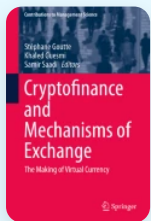


[Home](#) > [Cryptofinance and Mechanisms of Exchange](#) > Chapter

# Cryptocurrencies as an Asset Class

| Chapter | First Online: 03 January 2020



| pp 1–28 | [Cite this chapter](#)



## [Cryptofinance and Mechanisms of Exchange](#)

[Sinan Krückeberg](#)  & [Peter Scholz](#)

 Part of the book series: [Contributions to Management Science](#) ((MANAGEMENT SC.))

 2474 Accesses  11 [Citations](#)

## Abstract

Cryptocurrencies are a new emergence at the intersection of technology and finance. It is therefore of particular interest whether cryptocurrencies can form a new asset class or need to be subsumed under an existing one. We find that cryptocurrencies show characteristics of a distinct asset class based on strong internal correlation, an absence of correlation with any traditional asset class as well as sufficient market liquidity, while market stability has room for improvement. Adding cryptocurrency to traditional portfolio structures may lead to significant and persistent risk-adjusted outperformance. These results support the careful introduction of cryptocurrencies into the asset management mainstream.



This is a preview of subscription content, [log in via an institution](#)  to check access.

## Access this chapter

[Log in via an institution →](#)

### ^ Chapter

**EUR 29.95**

Price includes VAT (Poland)

- Available as PDF
- Read on any device
- Instant download
- Own it forever

[Buy Chapter →](#)

### ^ eBook

**EUR 117.69**

Price includes VAT (Poland)

- Available as EPUB and PDF
- Read on any device
- Instant download
- Own it forever

[Buy eBook →](#)

### ^ Softcover Book

**EUR 149.79**

Price includes VAT (Poland)

- Compact, lightweight edition
- Dispatched in 3 to 5 business days
- Free shipping worldwide - [see info](#)

[Buy Softcover Book →](#)

### ^ Hardcover Book

**EUR 149.79**

Price includes VAT (Poland)

- Durable hardcover edition
- Dispatched in 3 to 5 business days
- Free shipping worldwide - [see info](#)

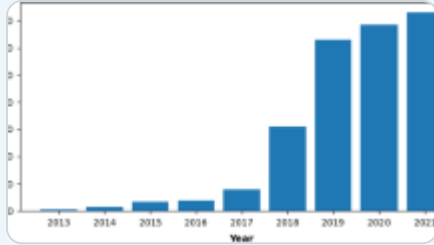
[Buy Hardcover Book →](#)

Tax calculation will be finalised at checkout

**Purchases are for personal use only**

[Institutional subscriptions →](#)

Similar content being viewed by others



### **Cryptocurrency trading: a comprehensive survey.**

Article | Open access

07 February 2022



### **A Study of the Impact of Crypto Assets on Portfolio Risk-Return Characteristics Before and After COVID-19...**

Chapter | © 2021



### **Microstructure noise and idiosyncratic volatility anomalies in cryptocurrencies**

Article | 19 February 2022

## Notes

1. Bleeding edge alternatives such as the ‘Tangle’ and ‘Hashgraph’ are emerging, see Popov ([2017](#)) and Baird ([2016](#)) respectively.
2. While alternative timeframes of 6, 9 and 12 months have been examined, results of the 3 month window are robust to such changes. Therefore, we limit our analysis to the three most recent months.
3. The organizations participating in the SRO are: BATS Exchange, Inc.; BATS Y-Exchange, Inc.; NASDAQ OMX BX, Inc.; Chicago Board Options Exchange, Incorporated; C2 Options Exchange, Incorporated; Chicago Stock Exchange, Inc.; EDGA Exchange, Inc.; EDGX Exchange, Inc.; Financial Industry Regulatory Authority, Inc.; International Securities Exchange LLC; The NASDAQ Stock Market LLC; New York Stock Exchange LLC; NYSE Amex LLC; NYSE Arca, Inc.; National Stock Exchange, Inc. and NASDAQ OMX PHLX LLC.
4. We also performed a check on Minimum-Variance optimization. Due to the high volatility levels of cryptocurrencies, we did not find any significant volatility reduction.

# References

---

Ackert LF (2012) The impact of circuit breakers on market outcomes. Technical report. Economic Impact Assessment EIA9. UK Government Office for Science – Foresight Project.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/289039/12-1070-eia9-impact-circuit-breakerson-market-outcomes.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289039/12-1070-eia9-impact-circuit-breakerson-market-outcomes.pdf)

Allen M (2017) Chiasso accepts tax payments in Bitcoin. swissinfo.ch.

[https://www.swissinfo.ch/eng/business/swiss-fintech\\_chiasso-accepts-taxpayments-in-bitcoin/43503464](https://www.swissinfo.ch/eng/business/swiss-fintech_chiasso-accepts-taxpayments-in-bitcoin/43503464)

Back A (2002) Hashcash-a denial of service counter-measure.

<ftp://sunsite.icm.edu.pl/site/replay.old/programs/hashcash/hashcash.pdf>

[Google Scholar](#)

Baird L (2016) The Swirlds hashgraph consensus algorithm: fair, fast, Byzantine fault tolerance. Technical report Swirlds-Tr-2016-01

[Google Scholar](#)

Briere M, Oosterlinck K, Szafarz A (2015) Virtual currency, tangible return: portfolio diversification with Bitcoin. J Asset Manag 16(6):365–373

[Article](#) [Google Scholar](#)

Buterin V (2013a) A next-generation smart contract and decentralized application platform. Technical report. Ethereum project white paper.

<https://github.com/ethereum/wiki/blob/master/drafts/%5Benglish%5D-old-ethereumwhitepaper.md>

Buterin V (2013b) Bitcoin network shaken by blockchain fork.

[bitcoinmagazine.com](https://bitcoinmagazine.com/articles/bitcoin-network-shaken-by-blockchainfork-1363144448/). <https://bitcoinmagazine.com/articles/bitcoin-network-shaken-by-blockchainfork-1363144448/>

Buterin V (2016) "Ethereum 2.0". Ethereum project mauve paper.

<https://cdn.hackaday.io/files/10879465447136/Mauve%20Paper%20Vitalik.pdf>

[Google Scholar](#)

Buterin V (2017a) On medium-of-exchange token valuations.

<http://vitalik.ca/general/2017/10/17/moe.html>

[Google Scholar](#)

Buterin V (2017b) The meaning of decentralization. Technical report. Medium.

<https://medium.com/@VitalikButerin/the-meaning-of-decentralization-a0c92b76a274>

CBOE (2017) XBT-Cboe Bitcoin futures. Technical report. Chicago Board Options Exchange. <http://cfe.cboe.com/cfe-products/xbt-cboe-bitcoin-futures>

CME (2017) Now available: Bitcoin futures. [cmegroup.com](http://cmegroup.com).

<https://www.cmegroup.com/trading/bitcoin-futures.html>

Dougherty C, Huang G (2014) Mt. Gox seeks bankruptcy after 480 million Bitcoin loss. [bloomberg.com](http://bloomberg.com). <https://www.bloomberg.com/news/articles/2014-02-28/mt-gox-exchange-files-for-bankruptcy>

Dwork C, Naor M (1992) Pricing via processing or combatting junk mail. In: Annual international cryptology conference. Springer, Heidelberg, pp 139–147.

[https://link.springer.com/chapter/10.1007/3-540-48071-4\\_10](https://link.springer.com/chapter/10.1007/3-540-48071-4_10)

[Google Scholar](#)

Dyhrberg AH, Foley S, Svec J (2018) How investible is Bitcoin? Analyzing the liquidity and transaction costs of Bitcoin markets. Econ Lett 171:140–143

[Article](#) [Google Scholar](#)

Eisl A, Gasser S, and Weinmayer K (2015) Caveat emptor: does Bitcoin improve portfolio diversification? Available at SSRN 2408997

[Google Scholar](#)

Elendner H et al (2018) The cross-section of crypto-currencies as financial assets - investing in crypto-currencies beyond bitcoin. In: Handbook of blockchain, digital finance, and inclusion, vol 1. Elsevier, Amsterdam, pp 146–170

[Google Scholar](#)

EOSProject (2017) EOS.IO technical white paper. Technical report EOS Project. <https://github.com/EOSIO/Documentation/blob/master/TechnicalWhitePaper.md>

Fink C, Johann T (2014) Bitcoin markets. Available at SSRN 2408396

[Google Scholar](#)

GolemProject (2016) The Golem project - crowdfunding whitepaper. Technical report. The Golem Project. <http://golemproject.net/doc/DraftGolemProjectWhitepaper.pdf>

Higgins S (2014) Hal Finney on Bitcoin: in his own words. [coindesk.com](http://coindesk.com). <https://www.coindesk.com/hal-finney-bitcoin-words/>

Jakobsson M, Juels A (1999) Proofs of work and bread pudding protocols. In: Secure information networks. Springer, Berlin, pp 258–272. [https://link.springer.com/content/pdf/10.1007/978-0-387-35568-9\\_18.pdf](https://link.springer.com/content/pdf/10.1007/978-0-387-35568-9_18.pdf)

Johnston D et al (2015) The general theory of decentralized applications, DApps. GitHub 9. <https://github.com/TarantulaTechnology/Documents-Blockchain/blob/master/The%20General%20Theory%20of%20Decentralized%20Applications%2C%20DApps.pdf>

[Google Scholar](#)

Juels A, Brainard JG (1999) Client puzzles: a cryptographic countermeasure against connection depletion attacks. In: NDSS, vol 99, pp 151–165. <http://www.isoc.org/isoc/conferences/ndss/99/proceedings/papers/juels.pdf>

[Google Scholar](#)

Kalla S (2017) A framework for valuing crypto tokens. Technical report. Acupacy. <https://www.coindesk.com/framework-valuing-crypto-tokens/>

Lee DKC, Li G, Wang Y (2018) Cryptocurrency: a new investment opportunity? J Altern Invest 20(3):16–40

[Google Scholar](#)

Merkle RC (1980) Protocols for public key cryptosystems. In: Security and privacy, 1980 IEEE Symposium on. IEEE, pp 122–134. [https://www.researchgate.net/profile/Ralph\\_Merkle/publication/220713913\\_Protocols\\_for\\_Public\\_Key\\_Cryptosystem/links/00b495384ecda07784000000/Protocols-for-Public-Key-Cryptosystems.pdf](https://www.researchgate.net/profile/Ralph_Merkle/publication/220713913_Protocols_for_Public_Key_Cryptosystem/links/00b495384ecda07784000000/Protocols-for-Public-Key-Cryptosystems.pdf)

Merkle RC (1990) A certified digital signature in Conference on the theory and application of cryptology. In: Brassard G (ed) Advances in cryptology. CRYPTO'89 LNCS 435. Springer, Heidelberg, pp 218–238. [https://link.springer.com/content/pdf/10.1007/0-387-34805-0\\_21.pdf](https://link.springer.com/content/pdf/10.1007/0-387-34805-0_21.pdf)

Nakamoto S (2008) Bitcoin: a peer-to-peer electronic cash system. Technical report. <https://bitcoin.org/bitcoin.pdf>

P4Titan (2014) Slimcoin - a peer-to-peer crypto-currency with proof-of-burn. Technical report. slimcoin

Popov S (2017) The tangle. Technical report. IOTA Project. [https://iota.org/IOTA\\_Whitepaper.pdf](https://iota.org/IOTA_Whitepaper.pdf)

ProtocolLabs (2017) Filecoin: a decentralized storage network. Technical report. Protocol Labs. <https://filecoin.io/filecoin.pdf>

Rosenfeld M (2012) Analysis of hashrate-based double spending. arXiv preprint arXiv:1402.2009. <https://arxiv.org/pdf/1402.2009.pdf>

SEC (2012) Approval order. Technical report Release 34-67090. Securities and Exchange Commission. <https://www.sec.gov/rules/sro/bats/2012/34-67090.pdf>

Sharpe WF (1992) Asset allocation: management style and performance measurement. J Portf Manag 18(2):7-19

Swissinfo (2016) Zug first to accept Bitcoin for government services. swissinfo.ch. [https://www.swissinfo.ch/eng/business/crypto-valley\\_zug-firstto-accept-bitcoin-for-government-services/42143908](https://www.swissinfo.ch/eng/business/crypto-valley_zug-firstto-accept-bitcoin-for-government-services/42143908)



Szabo N (2008) Bit gold. <http://unenumerated.blogspot.de/2005/12/bitgold.html>

Trimborn S, Li M, Härdle WK (2018) Investing with cryptocurrencies - A liquidity constrained investment approach

[Google Scholar](#)

Ummelas O (2018) Estonia scales down plan to create national cryptocurrency. [bloomberg.com. https://www.bloomberg.com/news/articles/2018-06-01/estonia-curbs-cryptocurrency-plan-that-drew-rebuke-from-draghi](https://www.bloomberg.com/news/articles/2018-06-01/estonia-curbs-cryptocurrency-plan-that-drew-rebuke-from-draghi)

Voshmgir S, Kalinov V (2017) Blockchain - A beginners guide. Technical report Version 1.0. BlockchainHub. <https://blockchainhub.net/blockchaintechnology>

Wei WC (2018) Liquidity and market efficiency in cryptocurrencies. Econ Lett 168:21–24

[Article](#) [Google Scholar](#)

WeiDai (1998) B-Money. <http://www.weidai.com/bmoney.txt>

[Google Scholar](#)

Wood G (2014) Ethereum: a secure decentralised generalised transaction ledger. Ethereum project yellow paper EIP-150 revision. <http://www.cryptopapers.net/papers/ethereum-yellowpaper.pdf>

[Google Scholar](#)

## Acknowledgements

---

We thank Christian Gombert of the Hauck & Aufhäuser Privatbankiers as well as Johannes Bernius for their invaluable support with data acquisition. Lars Geiger,

the participants of the 6th Crowdinvesting Symposium, and the participants of the 26th Annual Conference of the Multinational Finance Society have provided valuable feedback.

## Author information

---

### Authors and Affiliations

**Krückeberg Family Office, Hamburg, Germany**

Sinan Krückeberg

**Hamburg School of Business Administration (HSBA) Department of Banking & Finance, Hamburg, Germany**

Peter Scholz

### Corresponding author

Correspondence to [Sinan Krückeberg](#).

## Editor information

---

### Editors and Affiliations

**CEMOTEV, University Paris-Saclay, Versailles, France**

Stéphane Goutte

**IPAG Business School, Paris, France**

Khaled Guesmi

**Telfer School of Management, University of Ottawa, Ottawa, Ontario, Canada**

Samir Saadi

## Rights and permissions

---

[Reprints and permissions](#)

## About this chapter

### Cite this chapter

Krückeberg, S., Scholz, P. (2019). Cryptocurrencies as an Asset Class. In: Goutte, S., Guesmi, K., Saadi, S. (eds) Cryptofinance and Mechanisms of Exchange. Contributions to Management Science. Springer, Cham. [https://doi.org/10.1007/978-3-030-30738-7\\_1](https://doi.org/10.1007/978-3-030-30738-7_1)

[.RIS↓](#) [.ENW↓](#) [.BIB↓](#)

DOI	Published	Publisher Name
<a href="https://doi.org/10.1007/978-3-030-30738-7_1">https://doi.org/10.1007/978-3-030-30738-7_1</a>	03 January 2020	Springer, Cham
Print ISBN	Online ISBN	eBook Packages
978-3-030-30737-0	978-3-030-30738-7	<a href="#">Economics and Finance</a>
		<a href="#">Economics and Finance (R0)</a>

## Publish with us

[Policies and ethics](#) 

## Search

Search by keyword or author



## Navigation

**Find a journal**

---

**Publish with us**

---

**Track your research**

---

