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Choice Algonomics

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Abstract

Choice Algonomics is a Report on Algorand and Choice Coin tokenomics with an emphasis on Algo and Choice. Algo is the native cryptocurrency of the Algorand blockchain and its breakthrough layer-1 technical protocol. Choice is a utility token for voting created by the Choice Coin DAO, the largest open source software project on the Algorand blockchain. The purpose of this Report is to provide an overview for the DeFi ecosystem evolving on Algorand and offer analysis relating to the economic structures supporting Algo and Choice respectively.



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Introduction

Tokenomics is a field of industrial practice and academic study at the confluence of blockchain and economics. Most people compare tokenomic cycles to a boom-and-bust market, like Tulip Mania in the Netherlands during the 17th Century¹ or the dot com bubble at the turn of the 21st Century.² But the truth is blockchains are not bubbles following economic trajectories akin to speculative investing. Instead, blockchains³ are the bedrock for the best of modern finance, a completely new and nascent technology at the technical convergence of economics and electricity.⁴

Just before the turn of the 20th Century, Thomas Edison and Nikola Tesla were inventing new ways to harness electric power by manipulating the movement of electrons across conductive wire.⁵ At the time, there were many who criticized electricity generating technologies as too risky and dangerous. But, like blockchain, the technology was too important to be ignored.

Still, Edison and Tesla had a fierce rivalry to invent and inspire the electric revolution. Edison is famous for inventing the light bulb, but long forgotten was his plan to use the underlying technology to bring electricity to the world. He wanted to power homes with the same direct current he used in the light bulb, but the problem was the direct current model couldn't scale. As such, Edison's design was limited to providing electricity within a few blocks of a power station.

Nikola Tesla is one of the great inventors of all time. Tesla had a better model for electricidal transmission, an alternating current.⁶ Where direct currents only flow in one direction, alternating currents flow in multiple directions allowing for increases in magnitude and longer transmission ranges. Tesla's model crushed Edison's because the alternating current could scale. In fact, today the entire world runs on an alternating electrical current connected by computers across the world.

Similar to early electrical power, blockchain technology is segmented in two essential models – the proof-of-work (PoW) blockchain and the proof-of-consensus (PoC) blockchain. The two most prominent PoW blockchains are Bitcoin⁷ and Ethereum. Much like Edison's light bulb,

¹ A. Maurits van der Veen, *The Dutch Tulip Mania: The Social Foundations of a Financial Bubble* (2012).

² The reason for the dot com bubble was market speculation that led to several companies being over valued by investors. This created a pump and dump like economy, where people made and lost fortunes in short periods of time. See Michael J. Casey and Paul Vigna, *In Blockchain We Trust*, MIT Technology Review (April 9, 2018). (“The dot-com bubble of the 1990s is popularly viewed as a period of crazy excess that ended with hundreds of billions of dollars of wealth being destroyed.”)

³ Emily Wells, et al., *Blockchain Benefits and Risks* (2018). *See also* Elona Marku, et al., *General Purpose Technology: The Blockchain Domain* (2019).

⁴ Electricity is a charged electromagnetic current.

⁵ U.S. Patent No. 265,786 Apparatus for The Transmission of Electrical Power, to Edison (1882). *See also* U.S. 219,268 Electric-Light, to Edison (1879).

⁶ U.S. Patent No. 382,282 to Tesla, Method of Converting and Distributing Electric Currents (May 1, 1888). *See also* U.S. Patent No. 428,057, to Tesla, Pyromagnetic Electric Generator (May 13, 1890).

⁷ In the year 2008, an unknown person with the pseudonym Satoshi Nakamoto sent an email to a cryptography mailing list to announce he had produced a “new electronic cash system that’s fully peer-to-peer, with no trusted

these blockchains are breakthrough technology. The PoW model relies on a complex cryptographic hashing algorithm for a process called mining, which is used to distribute new assets and incentivize network maintenance.

However, also like the light bulb and the underlying technology, the direct electrical current, the PoW model does not scale. One problem is that mining or solving the necessary cryptographic hash algorithm underlying PoW technology requires massive amounts of computing power and brute force search. As a result, network maintenance for PoW blockchains is extremely expensive and economically inefficient. So, the cost for transactions is unnecessarily high and, in some instances, can cost hundreds of dollars for a single transaction.

The PoC model is the alternating current, it scales to allow global and instantaneous transactions at nearly no cost.⁸ The best PoC blockchain is Algorand, which was invented by one of the generations great cryptographers, Silvio Micali.⁹ The name Algorand is a marriage of two words algorithm and random, signifying the quantum-secure and random algorithm at the base of Algorand's PoC technology. While the technology for a purely random consensus mechanism is the keystone to solving the scale problem, its invention was no accident.

Instead, Algorand is a product derived from decades of cryptographic research and development, culminating in a creative concept that solves the blockchain trilemma. In fact, Algorand's foundational architectures began developing long before Bitcoin was created and evidence for the invention may be found in Micali's research since his Dissertation in the year 1983, Randomness Versus Hardness.¹⁰ Now, Algorand is a better blockchain, simultaneously solving security, scalability, and decentralized sustainability across global information networks.¹¹

Algorand is the finest financial technology on Earth and structured systemically for sustainable growth against global inflationary monetary policy. This Tokenomics Report proceeds in three parts. Part I provides an overview of the Algorand blockchain, including analysis of the technical protocol and empirical economic insights. Part II discusses Choice Coin and highlights the Choice asset, DAO governance protocol, and open innovation strategy. Part III dives into the tokenomics for Choice Coin, including analysis of decentralized finance (DeFi) platforms on Algorand, the Choice Coin DAO, and strategies for growth.

third party." See Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System 1 (2008). See also SAIFEDEAN AMMOUS, THE BITCOIN STANDARD xv (2018).

⁸ Sean Mann, Massimo Morini, Michele Treccani, The Algorand Economic Evolution Report, 7 (2021). ("Proof-of-stake itself is built on the same economic, skin-in-the-game incentive logic, but with the crucial innovation of avoiding the enormous waste of resources associated to mining: the largest holders are supposed to have the strongest loyalty and guarantee the best execution of node running services even without introducing an external resource consumption.")

⁹ Algorand, From our Founder (2022), <https://www.algorand.com/about/from-our-founder>.

¹⁰ Silvio Micali, Randomness Versus Hardness, University of California, Berkeley (1983).

¹¹ Yossi Gilad, et al., Algorand: Scaling Byzantine Agreements for Cryptocurrencies, 53 (2017). See also Emily Wells, et al., Blockchain Benefits and Risks, The Military Engineer, 62 (2018). ("Blockchain technologies are being considered as solutions to various cybersecurity and information technology threats and challenges.")

I. Algorand

Algorand is the purest and most powerful form of economic electrification. One of the great things about the Algorand Network is that it fosters a new global community with ample opportunity for the entrepreneurs, small businesses, and academics. The heterogeneous nature of Algorand DeFi at the confluence of computer science and economics has a competitive edge in the market because of its superior block validation technology. With Algorand, you can instantaneously send, validate, and record information around the world. It's money at the speed of light, 299792458 m/s . Indeed, Algorand is the generations greatest blockchain because Algorand moves with the financial force of physics.

A. Protocol

From a tokenomics perspective, the great thing about Algorand is that the protocol requires Algo to operate. This creates a constant, consistent, and continuous demand for the asset because everyone building and working on the Algorand blockchain needs Algo to facilitate all other transactions. Still, a key innovation for the Algorand blockchain is that transaction fees, which are paid in Algo, are less than a penny per transaction, thus enabling a truly public and global network.

As such, Algorand's technical and structural model gives it a significant advantage over traditional proof-of-work blockchains and corresponding cryptocurrencies. Algorand's proof-of-consensus blockchain improves security and power efficiency across blockchain networks by eliminating miners and validating transactions based on a staking consensus.¹² Algorand is the most technically advanced and sophisticated blockchain technology and utilizes advanced post-quantum cryptographic mechanisms and zero-knowledge proofs (ZKPs). The proof-of-consensus mechanism incorporates a timestamp signature,¹³ relying on ZKPs instead of hashing for validation.

Banks have little incentive to provide customer service and force customers to wait on hold for hours, mishandle customer data, disrespect security and privacy, and generally provide little to no value in exchange for the privilege of holding capital.¹⁴ Banks also charge account holders a

¹² Yossi Gilad, et al., *Algorand: Scaling Byzantine Agreements for Cryptocurrencies*, 53 (2017). *See also* Emily Wells, et al., *Blockchain Benefits and Risks*, *The Military Engineer*, 62 (2018). ("Blockchain technologies are being considered as solutions to various cybersecurity and information technology threats and challenges.")

¹³ Tal Rabin, *A Simplified Approach to Threshold and Proactive RSA*, 90, *Annual International Cryptology Conference* (1998). ("Proactive signature schemes use threshold signature schemes as the basis but drastically reduce the assumption concerning failures.") *See also* Scott J. Shackelford, Steve Myers, *Block-by-Block: Leveraging the Power of Blockchain Technology to Build Trust and Promote Cyber Peace*, 19 *Yale J. L. & Tech.* 334, 351 (2017). *See also* Tal Rabin, *Verifiable Secret Sharing and Multiparty Protocols with Honest Majority* (1989).

¹⁴ A main advantage for blockchain technologies is the ability to transfer capital in a more economically efficient way. *See* U.S. Patent No. 10,769,600 to Chen et al., *Cryptocurrency transactions using debit and credit values* (September 8, 2020).

myriad of fees, such as transaction fees, overdraft fees, and maintenance fees.¹⁵ These fees are gradually increased over time, even though no legitimate service is often rendered in exchange and banks earn interest on money deposited which is greater than the amount paid to account holders. In other words, banks force customers to pay them for the sole purpose of increasing their own profit at their customers' expense.

Smart contracts change this, creating financial freedom for the public. A smart contract is a software for transferring cryptocurrency. According to Fabrice Benhamouda, “[n]early all blockchain architectures support the notion of smart contracts, namely a programmable application logic that is invoked for every transaction.”¹⁶ Fees for smart contracts on Ethereum can have a wide range, which is often between \$5.00 and \$50.00 in ETH, the Ethereum native cryptocurrency, however in some instances transactions can cost hundreds or thousands of dollars.¹⁷ Similarly, Bitcoin transactions have a high range and often cost hundreds or thousands of dollars to facilitate because of the high cost of energy required to validate blocks.¹⁸

Algorand smart contracts are much faster and more efficient than smart contracts on other blockchain networks due to the heterogeneous way in which the network is programmed.¹⁹ The low transaction fees are possible because of Algorand's innovative proof-of-consensus mechanism, which validates blocks more efficiently and swiftly than the proof-of-work mechanism. Moreover, formed by MIT computer scientists, Algorand is the leading blockchain in research, development, and innovation.²⁰ Indeed, Algorand's technology is verified and protected by substantive peer-reviewed research and intellectual property, while simultaneously being publicly available through various open source licenses.

¹⁵ Julie Andersen Hill, Transaction Account Fees: Do the Poor Really Pay More than the Rich?, 15 U. Pen. J. Bus. Law, 66-67 (2013). (“While transaction accounts’ fee structures differ from bank to bank (and even account to account), common fees include overdraft fees, insufficient funds fees, return item fees, stop payment fees, and account maintenance fees. Some banks also assess teller fees, smart-phone banking fees, paper statement fees, and a variety of other fees.”)

¹⁶ Fabrice Benhamouda, et al., Supporting Private Data on Hyperledger Fabric with Secure Multiparty Computation, IBM Journal of Research and Development (April 2019), DOI: 10.1147/JRD.2019.2913621.

¹⁷ See Generally Giuseppe Antonio Pierro, Henrique Rocha, The Influence Factors on Ethereum Transaction Fees. 2019 IEEE/ACM 2nd International Workshop on Emerging Trends in Software Engineering for Blockchain (WETSEB), May 2019, Montreal, Canada. pp.24-31, 10.1109/WETSEB.2019.00010 . hal-02403098.

¹⁸ See Generally Al-Shehabi, Abdullah, "Bitcoin Transaction Fee Estimation Using Mempool State and Linear Perceptron Machine Learning Algorithm" (2018). Master's Projects. 638. DOI: <https://doi.org/10.31979/etd.j6zd-an2c> https://scholarworks.sjsu.edu/etd_projects/638.

¹⁹ Massimo Bartoletti, A formal model of Algorand smart contracts, 1 (2021), <https://arxiv.org/abs/2009.12140v3>. (“Smart contracts are agreements between two or more parties that are automatically enforced without trusted intermediaries.”)

²⁰ Sean Mann, Massimo Morini, Michele Treccani, The Algorand Economic Evolution Report, 5 (2021). (“While history is full of thousands of forgotten blockchains who disappeared in the initial days due to excess supply related to the distribution of tokens to initial backers and other structural “whales”, the Algorand community recognized the importance in ensuring a future for the platform based on the superior technology introduced by Silvio Micali, and was able to work together to achieve reform.”)

B. Intellectual Property

Owning blockchain technologies promises the opportunity to capture an early stake in the millennium's most prolific and best performing financial asset. Each blockchain invention is unique, offering new features and capabilities. A defining feature for blockchains compared to other technologies is blockchains are largely based on open source software. The reason blockchains are designed to be open source is because the technology is intended to decentralize economic transactions through peer-to-peer networks.²¹ As such, for distributed ledgers to be effective, they must be public and accessible by all nodes on the network.

More generally, considerations for owning blockchain technologies include code copyrights, software licenses, and patent rights. Patents help to validate blockchain technologies because the Government or other issuing body approves the innovation as new and useful in granting exclusive patent rights.²²

Patent Application No.	Title	Date
2019/0147438	Distributed transaction propagation and verification system	May 16, 2019
2020/0304314	Message-credentialed blockchains	September 24, 2020
2020/0313896A1	Declarative smart contracts	October 1, 2020
2020/0396059	Fast and partition-resilient blockchains	December 17, 2020
2021/0303195A1	Enabling erasure of sensitive information in a blockchain	September 30, 2021

Figure 1

Figure 1 shows a list of patent applications filed by Algorand for inventions relating to its layer-1 blockchain technology. Typically, the code for patented inventions is also protected under copyright law.²³ Additionally, an open source license will grant a license to use the technology, while limiting liability for the copyright holder. For example, the Algorand GitHub repository for PyTeal, is publicly available under the MIT License.²⁴ As such, blockchain technology is said to be made open because anyone with Internet access can use it, subject to certain restrictions.

In addition to Algorand, projects such as the Choice Coin DAO are also filing patent applications for their inventions on the blockchain. Algorand is a great innovation insofar as it creates a tool by which new innovations may be generated.

²¹ Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System 1 (2008).

²² 35 U.S.C. § 101.

²³ 17 U.S.C. §102.

²⁴ The MIT License, Open Source Initiative (2021).

Patent Application No.	Title	Date
17,375,542	Allogeneous smart contracts	July 14, 2021
17,410,676	Decentralized voting using quantum intelligence	August 24, 2021
17,483,297	Deep intelligence for decentralized finance	September 23, 2021
17,559,519	Voting using Choice Coin on a Blockchain	December 22, 2021

Figure 2

Figure 2 is a list of patent applications filed for technologies invented for the Choice Coin DAO. The patent applications protect various inventions for DAO infrastructure including applications for smart contracts, voting, and decentralized finance.

Traditionally, intellectual property (IP) can be used as a sword or a shield.²⁵ As a sword, IP rights are used to attack competitors infringing on rights. As a shield, IP rights defends against attacks and accusations of infringement. Choice Coin's IP strategy moves beyond the dichotomous paradigm. As an open source project, Choice Coin focuses on using its intellectual property not only as a shield, but also as a store of value and as technical blueprints for innovation. Patents allow the DAO to capture the value it creates and to validate the technology, as well as enjoy the rights of exclusive ownership.

C. Metrics

Various metrics may be considered keystone characteristics for measuring tokenomics. Algorand has a strong place in the blockchain market, as one of the largest and most prominent proof-of-consensus blockchains.

Metric	Amount
Circulating Market Capitalization	\$6,261,988,200.00
Total Market Capitalization	\$9,465,000,000.00
Total Accounts	21,278,749
Accounts over 1,000.00 Algo	67,104
Accounts over 10,000.00 Algo	11,217
Accounts over 100,000.00 Algo	1,589

Figure 3²⁶

Figure 3 shows important metrics for the Algorand blockchain related to financials and decentralization. At this point, given the evolution of DeFi applications on the Algorand blockchain it is likely the market capitalization reflects an artificially low value.²⁷ One main

²⁵ JOHN PALFREY, INTELLECTUAL PROPERTY STRATEGY 2 (MIT Press 2012).

²⁶ Data collected from AlgoExplorer on February 15, 2022.

²⁷ Sean Mann, Massimo Morini, Michele Treccani, The Algorand Economic Evolution Report, 6 (2021). ("We understand that the growth of the market cap depends both on the increase of supply and on the price dynamics, and

reason Algorand is currently undervalued is because Algorand's market data is tightly correlated with both Bitcoin and Ethereum.²⁸ As a result, arbitrage trading algorithms on both centralized and decentralized exchanges have a tendency to undervalue Algo without respect for, or consideration to, the underlying technology.

Still, the price of Algo has seen a steady increase over the past three years. Although the asset is volatile, the general trend is up with a significant force.

Date	Algo Price
January 31, 2020	\$0.25
January 31, 2021	\$0.64
January 31, 2022	\$0.97

Figure 4²⁹

Figure 4 depicts the price of Algo on January 31 over the past three years. While the growth in value of Algo has been continuing the asset is subject to relatively high volatilities, as is normal in the blockchain and cryptocurrency market.³⁰ Nonetheless, Algorand is built to scale and for long-term value generation. Figure 5 is a per unit Algo price projection through the year 2029.

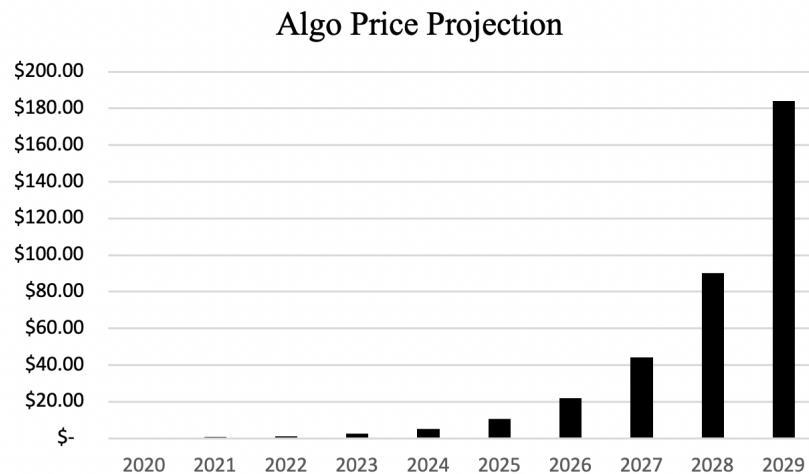


Figure 5

that the increase in supply clearly increases the market cap, but we also understand that the increase in ranking has been possible only because the price dynamics also kept healthy, without nullifying the supply increase.”)

²⁸ Sean Mann, Massimo Morini, Michele Treccani, The Algorand Economic Evolution Report, 4 (2021). (“The Algo is more correlated with ETH rather than with BTC, which can be understood considering the importance that smart contracts and DeFi have for both Algorand and Ethereum, and it is not surprising to see that also the correlation with mainstream finance represented by the Standard & Poor index is very low, explaining the Algo role in diversification.”)

²⁹ Data collected from AlgoExplorer on February 15, 2022.

³⁰ Sean Mann, Massimo Morini, Michele Treccani, The Algorand Economic Evolution Report, 5 (2021). (“The instabilities we see are quite normal in market time-series when it comes to volatilities and correlations, but we can see that these short-term correlations, while showing more variability, essentially confirm the longer term correlations seen above.”)

An important part of the Algorand ecosystem is Algorand Standard Assets. An Algorand Standard Asset (ASA) is a digital proof, which may be tokenized on the blockchain. ASAs are able to leverage the existing security infrastructure of the Algorand application, to launch new layer-2 applications, inventions, and solutions. For example, Choice Coin is a layer-2 solution to the decentralized governance problem.

ASA	Date Launched	Users	Transactions	Token Type
Yieldly	5/24/2021	101,126	3,429,007	DeFi
KittenCoin	10/9/2021	35,280	271,681	Community
Choice Coin	8/9/2021	30,417	766,478	Governance
Headline	2/24/2021	18,002	264,629	Access
AlgoNuts	5/23/2021	9,229	39,931	NFTs
TinyChart Token	10/21/2021	7,677	115,975	Access
Defly	12/16/2021	7,541	80,666	DeFi
Chips	10/29/2021	5,078	58,361	Gaming
AlgoStake	12/29/2021	4,958	78,846	DeFi

Figure 6³¹

Figure 6 shows important metrics for ASA use on the Algorand blockchain.³² Choice Coin is prominent on Algorand for having both a relatively high number of users and transactions.

ASA	TinyMan Liquidity	Circulating Market Capitalization	Total Market Capitalization
Defly Token	\$3,432,980.00	\$7,495,714.00	\$24,945,379.00
Yieldly	\$2,147,365.00	\$109,036,457.00	\$109,036,457.00
AlgoStake	\$499,978.00	\$1,714,862.00	\$18,610,394.00
Chips	\$433,229.00	\$2,673,057.00	\$11,911,351.00
Headline	\$304,091.00	\$24,786,360.00	\$24,858,766.00
AlgoNuts	\$259,683.00	\$388,147.00	\$850,760.00
TinyChart Token	\$250,139.00	\$2,860,266.00	\$3,034,765.00
KittenCoin	\$83,549.45	\$739,084.00	\$777,983.00
Choice Coin	\$70,516.73	\$1,091,408.00	\$3,358,177.00

Figure 7³³

³¹ Data collected on February 8, 2022.

³² Perhaps the newest and most promising ASA is AlgoStake, which invented a novel smart contract mechanism to simultaneously reward holders with multiple ASAs.

³³ Data collected on February 8, 2022.

Figure 7 shows important metrics for ASA tokenomics on the Algorand blockchain. While this data is based only on TinyMan data, new decentralized exchanges, such as AlgoFi, launched in Q1 of the year 2022 and will stimulate continuing growth in the Algorand ecosystem. Additionally, TinyMan is now included on CoinMarketCap,³⁴ providing data on the Algorand blockchain and ASAs to the greater cryptocurrency market. The addition of multiple DEXs on the blockchain, as well as greater market awareness will help to accelerate growth trajectories for Algorand.

II. Choice Coin

Choice Coin is a governance platform and open source software for decentralized voting. The goal is to solve the decentralized voting problem by introducing a digital asset for voting on a distributed ledger. In other words, the purpose for Choice Coin is to provide a mechanism by which decentralized organizations can vote securely on the Algorand blockchain. Critical to the innovation is that the software is simultaneously secure, open source, and decentralized. As such, the Choice Coin DAO was created to hold all Choice and to disseminate the asset across the Algorand blockchain.

A. Asset

A voting token for autonomous organizations, Choice is built on the Algorand blockchain as an ASA for voting and governance.³⁵ Specifically, Choice provides a tool for voting using Decentralized Decisions, the main Choice Coin software application. The asset itself is decentralized by design to allow for a fair and equitable governance system to operate the Choice Coin DAO. The asset is often provided to developers as a reward for open source software contributions on GitHub. In short, Choice is a utility token for governance and voting.

Data for Choice is aggregated in several silos and by many providers, such as Algoscan and AlgoExplorer. For tokenomic data, TinyCharts,³⁶ AlgoCharts,³⁷ and Live Coin Watch³⁸ all track the value of Choice. In addition to these tracking services, Choice Coin is also now included on both CoinMarketCap and CoinGecko. It is also likely that an over correction occurred after the December price peak and now the asset is significantly undervalued. Still since launch, Choice Coin is up 188.89% from its starting value of \$0.0009 to its current value \$0.0017.³⁹

The volatility experienced by the asset in its nascence is normal for the market and certain patterns have resulted in the asset being significantly undervalued in its current state. Although, the asset itself has been volatile, the value driven by the network is increasing. Indeed, Choice is

³⁴ CoinMarketCap is a data aggregated and software service provider for cryptocurrency.

³⁵ Choice Coin's ASA ID is: 297995609.

³⁶ Choice Coin, TinyCharts (2022), <https://tinychart.org/asset/297995609>.

³⁷ Choice Coin, AlgoChart (2022), https://algocharts.net/chart.php?asset_in=297995609&asset_out=0.

³⁸ Choice Coin, LiveCoinWatch (2022), <https://www.livecoinwatch.com/price/ChoiceCoin-CHOICE>.

³⁹ Data updated as of February 22, 2022.



designed to be used as a cryptographic key and not an individual investment.⁴⁰ Many digital assets share a similar property, particularly governance tokens, where they most effectively create value through use, rather than simple ownership. Choice Coin has robust software stacks, business models, and IP infrastructure in place to support significant tokenomic growth in the future.

B. Governance

Governance is a process by which collective decisions are made. Decentralization is a process of distributing assets across information networks. A key facet of the tokenomic evolution for Choice Coin governance is decentralizing Choice across the Algorand blockchain to allow the asset to operate as a true governance token. Thus, Choice Coin offers a mechanism by which decentralized organizations can initiate governance processes such as making proposals and voting.

Specifically, Choice provides a voting tool for Decentralized Decisions. There have been two governance issues for which Choice has been used, Vote 0 and Vote 1. In Vote 0, approximately 5.0 million Choice were committed to the vote and in Vote 1, approximately 55.00 million Choice were committed. One main way in which the Choice Coin network creates value is through the efficient and fair allocation of the Choice asset. As such, for both Vote 0 and Vote 1, voters were rewarded with Choice for their participation in the governance process.

To facilitate further decentralization, the freeze⁴¹ and clawback⁴² functions were removed from the Choice Coin asset. Originally, these functions were intended to aid in the compliance process in the event Choice was diverted for malicious use. But given recent developments in the blockchain space,⁴³ it is more beneficial from both an asset integrity and a compliance perspective to remove these functions. This creates a more permeant and tamper-proof governance process using Choice, which also increases user trust and participation.

Choice Coin v2 will build on Choice Coin's Decentralized Decisions software to provide an integrated and continuously live web-application for DAO governance on Algorand.⁴⁴ The web-application will allow users to make a proposal or participate in DAO voting globally and around the clock. The purpose for Choice Coin v2 is to build a governance platform for DAOs on Algorand. In fact, there is a need for a platform that rewards users for participation in governance processes because governance is critical for decentralization, engagement, and regulatory compliance.

⁴⁰ Choice Coin GitHub, White Paper (November 9, 2021).

⁴¹ Freeze allows for a manager account to freeze the asset on the blockchain.

⁴² Clawback allows for a manager account to revert asset transactions on the blockchain.

⁴³ Brian Haney, Cryptosecurity: An Analysis of Cryptocurrency Security and Securities, *Tulane Journal of Technology & Intellectual Property*, Vol. 24 (2021).

⁴⁴ Choice Coin v2 is expected to launch in Q3 of 2022.

C. Open Source Software

The Choice Coin DAO is an open source community that continuously innovates in building and improving governance infrastructures and software. In fact, blockchains are most commonly made of open source software.⁴⁵ Indeed, on Algorand, most of the information about the blockchain is available to everyone with access to the Internet. As such, open innovation on the public ledger is generating a global governance mechanism across the decentralized Internet.

The Choice Coin GitHub is the home of the largest open source project on the Algorand blockchain. Figure 8 is a table with open source software development information from the Choice Coin GitHub.

Repository	Contributors	Forks	License
Voting	74	1,600	Apache
NFTs	22	39	Apache
TEAL	21	24	Apache
Algorand-Protocol	14	17	Apache
Voting DApp	9	8	Apache
ChoiceCoin.github.io	8	3,000	Apache
Smart Contracts	7	465	Apache
Machine-Learning	6	6	Apache
CHOICE TinyMan Wrapper	4	8	MIT
Choice-V1	3	243	Apache
White Paper	3	226	Apache
Choice-Charities	2	1	Apache
Compliance	2	1	Apache
DeCHO	2	1	Apache
Converter	1	0	Apache
HerTechChoice	1	0	Apache

Figure 8⁴⁶

The GitHub has contributions from over 75 developers and includes 16 open source software licenses. The preferred License for Choice Coin is the Apache open source license.⁴⁷ However,

⁴⁵ For example, much of Algorand's software is open sourced under the MIT License. *See* The MIT License, Open Source Initiative (2021). The reason blockchains are designed to be open source is because the technology is intended to decentralize economic transactions. Then, the open source license grants a license to use the technology, while limiting liability for the copyright holder. *See* Typically, the code is protected under copyright law, which includes certain functional elements for the technology. *See* 17 U.S.C. §102. Here, the software code for Algomay may be made open source under the Apache License. Apache License, Version 2.0 (January 2004), <http://www.apache.org/licenses/>. ("2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.")

⁴⁶ Data recorded on February 20, 2022.

⁴⁷ Apache License, Version 2.0 (January 2004), <http://www.apache.org/licenses/>.



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in some instances, the MIT open source license may also be used.⁴⁸ These licenses allow for decentralization of Choice Coin software and the acceleration of innovation on Algorand.

While governments and institutional firms have largely failed in decentralization by design, their shortcomings spawn market opportunity. For example, traditional technology companies do not provide any reward, compensation, or incentive for open source developers building software code. So, Choice Coin decentralizes the Choice asset by rewarding developers with micro-grants for building voting technology. This creates a completely new market for opportunity on the Algorand blockchain. For example, one group long and unjustly lacking in opportunity to thrive in computer science is women.

As such, the Choice Coin DAOs open source software program birthed and sponsors the Her Tech Choice bootcamp, which is a virtual bootcamp for ladies to learn how to code on Algorand. The Her Tech Choice bootcamp is an avenue to network and collaborate with other participants with the same drive and vision. The bootcamp is also sponsored through a collaboration with Headline, another project on the Algorand blockchain focused on information validation. The concentration on creating opportunity for underrepresented groups is now empowering over 200 participants with knowledge and skills in software development. Creating opportunity where it was previously absent is one way in which open source software development creates value.

III. Tokenomics

Tokenomics is the confluence of cryptocurrency and economics. In short, cryptocurrencies may be defined as a collection of concepts and technologies forming the basis for a digital economy. Economics is the broad study of traditional financial systems. Consider, the United States Government spent \$20.652 trillion in the year 2020 alone.⁴⁹

⁴⁸ The MIT License, Open Source Initiative (2021).

⁴⁹ Consider the American economy is largely driven through Congressional Appropriations, which totaled \$14.1 Trillion in the year 2019, and the public procurement budget, which accounts for \$6.552 Trillion in Federal outlays in the year 2020 alone. See U.S. Department of the Treasury, *Final Monthly Treasury Statement: Receipts and Outlays of the United States Government for Fiscal Year 2020 Through September, 2020 and Other Periods* (2020). See also U.S. Department of the Treasury, *FY 2020 President's Budget Discretionary Appropriation Request* (2020).

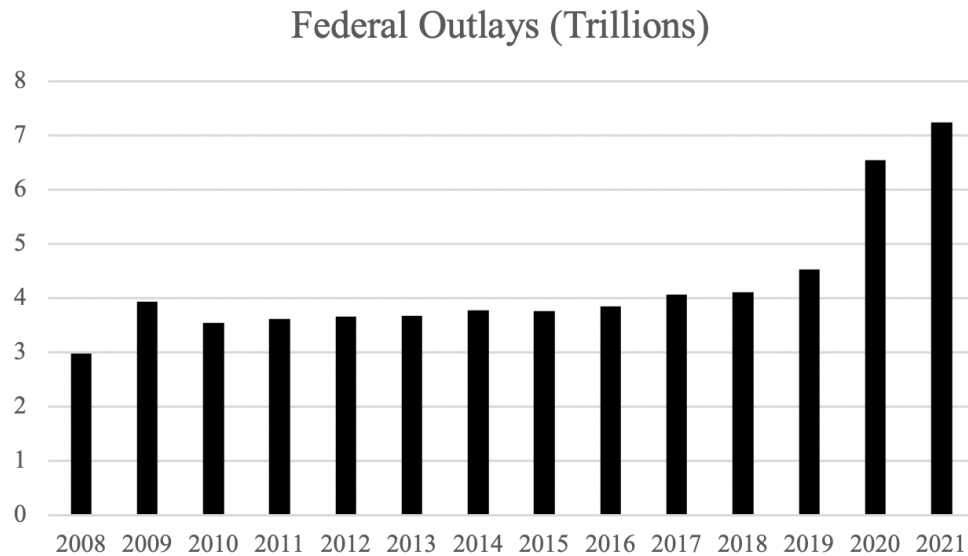


Figure 9

Figure 9 shows federal outlays growing by 243.01% from the year 2008 to the year 2021.⁵⁰ This means government spending has more than doubled since the year 2008. In fact, from 2018 to the year 2021 the annual amount the government spent externally grew by 176.17%. Moreover, in the year 2020 and the year 2021, the federal deficit grew by \$6.798 trillion, which is more growth than the previous eight years combined.⁵¹

The United States Dollar (USD) is a fiat currency, meaning it is not backed by anything.⁵² Moreover, USD is also an inflationary asset, where the supply is constantly increasing and the value in purchasing power per unit is decreasing. However, certain digital assets, such as Algo and BTC⁵³ are deflationary assets capped in total supply and backed by the value of a global information network including cutting edge software and hardware.

⁵⁰ Budget of the United States Government (2022), <https://www.govinfo.gov/app/collection/BUDGET>.

⁵¹ From the year 2012 to 2019 the total deficit accrued was \$6.039 trillion.

⁵² John J. Chung, Money as Simulacrum: The Legal Nature and Reality of Money, 5 HASTINGS BUS. L. J. 109, 112 (2009).

⁵³ In the bitcoin protocol, for the first four years each block issued fifty bitcoins. However, the number of bitcoins awarded for solving a block halves every four years. So, in 2012, the bitcoin issuance rate dropped to 25 bitcoins; in 2016, the bitcoin issuance rate dropped to 12.5 bitcoins; and in 2020, the bitcoin issuance rate dropped to 6.25 bitcoins. The number continues to halve until 21 million bitcoins have been issued, which is approximated to occur in 2140. See ANDREAS M. ANTONOPOULOS, MASTERING BITCOIN 215 (2017). See also Larissa Lee, New Kids on the Blockchain: How Bitcoin's Technology Could Reinvent the Stock Market, 12 HASTINGS BUS. L.J. 81, 103 (2016).

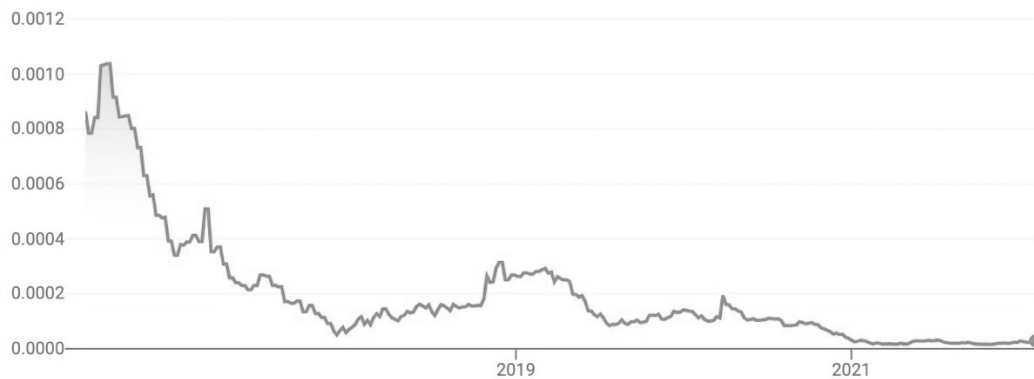
Figure 10⁵⁴

Figure 10 shows the value of USD to BTC over the past five years. Indeed, while some suggest the value USD is stable, compared to deflationary assets, the dollar is actually very volatile and crashing. Over time, the value of deflationary assets such as Algo and BTC will increase due to the nature of their finite supply.

A. DeFi

Decentralized Finance (DeFi) is a better form of finance, which is protected from institutional corruption, fraud, and inefficiencies. In fact, a major focus for the Algorand Network is building better financial technologies and applications. Perhaps the most important thing about DeFi on Algorand is that there is an incredible amount of opportunity for anyone around the world with Internet access. Indeed, the DeFi Platforms on Algorand define the network's tokenomics, creating opportunity for scalable growth. There are four main Platforms in the Algorand ecosystem which have influenced Choice tokenomics, TinyMan, AlgoFi, Yieldly, and AlgoStake.

TinyMan is a decentralized software supporting liquidity pools and swaps for ASAs. TinyMan provides liquidity pool software through its platform, which enable ASAs to be priced and traded. Liquidity pools create a pricing mechanism to facilitate on-chain trades between assets, which adds value to the network as a whole and facilitates growth. On October 7, the first Algo-Choice pool was initiated on TinyMan, valuing Choice at ~\$0.0009. More recently, there have been an influx of new projects on Algorand dedicated to offering exchange services.

AlgoFi is the newest DeFi software to launch to the Algorand MainNet. The AlgoFi platform includes a decentralized exchange, lending protocol, and a staking mechanism. The Choice Coin DAO will continue working to grow Choice liquidity on both AlgoFi and TinyMan, as well as new DeFi platforms as they arrive. Additionally, as liquidity pool providers grow on the Algorand blockchain, such as TinyMan and AlgoFi,⁵⁵ it is likely the value of the Algorand

⁵⁴ Data recorded February 23, 2022.

⁵⁵ TinyMan is an open source liquidity pool software which will be deployed on the Algorand blockchain in the year 2021.

Network will symbiotically expand. Having multiple liquidity pool software systems also provides incentive for liquidity providers to earn fees from swaps in the pool. Still, a keystone to growing these liquidity platforms are staking platforms, such as Yieldly and AlgoStake.

Staking is a process by which asset owners are algorithmically rewarded. The proof-of-stake mechanism provides an open, fair, and transparent method for decentralizing the Choice asset. The Choice Coin DAO worked to decentralize Choice via staking on Yieldly, a DeFi platform on the Algorand blockchain. There were two Yieldly pools created for Choice, Choice-Choice and YLDY-Choice. The Yieldly-Choice and Choice-Choice pools were available on the Yieldly platform and allowed asset holders to earn Choice by staking either Choice or YLDY, the Yieldly cryptocurrency.

Yieldly provided Choice Coin a direct way to decentralize Choice, helping to grow Choice Coin to over thirty-thousand users worldwide. Additionally, the partnership with Yieldly also solidified Choice Coin as a premier project on the Algorand blockchain.

Pool	Amount Allocated	Platform
Choice-Choice	15,000,000.00	AlgoStake
Choice-Choice	25,000,000.00	Yieldly
STKE-Choice LP	10,000,000.00	AlgoStake
USDC-Choice LP	1,000,000.00	AlgoStake
STKE-Choice	3,000,000.00	AlgoStake
YLDY-Choice	20,000,000.00	Yieldly

Figure 11

Figure 11 shows the allocation of Choice for various staking pools on the AlgoStake and Yieldly platforms. Since the conclusion of the Yieldly pools in Q1 of the year 2022, the Choice Coin DAO has collaborated with AlgoStake to provide staking services.⁵⁶ In launching, AlgoStake created a completely new market for staking assets on Algorand.⁵⁷

Given the structure of the AlgoStake smart contract system, users are able to stake their assets without having to send the assets out of their address or wallet, which may be beneficial from a security perspective. AlgoStake started small and as a result, the AlgoStake asset, STKE, is growing rapidly. Given the potential for growth of the AlgoStake asset, the Choice Coin DAO decided to reward Choice-STKE liquidity providers on TinyMan and align a correlational change in growth. Ultimately, both Yieldly and AlgoStake helped to incentivize tokenomic growth for Choice.

⁵⁶ AlgoStake, Litepaper (2022), <https://algostake.org/litepaper>.

⁵⁷ Indeed, STKE holders can receive rewards in multiple ASAs including STKE, Choice, BIRDS, and more. This is an innovation compared to existing staking architectures, which limit rewards to a single pool or smart contract.

B. DAO

A decentralized autonomous organization (DAO) is new form of entrepreneurial group focused on building business opportunities and applications on blockchains. Unlike traditional companies, a DAO has no central entity controlling operations. Rather, it is a network of people, businesses, contractors, and other entities working together toward common goals. The main goals for the Choice Coin DAO are to leverage the Algorand blockchain to build the world's best voting technology, create opportunity for open source software developers, and to provide a governance platform for the Algorand ecosystem.

The Choice Coin DAO was created to solve the decentralized governance problem, which concerns the process by which groups makes decisions on blockchains. It's an important problem, because the solution is the bedrock to both distributed ledger and consensus technologies. This is especially true on Algorand, a proof-of-consensus blockchain with a new, cheaper, and faster software structure than any other blockchain.

Solving, the decentralized voting problem requires formulating a way for participants to reach a consensus on how to distribute value or assets for governance. For example, if an organization operating under a decentralized system needs a specific way to determine an asset distribution plan, the organization may use voting among certain members within the network to reach a decision. Figure 12 shows the general distributions of Choice across the Algorand blockchain.⁵⁸

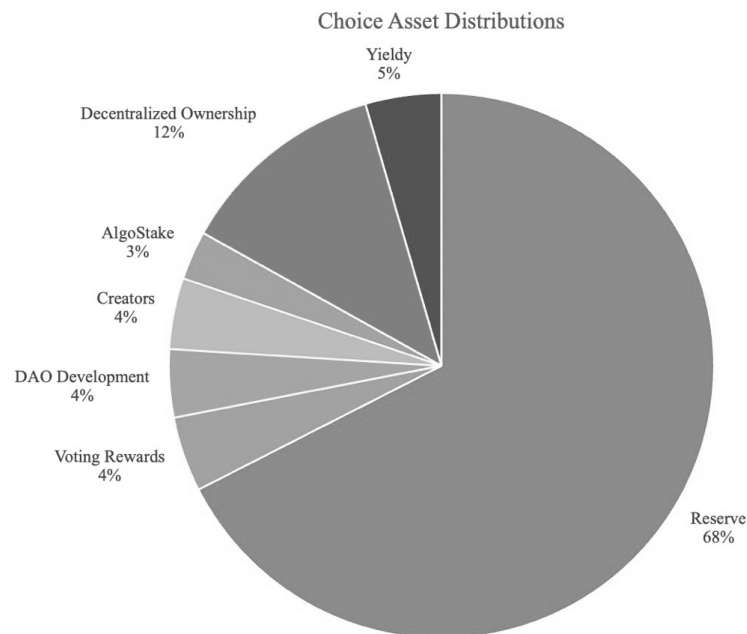


Figure 12

⁵⁸ Data recorded February 16, 2022.

The largest piece of the pie is the reserve address, which has a long-term distribution plan determined by Vote 0, which decided the flow of Choice from the reserve address to the DAO.

Year	Allocation	Remaining Reserve
2021	250,000,000.00	750,000,000.00
2022	75,000,000.00	675,000,000.00
2023	75,000,000.00	600,000,000.00
2024	75,000,000.00	525,000,000.00
2025	75,000,000.00	450,000,000.00
2025	75,000,000.00	375,000,000.00
2026	75,000,000.00	300,000,000.00
2027	75,000,000.00	225,000,000.00
2028	75,000,000.00	150,000,000.00
2029	75,000,000.00	75,000,000.00
2030	75,000,000.00	0.00

Figure 13

Figure 13 shows the release schedule for the Choice Coin DAO. Vote 0 decided the reserve address will release 75,000,000.00 Choice per year until all the address is empty. As such, on January 1 of each year, 75 million Choice will be moved from the reserve address to a Choice Coin DAO controlled address for decentralized distributions.

The Choice asset is decentralized throughout the DAO for the purpose of capturing and creating value. The Choice is allocated for various purposes, including the advancement of community engagement, open source software development, and grant proposals.

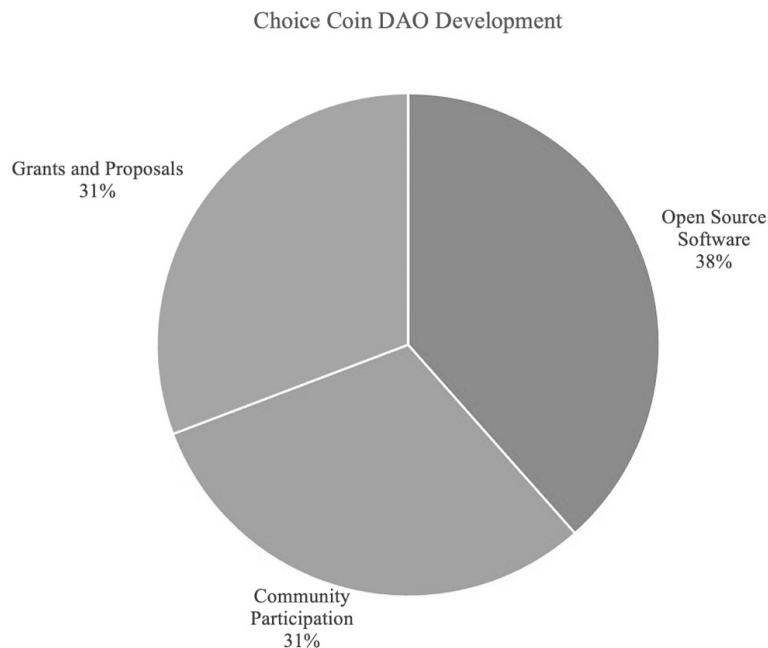


Figure 14

Figure 14 shows the initial allocation for the first half of the first distribution for the year 2022.⁵⁹ This tokenomic division for the DAO will ensure long-term success and act as an incentive for developers to continue building. Additionally, the reserve will be rekeyed to a multi-signature smart account to ensure the reserve assets are not controlled by one entity and that they will be automatically distributed to the DAO on an annual basis.

C. Scale

Creating demand is the key to scalable growth. To generate demand, Choice Coin focuses on generating use through voting, the token's main utility. Around the world, people want choice because choice is the essence of freedom. Thus, Choice Coin focuses on giving users freedom for professional growth through the DAO and financial freedom through participation rewards. To unlock the full value of Choice, users must use the asset for its intended purpose, voting and making collective choices. In doing so, Choice Coin will scale to advance decentralization, governance, and DeFi on the Algorand blockchain. Figure 15 shows a projected growth trajectory for Choice Coin.

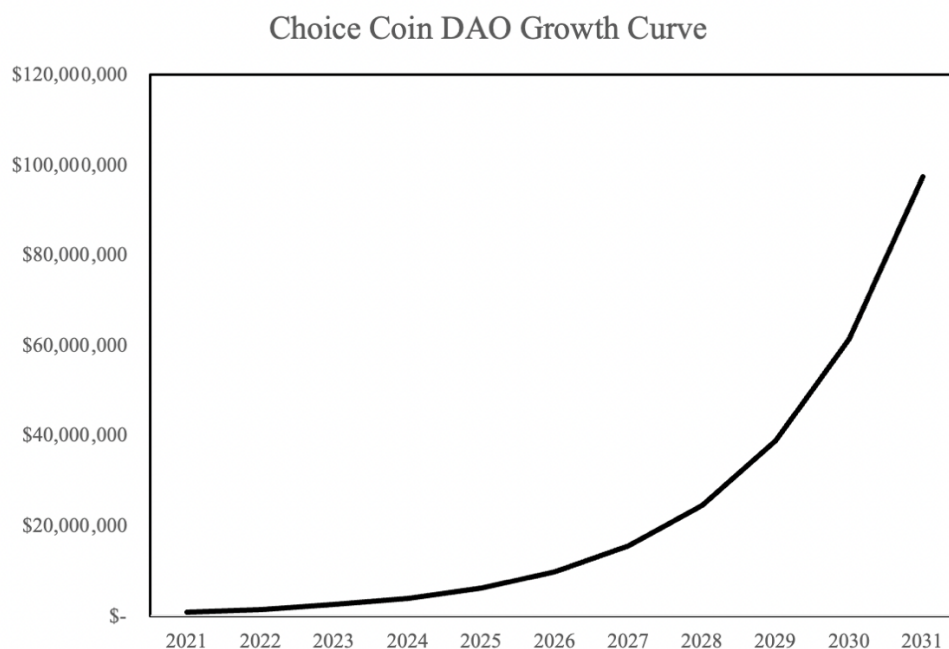


Figure 15

To continue toward complete decentralization of the Choice Coin DAO, Choice Coin v2 will build on Choice Coin's Decentralized Decisions software to provide an integrated and continuously live web application for DAO governance. Choice Coin v2 will allow users to make a proposal or participate in DAO voting globally and at any time. The goal is to make voting within the DAO easy and common, to create a more user-friendly experience for voters.

⁵⁹ Data recorded February 16, 2022.



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Choice Coin v2 will allow any participant in the DAO to submit a proposal to effect change. Proposals will then be verified and voted on accordingly through Decentralized Decisions.

In addition, to scaling the DAO infrastructure internally, Choice Coin is building a governance platform on Algorand based on a strong research and development program. There exists several DeFi platforms rewarding users for staking assets or providing assets to liquidity. However, Choice Coin is one of few platforms that rewards users for participation in governance processes. Participation is critical for DAOs because participation drives use, decentralization, and regulatory compliance. The goals for Choice Coin's governance platform are to evolve governance software on Algorand, to allow any DAO to generate a vote on the platform, and to make DAO voting on Algorand fast, easy, and fun.

It will be important to strengthen Choice tokenomics overtime with a focus toward DeFi. As such, Choice DeFi will be a team of the Choice Coin DAO focused on building DeFi applications on Algorand. The team will concentrate on developing the on Algomy software and machine learning analysis for financial forecasting and volatility⁶⁰ prediction. This analysis may be used for various purposes, including liquidity management. Choice Coin DeFi will define the edge in innovation using Algorand and artificial intelligence technologies.

Additionally, the DAO continues to aid developers in winning grants for open source software development.⁶¹ The Choice Coin DAO is developing extensive research at the confluence of governance, artificial intelligence, and blockchain technology.⁶² In fact, a focus on edge technologies drives the open innovation initiative at the core of the Choice Coin DAO. Indeed, members of the Choice Coin DAO have published papers on topics include machine learning, quantum computing, and smart contracts to support the open source software infrastructure. Choice Coin R&D will help ensure the future and lasting success for both the Choice Coin DAO and the Algorand blockchain.

Conclusion

This Report provided an overview of the Algorand blockchain, Choice Coin DAO, and the tokenomic structures supporting the two technologies. Part I provided analysis of the Algorand blockchain. Part II offered an overview of Choice Coin, including the Choice asset and DAO governance. Part III discussed tokenomics for Choice Coin, including analysis of decentralized finance DeFi platforms, the Choice Coin DAO, and strategies for growth. Moving forward both Algo and Choice are set for success and long-term economic prosperity.

⁶⁰ Volatility is a measure of statistical change in value.

⁶¹ In fact, two DeFi projects that were started by members of the Choice Coin DAO through Choice grants have received further grants from the Algorand Foundation. The two projects are DeCHO, a financial management application for startups, and ASALytics which uses natural language processing to analyze social media for ASAs.

⁶² Brian Haney, Choice Coin DAO R&D, Algorand Developer Forum (2022).