Teza

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A risk-managed approach to crypto investing – diversified 100-coin basket

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Abstract

Digital assets are the newest asset class to garner the sustained attention of serious investors. One of the most significant challenges investors face in entering the space is choosing the right coin to invest in. The history of equities illustrates that *there is no single right choice*, and that current leaders will relinquish their top spots to newcomers, lose value, and ultimately disappear.

With the digital assets space poised for continued growth and the "winners" yet to be determined, a dynamically maintained portfolio of coins – an index-like basket – can provide diversified access to a rapidly growing market. An index can reduce an investor's overall risk, protect against the possibility of holding a dying coin, and ensure participation in an asset class with strong value creation. To execute on this value proposition, however, there has to be an investment product based on a properly diversified crypto index.

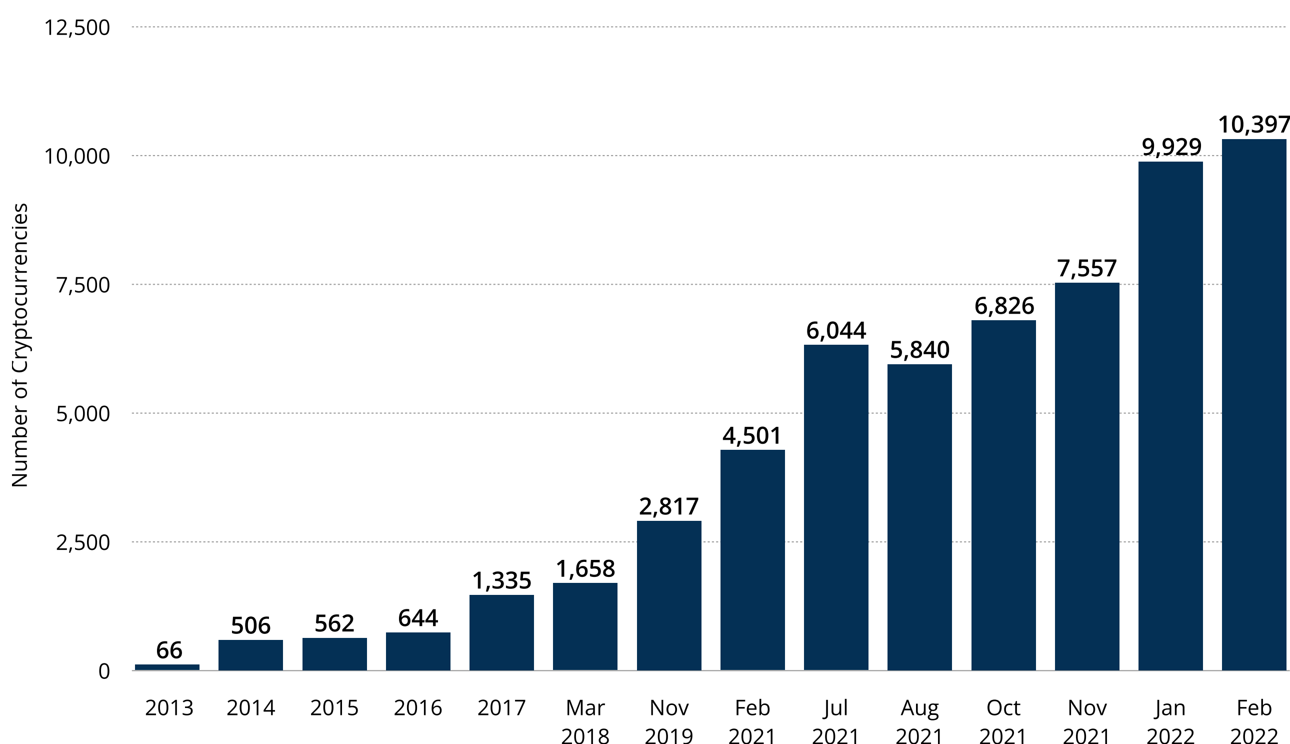
In this paper we introduce a diversified crypto investment strategy that offers exposure to the top 100 digital coins. The strategy dynamically and systematically adjusts to changes in the top 100 coins, offering investors diversified, risk-managed access to growth in the digital assets space.

The main problem of crypto investing

How do I choose the right coin?

Cryptocurrency investments and, more broadly, digital asset investments have taken the world by storm. Since the publication of Satoshi Nakamoto's paper in 2008 and the rise of Bitcoin, many more coins have sprung into existence. Bitcoin and Ether still maintain the largest market share, but newcomers are rising fast. As of Feb 2022 there are nearly 10,000 coins with quoted prices on over a thousand different exchanges (see figure 1).

Figure 1. Growth of cryptocurrencies worldwide from 2013 to 2022



Source: Statista

Global investors frequently speculate on what will become of different crypto coins. Which of the myriad in existence will take the torch from Bitcoin and Ethereum for the next five or ten years? Will Bitcoin vanish because of unsustainable energy consumption [1], or will it force a green energy revolution[2]? Will proof-of-stake coins completely replace proof-of-work coins? Will any of the meme coins survive their current valuations? Is there an existing coin that will define DeFi going forward? Is it better to invest in *security tokens* or *utility tokens*? If crypto gurus and enthusiasts cannot agree on answers to any of these questions, what hope does the average investor have?

At this point, most investors are forced to make a choice; investing in digital assets looks like playing roulette. How would you feel if you were one of the investors in OneCoin (ONE) or BitConnect (BCC)—just two examples of pyramid-scheme tokens, which were worth billions of dollars at one point? Or if you invested, after a lot of research, into a real web3-project crypto token at its peak that simply faded into obscurity because of the invention of a better technological solution?

At the same time, for a rational investor, it feels suboptimal to miss out on the biggest financial revolution of our lifetime just because selecting the right coin seems daunting. What is the solution then? Let's take a look at history and how similar issues have been solved in other asset classes.

Equities: a key historic example

Perhaps the closest parallel to Bitcoin in equities is the first ever publicly traded company: the Dutch East India Company (*Vereenigde Oost-Indische Compagnie*, or VOC), a megacorporation founded in 1602. Similar to Bitcoin, it started a new asset class: equities. Its 17th-century institutional innovations and business practices laid the foundations for the rise of giant global corporations in subsequent centuries. A pioneer, a trailblazer, and a harbinger of groundbreaking innovation—just like Bitcoin and Ethereum. VOC is believed to be the largest company to have ever existed, as big as Bitcoin and Ethereum look in the crypto space now. However, the Dutch East India Company dissolved in 1799 not being able to adapt to socio-economic changes in Europe and to the shift in power balance on the continent.

Similar to the VOC, Bitcoin has opened our eyes to a new way of business through a decentralized platform and a distributed ledger. Initially introduced as a currency or a new payment method, Bitcoin paved the way for novel distributed technologies, decentralized networks, and *many new coins of the future*.

Could the holders of VOC shares predict the existence of JPMorgan or General Electric, let alone Google and Amazon? Could they have predicted that the world would enter the nineteenth century *without* VOC? No—and neither could current ho*DL*ers of Bitcoin picture the world *without* Bitcoin in 25 years.

And yet, the Earth kept on rotating without the Dutch East India Company, just like it would without Bitcoin or Ethereum in the future. However, one thing is certain at present: the crypto space and digital assets are here to stay.

So, we return to the key question: what is the best way to invest? The quandary is similar to that of a tech enthusiast who in 1996 wanted to invest in the largest search engines: Yahoo!, Magellan, Lycos, Infoseek, and Excite. What was the right investment choice? Many investors did pick one over other, likely with solid reasons for doing so. And then, of course, came Google. So, very often, the right choice in a dynamic and competitive space is the one that is coming and not the one that is in front of investors at present.

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[1] https://digiconomist.net/bitcoin-energy-consumption/
[2] https://www.weforum.org/agenda/2021/06/how-blockchain-and-cryptocurrencies-can-help-build-a-greener-future/

Fortunately for crypto investors, traditional finance has already figured out how to solve the prediction problem. Again, we just need to look into the world of equity investments. The solution is index investing.

The first stock index—the Dow Jones Industrial Average—was developed by Charles Dow in 1896. This index averaged the top 12 stocks in the market, and its level was calculated by taking all of the stock prices (which in retrospect was not ideal because different companies have different—and non-constant—numbers of shares). Yet, it has survived more than a century, growing from its first published value of 40.94 on May 26, 1896, to a staggering 36,769 at the beginning of 2022. The original 12 companies in Dow Index were American Cotton Oil, American Sugar, American Tobacco, Chicago Gas, Distilling & Cattle Feeding, General Electric, Laclede Gas, National Lead, North American, Tennessee Coal and Iron, U.S. Leather, and U.S. Rubber. None of these companies remain in the index today, and only one (General Electric) survived at all. While the individual companies came and went, sky-rocketed and crashed, the index steadily moved up.

From this parallel, we come to the necessity of a crypto index solution for investors who want to allocate a portion of their portfolio to the digital assets space. A crypto index, similar to an equity index, would answer the question of which coin to buy. And the only answer that will satisfy all theories and opinions is simple: buy all of the coins. Similar to an equity index, a crypto index will keep on moving, while the individual coins will come and go.

There have been multiple attempts to develop a crypto index in the past few years. The “king” of indices—S&P— created several of them[3].

The true value for an actual investor, however, is a tradable instrument based on a diverse and clearly defined index.

Determining the appropriate index strategy to manage a 100 coin portfolio

Key value proposition

First, we should define a set of principles for an index to ensure the delivery of value to investors. Based on the discussion above, the following describes the values an index delivers to buy-and-hold investors:

1. Participation in the growth of the crypto market through a broad portfolio with minimal exposure to the idiosyncratic volatility of any coin
2. Participation in the rise of a next “megacoin” ensured by frequent index rebalancing
3. Automatic removal of losing assets from an investor’s portfolio through index rebalancing

Let us illustrate these points in order. The first point is self-explanatory and well studied. One of the founders of Modern Portfolio Theory, Harry Markowitz, noted that “Diversification is the only free lunch in investing.” Or as your grandma would say: “Don’t put all your eggs in one basket.” Any individual bet can be ruinous, but as long as the market is moving forward there is safety in numbers.

We have already indirectly discussed points #2 and #3 when we reviewed the history of equity indices. None of the individual companies survived the test of time. And yet, the index kept moving up.

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[3] https://www.prnewswire.com/news-releases/sp-dow-jones-indices-launches-sp-cryptocurrency-broad-digital-market-index-301332698.html

Furthermore, we venture to guess that the individual coin turnover in the crypto index is likely to be much faster than that in equities. The birth and death of a digital token is very easy to predict as compared to the fate of a company with significant physical assets (human workers, equipment, and buildings). A few changes in the open-source code can create a new token and make an old one superfluous. As of February 1, 2022, the 100 coin index has replaced 32 coins that were present in it just seven months ago.

In traditional financial markets, there are several types of tradable instruments that allow investors to track an index. These instruments can be *active*, such as mutual funds or hedge funds that are loosely based on an index, or *passive*, such as ETFs and futures contracts that are tied to an index by a set of rules.

Let us define in detail the parameters and rules for index composition and rebalancing.

The Diversified Crypto Index

Parameters of the index

Here, we will set the rules and principles in accordance with value propositions #1-3 stated above.

1. At any point in time, the Diversified Crypto Index will contain the top 100 digital coins by capitalization
2. The Diversified Crypto Index does NOT include:
   - 2.1. any coin directly tied to any FIAT currency
   - 2.2. any coin that has been traded for under 3 months
   - 2.3. any coin with average trading levels (normalized by capitalization) over the previous month that are less than 5% of the median trading level of other coins
3. The Diversified Crypto Index is a capitalization-weighted index with the maximum weight of any coin capped at 10%.
4. The index is rebalanced on the first day of each month. During each month, the number of coins for each constituent in the index is fixed.

Let us explain these choices:

1. The choice of 100 coins offers significant diversity to an investor, while maintaining a high level of liquidity. All major sectors in digital space have representation in a 100 coin basket. A smaller number is likely to sacrifice an investor's opportunity, but a larger number would render the index composition economically untradable.
2. Certain coins violate the value rules set forth above. Here, the index exclusions are explained:
   - 2.1. Crypto investors buy an index to get exposure to the growth and appreciation of cryptocurrency vs their local currency (whether USD or another). Buying USD coins for an American investor is not going to lead to increased growth or appreciation. For an investor from another country, buying USD coins may be attractive for other reasons but not as a bet on the growth of the crypto industry. Likewise, if an RMB-tied coin gains a lot of weight in the cap table, it will also be excluded since for a Chinese investor it represents exposure to nothing; for non-Chinese investors, it represents an investment in Yuan appreciation rather than cryptocurrency. As such, FIAT-tied currencies (sometimes referred to as stable coins) are excluded.
   - 2.2. Similar to the rules of equity indices in which a “hot” IPO name does not just get into an index but instead is “wetted” longer by the market, this principle protects an index investor from a rush rally that may be reviewed and retraced by the market. Even in a world of non-stable cryptocurrencies, investors are seeking price stability. And while an initial fast rise can be missed, an investor with a broad portfolio should not sacrifice much in the way of returns, as a coin with small initial capitalization would have a relatively low

weighting in the index. If the coin truly becomes promising, it will keep delivering value in the index for years to come.

2.3. This is an additional measure of investor protection. A coin with a few fake trades or one that is dying does not belong in an index or an investor's portfolio.

3. Relying on wisdom from traditional finance, the 10% maximum is intended to ensure proper diversification. As the market grows and additional mega-coins crop up, this limit will become less important. However, at the current state of Bitcoin and Ethereum dominance, such a limit is necessary to provide the benefit of diversification.
4. The choice of rebalancing frequency is dictated by two factors: the overall agility of the market and potential trading costs. The frequency of the rebalancing should be high enough to be responsive to the fast pace of the digital market but not so high as to generate noisy trading in the bottom portion of the portfolio. When we examine the index composition month over month, it is easy to see that the crypto market is much more dynamic than other asset classes. In 2021, an average of 8 coins left and new coins entered the Diversified Crypto Index every month. Monthly rebalancing aims to capture these rapid changes without generating excess trading costs.

Comparing 100 coin strategy to other long-only crypto strategies

Bitcoin

The most sought-after cryptocurrency on the market is Bitcoin, and for a good reason. Like every product that is successful in establishing a monopoly over its market, Bitcoin was the first of its kind. It should, of course, be noted that maintaining an edge over other cryptocurrencies doesn't automatically make Bitcoin a safe investment. Long-term investors are cautioned against making an allocation towards Bitcoin. A broader set of coins - a new digital asset class - that represents the emerging world of web3 is a more suitable alternative for the long-term investor.

By providing exposure to "altcoins," the index significantly outperforms BTC. For example, during the period of Jan 2021 to Jan 2022 Bitcoin made 61%, while a broader basket (including 10% of bitcoin) - the Diversified Crypto Index - generated returns of 367%.

Figure 2. DCI index performance vs BTC

Source: Teza Analysis

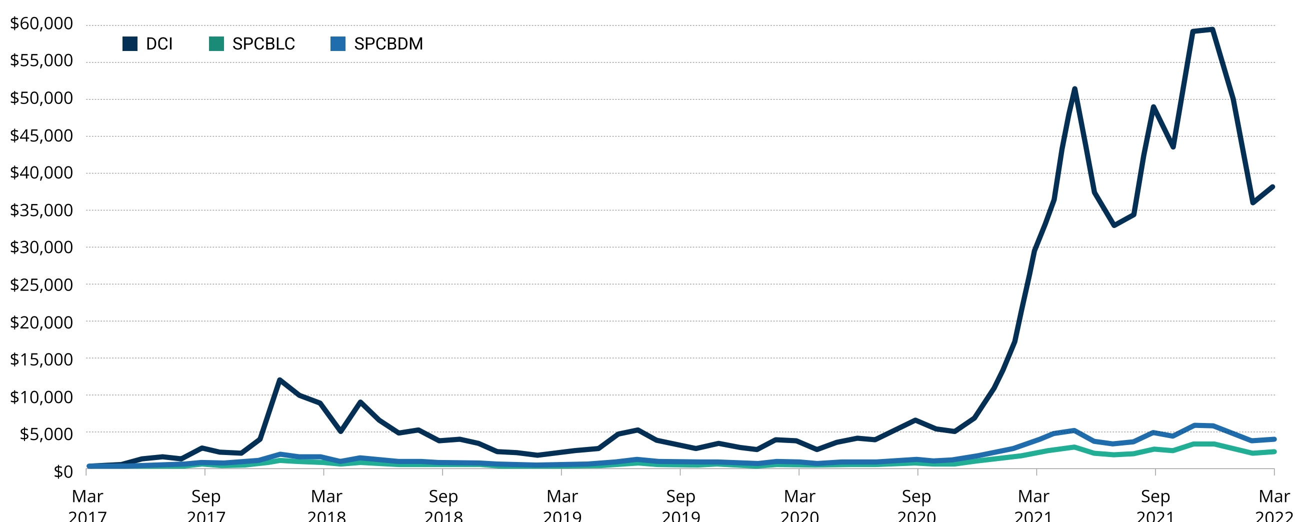
Altcoins driving performance does not mean that the index is substantially riskier than a megacoin investment. The beta (correlation) between altcoins and megacoins is significantly different in down markets versus up markets. During a bear market, drawdowns in the Diversified Crypto Index are (while likely somewhat larger) similar to drawdowns in BTC or ETH. Yet, in an upmarket, the pace of altcoin growth - e.g., Solana (10,000% increase in value in 2021) - is significantly higher than the pace of megacoin growth.

S&P Large Cap Crypto, and S&P Broad Digital Market Index

Let's examine the Diversified Crypto Index performance vs. similar index products containing broad enough baskets of crypto assets. Is the choice of 100 coins a correct representation of the current crypto market?

S&P introduced their sets of crypto indices in July 2021. The S&P Broad Digital Market Index (SPCBDM) contains over 240 coins, while the S&P Cryptocurrency Large Cap Index (SPCBLC), a subset of SPCBDM, includes around 30 assets with substantial capitalization.

Figure 3. The Diversified Crypto Index performance vs SPCBLC and SPCBDM



Source: Teza Analysis

The significant outperformance of 100 coin strategy can be explained by the difference in index construction.

- Frequency of rebalancing: S&P rebalances coins every quarter, while the Diversified Crypto Index rebalances every month.
- Coin inclusion: S&P has set stricter rules for a coin to be included in the index. For example, the requirement for a clear White Paper presented on a coin's website. The Diversified Crypto Index more closely mirrors the current crypto market (i.e., the Index does not exclude memecoins).
- Weighting: The 10% weight limitation placed on each coin within the index makes a significant difference in performance attribution between the Diversified Crypto Index and S&P's indices. The latter would be dominated by the performance of a single coin - Bitcoin.

To emphasize the last point: we believe that a tilt toward "equal weighting" serves a dual purpose – providing diversification and generating excess returns. This exposes the index to a heavier weighting towards smaller digital coins relative to their current market capitalization. From the operational side, the rapid movement of coins in and out of the index creates certain difficulties for the coin manager: it is critical to ensure timely liquidity sourcing and secure coin storage with a custody provider. But in the end these choices **ensure the delivery of the index value proposition (described above) to investors.**

Strategy Implementation

Today, there are no retail investment products that offer exposure to a digital coin index. As the regulatory landscape matures and clearer guidance is provided, we expect a number of retail products to come to market that give investors the diversified index exposure that is lacking today. It is not clear, however, when such products may become available to the global investor community.

The only way such a strategy is available for implementation today is through active coin management.

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