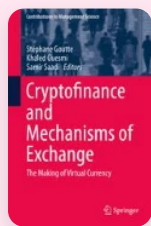


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# Cryptocurrencies as an Asset Class

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## Cryptofinance and Mechanisms of Exchange

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

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## 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.

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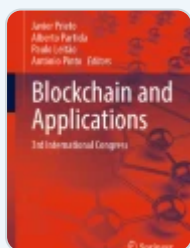
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## Notes

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

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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>

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](http://bitcoinmagazine.com). <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>

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)

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

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[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](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

[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](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](#)

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