Cryptomunten: een hype en of een blijver?

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Outline

❶ Cryptocurrencies: Descriptive Statistics
- Market Data
- ESG Considerations
- Who Invests in Crypto?

1. Cryptocurrencies: Descriptive Statistics
Market Data

What are the most important cryptocurrencies today?

#	Name		Price	1h %	24h %	7d %	Market Cap ⓘ	Volume(24h) ⓘ
1	Bitcoin BTC	Buy	$76,982.05	▲0.34%	▼2.03%	▼12.45%	$1,538,305,840,569	$71,140,011,184 924.44K
2	Ethereum ETH	Buy	$2,252.57	▲0.93%	▼6.57%	▼22.50%	$271,872,038,697	$52,754,251,279 23.44M
3	Tether USDT	Buy	$0.9987	▼0.02%	▼0.02%	▼0.01%	$185,140,410,280	$152,110,371,158 152.30B
4	BNB BNB	Buy	$758.77	▲0.77%	▼2.59%	▼13.06%	$103,466,686,340	$3,849,335,720 5.08M
5	XRP XRP	Buy	$1.59	▲0.72%	▼4.18%	▼15.45%	$97,089,819,557	$5,346,278,906 3.35B
6	USDC USDC	Buy	$0.9996	▼0.00%	▼0.00%	▼0.01%	$70,315,965,498	$19,227,025,054 19.23B
7	Solana SOL	Buy	$101.90	▲0.34%	▼3.48%	▼16.83%	$57,720,306,995	$7,831,921,555 76.95M
8	TRON TRX	Buy	$0.2838	▲0.20%	▼0.91%	▼4.10%	$26,884,189,009	$872,452,326 3.07B
9	Dogecoin DOGE	Buy	$0.1039	▲0.63%	▼2.00%	▼14.61%	$17,522,278,021	$2,128,535,858 20.49B
10	Cardano ADA	Buy	$0.2876	▲0.81%	▼2.97%	▼17.52%	$10,367,260,673	$963,649,925 3.35B

1. Cryptocurrencies: Descriptive Statistics
Market Data

- ▶ # Cryptocurrencies: 8,957 (compared to 682 early 2017)
- ▶ Market Cap: $2.58 T (compared to $830 billion early January 2018)
- ▶ 24h Vol: $181.88 B (compared to $12.9 B in 2018)
  - volume of all stable coins is now $177.31 B
- ▶ BTC Dominance: 59.39%
  - ETH: 10.6%

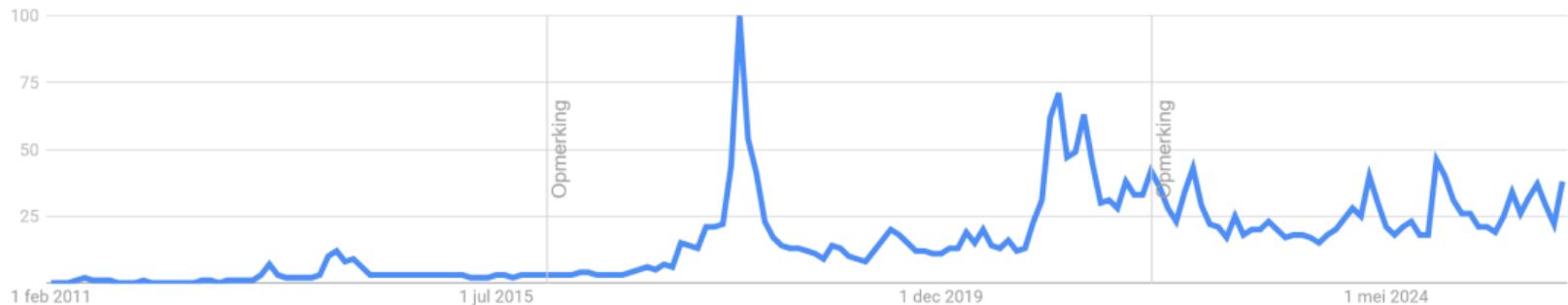Source: coinmarketcap.com, 2/2/2026

Price Bitcoin

1. Cryptocurrencies: Descriptive Statistics
Market Data

Google Trends "Bitcoin"

Interesse in de loop der tijd ⑦

1. Cryptocurrencies: Descriptive Statistics
Market Data

Interesse per regio ⑦
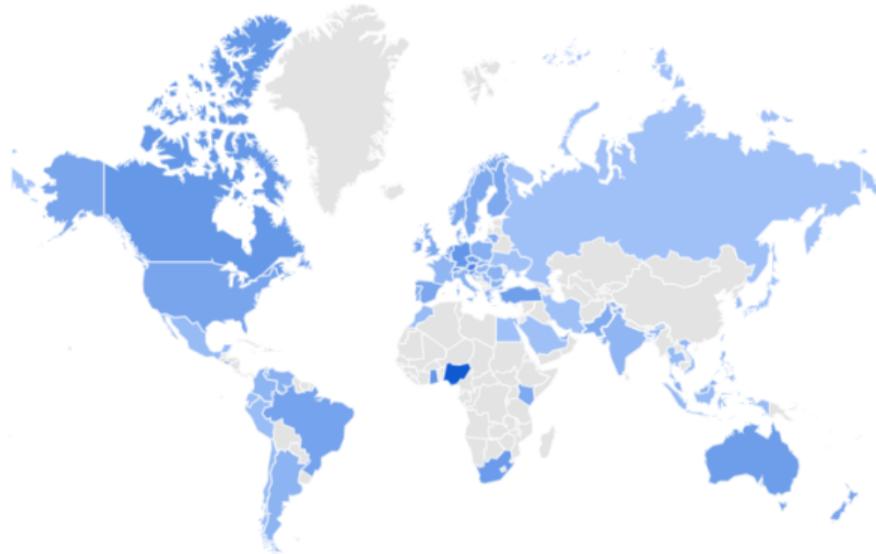
1	El Salvador
2	Nigeria
3	Oostenrijk
4	Zwitserland
5	Nederland

Bitcoin and the Environment
(<u>Source</u>: https://digiconomist.net/bitcoin-energy-consumption)

Bitcoin Energy Consumption

Click and drag in the plot area to zoom in
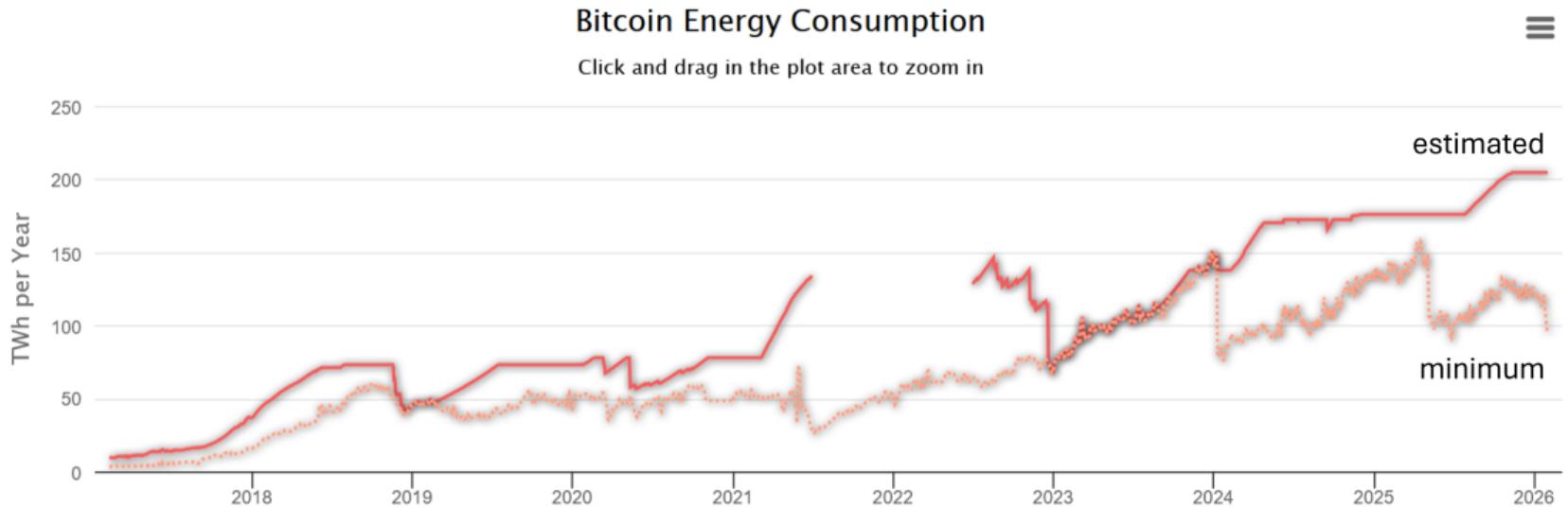
1. Cryptocurrencies: Descriptive Statistics
ESG Considerations

Annualized Total Bitcoin Footprints

Carbon Footprint	Electrical Energy
114.03 Mt CO2	204.44 TWh
Comparable to the carbon footprint of **Czech Republic**.	Comparable to the power consumption of **Thailand**.

Electronic Waste	Fresh Water Consumption
19.16 kt	3,222 GL
Comparable to the small IT equipment waste of **the Netherlands**.	Comparable to the total water use of **Switzerland**.

Single Bitcoin Transaction Footprints

Carbon Footprint	Electrical Energy
829.49 kgCO2	1487.18 kWh
Equivalent to the carbon footprint of **1,838,432** VISA transactions or **138,248** hours of watching Youtube.	Equivalent to the power consumption of an average U.S. household over **50.97** days.

Electronic Waste	Fresh Water Consumption
139.40 grams	23,438 liters
Equivalent to the weight of **0.85** iPhones 12 or **0.28** iPads. (Find more info on e-waste here.)	Equivalent to the amount of water in a **backyard swimming pool.**

Gold Mining Footprint	Bitcoin Mining Footprint
31 tonnes CO2	690 tonnes CO2
The carbon footprint of one Bitcoin's worth of gold mined.	The carbon footprint of a single mined Bitcoin (inc. fees).

1. Cryptocurrencies: Descriptive Statistics
ESG Considerations

Bitcoin and Crime

- Foley, Karlsen, and Putniņš (2019)
  - 26% of users of bitcoin and 46% of transactions are associated with illegal activity
  - 23% of the total dollar value of transactions and 49% of bitcoin holdings are associated with illegal activity
- Sokolov (2021): Ransomware activity and blockchain congestion
  - when demand for settlement exceeds blockchain capacity, blockchain users engage in fee competition to prioritize their transaction settlement
  - a typical surge in ransomware activity causes transaction fees to increase by 2.1% and up to 28% in extreme cases

1. Cryptocurrencies: Descriptive Statistics
ESG Considerations

> *Novel technology is not the same as better technology or better economics. That is clearly the case with Bitcoin: while perhaps intended as an alternative payment system with no government involvement, it has become a combination of a bubble, a Ponzi scheme and an environmental disaster. The volatility of bitcoin renders it a poor means of payment and a crazy way to store value. Very few people use it for payments or as a unit of account.*
> *(Agustin Carstens, General Manager, BIS, at the House of Finance, Goethe University, Frankfurt, 6 February 2018.)*

<u>Source</u>: https://www.bis.org/speeches/sp180206.htm

1. Cryptocurrencies: Descriptive Statistics
Who Invests in Crypto?

Degryse, Giuli, Sekerci, and Stradi (2026): representative sample of Dutch households (October 2022)

▶ 12% of the respondents have invested in crypto at least once (19% invested in traditional assets)
▶ individuals are more likely to invest in crypto if they
  • are **more susceptible to financial hype**
    - financial hype measure is constructed based on the idea that a key characteristic of a financial market bubble is that investors are driven primarily by recommendations from word of mouth and (social) media (narrative contagion)
  • have **lower social preferences**
    - social preferences are measured based on altruism $\rightarrow$ strong predictor of individuals' willingness to act on societal concerns, including climate change
    - willingness to act in favor of societal goals, even in the absence of direct personal benefit

▶ Moreover: crypto investors
- are less likely to rely on bank advisors
- are risk-loving
- have studied economics
- have right-wing political views
- are male and young

1. Cryptocurrencies: Descriptive Statistics
Who Invests in Crypto?
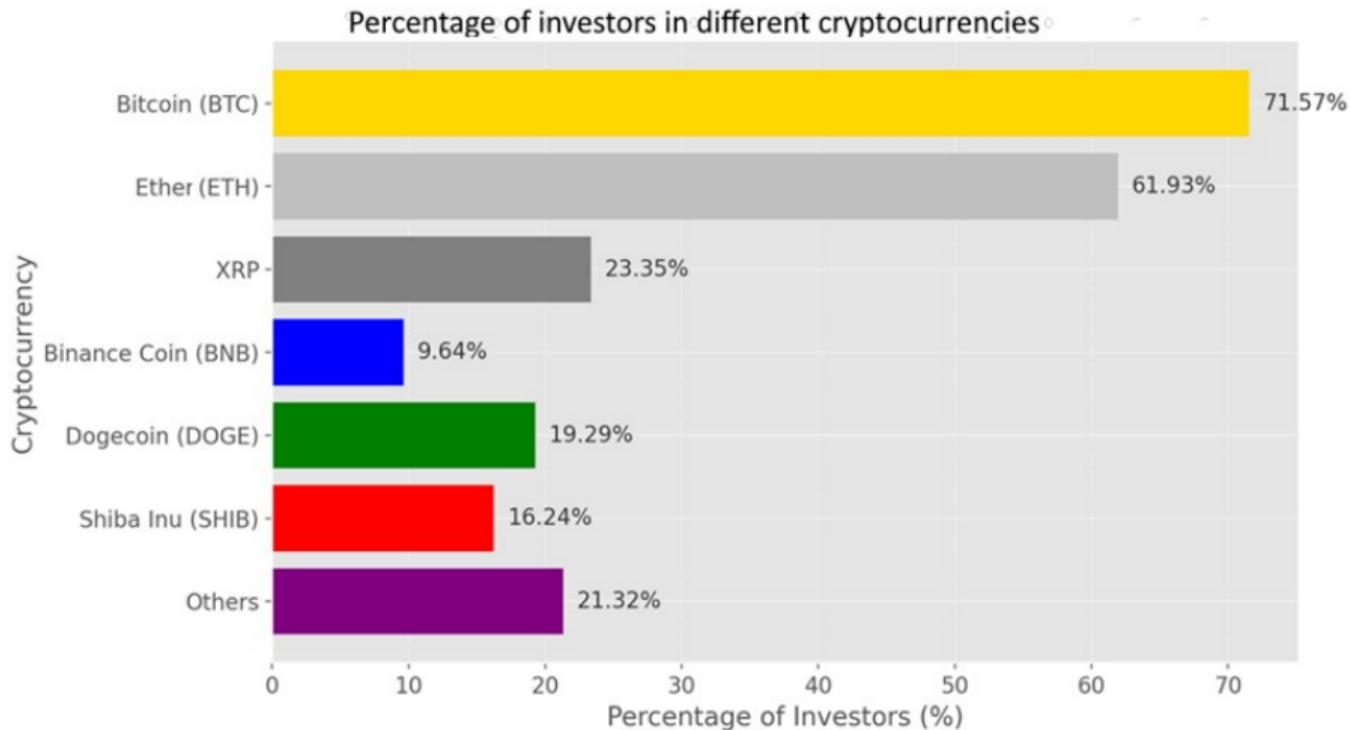
Percentage of investors in different cryptocurrencies

Reasons for Investing in Cryptocurrencies

Reason	Percentage of Investors (%)
Profitable Speculative Investment	44.95%
Experimenting	29.80%
Believe in Technology and Purpose	26.26%
Fear of Missing Out	18.18%
Diversification	14.14%
Lost Trust in Banks	13.64%
Lost Trust in Central Banks	13.64%
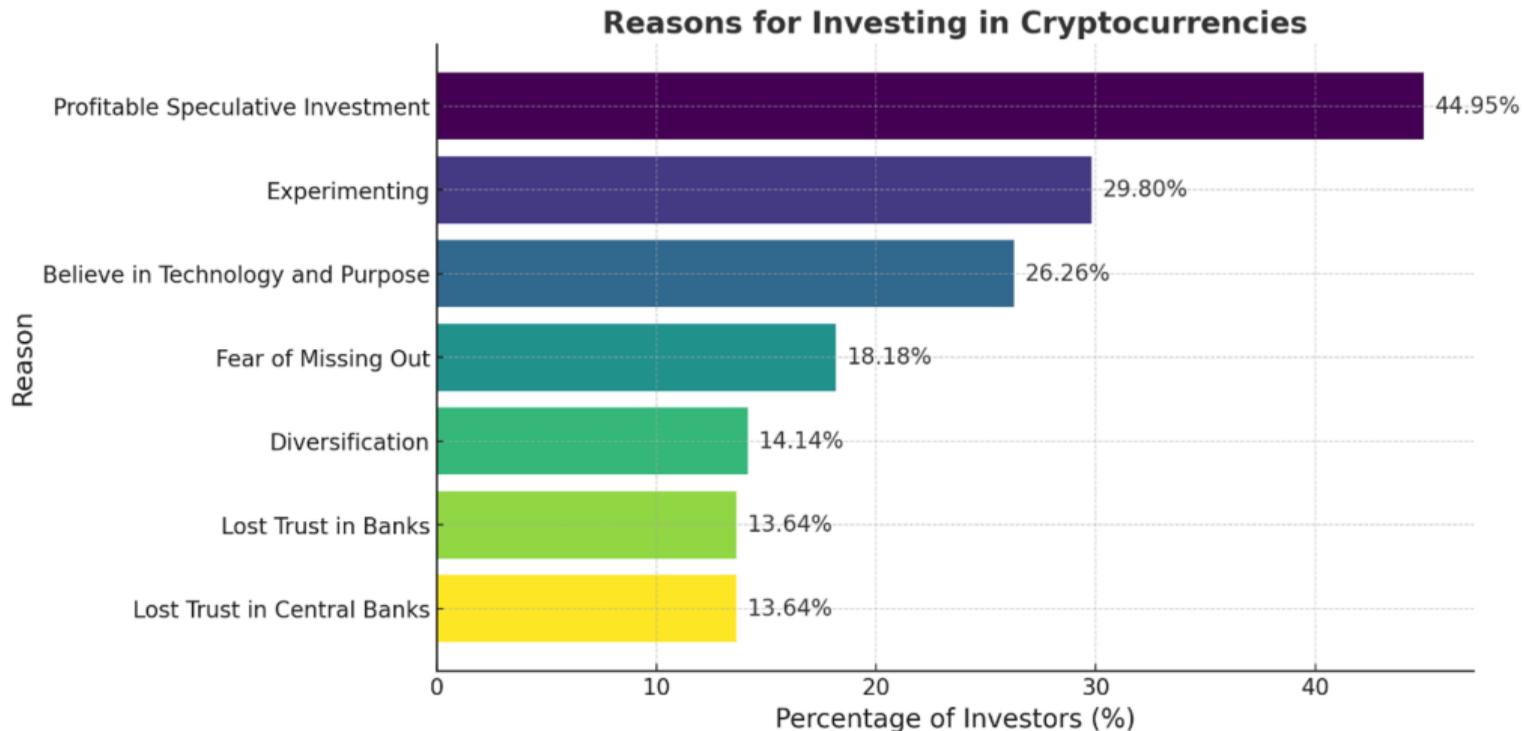
1. Cryptocurrencies: Descriptive Statistics
Who Invests in Crypto?

▶ Experiment: 1,200 U.S. participants through Prolific

▶ They randomly assign individuals to receive one of the following information treatments:
  - The number of people becoming Bitcoin millionaires (hype treatment) → Bloomberg
  - The environmental impact of Bitcoin (carbon treatment) → Dutch Central Bank research
  - The percentage of Bitcoin illegal transactions (illegality treatment) → Foley et al. (2019) paper
  - Control group (no additional information)

▶ Key dependent variable: Amount allocated to Bitcoin (out of $300) in an incentivized choice

1. Cryptocurrencies: Descriptive Statistics

Who Invests in Crypto?

▶ Hype treatment increases Bitcoin investments → more than 20% compared to the sample mean
- reason: Hype increases Bitcoin investments by raising expectations of excess returns

▶ Carbon treatment and Illegality treatment decrease Bitcoin investments → less than 18% and 15% compared to the unconditional sample mean, respectively
- no excess return effect
- information about Bitcoin's social concerns decreases investments as people invest less when they perceive crypto as harmful

❷ What is the Fundamental Value of 1 Bitcoin?

2. What is the Fundamental Value of 1 Bitcoin?

▶ Chicago Booth's Initiative on Global Markets consulted its North American Economic Experts Panel

Statement before the panel: A bitcoin has a fundamental value of at least $1,000.

Responses as percentage of full North American IGM Economic Experts Panel

Strongly agree	2%
Agree	2%
Uncertain	42%
Disagree	19%
Strongly disagree	14%
No opinion	14%
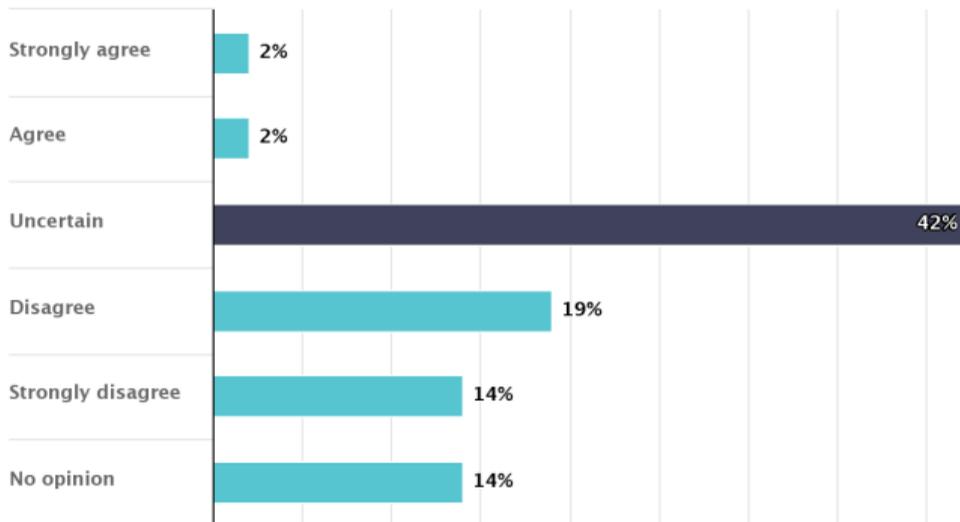
2. What is the Fundamental Value of 1 Bitcoin?

▶ Darrell Duffie (Stanford)
  For many reasons, the market price does not reflect fundamental Bitcoin value, which in any case is mainly related to avoiding detection.
  Response: Uncertain

▶ Eric Maskin (Harvard)
  Bitcoin has a fundamental value of $0.
  Response: Strongly disagree

▶ Robert Shimer (University of Chicago)
  Bitcoin has no fundamental value. Its value comes from the belief that it has value.
  Response: Strongly disagree

2. What is the Fundamental Value of 1 Bitcoin?

Schrödinger's Bitcoin

Feb 12, 2021 | **WILLEM H. BUITER**

Notwithstanding the recent spectacular surge in its price, Bitcoin will remain an asset without intrinsic value whose market value can be anything or nothing. Only those with healthy risk appetites and a robust capacity to absorb losses should consider investing in it.

2. What is the Fundamental Value of 1 Bitcoin?

Asset Pricing 101

Value of an asset = discounted sum of all expected future cash flows

▶ What are the cash flows of cryptocurrencies?
▶ Are there other value drivers?

2. What is the Fundamental Value of 1 Bitcoin?

▶ Transactional benefits (Biais, Bisière, Bouvard, Casamatta, and Menkveld (2023))
- cryptocurrency can provide transactional benefits that standard money cannot
- but: transactional benefits of a cryptocurrency depend on its price: higher price → stronger purchasing power relative to the standard currency → higher are the transactional benefits
- then multiple equilibria are possible, e.g.,
  - expectation of high future price and transactional benefits, lead to high price today
  - zero is also a possible value
- changes in fundamentals explain only a small share (around 5%) of the variance of Bitcoin returns
  - most of Bitcoin return variation reflects extrinsic volatility unrelated to fundamentals

▶ Future demand and supply

2. What is the Fundamental Value of 1 Bitcoin?

- ▶ Scarcity
  - cfr stamps: stamps are scarce and one expects that future investors put a higher value on them than now (Danielson, 2018)
- ▶ Anonymity (?)
- ▶ Bubble effect
  - market cap of cryptocurrencies has grown tremendously in a few years → this is in line with bubbles in the past: new and innovative technology but also extreme speculative behavior
- ▶ Network effect of cryptocurrency adoption
  - price dynamics induced by the positive externality of the network effect Cong, Li, and Wang (2020)
- ▶ Production side of the coins: miners
- ▶ Compensation for risk of hacks

❸ Risk and Return in Cryptocurrencies

3. Risk and Return in Cryptocurrencies

Time Series (Liu and Tsyvinski (2021))

▶ **Mean and standard deviation** of the coin market returns (value-weighted index) are an order of magnitude **higher than those of the stock returns** during the same period
  - daily, weekly, and monthly returns: 0.46%, 3.44%, and 20.44%
  - daily, weekly, and monthly standard deviations 5.46%, 16.50%, and 70.80%

▶ Sharpe ratios at the daily and weekly levels are about 60% and 90% higher, and the Sharpe ratio at the monthly level is comparable to those of stocks

3. Risk and Return in Cryptocurrencies

Time Series (Liu and Tsyvinski (2021))

▶ Drivers and predictors for cryptocurrency returns
▶ Coin market returns are
  - positively and significantly exposed to cryptocurrency **network growth** (both adoption and expected future growth)
  - **not** significantly exposed to the cryptocurrency **production factors**
▶ Future cryptocurrency cumulative returns are predicted by
  - **momentum**: e.g., one-standard-deviation increase in current coin market returns predicts a 3.30% increase in the weekly returns over the next week
  - **investor attention**: one-standard-deviation increase in the investor attention measure yields a 3.0% increase in the 1-week-ahead future coin market returns
  - not by cryptocurrency valuation ratios

3. Risk and Return in Cryptocurrencies

Time Series (Liu and Tsyvinski (2021))

▶ Cryptocurrencies do **not comove** a lot with currencies, commodities, stocks, and macroeconomic factors $\rightarrow$ low similarity between cryptocurrencies and traditional asset classes

3. Risk and Return in Cryptocurrencies

Cross-Section of Expected Cryptocurrency Returns (Liu, Tsyvinski, and Wu (2022))

▶ Methodology: each week
- sort the returns of individual cryptocurrencies into quintile portfolios based on the value of a given characteristic
- track the return of each portfolio in the week that follows and calculate each portfolio's average excess return over the risk-free rate
- form a long-short strategy based on the difference between the fifth (largest) and the first (smallest) quintiles

3. Risk and Return in Cryptocurrencies

Cross-Section of Expected Cryptocurrency Returns (Liu et al. (2022))

▶ Results (only significant strategies):
- **size strategy**: zero-investment long-short strategy that longs the smallest coins and shorts the largest coins generates more than 3% excess weekly returns
- **momentum strategies**: zero-investment long-short strategy that longs the coins with large price increases and shorts the coins with small increases generates about 3% excess weekly returns
- **volume-related strategies**: a zero-investment strategy that longs coins with the lowest volume and shorts coins with the highest volume generates about 3% excess weekly returns
- **volatility strategy**: zero-investment strategy that longs coins with the lowest price volume volatility and shorts coins with the highest price volume volatility generates 3.2% excess weekly returns

3. Risk and Return in Cryptocurrencies

Cross-Section of Expected Cryptocurrency Returns (Liu et al. (2022))

▶ Can a small number of factors span these 10 cross-sectional cryptocurrency return predictors?

- a 3-factor model with the cryptocurrency market factor ($CMKT$), a cryptocurrency size factor ($CSMB$), and a cryptocurrency momentum factor ($CMOM$) accounts for the excess returns of all 10 successful zero-investment strategies

3. Risk and Return in Cryptocurrencies

Cross-Section of Expected Cryptocurrency Returns (Liu et al. (2022))

▶ What are plausible mechanisms behind the cryptocurrency size and momentum effects?

▶ Size effect:
- captures an illiquidity premium
- size premium is relatively large at times of high Bitcoin transactions

▶ Momentum premium
- investor overreaction

4 Crypto Trading

4. Crypto Trading

- ▶ Markets seem to be **liquid**
  - Dyhrberg, Foley, and Svec (2018): average quoted and effective spreads for Bitcoin are lower than spreads on major equity exchanges → Bitcoin investible for retail size transactions
- ▶ Large and recurrent **arbitrage** opportunities (Makarov and Schoar (2020))
- ▶ **Fees** can be high
- ▶ Evidence for **market manipulation**
  - pup-and-dump schemes (Dhawan and Putniņš (2022))
  - wash trading = creation of fake trading records by having the same trader clearing his own standing limit orders (Aloosh and Li (2024))

❺ Should One Invest in Cryptocurrencies?

5. Should One Invest in Cryptocurrencies?

Should one invest in cryptocurrencies?

▶ Duchin, Solomon, Tu, and Wang (2025): study portfolio choice implications of various models and beliefs
▶ Allocation of **zero** to cryptocurrency, year after year, is **hard to generate** by most Bayesian priors, including pessimistic priors
  • prior beliefs about mean returns would need to be lower than -10.6% per month to justify never buying Bitcoin by the end of their sample period (February 2022)
  • short selling restrictions could generate zero weight

5. Should One Invest in Cryptocurrencies?

Should one invest in cryptocurrencies?

▶ Most optimal weights range between **plus or minus 1 percent and 5 percent** and are smooth
  - so weights are small but non-trivial
  - cryptocurrency's high volatility does not lead to large changes in weights, especially over short periods

▶ **Foregone gains** from investing in cryptocurrency are comparable to non-investment in a number of other assets
  - usual advice: investors should hold different assets due to their diversification benefits

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Thank You!

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