,

with a Pearson coefficient of 0.3. **This makes them a good addition for diversification in investment portfolios on capital markets.**

4. **Different Drivers of Returns:** The low correlation of crypto asset returns with capital markets and a high Jensen's Alpha indicate that the factors driving the returns differ from those in the capital markets.

5. **Bear Market Dynamics:** In bearish trends, high 'bearish' betas signify a more significant influence of loss drivers from capital markets during these periods. This can be attributed to macroeconomic conditions (recession, inflation, economic shocks, wars) that reduce investor readiness to invest in riskier assets, causing the more volatile crypto ecosystem to suffer more significant impacts.

6. **Performance of Ether:** Over the five years, Ether has been the most profitable, with an average annual return of 55.61%. Despite being the riskiest, it provided the best reward per unit of risk, as indicated by the highest Treynor coefficient and the second-highest Sharpe coefficient. Its returns correlation and Jensen's Alpha suggest additional positive drivers distinct from market waves on capital markets.

7. **Bitcoin and Ether Combination:** The combination of Bitcoin and Ether, making up the NWSBE index, also shows an excellent profitability reward per unit of risk.

8. **NWST1100 Index:** The reward in profitability per unit of risk for the NWST1100 index is nearly five times better than the average global stock represented by the DJW index.

9. **Other Indices:** Indices like NWSM200, NWSCo100, and NWSET100, consisting of large and medium capitalizations, are riskier compared to capital markets, but their average annual returns and rewards for the risk taken (Sharpe, Treynor) do not significantly deviate from those in the capital markets.

From the conclusions, we can summarize that crypto investments over the past five years have proven to be an excellent asset class to complement portfolios containing capital market investments. Although they are two to three times riskier than capital markets, their returns are so substantial that they cover all these risks and add significantly higher returns per unit of risk than can be achieved in capital markets.

However, it's important to note a significant aspect regarding risk. Empirical evidence from a century of capital markets has shown that for long-term sustainable investment and peaceful sleep for the investor, two standard deviations of the investment must be less than 50%. Unfortunately, crypto investments do not meet this condition. However, a solution to this problem has been found in the CAPM model by Nobel laureates, which suggests that to reduce the risk of such investments, only a part of the available investment money should be invested in them (according to the data in the table, less than one-third), and the rest should be left untouched in a bank account.

Time Course of the Ratio Between Crypto Assets and Capital Stock Investments

Since a picture is worth a thousand words or numbers, the following image provides additional insight into the temporal dynamics of the relationship between Crypto

(digital assets) and global stocks. It represents the ratio between digital assets, as represented by the NWST1100 index, and stocks in global capital markets, as represented by the Dow Jones Global W1Dow index. The image shows that during a downturn, Crypto falls faster and more strongly; during a growth period, it rises faster and more intensely, thus being more volatile and riskier. The comparison covers different periods, offering insights into historical and recent performance and potential future trends. Note the magnitude of the fluctuations; it's not just a few percentage points but, for example, a drop in the ratio from a value of 16.31 to 3.94, representing a 75% reduction in the ratio.

On the other hand, during a bullish trend, an expected increase of up to 400% is anticipated according to the mean reversion theory. This enormous dynamism is primarily a consequence of the structure shown in the image in the structure chapter. During a bullish trend, fiat money flows into the crypto ecosystem. Bitcoin, and to some extent Ether, first absorb this money. The area below them, representing scale-up and start-up companies, is about half their size, causing this money to exert a much greater upward pressure on prices, similar to what we saw with gas prices in the EU a year ago. The same reasoning applies to the significant drops during a bearish trend.

Historical Comparison: After the last Bitcoin halved until two years ago, the ratio was growing in favor of the NWST1100 Index, representing digital assets. This was followed by a crypto winter, and the ratio decreased in favor of capital markets, falling below the twenty-eight-month long-term average (the last value of this average is around 7.5),

marked with red dots. This was followed by more than a year of horizontal fluctuations, which was also the best time to buy crypto investments. The average quotient over the last 143 working days is a blue dashed curve. Currently, this average is below the long-term average. The mean reversion theory suggests that asset prices over time return to their historical average returns, and the current quotient below the long-term average could mean that digital assets are undervalued compared to historical trends.

Expectations are high as we stand on the threshold of a confirmed bullish trend among digital assets and global capital market stocks. Digital assets purchased in the past year will offer increased returns compared to stocks as we move through this bullish phase. An updated image of this ratio can be regularly followed in the weekly commentary on the 2100News website: https://www.2100news.com/weekly-crypto-reports/

Crypto Asset Trading

Understanding the market and its dynamics is crucial for successful crypto asset trading. A characteristic feature of the crypto market is the large number of digitally connected participants, unlike those in capital markets, operating in a much smaller space. This translates into a high energy level, where a strong wind in nature creates large waves.

Crypto asset trading occurs in two ways:

- Centralized exchanges which are akin to stock exchanges in capital markets (with major ones like Binance and notable ones like Bitstamp, which originated in Slovenia).
- On decentralized exchanges, a technological novelty of the crypto ecosystem and blockchain technology (e.g., Uniswap, PancakeSwap), where you trade against a pool, ensuring supply and demand are always available and the transaction price is algorithmically determined.

Dynamics of Trading or Manipulation?

The talk among capital market participants that crypto trading is all manipulation is not entirely accurate. As a professional manager and trader with over thirty years of experience in various financial markets, I see crypto as the mainstream of new generations. It cannot be dismissed by the older ones and should instead be understood. The older generation might have a traditional bar. When a new one appealing to younger crowds opens up, the old one slowly fades, even attracting the curious older generation, boosting the new bar's business.

Younger generations perceive cryptocurrencies not only as investments but also as a form of gaming and community building on social networks, not only by an investment approach. This difference in perception and viewpoint is crucial. Baby boomers used to go to casinos for gaming, while younger generations attempted it with crypto purchases.

Our insights for this comment on the markets are based on 6,500 contributions in daily reports, gathered at 2100News through the **Movers of the day** section, which you can follow daily.

Below is an image of a typical coin or token with the biggest daily jump on a particular day. It's interesting to note that mid-capitalization coins or tokens, i.e., up to the 300th place in the market capitalization ranking, typically experience the biggest daily jump on a particular day, sometimes doubling in price in just two to three days. However, this is usually followed by consolidation, which aligns with Fibonacci levels, indicating a downward wave of 38% to 62% of the rise, and then another upward bounce. As a result, those that rose the most in previous days quickly become among those that fell the most in the following days.

These large fluctuations often seem like fraud to the uninformed. It happens when the entire issuance changes ownership in one day. In most cases, I believe it's not fraud but a consequence of the environment's structure. If a 100-kilogram person steps on a scale, it swings much more than a 20-kilogram child. On the day a coin or token stands out, there is too much available money and buyers or sellers for the amount of issued digital assets. The crypto market is highly digitalized; communities formed around individual coins are strongly connected through social networks (Reddit, Telegram) and often operate based on shared information. Many arbitrage algorithms are at play. In essence, coordinated actions, which are pursued by regulators in capital markets, are in the crypto ecosystem mainly a consequence of a large number of participants accessing the same information and sharing in relatively small areas (e.g., around a hundred million market capitalization).

The rare trading pattern of pump and dump indicates that a group might have coordinated to manipulate the market. But in the example below, the entire capitalization changed hands twelve times in one day.

Such digital assets are a surefire way for inexperienced traders to quickly end their venture into the crypto market, as a few unsuccessful trading attempts can lead to the rapid loss of their entire investment. Suppose the daily trading volume of a coin or token exceeds 10% of the total issuance. In that case, it is a sign or alarm that this investment is unsuitable for those with insufficient trading knowledge and experience.

Investing in crypto assets

Investing in crypto assets requires a deep understanding of their nature, market dynamics, and proper risk management. One needs to be aware of the specific characteristics of cryptocurrencies and apply proven investment methods and techniques. As previously dissected, the crypto ecosystem is diverse, consisting of Bitcoin as a non-sovereign monetary asset, tokens and coins of companies aged six to seven years (scale-ups), and many startups. Cryptocurrencies have come a long way since their early days when they were dominated by computer enthusiasts and rebels against traditional financial systems. Initially, few saw crypto assets as investments; they were a means to rapidly enrich through supporting startups (ICO mania). Today, the sector has evolved, attracting serious investors and institutions.

The perception of cryptocurrencies as legitimate investment assets has shifted, especially after 2020. With financial innovations like DeFi (decentralized finance), the crypto market has become more attractive to traditional investors primarily operating in capital, commodity, and futures markets. This led to considering digital assets as investments to be managed with classic investment approaches. The probability of success for a newly issued coin or token, suitable primarily for angel investors in startups, has been demonstrated in a particular chapter.

Additionally, in another chapter, the investment properties of groups of crypto assets were shown, revealing that few are suitable for a 'buy and hold' strategy. Still, several groups are excellent for tactical investments over about a year. Particularly interesting was viewing the crypto ecosystem as an investment opportunity through the lens of capital markets. A particular chapter compared the crypto ecosystem and capital markets, revealing core insights guiding capital market investors to allocate a portion of their funds to crypto investments.

The extreme profitability in historical terms is crucial in investment and breakthrough moments. For thousands of years, the high yield of crops like wheat, beans, potatoes, and corn (multiplying the seed sown by 80 up to 500 times) ensured human sustenance. Similarly, the high profitability brought the crypto ecosystem into the investment radar. Key findings from the comparison with capital markets are:

1. **The reward in terms of return per unit of risk (e.g., Treynor ratio) for the broad NWST1100 index is almost five times better than the average global stock represented by the DJW index.**
2. Although **crypto investments are two to three times riskier compared to capital markets, their returns are so substantial that they cover all those risks and provide a significantly higher additional return per unit of risk.**
3. For a sustainable long-term investment and peaceful sleep, the two standard deviations of the investment must be less than 50%. Crypto investments don't meet this condition, but the issue is resolved by investing only a part of the available funds (less than one-third, according to the data) and leaving the rest untouched in a bank account.

The crypto ecosystem has a significant advantage over capital markets with a broader spectrum of profitability and higher rewards for each unit of risk assumed. It can emulate capital markets, but the reverse isn't true. When you see bank representatives, pension fund managers, or mutual fund managers on TV dismissing the crypto ecosystem as highly risky without quantitative metrics, understand that they are unfoundedly and marketing-wise defending their established positions.

Contrastingly, the world's largest asset management company, BlackRock, managing eight times more assets than the entire crypto ecosystem's worth, has staked its social capital in support of crypto investments. The recent price jumps in Bitcoin and Ethereum were driven by their decision to allow clients to invest in these cryptocurrencies via ETFs listed on capital markets, indirectly corroborating our assessments and calculations in this review.

Crypto Asset Portfolio Management

Managing a crypto asset portfolio can be quite challenging, and it often leaves me with several dilemmas. As someone who has been a professional manager for decades, with a quantitative focus, I view portfolio management differently.

To begin, it's essential to clarify a few things. Investors typically invest to earn returns, but not all of them are comfortable with mathematics or statistics. In fact, some highly educated individuals may not even understand this financial jargon.

1. **Past Performance Is Not Indicative of Future Results**: This is a crucial caution in investment management, but it's often misunderstood or ignored. Unlike the fixed percentages that banks guarantee in credits or deposits, past performance in investment management doesn't promise future returns. This chapter will enlighten you that standard assessment measures can be used to calculate expected future returns based on an asset manager's past daily performance data. It's important to note that these are still expectations and not guarantees.
2. **Net Profitability Is Key for Investors**: Focusing on net returns after all fees and taxes is essential. Continuous payment of various costs, especially management fees, can lead to significantly different results than the gross returns showcased in promotional charts.
3. **Investment Risk**: Investors enter, enhance, reduce, or exit investments at different times, leading to varying earnings on the same investment. Riskier investments have more 'hairy' charts, implying that their value fluctuates more dramatically. This volatility increases the likelihood of overpaying upon entry or receiving less upon exit, impacting the overall earnings.
4. **Amateur vs. Professional Managers**: The goal difference between amateurs and skilled professional managers is substantial. Amateurs primarily aim for profitability without profoundly understanding how and why they achieve it. In contrast, **good professional managers focus on profitability and understanding the reasons behind their performance. They integrate this understanding into their procedures and processes, thereby building and enhancing skills critical for generating exceptional returns per unit of risk over the long term.**

Understanding and navigating these facets is crucial for effective portfolio management, especially in crypto assets' volatile and complex world.

Amateur Managers

Let's start with a basic notion: you are an amateur manager if:

1. **You Purchase Financial Instruments:** Owning a portfolio of financial instruments.
2. **Engagement in Transactions:** Initial and additional purchases and sales constitute management activities.
3. **Results of Actions and Market Conditions:** In conjunction with market conditions, the outcome of your actions results in either profit or loss.
4. **Calculating Your Return:** This is where complexities begin. If you are depositing and withdrawing money, calculating your return on investment isn't straightforward (considering time & money-weighted aspects).

The media heavily promotes the democratization of finance, suggesting that managing investments is as simple as cooking a meal or driving a car. This perspective is widespread in financial TV shows, podcasts, and social media, encouraging amateur management. Discussions often revolve around what to buy for high returns, and unsuccessful suggestions are quickly forgotten.

Amateurs sometimes misuse financial terms, applying them in contexts different from their defined meanings in finance. For instance, in a debate between a journalist and a promoter of amateur management, the journalist asks, "What does a conservative crypto portfolio look like today?" The response often lists some of the most significant coins and tokens, likely without realizing the nonsensical nature of the question.

A conservative portfolio implies low-risk tolerance, typically comprising 30% stocks and 70% bonds. Its risk, measured in standard deviation over the past 30 years, is around 9.3%, with an expected maximum reduction of about 18% in five years. By this definition, a crypto portfolio can never be conservative, as the broadest NWST1100 index has a standard deviation of 70% and a maximum reduction of 80% over five years. **A conservative crypto portfolio that meets risk expectations would consist of 1/8th of crypto investments and 7/8th of uninvested cash in a bank account.**

The energy - or capital - that amateur managers bring to the markets creates waves, similar to kinetic energy producing electricity in marine environments. Like in nature, financial instruments' fluctuations can be leveraged for monetary gain through skillful management.

Successful management, like most activities in life, is a mix of skill and luck. A manager who is lucky this year is not more likely to be more fortunate next year than any other manager. While skill is a constant, luck is transient. Hence, expected performance in the next period tends to revert to the average because the luck variable has an expected value of zero.

Consequently, the expected return for amateur managers is below average. A significant portion of returns from the ecosystem is taken by those with skills, predominantly

professionals. In essence, this activity is similar to a lottery, where some win smaller amounts than others lose, with the platform and taxes taking their share.

Amateur managers, on average, unknowingly serve as fodder, while others enter for the lottery-like chance of quick gains. They typically lack an understanding of measuring and accounting for risk, focusing solely on returns without considering the risk involved in their investment decisions.

Following Managers – Social Management

In recent years, a new form of management, situated between amateur and professional management, is social portfolio management. This approach involves managing one's portfolio by following another individual publicly sharing their management execution. Copying allocations means that when the manager being followed executes trades, these trades are immediately sent to all copiers for identical execution. Copying allocations requires that managers have funds on the exchange. Since copiers will replicate the currently assigned funds, managers must have their skin in the game. At every step, followers maintain a portfolio identical to the managers' – effectively follows their performance. A focus is on results, not strategy. Copying a manager's allocations means entrusting them with handling your funds, which are otherwise in your account. For followers, it's crucial to assess that the manager has a professional methodology for management. While copying allocations can sometimes seem like a black box, extensive data on historical performance, detailed trade history, and portfolio statistics can help alleviate immediate concerns.

When choosing a manager to follow, it's essential to understand that successful investing, like most life activities, combines skill and luck. Distinguishing between the two is crucial because skills are relatively constant, while luck, by definition, is not. A portfolio manager with skills this year will likely retain them next year. However, a manager who was lucky this year is no more likely to be more fortunate next year than any other manager. In other words, above-average performance is proof of both good luck and above-average skills. However, while skills are a constant, the element of luck is transient. Therefore, expected performance in the next period tends to return to the average because luck has an expected value of zero.

Apart from the selection process described years ago in the article "**How to choose which Digital Assets Portfolio Management Strategy to copy?**", costs paid for the following are also crucial. For the follower, net earnings are essential, and they should avoid high commissions, as presented in "**How to choose which Crypto Strategy to follow?**"

Professional Managers – Procedures and Process

Thirty years ago, the professional financial management scene was as chaotic as the current variety of managers in the crypto ecosystem. Each professional manager marketed their product, showcasing periods of superior performance, with little discussion about risks. Self-regulation by providers, academic circles, the CFA Institute, and CFA-certified analysts gradually introduced order over decades, primarily by developing metrics that linked returns to risk. For instance, Jensen's Alpha for an investmen indicates how much more or less return an investment generates compared to its expected return based on beta risk. The Sharpe and Treynor ratios measure investment returns per unit of risk undertaken.

Professional managers have embraced a meritocratic approach, understanding the need to measure their work and differentiate skill from luck statistically. It's not enough to earn or lose money; understanding why it happened is crucial for future actions.

Professional portfolio management focuses on a structured process or approach to investment portfolio management, continuously improving these procedures:

1. Diversification of Unsystematic Risk: Diversifying risk can significantly reduce if investment returns are poorly correlated. Not investing everything in a single asset minimizes the impact of any single investment's poor performance.
2. Breakdown and Analysis of Return Contributions: This involves breaking down the sources of a portfolio's performance to understand what drives returns:
   a. Asset Allocation Effect and Component Analysis: Was above-average performance due to index selection, individual coin or token choice, or timing trades?
   b. Calculation of Excess Returns Relative to Risk Taken
3. Performance Tracking in Different Market Conditions: Analyzing performance in various market environments (bull markets, bear markets, high volatility periods) reveals whether a manager's success is consistent or primarily achieved in specific market conditions.
4. Consistency of Performance: Assessing the consistency of outperforming over time helps differentiate luck from skill, a generally complex task:
   a. Skills are relatively constant, while luck is not.
   b. Luck is more likely a factor in short-term success, while consistent long-term outperformance indicates skill.
   c. Comparing a manager's performance with peers managing similar portfolios helps determine if outperformance is skill-based or a broader market trend.
5. Qualitative Assessment: Evaluating the investment process, decision-making, and response to changing market conditions can also provide insights into their skill level.

Professional management is often described as a blend of science and art, where even among professionals, "heroic managers" make decisions based on skills, a "sixth sense" of intuition or extrasensory perception, and the courage to decide under uncertain conditions.

Much has been written regarding professional management, with a significant portion being unproductive. I have spent years developing computerized automatic strategies, primarily determining what published material does not work well enough when programmed and left to an algorithm's management process.

Engineering Combinations: Cash – Crypto - Stocks

As we previously discussed, the crypto ecosystem has a significant advantage over capital markets due to its broader range of profitability and higher rewards for each unit of risk taken. While we can emulate capital markets using crypto investments, the reverse is invalid. Nobel laureates created the CAPM model nearly half a century ago, which links risk and expected return Conclusions will be drawn from three portfolios, which include the following combinations:

1. Portfolio Comb1: This portfolio consists of 85% cash left uninvested in a bank account and 15% invested in the cryptocurrency ecosystem, using the broadest NWST1100 index for calculation. This strategy aims to execute a few transactions over five years, selling when prices are high and buying when they are low. During confirmed transitions between long-term bull and bear markets, adjustments to the ratio are necessary. This adjustment is based on **Market Breadth Indicators**, which provide signals for increasing or decreasing the crypto investment proportion in the portfolio. For example, during a bull market, the crypto allocation might rise to 30%, requiring a sale of some crypto assets to re-establish the 85:15 ratio. Similarly, the crypto allocation may drop to 10% at the end of a bear market, and additional crypto assets must be purchased to restore the original ratio.
2. Portfolio Comb2: This portfolio demonstrates how adding 10% of crypto investments to a portfolio otherwise composed like the SPX500 stock index can enhance the portfolio's characteristics. Including crypto assets, known for their high return potential and volatility, diversifies the portfolio and potentially enhances overall returns, albeit with increased risk.
3. Portfolio Comb3: This portfolio shows how adding 10% of crypto investments to a portfolio with 80% stocks can modify the portfolio's risk-return profile. The portfolio's overall risk is potentially reduced by keeping 10% of the portfolio in uninvested cash, while the crypto component offers the potential for higher returns.

Meas/ind2	DJW	SPX500	Comb1	Comb2	Comb3
Correlation	0.95	1.00	0.16	0.81	0.78
beta	0.76	1.00	0.17	1.06	0.98
Yearly SD	17.43%	21.65%	22.90%	28.23%	27.13%
Max DrawDown 5y	34.25%	33.92%	37.73%	47.12%	47.10%
Yearly Return	5.00%	8.88%	21.76%	12.48%	11.80%
Jensen's Alpha	-1.79%	0.00%	20.25%	3.08%	3.13%
Sharp ratio	0.29	0.41	0.95	0.44	0.44
Treynor ratio	6.54%	8.88%	128.27%	11.79%	12.09%

- *Standardized criteria are, as usual, applied to data for five years from 1.11.2018 to 31.10.2023. The data is collected in the databases at 2100News.*
- *The basis for comparison is the capital index SXP500.*

Let's summarize some conclusions that arise from the above table:
1. With the Comb1 portfolio, we confirm the thesis that with the broader spectrum of profitability of the crypto ecosystem, **we can make similarly risky investments as on the capital markets but achieve much better characteristics by standardized measures**. The Comb1 portfolio has a beta of only 0.17, similar risk expressed with standard deviation, and a similar maximum decline; the following lines in the column then put it on the winner's podium, as it has:
   a) **Two-and-a-half times higher annual return, 20.25% higher Jensen's alpha,**
   b) **Incredibly higher reward for the accepted unit of risk (Sharpe and Treynor ratios).**
2. The Comb2 portfolio shows why the world's largest capital manager, BlackRock, wants to obtain permission from the SEC for financial instruments (ETFs), allowing it to add Bitcoin and Ether to its portfolios for its clients invested in the capital markets. **If we add a tenth of crypto investments to such a portfolio, we increase the annual return by 40% and simultaneously increase the return per unit of accepted risk**. The column shows that this addition is justified and appropriately rewarded.
3. The Comb3 portfolio shows that if we want to maintain the portfolio's beta approximately as SPX500 has, we leave 10% of the money uninvested. Even this combination is better than a portfolio composed solely of capital investments.

What do market breadth indicators show us?

The behavior of the crypto market in a bearish trend is significantly different from that in a bullish trend, as the former reacts almost twice as much to macroeconomic conditions, much like risky capital investments. On the other hand, in a bullish trend, the correlation with the capital markets is weak, with Pearson's coefficient at 0.3, and other drivers of market growth come into play. Hence, it is unwise to assume that a trend will continue indefinitely without understanding why it is so and what could cause it to change. 2100News, a developer of indices, has devised **Market Breadth Indicators** based on index preparation data to provide a clearer picture of the state of the crypto

market and potential reversals of significant trends. Market breadth indicators can help investors anticipate trend reversals and assess current market conditions.

Bitcoin Halving

Bitcoin halving is an event that happens approximately every four years (or precisely every 210,000 blocks mined), which cuts the reward for mining new blocks in half,so miners receive 50% less Bitcoin for verifying transactions and adding them to the blockchain. The halving is part of Bitcoin's monetary policy, which is embedded in its code. Halvings continue until the maximum supply of Bitcoin has been mined, which is expected to occur around 2140.

The Bitcoin halving is a pivotal event in the cryptocurrency space, not just for Bitcoin itself but also for the broader crypto ecosystem, including altcoins. The surge in Bitcoin's value after the 2020 halving was notable, but many forget that the rest of the crypto ecosystem experienced even more dramatic and faster growth. Was this due to high expectations for the success of startup companies (ICOs), or was it a result of investors pouring excess money into other crypto investments that had not yet grown? This question will be crucial in the upcoming halving, which will occur in less than six months.

The publicity surrounding Bitcoin halving events can increase public interest in cryptocurrencies, potentially leading to increased adoption and investment in altcoins.While most major crypto projects are already in the development phase, the question remains whether they can generate the same level of momentum as they did four years ago. Past patterns are not guaranteed to repeat themselves to the same extent, as each cycle has its unique context and market dynamics.

Conslusion

The research provides valuable insights into the crypto market, offering a balanced view acknowledging its challenges and opportunities. The crypto ecosystem presents a unique and rapidly evolving financial sector. Our analysis underscores its potential as an emerging asset class suitable for inclusion in diversified investment portfolios. However, the inherent risks and volatility require a cautious and informed investment approach. This paper contributes to a more nuanced understanding of cryptocurrencies, offering insights for investors and financial analysts navigating this dynamic market, seeking to understand and leverage the complexities of the crypto ecosystem for informed investment decision-making. The upcoming Bitcoin halving is highlighted as a significant event that could shape the trajectory of the crypto market shortly.

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Digital assets are speculative and highly volatile, can become illiquid at any time, and are for investors with a high-risk tolerance. Investors in digital assets could lose the entire value of their investment.