

[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 \(\(MANAGEMENT SC.\)\)](#) 2797 Accesses  25 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 !\[\]\(3dfb8d66e81160ad61421a3452093d1b_img.jpg\)](#)

Subscribe and save

Springer+

from €37.37 /Month

- Starting from 10 chapters or articles per month
- Access and download chapters and articles from more than 300k books and 2,500 journals
- Cancel anytime

[View plans !\[\]\(de95854c7ee024cfadc48187bbb781b2_img.jpg\)](#)

Buy Now

Chapter

EUR 29.95

Price includes VAT (Poland)

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

[Buy Chapter !\[\]\(e3275251d0893157c3584e20c81dc3ba_img.jpg\)](#)

eBook

EUR 117.69

Price includes VAT (Poland)

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

[Buy eBook !\[\]\(83bbbd261710c59db0214aa27b2edc0d_img.jpg\)](#)

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 !\[\]\(a8ff699ced33317c53c86f9bf3171905_img.jpg\)](#)

Hardcover Book

EUR 149.79

Price includes VAT (Poland)

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

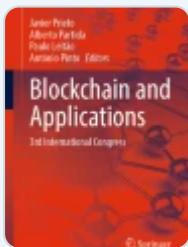
[Buy Hardcover Book !\[\]\(b78e2d0769ad682766c36e077fde3d60_img.jpg\)](#)

Tax calculation will be finalised at checkout

Purchases are for personal use only

[Institutional subscriptions](#) →

Similar content being viewed by others



[Cryptocurrencies and Price Prediction: A Survey](#)

Chapter | © 2022



[Digital Finance: Key Representatives of the Cryptocurrency Market](#)

Chapter | © 2024



[Cryptocurrencies: The Future of Finance?](#)

Chapter | © 2019

Explore related subjects

Discover the latest articles, books and news in related subjects, suggested using machine learning.

[Behavioral Finance](#)

[Financial Economics](#)

[Islamic Finance](#)

[Mathematical Finance](#)

[Quantitative Finance](#)

[Blockchain](#)

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-breakers-on-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

Back A (2002) Hashcash-a denial of service counter-measure.
<ftp://sunsite.icm.edu.pl/site/replay.old/programs/hashcash/hashcash.pdf>

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

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

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

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

[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>

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://www.coindesk.com/hal-finney-bitcoin-words/).

<https://www.coindesk.com/hal-finney-bitcoin-words/>

Jacobsson 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

[Chapter](#) [Google Scholar](#)

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

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

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

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

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

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

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

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](#)

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>

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

Copyright information

© 2019 Springer Nature Switzerland AG

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

[.RIS](#) [.ENW](#) [.BIB](#)

DOI

https://doi.org/10.1007/978-3-030-30738-7_1

Published

03 January 2020

Publisher Name

Springer, Cham

Print ISBN

978-3-030-30737-0

Online ISBN

978-3-030-30738-7

eBook Packages

[Economics and Finance](#)

[Economics and Finance \(R0\)](#)

Keywords

[Cryptocurrency](#)[Tokens](#)[Coins](#)[Asset class](#)[Portfolio optimization](#)[Asset management](#)

Publish with us

[Policies and ethics !\[\]\(eaac180de418db4eae4b4cefebda75e8_img.jpg\)](#)

Search

Search by keyword or author



Navigation

Find a journal

Publish with us

Track your research