How and Why Institutional Investors Should Allocate to Bitcoin

Executive Summary

This research paper aims to guide a potential institutional investor into why and subsequently how an allocation into Bitcoin should be made. The case is strong to include Bitcoin in institutional portfolios. Leaving aside arguments such as digital gold, inflation hedging, store of value, and medium of exchange which are all well-trodden paths and which I will not deal with here. Rather I want to concentrate on the asset protection and portfolio enhancement properties of Bitcoin, which are of prime consideration to Institutional investors.

Institutions should hold Bitcoin because;

- **It protects against asset debasement, which is undeniably occurring in the global economy.**
- **It improves portfolio risk adjusted returns.**

Institutions have very specific requirements when considering the implementation needs of a Bitcoin mandate. These needs can be thought of in terms of The Maslow hierarchy of needs; therefore any implementation must satisfy all levels of the implementation pyramid;

- **Security**
- **Compliance**
- **Reporting**
- **Best Execution**
- **Research**

Once a decision has been made on proceeding with a Bitcoin mandate, implementation can be achieved via a number of avenues;

- **Exposure to Physical BTC**
- **Exposure to products that have exposure to Bitcoin**
- **Alternative Hedge Fund Investments**
- **Wider exposure to crypto**

In the future it is highly likely that the implementation of regulated blockchain will transform the ability of Institutions participating in the nascent digital space.

Bitcoin clearly has a place in any institutional portfolio. The macro backdrop could not be better. But it is important to realise this should be a small portfolio contributor, and that for now it will trade as a risk-on asset and will probably not protect against large scale equity declines until it becomes more mature and it's store of value becomes a widely accepted property.

Nevertheless the empirical evidence supports a small allocation to BTC and there are a variety of implementation avenues available that would pass the Institutional "Maslow" test.

How and Why Institutional Investors Should Allocate to Bitcoin

"Having an understanding of the 'why' will help with having an understanding of the 'how'."

— Bobby Darnell, Time For Dervin - Living Large In Geiggityville

Digital assets have exploded into the public consciousness in the last several years. Bitcoin has a market cap of over $1 trillion and Ethereum is approximately half of that. All digital tokens and coins combined have a market cap of approximately $2.6 trillion. Yet this astronomical growth has been primarily fuelled by retail, HNW and family office investors. Institutional investors have yet to get significantly involved, although 2021 saw a significant increase in institutional buying in particular in Bitcoin, where Institutional investors now hold approximately 8% of bitcoins in existence.[1]

So why has arguably the fastest and highest performing asset class in history been overlooked by Institutional investors? The answer is twofold. Firstly, the argument on the validity of bitcoin rages on. Many high profile respected investors continue to argue that Bitcoin is a "tulip" and goes to zero. That the twin arguments of a store of value and a medium of exchange are flawed and spurious.

Secondly and more importantly however, Institutions, particularly the largest and most sophisticated are subject to a form of Maslow's hierarchy of needs when investing. The barriers to entry are considerably higher to a Sovereign Wealth or Pension Fund than they are to a family office. These barriers are particularly strong where digital assets are concerned, and the question of "how" to participate for these investors, is in many ways even more important than the "why".

This paper briefly attempts to frame these two questions and provide a roadmap for institutional investors interested in looking at the digital asset space, and Bitcoin in particular. So let's start with the "why", as understanding that will greatly help with the understanding of the "how".

[1] https://learn.bybit.com/crypto/who-owns-the-most-bitcoin/

“To ask, 'How do you do it?' is already starting off on the wrong foot. When reaching for the stars, there does not have to be a 'how' if there is a big enough 'why'.”

– Criss Jami, Diotima, Battery, Electric Personality

A. Rationale for Institutional Investment in Bitcoin

Why should an Institution invest in Bitcoin? A well-trodden path including a store of value digital gold, pristine collateral, a means of payment, foundation of a new financial system etc. etc. The list goes on. But I want to focus on something more tangible. Firstly the direct implications of what Bitcoin brings right now in the current world economic cycle, and secondly by the impact it could and would have on institutional portfolios by including BTC in the light of the broken 60/40 model, which has clearly been discredited as bonds are trading at or close to zero percent, with very little likelihood of that changing with the shadow of Yield Curve Control looming large.

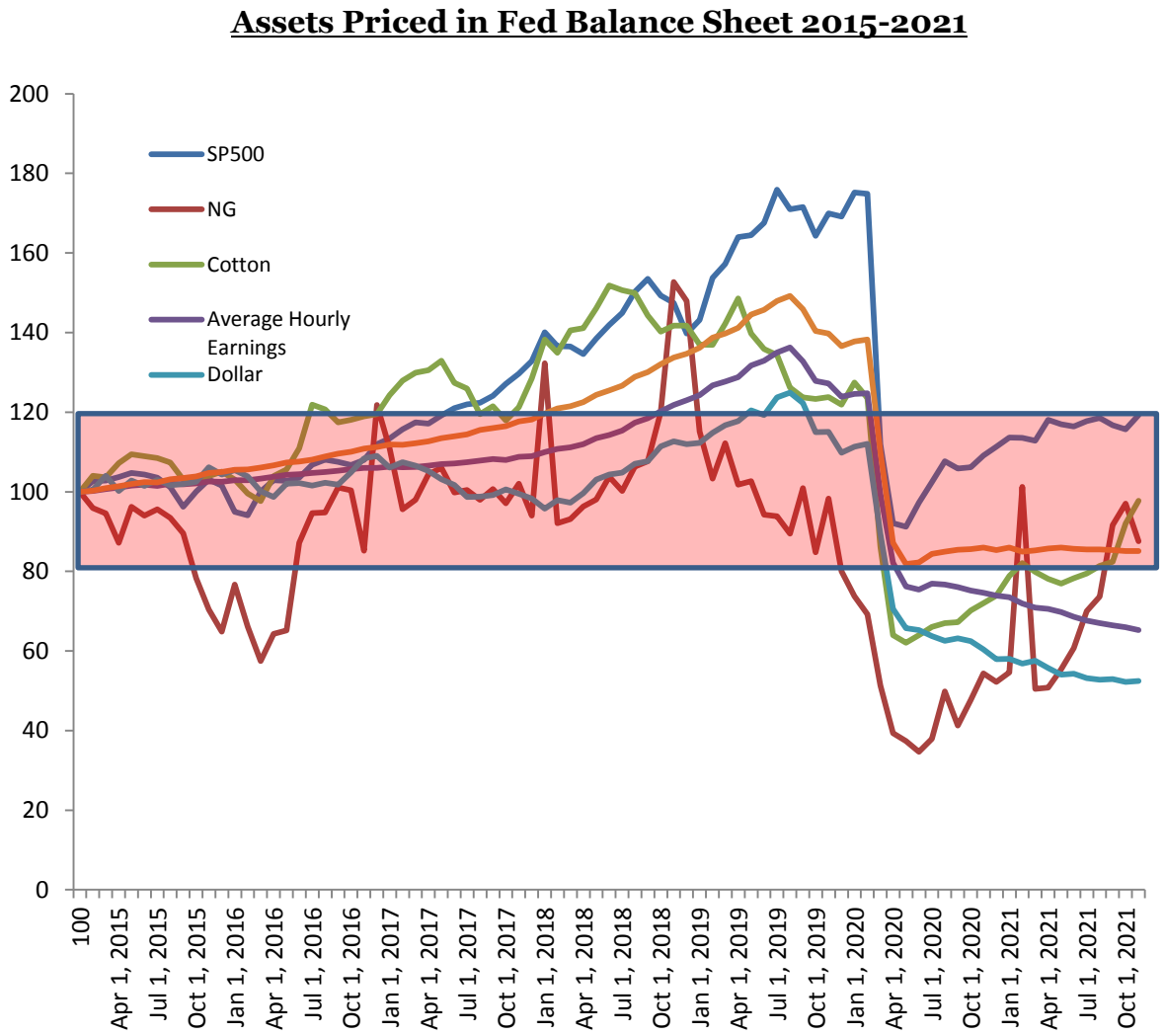
1. Inflation versus Debasement

The debate rages on about whether we are experiencing inflation, and if we are, whether it is temporary or lasting. Now why is there any debate about this? In the past inflation was a given. Central banks reacted to it, and policy was conducted in definite knowledge of the risks and issues that were being faced. That is no longer the case. Why is that? Well the issue is that some prices are going up, in many cases by a lot, and others are not reacting or even falling. Technology has a role to play in this, but essentially I believe the world is looking at this issue through the wrong prism.

In 2020 the Federal Reserve embarked on the biggest expansion of its balance sheet in history. The narrative follows that all this additional money printing found its way into equity markets, and has created an extraordinary asset bubble that at some point will burst. P/E ratios are at all-time highs, valuations are extreme, and this monetary printing is resulting in accelerating price inflation.

Since 2015, and especially since 2020 prices in equities, energy, real estate and many other goods have exploded in value. That is undeniable. But only when you look at them when priced in USD’s. Imagine that the purchasing power of a good is not given by the denominator being the USD, but by the Fed Balance Sheet instead, which is the purest version of money printing there is. Very quickly, it is going to become apparent that we are not seeing asset price inflation at all. None of the traditional asset classes are experiencing any kind of bubble in fact. The only bubble we have is within the Fed Balance Sheet itself.

Consider this graph;

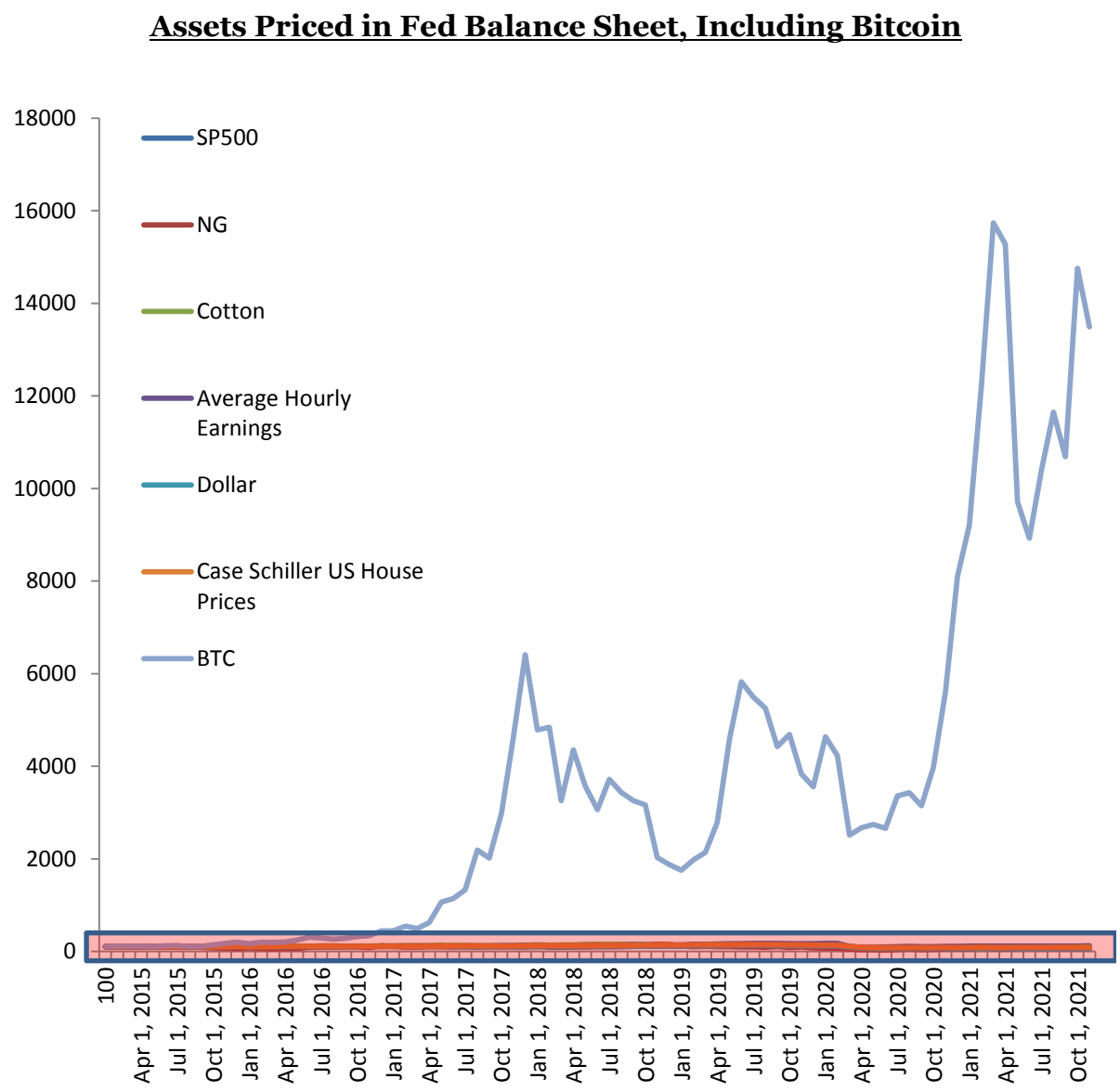


It is blindingly obvious that since 2015 Commodities, Equities House Prices etc. have been merely holding their own against the rapid increase in the Fed Balance Sheet. That makes sense. These are limited supply assets. A rise in the denominator is merely resulting in a rise in the numerator, and the purchasing power of these assets are holding steady

Compare that to the unlimited supply assets. Wages and the USD have been absolutely pummelled in the last 6 years. The global pricing denominator the dollar has fallen by 50% and wages have fallen by 40% when priced against the Fed Balance Sheet. What does this all mean? It means that quietly, stealthy and irreversibly, people's purchasing power is being eroded, and the ability to purchase fixed supply assets such as housing is dropping exponentially.

This has profound implications. It is at the heart of why we have a pension's crisis. A whole generation (probably two) are going to be unable to buy a home. Assets with unlimited supply such fiat currency are being debased, and this is just not showing up in the traditional inflation and currency valuation metrics.

Therefore why hold Bitcoin? Here is why;



This is the same graph as before but with Bitcoin overlaid. Bitcoin is the only asset in the world that has outpaced the growth of the Fed Balance Sheet, and materially increased its purchasing power. Therefore, if you are an Institution with a Fiduciary responsibility to protect the future wealth of your investors, pension holders etc. then Bitcoin is essential in your portfolio.

I view diversification not only as a survival strategy but as an aggressive strategy, because the next windfall might come from a surprising place. "

Peter Bernstein

2. Improved Portfolio Risk Adjusted Returns

Traditional investment portfolios have historically been built around the 60/40 portfolio model. A 60% allocation to equities and a 40% allocation to fixed income. The theory being that in market drawdowns, and flights to quality, the fall in bond yield associated with equity market falls will somewhat mitigate losses and improve risk adjusted returns.

In the current ultra-low interest rate world, it is fair to say that the 60/40 portfolio has been discredited. Bonds do not provide protection when yields re close to zero, especially when Central Banks chosen policy response is Quantitative Easing. This has been discussed and researched ad infinitum over the last number of years.

A variety of modifications to the 60/40 rule have been proposed, the most common being the addition of some form of alternatives. One common type of alternative is Blackrock's addition of long short non correlated equity returns as a diversifier.[2] So I have analysed the absolute returns on four different portfolios since 1 January 2015 and calculated the risk adjusted returns to directly compare them. I have not only used the Sharpe Ratio and a risk adjustment measurement but also the Omega Ratio which is a far superior measurement. The Sharpe Ratio considers the simple ratio of return versus volatility whereas the Omega ratio considers all moments and gives a much more detailed evaluation of the distribution of returns utilising higher moments and evaluates the benefits of gains as opposed to losses.

The Omega Ratio is defined as[3];

$$\Omega(r) := \frac{\int 1 - F(x)\, dx}{\int F(x) dx}$$

Where;

Ω = Omega

r= return threshold

F=cumulative probability distribution

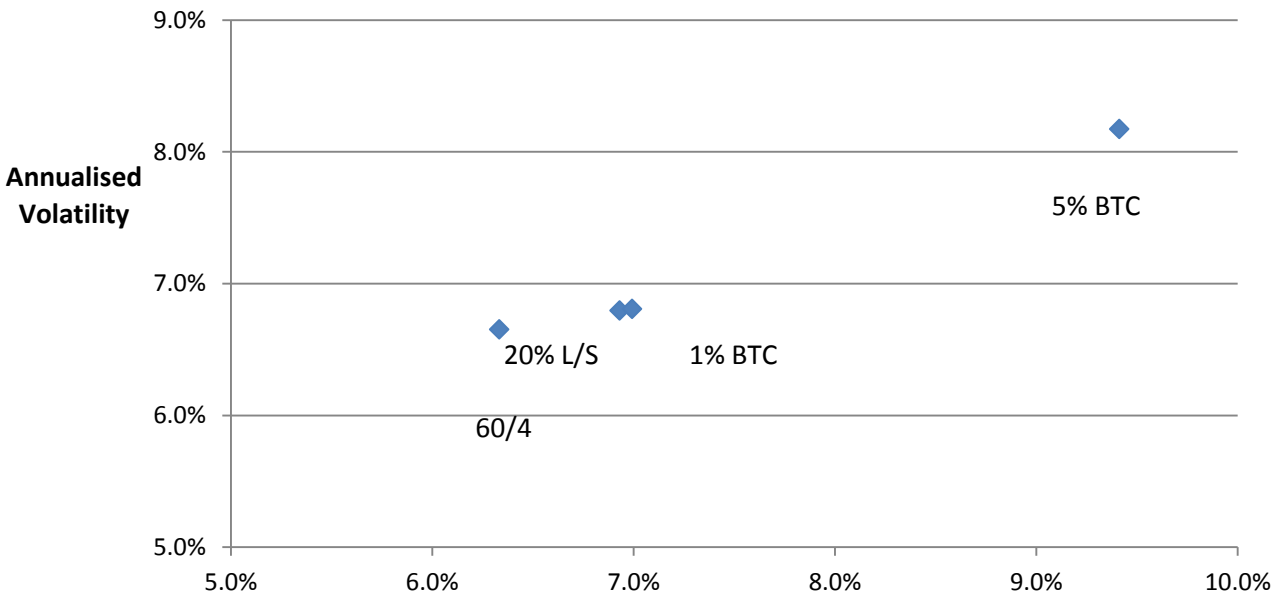
[2] https://www.blackrock.com/us/individual/insights/60-40-portfolios-and-alternatives
[3] https://www.actuaries.org.uk/system/files/documents/pdf/keating.pdf

Comparison of Different Portfolio's Constructed Around 60/40

- Traditional 60/40 Portfolio
- Alternative Portfolio 55/25 with 20% allocation to long short equity
- Alternative 59.5/39.5 with 1% allocated to Bitcoin
- Alternative 57.5/37.5 with 5% allocated to Bitcoin

	Annualised Return	Annualised Volatility	Sharpe Ratio	Omega Ratio
Traditional 60/40 Portfolio	6.3%	6.7%	0.703	2.24%
Alternative 55/25 with 20% L/S	6.9%	6.8%	0.776	2.23%
Alternative 59.5/39.5 with 1% BTC	7.0%	6.8%	0.784	2.30%
Alternative 57.5/37.5 with 5% BTC	9.4%	8.2%	0.949	2.98%

Annualised Return v Annualised Volatility



As can be clearly seem, Bitcoin has a place as an alternative allocation in any Institutional portfolio that is looking to improve on the outdated 60/40 portfolio. Adding 1% BTC improves even the Blackrock portfolio of adding Long/Short equity on both ab absolute basis and on a risk adjusted basis. Adding 5% BTC has a very material difference, dramatically improving return and risk adjusted returns.

"It is a very important and lucrative skill one can have that allows them to be able to see into the future and act toward it in the present."

– Mohith Agadi

B. Specific Institutional Considerations of Implementing a Bitcoin Mandate

Having established that Bitcoin holds an important part of any institutional portfolio, the question then is how to implement a strategy to hold Bitcoin. This is not as easy a question to answer as it sounds. However we can broadly split this into;

- Exposure to Physical BTC
- Exposure to products that have exposure to Bitcoin
    - Bitcoin Trust (Greyscale)
    - ETFs
    - Equity
- Alternative Hedge Fund Investments
    - Pooled Investment Vehicles
    - Managed Accounts
- Wider exposure to crypto
    - DeFi
    - NFTs
    - Metaverse
- Regulated Blockchain

However before we consider the practical applications of how to implement an investment strategy there are specific considerations that apply to Institutions that do not apply to High Net Individuals or Family Offices. The larger the institution the more structure that surrounds the investment process. We could think of this as something akin to Maslow's hierarchy of needs.

Security

A primary consideration for Institutional Investors is security. In the Fiat world counterparties are regulated. ISDAs are in place, and a well-established liquid, embedded financial system ensures efficient clearing of business. Institutions must consider aspects such as credit, counterparty and jurisdictional risk when dealing with exchanges. Coins need to be stored safely, with recovery protocols in place, with multi signature or sharded keys.

Compliance

Compliance is a huge consideration for Institutions, and in reality at the present time it rules out participation in areas of crypto such as DeFi, NFT's and the Metaverse, except when gaining exposure through equity participation in an exposed company.

The regulatory framework is much too detailed to cover here, and varies from jurisdiction to jurisdiction, however in general there are no restrictions on purchasing and holding Bitcoin as long as the counterparties involved are approved for such things as AML and KYC. The challenges come when dealing directly on block chains and in protocols such as DeFi, NFTs and the Metaverse, which in general use the ERC-20 protocol, where no such safeguards are in place. Some steps are being taken by companies such as Fireblocks that are patching areas to allow only AML and KYC counterparties top participate, but the situation is far from ideal. The long term solution is Institutional participation via a fully regulated blockchain, where ID verification is embedded at the protocol level and smart contracts can be put in place to ensure compliance with regulations surrounding things like accredited investors. That is very close to being achieved however via the Concordium blockchain, and more on that later.

Reporting

At the BTC exposure level, reporting is not such a large consideration, but again, yield enhancement strategies via liquidity pools, airdrops etc. etc. can become problematic.`

Best Execution

Best execution is usually a requirement amongst large institutional counterparties. Exchange arbitrage is still alive and well, and while a single counterparty of execution desk can be held to account on best execution, liquidity is still an issue, and needs to be accounted for in any risk management models being built for reporting. Very large acquired positions and not going to be able to be unloaded without significant market impact. In addition margins can widen suddenly, and gapping markets still and do occur. Position sizing needs to adequately addressed by any Institution prior to mandate execution.

Research

Institutions require access to timely and accurate information to research the markets. Fundamental blockchain analysis is now available, either directly by running a node, or indirectly by subscribing to providers of this information. The research market into crypto has deepened considerably in the last twelve months.

When you translate a dream into reality, it's never a full implementation. It is easier to dream than to do.

Shai Agassi

C. The Implementation of a Bitcoin Mandate

From an institutional standpoint, there are four main ways to get exposure to Bitcoin. Which avenue is chosen really depends on the specific requirements and regulatory and compliance **considerations.**

1. **Direct Asset Exposure**

    a. **Purchasing Physical Bitcoin**

Institutions can buy BTC directly . Many traditional institutional counterparties facilitate this already. Fidelity for example offers an execution capability to on-boarded clients. This capability meets all required KYC and AML requirements. Dedicated crypto institutions obviously cater to this type of flow within a KYC and AML framework as well. Entities such as Cumberland, Galaxy Digital, Kraken, FalconX, Bitcoin Suisse all are able to purchase physical BTC for on boarded and verified clients.

In addition there is a quiet but real peer to peer OTC market that trades at a discount for Institutions that have large volumes to purchase. Documentation for such transactions is required and full KYC is performed between buyers and sellers in advance of any transaction.

Exchanges at present are not a viable option. Liquidity is still not very good, and KYC and AML considerations would prevent most institutions from operating on exchanges, let alone taking account of the associated credit, jurisdiction and counterparty risks.

Buying physical BTC comes with its own issues however. The coins need to be securely stored in cold offline wallets, with recovery protocols in place and sharded keys or multi-signature protocols. However, again companies such as Fidelity offer institutional grade security with secure, vaulted cold storage, physical cyber and operational controls, multi-level safeguards with dedicated on boarding and support.

    b. **Exposure through Derivatives**

The derivatives market is growing at an accelerating rate. Perpetual futures, futures, options and even NDF's are available. Investment banks such as Goldman Sachs[4] offer direct bitcoin futures via Galaxy Digital and of course Bitcoin futures are available on the CME. Futures are extremely prevalent on various exchanges, but again from an Institutional point of view, these exchanges are probably off limits for now.

[4] https://www.cnbc.com/2021/06/18/bitcoin-goldman-sachs-ramps-up-trading-in-partnership-with-mike-novogratz-galaxy-digital.html

B2C2 in November 2021 transacted the first NDF in Bitcoin[5] with QCP Capital, and that market will likely explode in 2022 as it has the unique advantage of alleviating any transactional and risk management concerns, while giving exposure to the spot market without having to take physical delivery of the Bitcoin.

2. Indirect Asset Exposure

a. The Greyscale Trust

The Greyscale Trust is a pooled investment six month lock up Trust. It is described as an ETF but it is not. While not being a traditional ETF assets are backed by physical bitcoin and the fund is liquid and trades on OTCQX. It is enormous. By far the biggest investment vehicle for BTC in existence. It has $27bn USD under management which is around 3% of all circulating Bitcoin.[6] However as an investment vehicle it is still not ideal. It charges a 2% expense ratio fee and because of the unique nature of the Trust, with a six month lock-up, its share price trades at a premium or a discount to NAV. Up until February 2021 this was at a significant premium which allowed the Trust to be arbitraged, but since February 21 it has been trading at an ever increasing discount to NAV. Currently as at January 2022 that discount is -26.5%.

Daily Greyscale Premium/Discount to NAV

b) Traditional ETF's

On October 19 2021, the Proshares ETF debuted on the NYSE and became the quickest ETF to ever reach $1bn in assets. This was followed in the US by the VanEck ETF and the Valkyrie ETF.

The major issue with approved ETF's in the United States however is that these are all futures based ETF's and are not linked to the underlying spot price, albeit indirectly through the futures. 2022 will however in all likelihood see the authorisation of a spot based ETF in the United States.

[5] https://www.marketsmedia.com/execution-of-crypto-ndf-monumental-for-institutional-adoption/
[6] https://grayscale.com/products/grayscale-bitcoin-trust/

In Europe there are many ETF's (or ETP's as they are called in Europe), where ONLY institutional investors can get exposure to Bitcoin. A good example is the Invesco Physical Bitcoin ETF.

The Invesco Physical Bitcoin ETP is listed on Deutsche Börse Xetra, Germany's stock market for equities and exchange-traded funds, under the symbol BTIC, and tracks the CoinShares Bitcoin Hourly Reference Rate Index, minus a 0.99% annual fee.[7] The product is targeted solely at institutional investors looking to gain exposure to Bitcoin who may not be willing or able to invest directly.

In Europe investors can now choose from 26 ETNs from seven providers on Bitcoin, Bitcoin Cash, Cardano, Ethereum, Litecoin, Polkadot, Solana, Stellar, Tezos, and TRON as well as a Crypto Basket. With an average monthly order book turnover of around one billion euros, Deutsche Börse with Xetra is the European market leader in crypto ETN trading.

The product offering in Deutsche Börse's ETF & ETP segment currently comprises a total of 1,745 ETFs and 224 ETCs and ETNs. With this selection and an average monthly trading volume of around €17 billion, Xetra is the leading trading venue for ETFs and ETPs in Europe.

c. Investments in Companies with Bitcoin Exposure

Traditional equity purchases are a possibility to consider. Obvious candidates include Microstrategy. Michael Saylor's company which owns over $5bn of bitcoin, Coinbase, Galaxy Digital, Voyager a crypto brokerage, Marathon and Hut 8 both miners. Specific sector exposure is also available .DeFi exposure is possible through the Bitwire Asset Management DeFi Crypto index fund (BITW)[8] , NFT's via the Bitwise Blue-Chip NFT Index Fund[9] and the Metaverse via the META ETF[10]

3. Alternative Investments

a. Pooled Investment Vehicles and/or Managed Accounts.

The Fund Management industry is booming in the crypto space. There are currently over 850 crypto related funds, the vast majority of which are under $100m in AUM. None thus far however have achieved true escape velocity so the ability to invest significant capital in hedge fund type strategies is limited by capacity. These funds are set up in the traditional way, typically in an offshore or crypto friendly jurisdiction. Fees are very typical, but management fees tend to be lower than fiat based funds, and performance fee's higher.

[7] https://www.deutsche-boerse-cash-market.com/dbcm-en/newsroom/press-releases/First-Crypto-ETN-from-Invesco-launches-on-Xetra-2852246
[8] https://bitwiseinvestments.com/crypto-funds/defi/
[9] https://bitwiseinvestments.com/crypto-funds/nft/
[10] https://www.roundhillinvestments.com/etf/meta/

These strategies can be broadly classified into five types;

1. **Index Funds**

   These are funds tracking either a particular coin or token or a mix, or an asset weighted basket. There are a myriad of different flavours and pure market tracker products exist as well.

2. **Exchange Arbitrage**

   Despite an explosion of hedge fund and asset management businesses that take advantage of discrepancies across different global exchanges, these products are very popular, and the discrepancies show no signs of being arbitraged away. A typical exchange arbitrage fund would expect to make about low to mid 20% annually with minimal risk.

3. **Yield Enhancement**

   These are funds that are providing passive bitcoin holders with yield enhancement strategies. These strategies range from staking and lending right the way through to funds like my own that trade extremely sophisticated strategies exploiting the inefficient volatility surface that exists for both Bitcoin and Ethereum. Yield enhancement is also available via DeFi protocols, but I have classed that as an alternative type of fund, as investing in these products is much harder for Institutions to participate in, as DeFi, NFT and the Metaverse would in all likelihood fail the "Maslow Hierarchy of Needs" tests outlined earlier.

4. **Alternative Funds**

   These are funds that participate aggressively in Decentralised Finance, Liquidity pools, NFT and the derivatives thereof, metaverse investing

5. **Venture Funds**

   These are akin to traditional Venture Capital Funds. Investing in start-ups, and very often specialised into a specialised sector.

Managed account are available to access a very wide range of alternative digital hedge fund strategies via entities such as copper.co who on-board managers and give investors a managed account platform to allocate to them.[11]

[11] https://copper.co/

You don't have to gaze into a crystal ball when you can read an open book

Aneurin Bevan

D. The Future of Institutional Involvement in Bitcoin and Blockchain

To categorise the future of digital currencies into a compartment which defines institutional adoption as equalling investment in Bitcoin is to totally misunderstand the opportunity sitting in front of us.

Institutional adoption is going to embrace the vast and still untapped benefits the Blockchain provides, and Bitcoin is merely one part of that ecosystem. Arguments will rage about the store of value, medium of exchange, and the inflation hedging properties of bitcoin, but right now it is a risk asset, and should be viewed as such.

However the new protocols such as DeFi are revolutionary and will undoubtedly attract the interest of institutions. But at present, for the reasons outlined in this paper, institutions will not participate in these protocols. This is simply because ERC-20, the underlying protocol that supports many of these products is not in any way regulatory friendly. Institutions do not know who they are dealing with, and that is unacceptable. However the horizon is changing. Blockchains are being built that embed ID verification at the protocol level and incorporate smart contracts that will be able to provide a gateway that can police and gate accredited, qualified and the myriad of other categorisations of investor, which is so essential for institutions to allow clients to pass KYC, AML and investor status requirements.

One such blockchain is Concordium.[12] Concordium is a science-based proof-of-stake blockchain created for all, with in particular business applications in mind. It is a blockchain with identification built into the protocol level to meet regulatory requirements, while delivering a user-friendly platform that can handle smart contracts. This type of a blockchain will allow institutions to invest and participate in protocols such as DeFi and liquidity pools, and even allow them to build their own products and applications to offer to their own customers.

[12] https://www.concordium.com/