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Cryptocurrencies

MScF 2023





Introduction



Understanding
Cryptocurrencies



Major concerns



Systematic
Strategies



Risk factors



Are Cryptocurrencies
money?



Conclusion

Introduction

- Understanding the complex world of Cryptocurrencies
- Major concerns
- Systematic Strategies in Cryptocurrency Trading
- Risk factors in Cryptocurrency Investments
- Are Cryptocurrencies Money?



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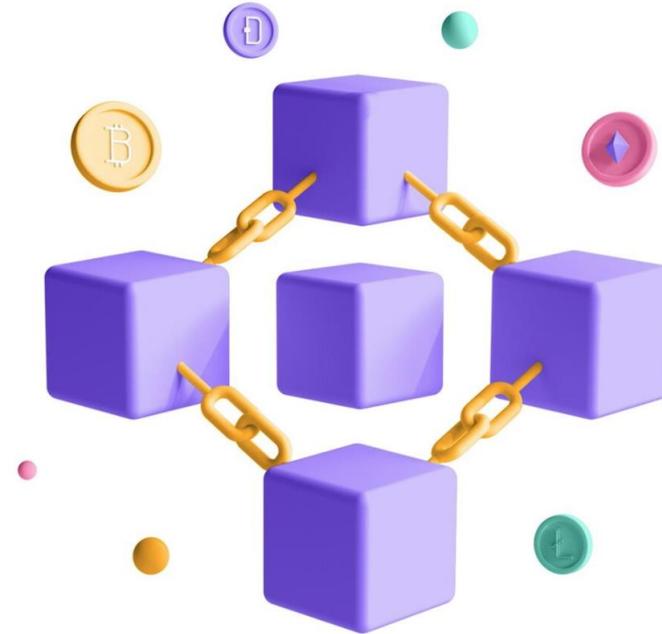


Are Cryptocurrencies
money?



Conclusion

Cryptocurrencies & Blockchain





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Proof of Work



Environmental concerns

- Energy intensive
- High electricity consumption

Social and Governance Impacts

- Can lead to centralization

VS

Proof of Stake



- Much less energy intensive
- Not require extensive computational work
- More decentralized and democratic structure



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BITCOIN TRANSACTION LIFE CYCLE

Elon wants to send 0.2 BTC to his friend Cristina



Elon opens his BTC wallet...



scans / copy Cristina's address...



fills the amount and the fee...



and sends!

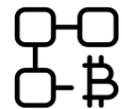
USER



MACHINE



The wallet signs the transaction using Elon's private key



New confirmations appear with each new block that is created



Cristina sees the first confirmation



The nodes verify the result and propagate the block



The miner who solves the Proof of work propagates the new block to the network



Mining time!



Miners include the transaction in the next block to be mined



The transaction is propagated and validated by the network nodes





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Exchanges



coinbase



Hot Wallets



coinbase | Wallet



Cold Wallets





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Centralized Crypto exchange

 BINANCE

 kraken

 coinbase

 BYBIT

 UNISWAP

 PancakeSwap

 AAVE

Advantages

- Friendly Interfaces
- Reliable
- Leverage

Disadvantages

- Expensive fees
- Security risk
- Volatility

Advantages

- Token availability
- Anonymity
- Reduced security risks

Disadvantages

- Liquidity risk
- Network risk
- Token risk



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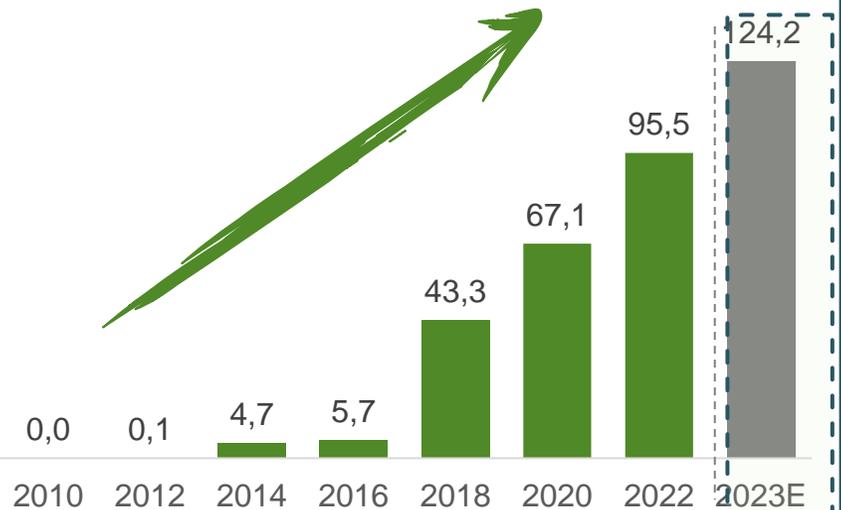


Are Cryptocurrencies money?

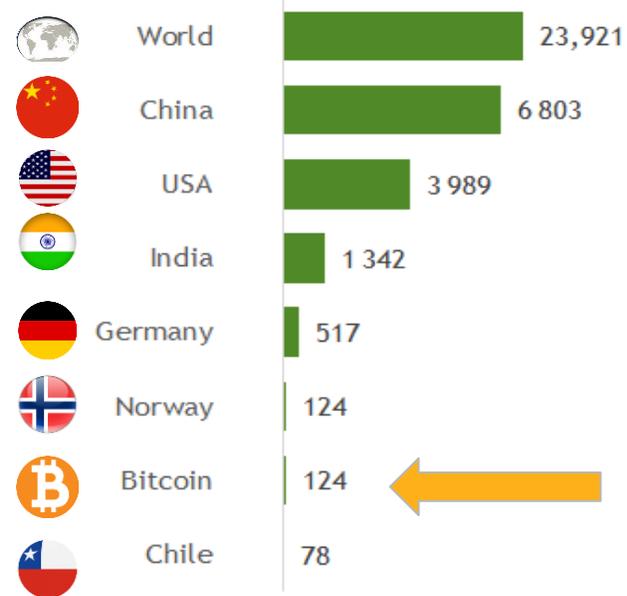


Conclusion

Total Bitcoin Electricity Consumption in TWh⁽¹⁾



Electricity Net Consumption in TWh⁽¹⁾



Single Bitcoin Transaction



Same Carbon footprint



735,000 VISA credit card transactions
51,210 hours of Youtube

Sources:

- [Cambridge Bitcoin Electricity Consumption Index](#)
- [International - U.S. Energy Information Administration \(EIA\)](#)

(*) Annualized value on 15 November 2023



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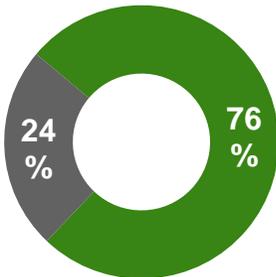
Conclusion

Crypto Area

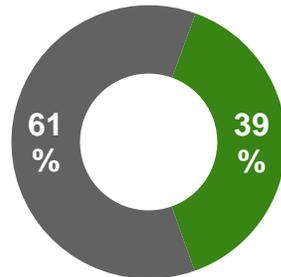
Traditional Area

Renewables as Part of Hashing Energy Mix⁽¹⁾

Share of miners



Share of total energy consumption

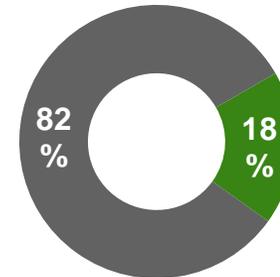


come from a survey

■ Renewables

■ Non-renewables

Primary energy Consumption by fuel⁽²⁾



■ Renewables, Hydro and Nuclear

■ Oil, Natural Gas and Coal

Even though non-renewables sources is a majority on Bitcoin's energy consumption, when compared to the global energy matrix it is significantly higher

Sources:

1. Page 26 [3rd Global Cryptoasset Benchmarking Study](#).
2. Page 9 [Energy Institute – Statistical Review of World Energy 2023](#)



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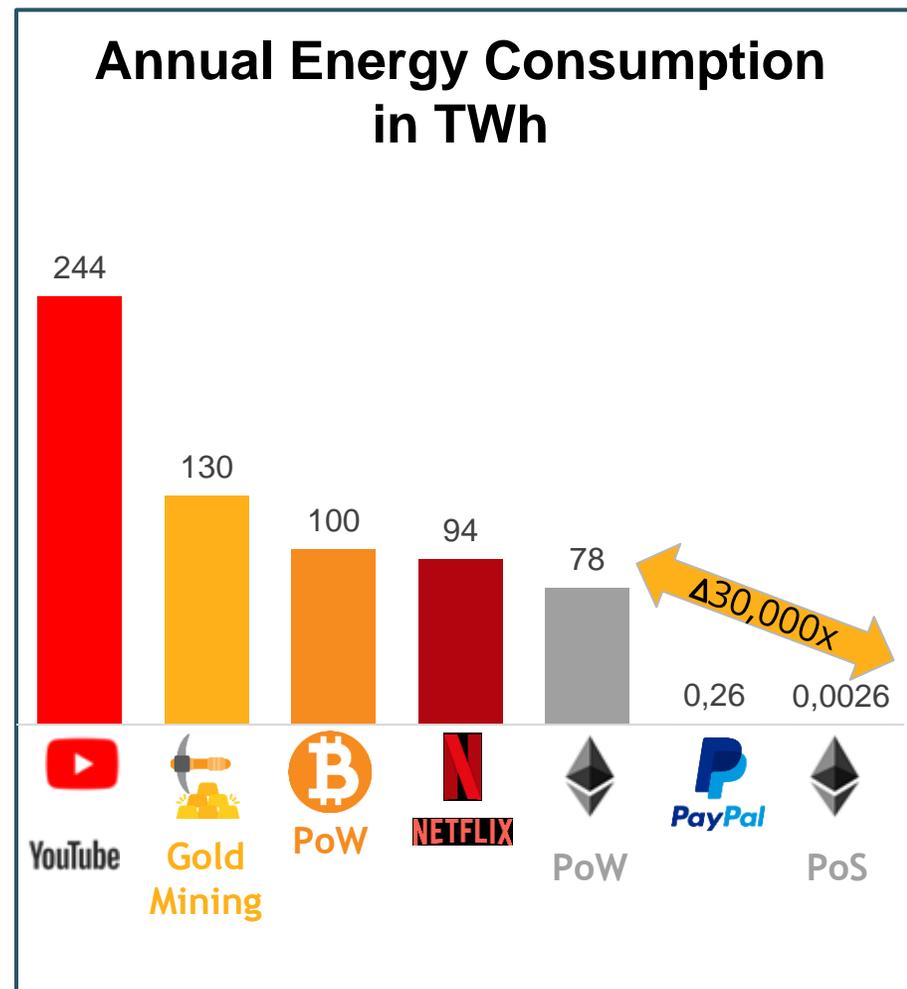
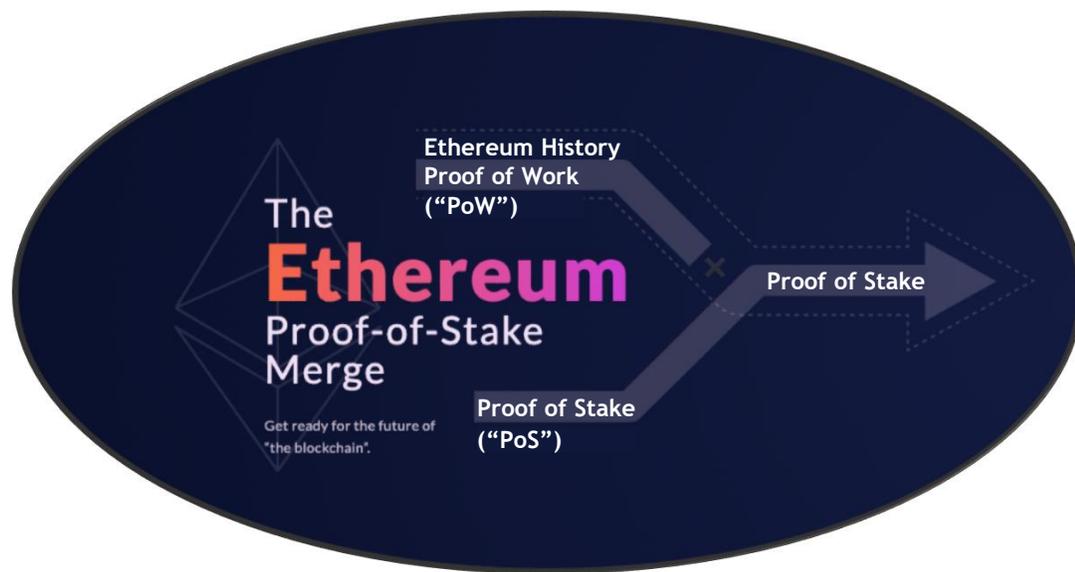


Are Cryptocurrencies money?



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Is there room for improvement?





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Some facts about Salvador

- First Country to Legalize Bitcoin as Legal Tender
- Using Volcano Energy to Mine Bitcoin

Why bitcoin ?

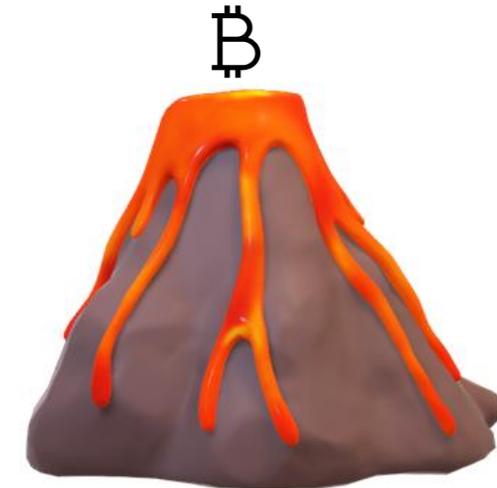
- **Financial Inclusion:** A significant portion of El Salvador's population does not have access to traditional banking services
- **Attracting Investment:** By embracing Bitcoin, El Salvador positions itself as a hub for cryptocurrency innovation and investment.
- **Economic Diversification:** Introducing Bitcoin is seen as a way to diversify the country's economy and reduce dependence on the US dollar, which has been El Salvador's official currency since 2001

Sustainable Innovation

Economic Inclusion

Environmental Responsibility

**Geothermal energy from
volcanoes for Bitcoin mining**





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Social and Governance Impact



Financial Inclusion



Humanitarian Aid⁽¹⁾



Transparency



Decentralized Decision Making (DAO)



Regulation and compliance

Sources:

1. <https://aidonic.io>



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4 main categories of Crypto

Shitcoin



Stablecoin



Bitcoin



Altcoin





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TRADING STRATEGIES

Which Crypto to trade?

22 932 Cryptocurrencies

1.1 Trillion market cap

Source: CoinMarketCap

#	Name	Price	1h %	24h %	7d %	Market Cap	Volume(24h)	Circulating Supply	Last 7 Days
1	Bitcoin BTC	\$43,756.36	▲0.17%	▼0.13%	▲10.86%	\$856,134,259,155	\$14,505,430,711 331,571 BTC	19,565,937 BTC	
2	Ethereum ETH	\$2,338.40	▲0.15%	▼0.63%	▲8.28%	\$281,113,805,017	\$8,259,320,864 3,534,345 ETH	120,216,543 ETH	
3	Tether USDt USDT	\$1.00	▲0.00%	▼0.02%	▼0.02%	\$90,607,305,412	\$38,230,280,259 38,225,023,886 USDT	90,589,444,293 USDT	
4	BNB BNB	\$239.13	▲0.24%	▼0.90%	▲4.76%	\$36,275,562,152	\$707,695,541 2,957,381 BNB	151,696,817 BNB	
5	XRP XRP	\$0.6569	▲0.41%	▼4.32%	▲4.41%	\$35,444,336,174	\$1,596,627,979 2,435,380,960 XRP	53,957,460,767 XRP	
6	Solana SOL	\$71.75	▲0.17%	▼6.17%	▲13.46%	\$30,572,365,412	\$2,228,988,165 31,023,918 SOL	426,080,326 SOL	
7	USDC USDC	\$1.00	▲0.01%	▼0.00%	▲0.01%	\$24,548,667,683	\$4,007,217,178 4,006,982,421 USDC	24,547,144,972 USDC	
8	Cardano ADA	\$0.592	▲2.52%	▼5.46%	▲50.40%	\$20,911,958,479	\$1,658,487,890 2,808,730,392 ADA	35,323,472,030 ADA	
9	Dogecoin DOGE	\$0.09866	▲0.69%	▼3.13%	▲16.40%	\$14,026,535,762	\$845,240,134 8,605,388,070 DOGE	142,174,806,384 DOGE	
10	Avalanche AVAX	\$32.07	▼0.55%	▼5.24%	▲45.95%	\$11,729,402,057	\$1,239,779,027 38,591,637 AVAX	365,755,201 AVAX	



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600 Exchanges Worldwide

Source: CoinMarketCap

#	Exchange	Score ¹	Trading volume(24h)	Avg. Liquidity	Weekly Visits	# Markets	# Coins	Fiat Supported	Volume Graph (7d)
1	Binance	9.9	\$10,603,012,915	818	12,832,074	1479	393	EUR, GBP, BRL and +8 more ¹	
152	UEEx	4.3	\$4,716,173,575	212	126	137	137	USD, AED	
57	Bitrue	5.1	\$3,215,602,262	281	1,414,226	982	542	USD, EUR, GBP and +7 more ¹	
7	Upbit	7.1	\$2,948,392,097	516	1,654,077	294	190	KRW	
106	IndoEx	4.7	\$2,673,441,084	591	47,057	167	86	--	
103	BIKA	4.7	\$2,570,396,013	458	500,754	106	88	--	
6	OKX	7.5	\$2,244,482,155	571	6,223,015	660	318	AED, ARS, AUD and +43 more ¹	
147	SuperEx	4.3	\$2,067,826,953	161	18,876	361	355	--	
5	Bybit	7.5	\$1,994,115,794	603	4,147,401	719	485	USD, EUR, GBP and +3 more ¹	
16	MEXC	6.3	\$1,732,621,065	525	1,910,454	2164	1728	EUR, USD, GBP and +12 more ¹	



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Exchanges vary in options and fees

BYBIT



Feature	Bybit	Binance
Trading options	Cryptocurrency spot and futures trading with leverage	Cryptocurrency spot and futures trading, as well as margin trading, trading in fiat currencies, stablecoins, and other assets
Trading fees	Flat trading fee of 0.025% for both makers and takers; funding fee for futures trades	Tiered trading fees based on 30-day trading volume and maker/taker status; margin fees for margin trades
Deposit fees	No fees for depositing cryptocurrency or stablecoins	No fees for depositing cryptocurrency; fees for depositing fiat currency vary by currency and payment method
Withdrawal fees	Flat withdrawal fee for each asset; minimum withdrawal amount	Flat withdrawal fee for each asset; minimum withdrawal amount
Other fees	Inactivity fee for inactive users	Inactivity fee for inactive users; margin fees for margin trades

Source : <https://medium.com/@nicchong/bybit-vs-binance-a-side-by-side-comparison-of-the-top-crypto-exchanges-996a6ccc413b>



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Not a safe decision...



- Position backed with own coin
- Bankman-Fried found guilty on 7 federal counts

Source illustration: <https://cryptonews.com/news/ftx-scandal-what-latest-testimony-means-for-cryptocurrency-industry.htm>



- 4.3 Billion litigation
- CEO plead guilty and to resign

Source illustration: <https://www.wsj.com/finance/regulation/binance-copped-a-4-billion-plea-but-is-still-fighting-the-sec-44a4e5a5>



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INVESTMENT STRATEGIES

- A broad Overview

Active Strategy

- Altcoin / Bitcoin rotation
- Market Timing
- Volatility Trading
- Bot Trading
- Scalping
- High frequency trading
- Swing Trading
- Day trading

Passive Strategy

- Holding
- Portfolio
- Dollar Cost Averaging (DCA)
- ETF (available soon)
- Holding only Bitcoin as eGold



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Holding Strategy

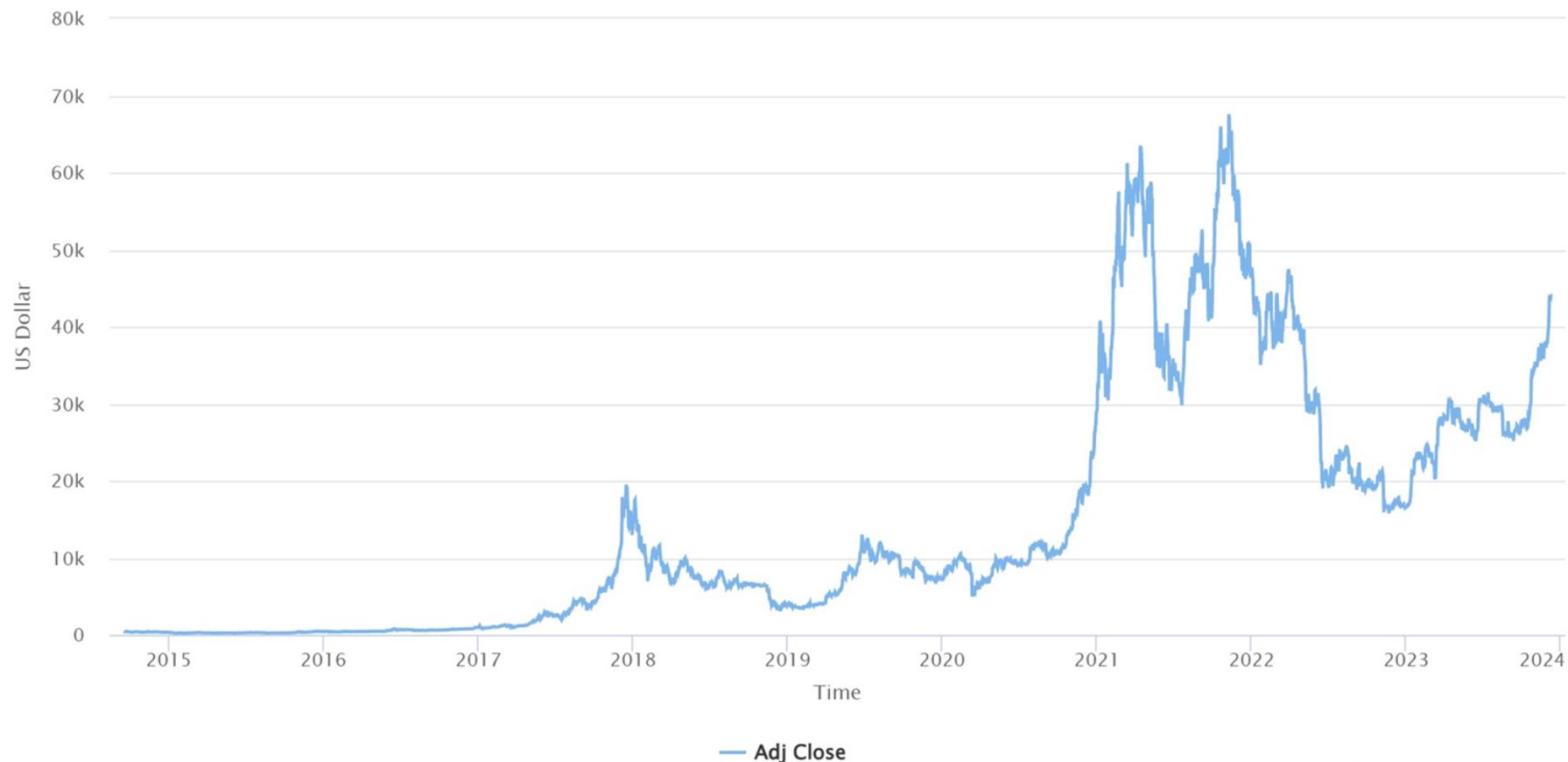
1\$ in 09/14



94.5\$ today

	Annual R	Annual SD	SR
S&P	10.35%	15.33%	0.64
BTC	64.00%	70.60%	0.93

Price Evolution of Bitcoin
(Daily closing price since 17/09/2014)



Source: Team analysis, Yahoo finance



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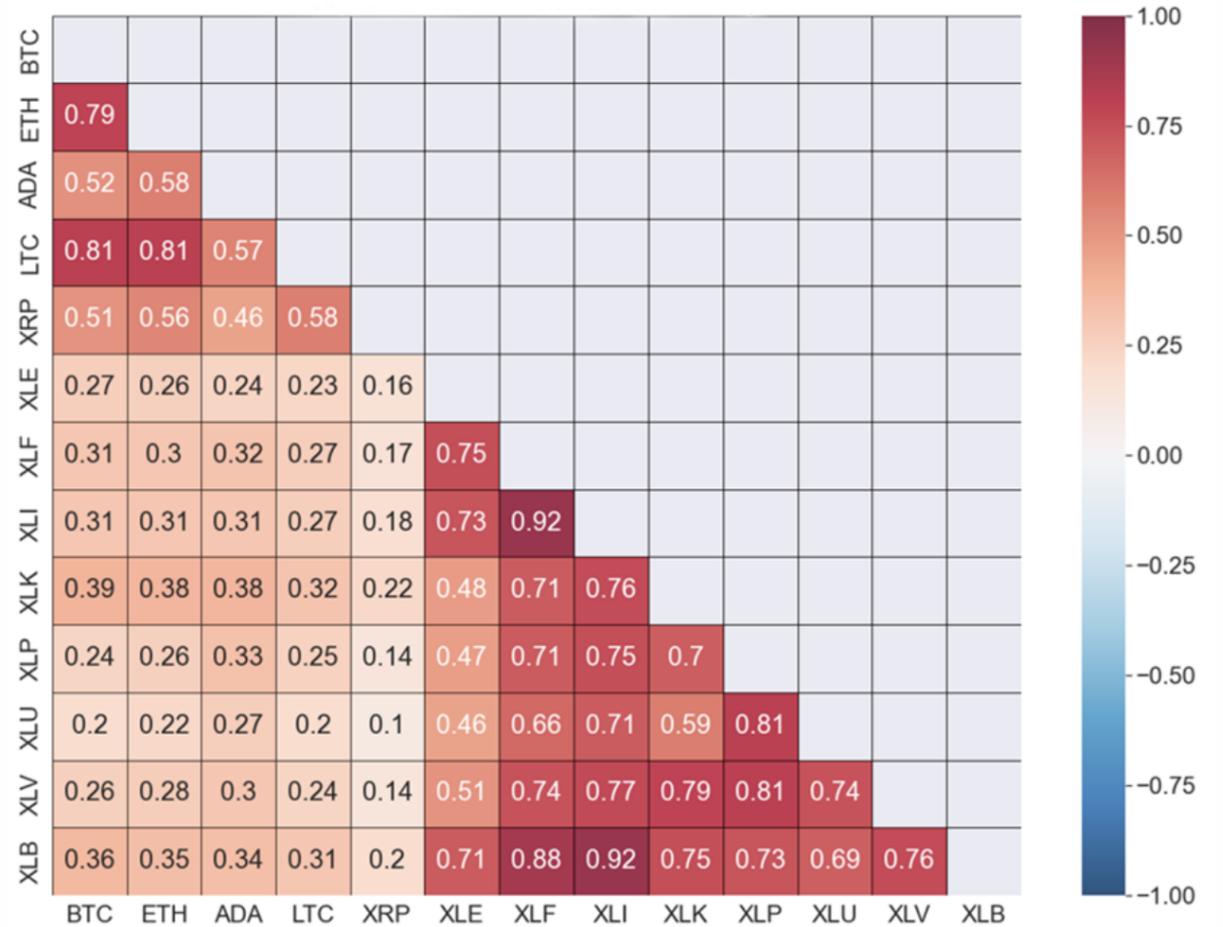


Conclusion

Crypto uncorrelation...

...open rooms for...

...trading strategies.



Source: Refinitiv data

<https://blogs.cfainstitute.org/investor/2022/11/16/how-do-cryptocurrencies-correlate-with-traditional-asset-classes/>



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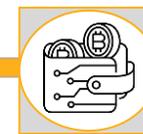
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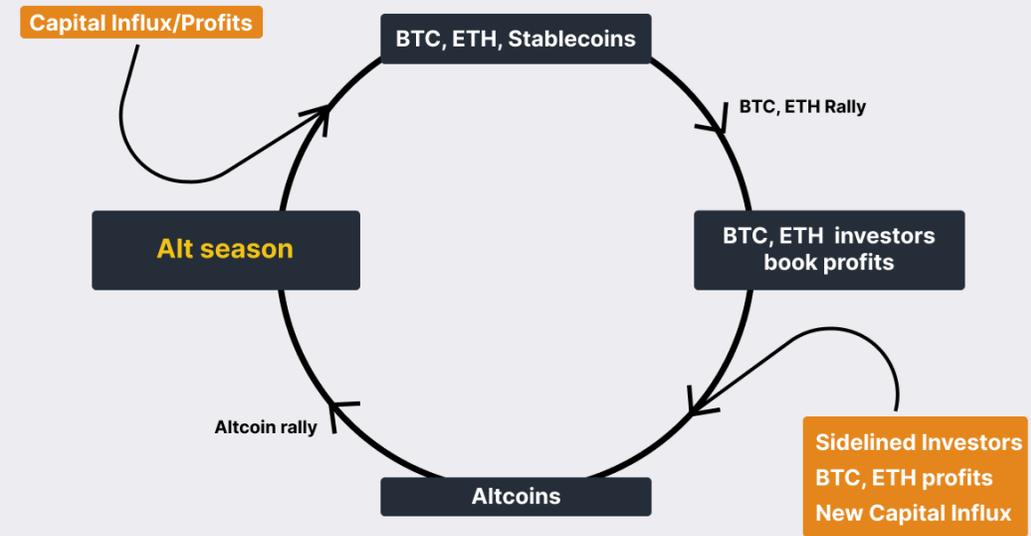
Conclusion

Capital translation creates lead to Alt season

The more **Altcoins** outperform the **BTC**

The more likely the **Alt Season**

Alt Season Dynamics



Source: <https://www.fxstreet.com/cryptocurrencies/news/here-are-top-three-altcoin-categories-that-are-likely-to-pump-the-hardest-in-the-2023-alt-season-202303220744>



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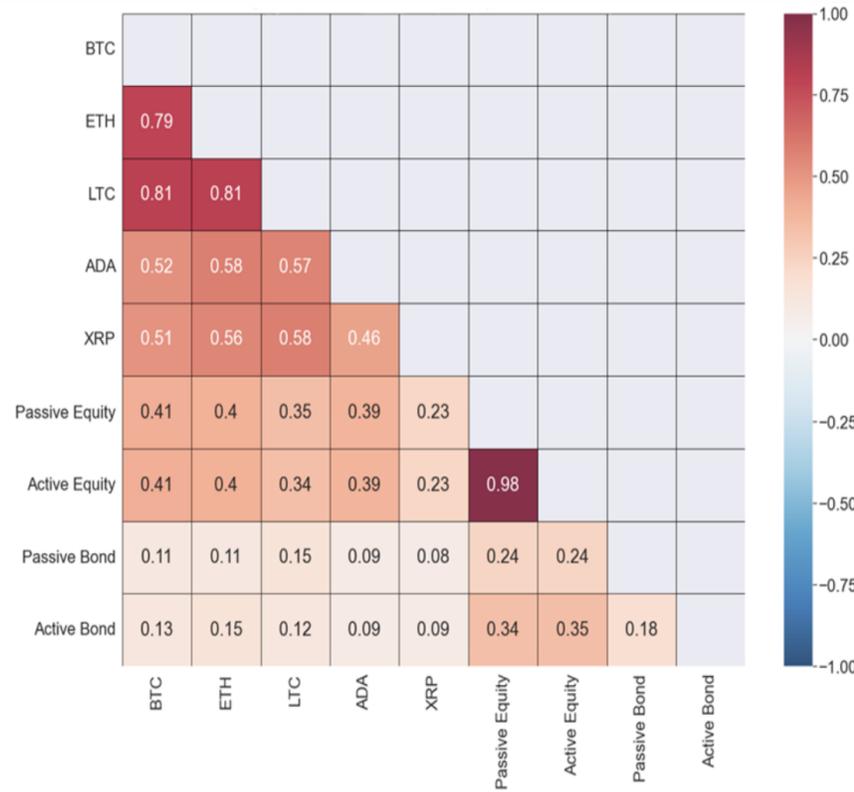


Are Cryptocurrencies money?



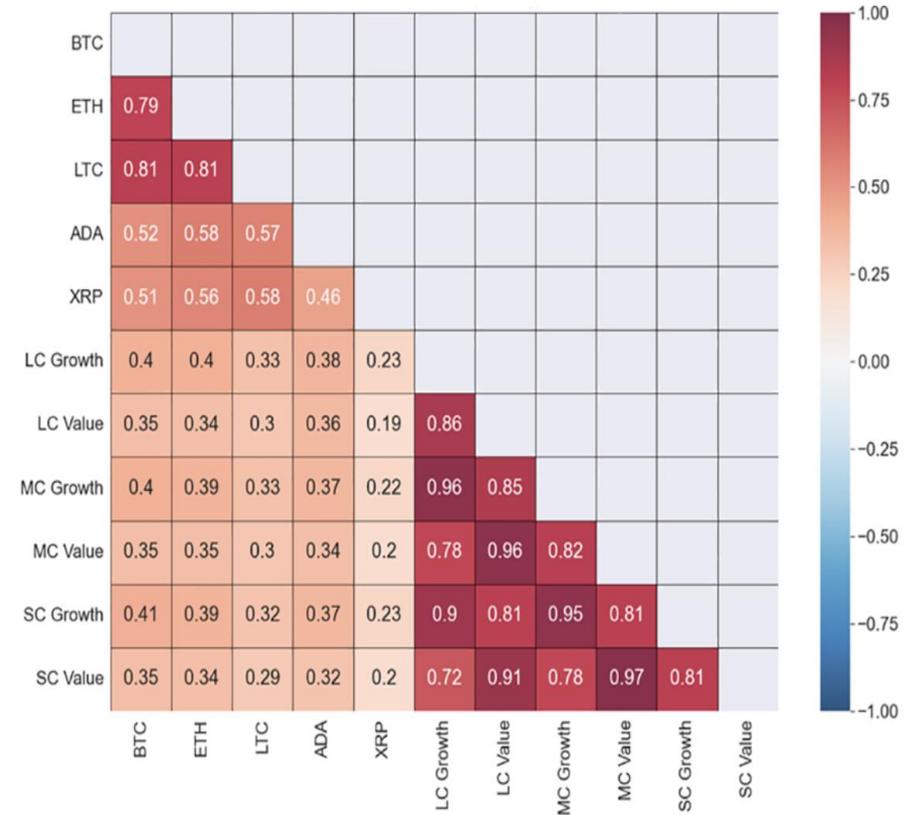
Conclusion

Crypto, Passive and Active Equity and Bonds: Correlation Heat Map



Source: Refinitiv

Crypto and Mutual Funds: Correlation Heat Map



Source: Refinitiv data

<https://blogs.cfainstitute.org/investor/2022/11/16/how-do-cryptocurrencies-correlate-with-traditional-asset-classes/>

Crypto as possible
hedge of the
traditional
market?



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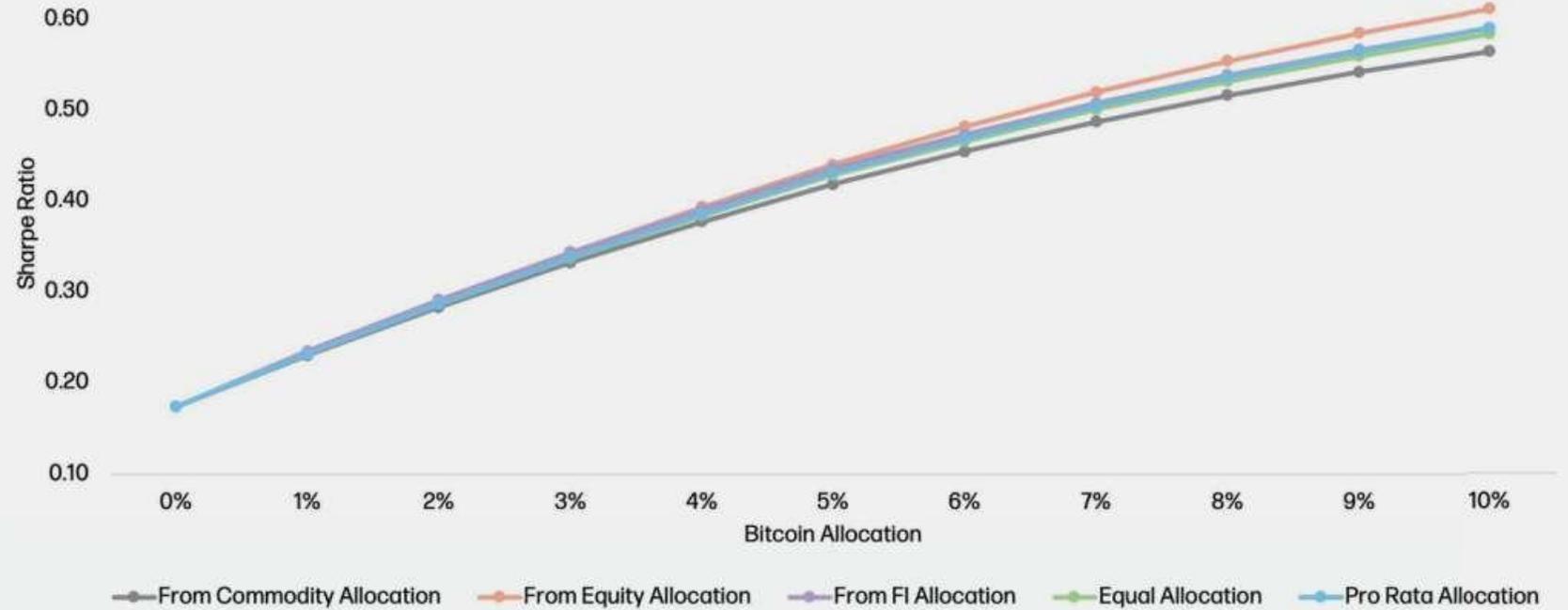


Conclusion

Adding crypto to traditional portfolios.

Exhibit 7: Risk-Adjusted Returns

Source: Galaxy Research



Source: <https://www.galaxy.com/insights/research/bitcoin-in-a-portfolio-impact-and-opportunity/>



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Focus on Equity

From Equity Allocation

	Base	1% BTC	2% BTC	3% BTC	4% BTC	5% BTC	6% BTC	7% BTC	8% BTC	9% BTC	10% BTC	5-year Avg
aReturns	7.46%	8.16%	8.85%	9.53%	10.20%	10.88%	11.50%	12.13%	12.75%	13.36%	13.96%	10.80%
aVolatility	12.37%	12.38%	12.45%	12.57%	12.74%	12.96%	13.22%	13.51%	13.84%	14.20%	14.59%	13.17%
aDownVolatility	8.08%	8.10%	8.14%	8.21%	8.31%	8.42%	8.56%	8.72%	8.90%	9.09%	9.30%	8.53%
Sharpe	0.17	0.23	0.29	0.34	0.39	0.44	0.48	0.52	0.55	0.58	0.61	0.42
Sortino	0.26	0.36	0.44	0.52	0.60	0.68	0.74	0.81	0.86	0.91	0.96	0.65
MaxDrawDown	-21.04%	-21.13%	-21.22%	-21.32%	-21.41%	-21.50%	-21.60%	-21.69%	-22.34%	-23.01%	-23.67%	-21.81%
Global Index Corr	0.59	0.59	0.58	0.58	0.57	0.56	0.55	0.54	0.53	0.51	0.50	0.56

Source: <https://www.galaxy.com/insights/research/bitcoin-in-a-portfolio-impact-and-opportunity/>



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Crypto portfolio in the traditional portfolio theory.

Exhibit 8: Average Annualized Volatility

Source: Galaxy Research

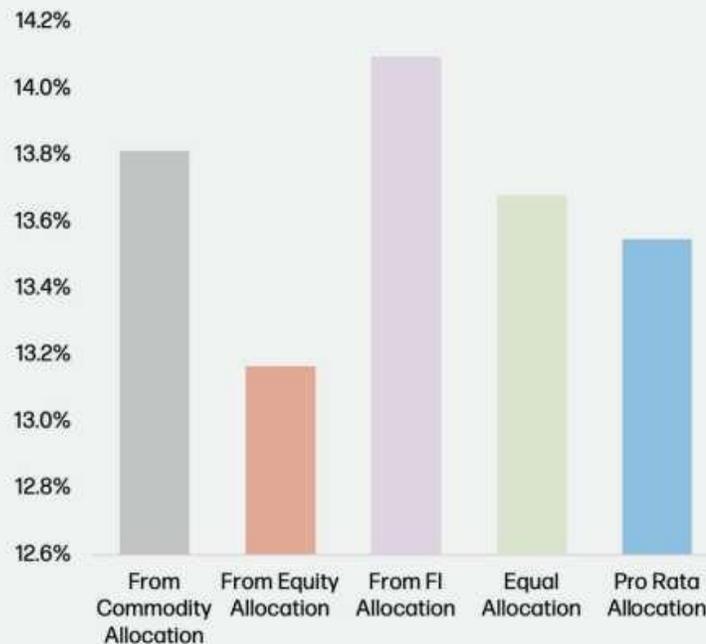
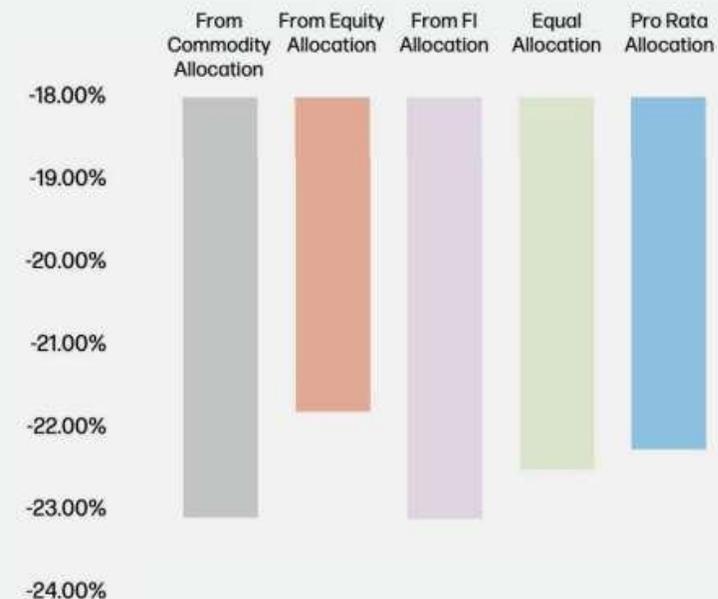


Exhibit 9: Average Maximum Drawdowns

Source: Galaxy Research



Source: <https://www.galaxy.com/insights/research/bitcoin-in-a-portfolio-impact-and-opportunity/>



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Cryptocurrencies Risks



New market, volatility
much higher than
traditional markets



Risk of frauds and hacking,
among others, due to lack
of regulation



Decentralization requires a
lot of independence and
knowledge



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Variance of Bitcoin

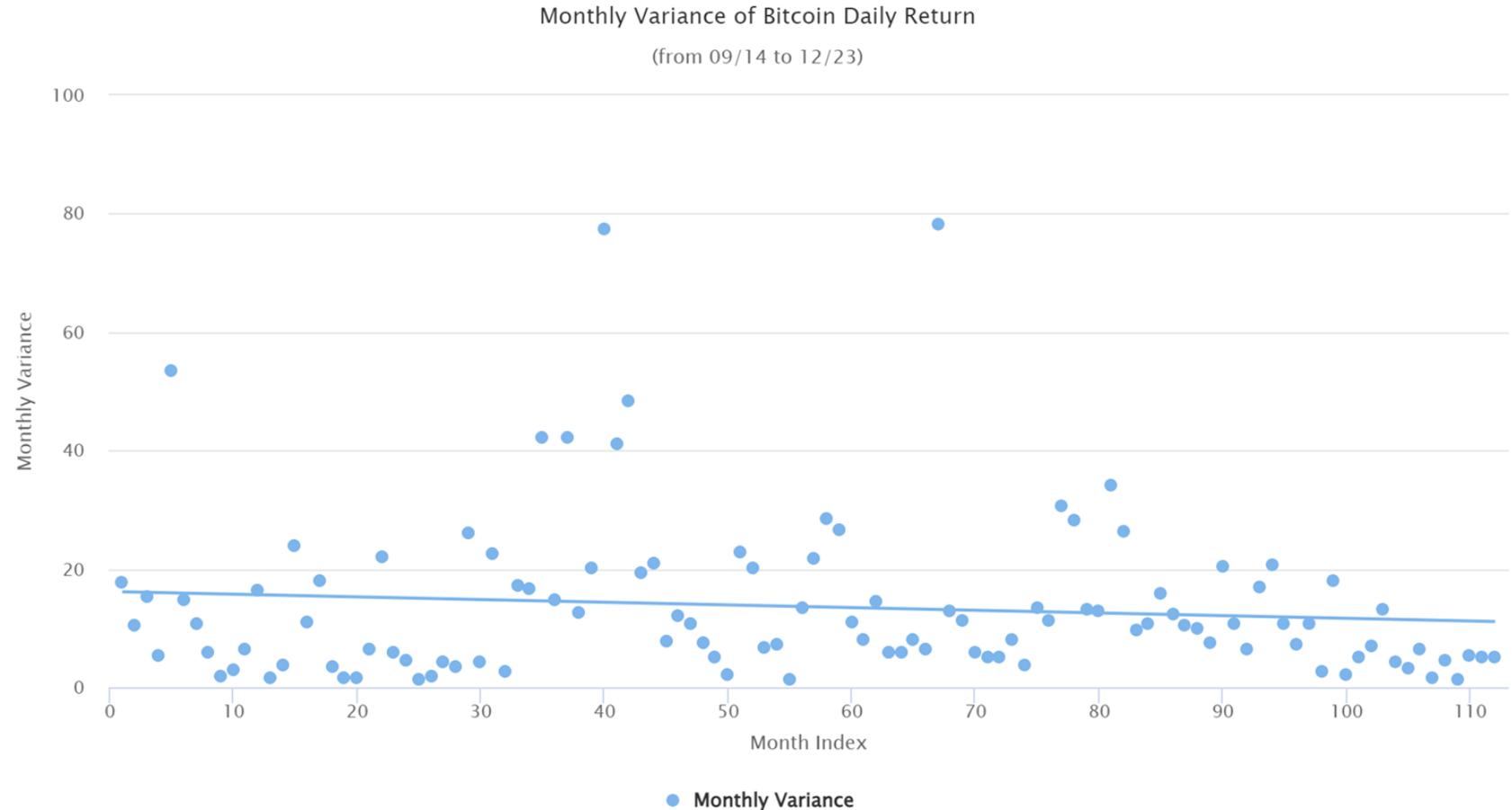
do not decrease

with time

T stat: -
1,05

p value:
22%

Cannot reject the null



Source: Team analysis, Yahoo finance



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**Are Cryptocurrencies
money?**



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Are Cryptocurrencies Money?

Store of value?

Medium of Exchange?

Medium of account?





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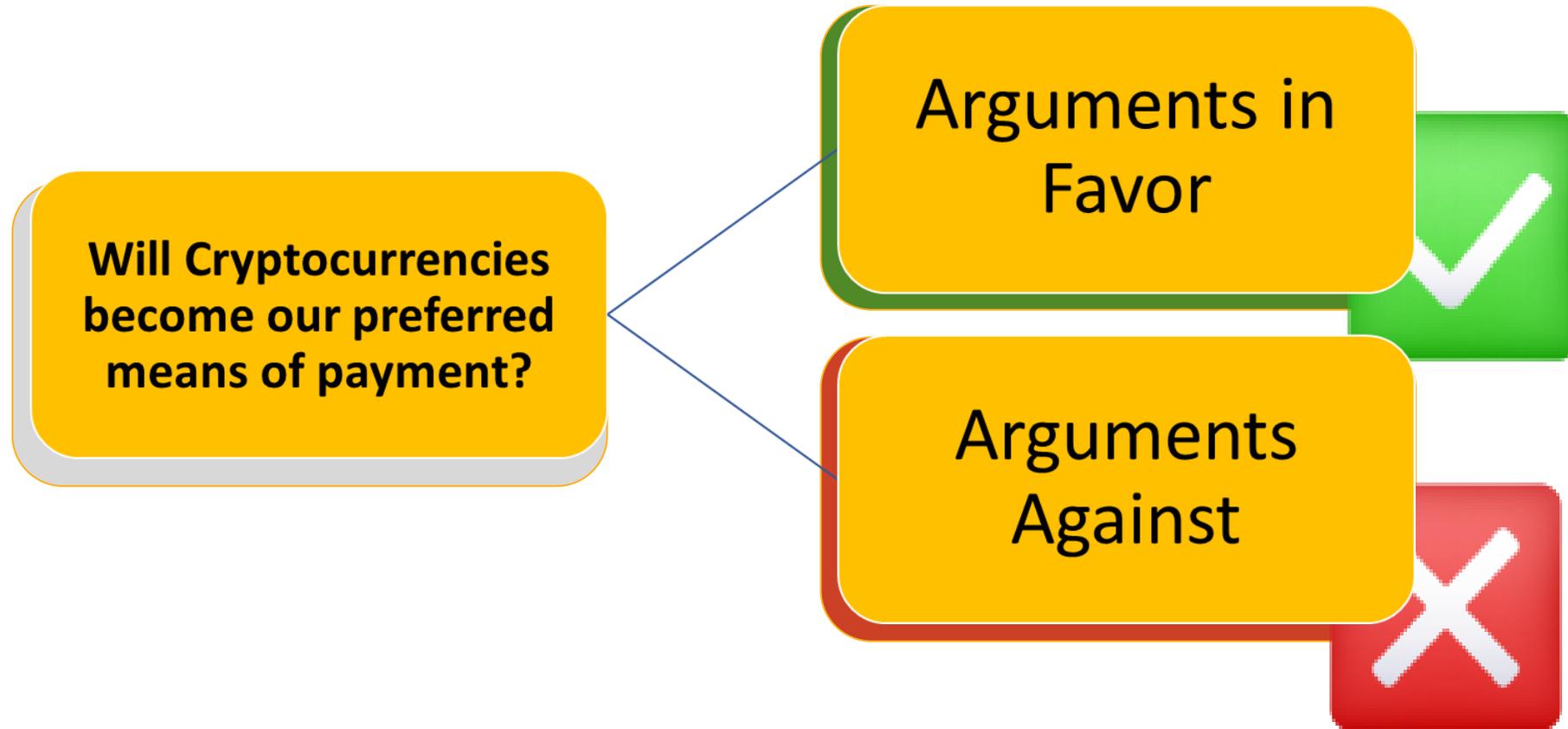
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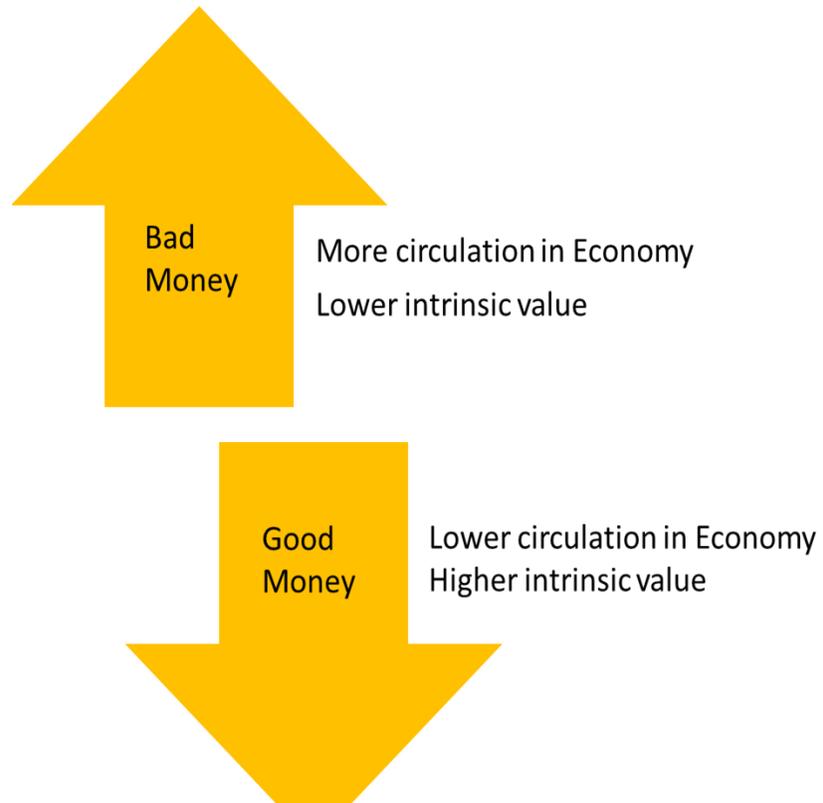
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Are Cryptocurrencies
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Gresham's Law

- Central Banks can increase the supply of money, which leads to a decrease of intrinsic value of the currency
- This can lead to Bitcoin or other cryptocurrencies to become a store of value instead of a mean of payment (similar to Gold)



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Conclusion

5 GOLDEN RULES FOR YOUR TRADING PSYCHOLOGY

- DO NOT TRADE ON 20 PAIRS, BE FOCUS ON 5 THAT YOU KNOW
- RESPECT YOUR RISK MANAGEMENT
- TRADE AROUND SESSIONS
- DO NOT TRADE DURING NEWS
- DON'T MOVE YOUR STOP LOSS



Always Be Curious but Cautious

Thank you for your attention!

...If anyone wants to try...

... I accept Bitcoin



Appendix

Exhibit 6: The Risk-Adjusted Benefits of Bitcoin

Source: Galaxy Asset Management



	From Commodity Allocation				From Equity Allocation				From FI Allocation				Equal Allocation				Pro Rata Allocation			
	Sharpe	Δ	Sortino	Δ	Sharpe	Δ	Sortino	Δ	Sharpe	Δ	Sortino	Δ	Sharpe	Δ	Sortino	Δ	Sharpe	Δ	Sortino	Δ
Base Portfolio	0.17	-	0.26	-	0.17	-	0.26	-	0.17	-	0.26	-	0.17	-	0.26	-	0.17	-	0.26	-
1% BTC	0.23	0.06	0.35	0.09	0.23	0.06	0.36	0.09	0.23	0.06	0.36	0.09	0.23	0.06	0.35	0.09	0.23	0.06	0.35	0.09
2% BTC	0.28	0.05	0.43	0.08	0.29	0.06	0.44	0.09	0.29	0.06	0.44	0.09	0.29	0.05	0.44	0.08	0.29	0.06	0.44	0.08
3% BTC	0.44	0.05	0.51	0.08	0.34	0.05	0.52	0.08	0.34	0.05	0.52	0.08	0.34	0.05	0.52	0.08	0.34	0.05	0.52	0.08
4% BTC	0.38	0.04	0.58	0.07	0.39	0.05	0.60	0.08	0.39	0.05	0.60	0.07	0.38	0.05	0.59	0.07	0.39	0.05	0.59	0.07
5% BTC	0.42	0.04	0.64	0.07	0.44	0.05	0.68	0.07	0.44	0.04	0.67	0.07	0.43	0.04	0.66	0.07	0.43	0.05	0.66	0.07
6% BTC	0.45	0.04	0.70	0.06	0.48	0.04	0.74	0.07	0.47	0.04	0.73	0.06	0.47	0.04	0.72	0.06	0.47	0.04	0.72	0.06
7% BTC	0.49	0.03	0.76	0.05	0.52	0.04	0.81	0.06	0.51	0.03	0.78	0.06	0.50	0.03	0.77	0.06	0.50	0.04	0.78	0.06
8% BTC	0.52	0.03	0.80	0.05	0.55	0.03	0.86	0.06	0.54	0.03	0.83	0.05	0.53	0.03	0.83	0.05	0.54	0.03	0.83	0.05
9% BTC	0.54	0.03	0.85	0.04	0.58	0.03	0.91	0.05	0.57	0.03	0.88	0.05	0.56	0.03	0.87	0.05	0.56	0.03	0.88	0.05
10% BTC	0.56	0.02	0.89	0.04	0.61	0.03	0.96	0.05	0.59	0.02	0.92	0.04	0.58	0.02	0.91	0.04	0.59	0.03	0.92	0.04

Data: Bloomberg, from August 31, 2018 to August 31, 2023

Source: <https://www.galaxy.com/insights/research/bitcoin-in-a-portfolio-impact-and-opportunity/>

From Commodity Allocation

	Base	1% BTC	2% BTC	3% BTC	4% BTC	5% BTC	6% BTC	7% BTC	8% BTC	9% BTC	10% BTC	5-year Avg
aReturns	7.46%	8.20%	8.92%	9.63%	10.33%	11.02%	11.68%	12.34%	12.99%	13.62%	14.24%	10.95%
aVolatility	12.37%	12.52%	12.73%	12.99%	13.29%	13.63%	14.01%	14.42%	14.86%	15.32%	15.81%	13.81%
aDownVolatility	8.08%	8.18%	8.31%	8.47%	8.65%	8.84%	9.05%	9.29%	9.53%	9.79%	10.07%	8.93%
Sharpe	0.17	0.23	0.28	0.33	0.38	0.42	0.45	0.49	0.52	0.54	0.56	0.40
Sortino	0.26	0.35	0.43	0.51	0.58	0.64	0.70	0.76	0.80	0.85	0.89	0.62
MaxDrawDown	-21.04%	-21.28%	-21.52%	-21.76%	-22.00%	-22.23%	-22.90%	-23.87%	-24.84%	-25.80%	-26.74%	-23.09%
Global Index Corr	0.59	0.59	0.58	0.58	0.57	0.56	0.55	0.54	0.53	0.52	0.51	0.56

From Equity Allocation

	Base	1% BTC	2% BTC	3% BTC	4% BTC	5% BTC	6% BTC	7% BTC	8% BTC	9% BTC	10% BTC	5-year Avg
aReturns	7.46%	8.16%	8.85%	9.53%	10.20%	10.88%	11.50%	12.13%	12.75%	13.36%	13.96%	10.80%
aVolatility	12.37%	12.38%	12.45%	12.57%	12.74%	12.96%	13.22%	13.51%	13.84%	14.20%	14.59%	13.17%
aDownVolatility	8.08%	8.10%	8.14%	8.21%	8.31%	8.42%	8.56%	8.72%	8.90%	9.09%	9.30%	8.53%
Sharpe	0.17	0.23	0.29	0.34	0.39	0.44	0.48	0.52	0.55	0.58	0.61	0.42
Sortino	0.26	0.36	0.44	0.52	0.60	0.68	0.74	0.81	0.86	0.91	0.96	0.65
MaxDrawDown	-21.04%	-21.13%	-21.22%	-21.32%	-21.41%	-21.50%	-21.60%	-21.69%	-22.34%	-23.01%	-23.67%	-21.81%
Global Index Corr	0.59	0.59	0.58	0.58	0.57	0.56	0.55	0.54	0.53	0.51	0.50	0.56

From FI Allocation

	Base	1% BTC	2% BTC	3% BTC	4% BTC	5% BTC	6% BTC	7% BTC	8% BTC	9% BTC	10% BTC	5-year Avg
aReturns	7.46%	8.27%	9.06%	9.84%	10.61%	11.39%	12.11%	12.84%	13.56%	14.26%	14.96%	11.30%
aVolatility	12.37%	12.59%	12.86%	13.17%	13.53%	13.93%	14.36%	14.82%	15.30%	15.81%	16.33%	14.10%
aDownVolatility	8.08%	8.23%	8.41%	8.61%	8.83%	9.07%	9.32%	9.59%	9.88%	10.17%	10.48%	9.15%
Sharpe	0.17	0.23	0.29	0.34	0.39	0.44	0.47	0.51	0.54	0.57	0.59	0.41
Sortino	0.26	0.36	0.44	0.52	0.60	0.67	0.73	0.78	0.83	0.88	0.92	0.64
MaxDrawDown	-21.04%	-21.46%	-21.88%	-22.29%	-22.71%	-23.12%	-23.53%	-23.93%	-24.33%	-24.73%	-25.15%	-23.10%
Global Index Corr	0.59	0.59	0.58	0.57	0.57	0.56	0.55	0.54	0.53	0.52	0.50	0.55

Equal Allocation

	Base	1% BTC	2% BTC	3% BTC	4% BTC	5% BTC	6% BTC	7% BTC	8% BTC	9% BTC	10% BTC	5-year Avg
aReturns	7.46%	8.21%	8.94%	9.67%	10.38%	11.10%	11.77%	12.44%	13.10%	13.75%	14.39%	11.02%
aVolatility	12.37%	12.49%	12.68%	12.91%	13.18%	13.50%	13.85%	14.23%	14.65%	15.08%	15.54%	13.68%
aDownVolatility	8.08%	8.17%	8.29%	8.43%	8.59%	8.77%	8.97%	9.19%	9.42%	9.67%	9.93%	8.87%
Sharpe	0.17	0.23	0.29	0.34	0.38	0.43	0.47	0.50	0.53	0.56	0.58	0.41
Sortino	0.26	0.35	0.44	0.52	0.59	0.66	0.72	0.77	0.83	0.87	0.91	0.63
MaxDrawDown	-21.04%	-21.29%	-21.54%	-21.79%	-22.04%	-22.28%	-22.53%	-22.77%	-23.33%	-24.12%	-24.89%	-22.51%
Global Index Corr	0.59	0.59	0.58	0.58	0.57	0.56	0.55	0.54	0.53	0.52	0.51	0.56

Pro Rata Allocation

	Base	1% BTC	2% BTC	3% BTC	4% BTC	5% BTC	6% BTC	7% BTC	8% BTC	9% BTC	10% BTC	5-year Avg
aReturns	7.46%	8.20%	8.93%	9.65%	10.36%	11.07%	11.73%	12.40%	13.06%	13.71%	14.34%	10.99%
aVolatility	12.37%	12.47%	12.63%	12.82%	13.07%	13.36%	13.69%	14.05%	14.44%	14.86%	15.30%	13.55%
aDownVolatility	8.08%	8.15%	8.25%	8.38%	8.52%	8.69%	8.87%	9.08%	9.29%	9.53%	9.77%	8.78%
Sharpe	0.17	0.23	0.29	0.34	0.39	0.43	0.47	0.50	0.54	0.56	0.59	0.41
Sortino	0.26	0.35	0.44	0.52	0.59	0.66	0.72	0.78	0.83	0.88	0.92	0.63
MaxDrawDown	-21.04%	-21.26%	-21.48%	-21.70%	-21.92%	-22.14%	-22.36%	-22.57%	-22.79%	-23.47%	-24.19%	-22.27%
Global Index Corr	0.59	0.59	0.58	0.58	0.57	0.56	0.55	0.54	0.53	0.52	0.50	0.55

3 month t-bill as of August 31, 2023 used as risk-free rate for sharpe and sortino calculations

Data: Bloomberg, from August 31, 2018 to August 31, 2023