Eco: A Cryptocurrency with Independent Monetary Policy

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Abstract

Eco is intended to serve as a decentralized alternative to fiat currencies. Other decentralized cryptocurrencies either fix their monetary policies and admit exchange rate volatility, or attempt to limit volatility with undue centralization risk or fragile algorithmic policies. Eco is a free-floating currency that achieves its aims through monetary policy transparently established and managed by a representative group of governing 'Trustees' who are elected by the community of Eco holders.

While the ultimate actions of the community and its elected Trustees are wholly in their control, the system is designed such that those actors' incentives are aligned around a single mandate: to maximize the aggregate wealth held in the Eco currency system. Such a mandate suggests two long-term monetary policy goals: diminishing volatility over time; and protecting the purchasing power of holders. With those goals mutually satisfied through the exercise of Eco monetary policy, the Trustees' mandate should be fulfilled as evidenced by increasing inflows into the Eco economy as well as growing Eco transaction volume.

Ultimately, Eco is designed to enable an independently governed payment economy. It seeks to become a trusted, ubiquitous currency that is increasingly treated as a medium of exchange—and, eventually, an independent store of value and a global unit of account.

Context

This whitepaper describes Eco's motivation, system design and starting conditions. But it is critical to acknowledge that what is set forth below is just that—starting conditions. As detailed further, Eco is designed to not only be fully decentralized, but be fully upgradeable. Once launched, every aspect of the system can be changed at the discretion of its users (including the mechanism for instituting such change itself) via community governance.

This document describes the founding intent of Eco rather than being any sort of prescription for the long-term state of the system, or the individual and collective goals of its future users and governors.

Eco's initial design acknowledges that any system of money or government that endures is adaptable—sometimes to the point of becoming unrecognizable from its initial assumptions. From here, Eco will flourish based on the efforts and ideas of its community.

Contents

1   Introduction

The original vision for cryptocurrency[1] contemplated a better means of payment—a money isolated from the political capture of traditional currencies and unhindered by the restrictions of legacy payment systems. Bitcoin and Ethereum laid the foundation to realize this vision. To date, stablecoins have been one of the most significant applications—a necessary advancement to making the benefits of cryptocurrency more accessible. But the original vision for independent money remains unfulfilled. While stablecoins enable the next generation of payment technology, they are designed to track the currencies we already have. We have yet to see a cryptocurrency convincingly designed to evolve money itself and serve as a usable alternative to fiat.

Eco is intended to address this gap. It is an effort to create a new, independent money with the payment system advantages demonstrated by Bitcoin and stablecoins, combined with the market-driven adaptability of existing fiat currencies. The best ideas for driving adoption of Eco will ultimately be driven by the community of Eco users and enthusiasts. This whitepaper instead focuses on the initial design for the currency itself and the vision for it: a currency enabling an independently governed payment economy—a cryptocurrency with governance designed to protect and maximize users' purchasing power relative to its demonstrated use cases.[2]

1.1   A New Paradigm for Digital Payments

Cryptocurrency can support payment networks that are faster, cheaper and more secure. This is especially true where payments are burdened by high cost and high friction today. Blockchain technology also allows us to rethink new forms of currency, with governance systems that can evolve independently from some of the forces that influence fiat money. With programmable money[3] we have an opportunity to build a digital reserve currency; one that can become a viable and advantageous alternative to existing fiat money.

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[1]   See https://bitcoin.org/bitcoin.pdf

[2]   Throughout this whitepaper "purchasing power" refers to the amount of goods or services a unit of currency can buy, as well as how many kinds of goods that currency can buy. Price inflation and/or currency devaluation diminish purchasing power over time, as can merchants choosing not to accept the currency.

[3]   See https://medium.com/electric-capital/programmable-money-79e16dc7bfca

For self-contained digital payment economies to scale to large payment volume amongst a widespread user base, they need a spendable cryptocurrency with low volatility, high liquidity and deep consumer trust. Many projects have attempted to solve these requirements by creating stablecoins pegged to some external asset; but while these improve on existing payments infrastructure, they effectively amount to being new payment systems for the same old currencies. Eco is a different type of asset—an independent digital currency for a growing crypto economy.

The premise for Eco is simple: take influence from reserve fiat currencies, and improve on these systems with blockchain-based governance that can be more responsive, transparent, and equitable in practice. By leveraging on-chain economic data, user input, and a more direct connection between monetary policy and end-users, Eco is able to evolve and improve faster than any currency ever has.

Eco also challenges the notion that the target should be fixed-rate or 'dollarized' currency stability at all times. Many of the use cases for which Eco may be well suited are use cases in which dollarized assumptions may not apply, because they are new marketplace models and/or because their user bases are geographically diverse. For these reasons Eco approaches currency utility as a function of consumer expectations, network effects, and restraining—but not eliminating—the effects of currency volatility. With this as background, this whitepaper details the economic principles and design for Eco.

2 Eco Currency & Governance

2.1 Background and Theory

Monetary theory recognizes that a currency may only demonstrate two of the following three characteristics: free flow of capital, fixed exchange rate, or independent monetary policy.[4] Open financial systems—and most payment-related value propositions for cryptocurrency—demand free flow of capital. This leaves a tradeoff between fixed exchange rates and independent monetary policy. Stablecoins choose the former; Eco is the first payment-focused cryptocurrency to select the latter.

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[4] This is known as the Trilemma or the 'Impossible Trinity.' See https://investopedia. com/terms/t/trilemma.asp or www.economist.com/the-economist-explains/2016/09/09/ what-is-the-impossible-trinity.

For a cryptocurrency with independent monetary policy to be effective, it is important to leverage certain benefits that are unique to crypto-economies: the ability to **capture much better data** about economic activity, and the opportunity to more directly and predictably **influence velocity of money**[5] amongst end users with policies informed by that data.

To appreciate the potential impact of these benefits, consider that central bank decisions today are educated bets on how human actors and financial institutions will respond to changes in monetary policy. Central bankers respond to trends but also must act without complete information. Even primary metrics such as Consumer Price Index and unemployment rate—the two most important reference points for the United States' Federal Reserve—are only published monthly because of the intensive process of gathering the necessary data[6]. And even beyond those, there is an array of valuable higher-fidelity data that is logistically impractical for the Federal Reserve to gather in time to act upon, but that a blockchain may feasibly expose to system governors in nearly real-time.

This is only half the battle: After a central bank evaluates data and decides on new monetary policy, it is typically constrained to actions that only enforce new monetary goals indirectly[7]. The Federal Reserve sets interest rate targets to manage inflation and unemployment, but does not have a direct relationship with citizens. Therefore it must act through bank intermediaries and open market bond purchases (or sales) to steer the American economy toward its policy goals. For this reason, consumer behavior in reaction to monetary policy—changes in velocity of money relative to changes in money supply—has traditionally been very difficult for central banks to model, influence or predict[8]. This often leads to market inefficiency and unintended consequences.

Cryptocurrency exposes entirely new possibilities for capturing better data about economic activity: circulating currency supply is a known quantity, while

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[5] "Velocity of money" refers to the number of times a single unit of currency is exchanged during a given time period. See https://investopedia.com/terms/v/velocity.asp.

[6] For more information about how the Bureau of Labor and Statistics calculates unemployment and CPI, see https://www.bls.gov/cpi/questions-and-answers.htm and https://www.bls.gov/cps/cps_htgm.htm.

[7] One exception would be certain 'quantitative easing' measures in which central banks step into public markets to directly purchase systemically important assets with falling prices to bail them out.

[8] See, e.g., Robert H. Rasche, *"M1 Velocity and Money Demand Functions: Do Stable Relationships Exist?"*; Paul S. Anderson, *"Monetary Velocity in Empirical Analysis"; and Daniel L. Thornton, "Why Does Velocity Matter?"*

transaction volume and velocity of money are more immediately measurable. Some of these data points (such as transaction volume) are unavailable to central banks today; others (like velocity of money) take weeks to even estimate. But cryptocurrency and (permissionless) blockchains make it possible to know this and much more, with this information open sourced and able to be gathered and shared without necessarily compromising user privacy. Eco is designed to maximize these benefits, informing monetary policy with better data about economic activity and the effects of previous policy cycles. This gives full transparency into a complete range of effects that any change in monetary policy causes.

Beyond gathering better data, it also becomes possible to more predictably influence economic activity and velocity of money. With cryptocurrency, 'the mint' can have a direct relationship with the consumer. This makes it possible to alter interest rates and deploy quantity-theory[9] policies with more immediate consequences focused on velocity rather than mere price activity. Eco provides alternative mechanisms for new supply distribution. In this system, every monetary policy decision is primarily an exercise in influencing spending activity and wealth perception to speed or slow (or maintain) velocity of money.

In summary, cryptocurrency can fundamentally improve the effectiveness of monetary policymaking by providing decision-makers with real-time, reliable data while also delivering the impact of monetary policy decisions directly to consumers. The significance of these points should not be underestimated. Cryptocurrency is an experiment not just in our willingness to adopt a new form of money, but also in our ability to construct a monetary system that is more aligned with consumer and producer wellbeing.

2.2 Eco Token Model

Eco features two tokens: the variable supply base currency (**ECO**) for spending and saving, and a deflationary supply token (**ECOx**) which creates an open market capturing expectations for ECO adoption.[10] Token holders are empowered to elect monetary policymakers and vote on other proposed system upgrades. Both tokens are described in greater detail below.

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[9]   The Quantity Theory of Money states that changes in circulating supply of a currency will lead to a change in prices of goods and services. See https://investopedia.com/terms/q/quantity_theory_of_money.asp.

[10] From this point forward, "ECO" and "ECOx" refer to either token, respectively, and "Eco" refers to the system generally. The initial ECO supply is 10 billion units, and ECOx supply is 1 billion units.

2.2.1 ECO Currency

ECO is a medium-of-exchange token designed for everyday use. Its monetary policy is managed by an elected group of 'Trustees' to accomplish a single mandate: maximizing the aggregate wealth held in the *Eco*nomy. Without further prescription, this avoids the conflicting internal incentives and goals that plague the governance of many fiat currencies today.[11]

Many cryptocurrencies employ algorithmic (rule-based) monetary policy to minimize human involvement. ECO takes a different approach, with a monetary policy system that demands human input and enables ECO to evolve and remain responsive to unforeseen events. Moreover, ECO's policy may be managed in ways that look to recent monetary history for precedent, or in ways that are unfamiliar to observers and users of fiat currencies. In this way, Eco approaches monetary utility primarily as a governance challenge.

Initially, Trustees can manage ECO monetary policy by varying supply inflation (or deflation) rates, internal interest rates, and transaction fees (for more detail about the Trustee voting process and ECO monetary policy functions, see Section 3.3 below). As with all aspects of Eco, the monetary policy functions may evolve over time through upgrades adopted via community governance (which could even be used to overrule or negate Trustee policy decisions the community deems to be destructive or ineffective).

Trustees are elected by ECO and ECOx holders according to the community governance process (outlined in Section 3.4 below). Trustees serve default one-year terms, after which they may vacate, or be re-elected or voted out by the community. Trustee elections are intended to ensure the group remains representative of the ECO user base.[12] Individual Trustees may also be added or removed (so the number of Trustees could increase or decrease) via community governance.[13]

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[11] cf. the Federal Reserve's dual mandate of price stability and maximum sustainable employment; the ECB's mandate of price stability and, inter alia, full employment and balanced economic growth; the Bank of Japan's mandate of price stability and stability of the financial system; etc.

[12] It is important to note that Trustees will not play any sort of technical role or act as validators, so they cannot censor transactions in Eco.

[13] It would also be possible for the Eco community to trigger a special 'no confidence' vote outside the usual election cycle, to remove or replace the existing Trustee group in whole or in part.

Trustee accountability is reinforced by making all voting results public, and ensuring Trustees' financial incentives are tied to verifiable growth in ECO's user base and payment volume (which are expected to be a result of effective governance by the Trustees). Trustees vest into ECOx tokens over the course of their term; each year, a set number of ECOx will be reserved and locked in a smart contract for the duration of the Trustees' term. When these are released, an individual Trustee shares in the distribution according to the Trustee's voting participation during the term (i.e., Trustees will not be compensated for voting cycles in which they fail to submit a vote). In this way, Eco is designed to ensure that Trustees are compensated for being consistently attentive, engaged, and accountable to the broader Eco user base.

2.2.2   ECOx Token

In any currency system there are two broad categories of market participants: active users (primarily consumers) and financial actors who provide capital and promote liquidity. Financial actors often operate in markets somewhat removed from the daily concerns of the average consumer. But these markets play a critical role, signaling expectations for the future and often serving to insulate consumers from broader currency volatility. ECOx is designed to fulfill this function in Eco, as a secondary token to bootstrap system governance, liquidity and capital allocation. An open market for ECOx will serve as a critical indicator to Trustees governing ECO monetary policy, as price volatility of ECOx is designed to be directly correlated with broader expectations about future adoption and usage of ECO.

Unlike some two-token cryptocurrency systems, Eco does not have any sort of two-way, arbitrage-based exchange function where ECOx is intended to sustain a specified price target for ECO. Rather, ECOx is a deflationary-supply asset[14] positioned to bootstrap the early *Eco*nomy, provide a market-based signal for its governance, and eventually play a role in securing certain ECO functions or use cases.[15] ECOx may benefit from increasing ECO adoption in two ways: some ECO transactions could be charged a nominal fee[16] which accrues pro rata to

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[14] "Deflationary supply" here means that the ECOx supply is capped (rather than there being a decreasing rate of supply increase), and ECOx supply will only decrease over time as ECOx is converted into ECO, as further described below.

[15] It is anticipated that ECOx will collateralize and/or be staked to enable certain ECO use cases, such as sending ECO into Layer 2 networks or application-specific contracts, or creating ECO wrapper contracts.

[16] This fee is intended to be introduced by community governance, as further discussed in Section 3 below.

ECOx holders who stake (so ECOx would benefit from ECO payment volume); and ECOx is convertible into a percentage of ECO supply (so ECOx benefits from growth of the *Eco*nomy). Conversion of ECOx into ECO is at the election of the ECOx holder and is non-reversible; the converted units of ECOx are permanently withdrawn from circulation.

ECOx's conversion ratio to ECO is designed to reward those who hold ECOx for longer than others. The conversion formula is:[17]

$$\alpha_m = (e^{(\beta_c/\beta_i)} - 1) * \alpha_c$$

α_m = ECO minted and returned to the converting party
α_c = the total current supply of ECO
β_c = ECOx being converted by the converting party
β_i = the initial supply of ECOx at network launch

While ECOx fee accrual and conversion rights enforce strong long-term incentives to hold, these rights are not intended to be perpetual. Therefore it is anticipated that both the ECOx fee revenue and conversion percentage will be capped after an end date.[18] After this point, ECOx has served its primary purpose:[19] bootstrapping the system until ECO has sufficient usage data, liquidity and inertia to be governed more independently (relying less on ECOx market indicators after the market for ECO deepens and matures).

In summary, ECOx is very different from 'secondary' tokens in other cryptocurrency systems. While ECO is the first cryptocurrency designed with independent monetary policy to encourage spending usage, ECOx is designed to bootstrap a secondary market based on expectations for broader ECO adoption.

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[17] Effectively, this takes the plain English concept that "converting 1% of ECOx results in ownership of 1% of ECO" and computes it continuously on a unit-by-unit basis.

[18] This 'sunset date' is proposed to be 10 years after launch in system documentation. Past that point, the ECOx-to-ECO conversion ratio would be capped (as of its value at that block) independent of future inflation, and transaction fees payable to ECOx holders would begin to decay, reaching zero at the end of Year 15. Note that the ECOx sunset is not initially 'hard-coded' and must be approved (or may otherwise be amended) in a future community vote.

[19] While ECOx initially also serves as the primary economic incentive for Trustees to serve, it is likely that the community will create new incentives for Trustees over time, which are likely to evolve as the *Eco*nomy grows and as the profile of the Trustee group evolves.

The value of ECOx is designed to be a representation of the expected value of Eco as an *economy unto itself*, rather than merely the value of ECO as an asset in comparison to other assets. One of the functions that this secondary market serves is insulating consumers from volatility by allowing different parts of price discovery—the immediate value of ECO versus future value of the ECO-denominated economy as represented by ECOx—to be undertaken in parallel.[20]

2.3   Eco Community Governance

Eco has two different governance frameworks: ECO monetary policy governance described above, and community voting on broader system updates. This section describes the community voting system.

Eco is designed to evolve in a decentralized way, and to ensure that the system ultimately puts end users in control. ECO and ECOx holders may vote on proposals to upgrade or alter virtually any Eco setting or process (including the structure of monetary or community governance); all system code may be updated or migrated pursuant to community voting. New upgrade proposals may be submitted at any time, by any user. Submitted proposals remain open for a defined period (initially one generation cycle, or roughly 14 days), and must earn staked support from 15% of total system voting power in order to be voted on, at which point a majority of participating voting power must be in favor for the proposal to be enacted.

Again: all of Eco's system code can be updated pursuant to community voting.[21] That is, after the network is launched, the entire system is malleable and fully governed by its users.

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[20]   Though difficult to empirically verify, the fact that virtually all other major cryptocurrencies chose to conflate these two price signals likely contributes to their tendency towards abrupt bubbles.

[21]   This upgradability framework uses similar mechanisms to OpenZeppelin's upgradability framework.

3 Additional Specification

Below is additional technical detail about Eco architecture and certain smart contract functions.

3.1 Platform Choice; Future Upgradability

The initial implementation of Eco is built on Ethereum. To date, Ethereum is the only blockchain platform with the history of uptime, security and smart contract functionality to support a system like Eco. Clearly a fully decentralized payment network requires better scalability (in terms of both throughput and transaction confirmation time) than Ethereum currently enables. For this reason many early test cases for Eco will likely be intentionally low-velocity, and many early payment flows for Eco will likely be enabled by custodial partners, leaving further scalability to an anticipated Layer 2 upgrade. The goal is for ECO to be compatible with an array of wallet and dApp partners in the Ethereum ecosystem.

Although the average consumer may not yet demand the benefits of a fully decentralized payment network, Eco builds toward this vision. Eco smart contracts are built to be upgradable not only to empower its user base, but also in anticipation of future Ethereum upgrades or the possibility of migrating/bridging to a separate[22] blockchain, although this is not currently necessary.

3.2 Base Concepts: Timekeeping, Balance Stores

Most processes in Eco reference a multiple of a standard timing cycle of approximately 14 days (1,209,600 seconds or equivalent blocktime). Eco utilizes balance snapshots to enable certain stake-weighted voting mechanisms and dis-incentivize wallet splitting. These snapshots are recorded in periodic 'generations' using a copy-on-write mechanism that imposes no additional cost for snapshotting the system. Updating the generational balance-store and all other maintenance processes are executed on-chain with the cost paid on the first balance-modifying operation of any generation, and the functions are designed such that the caller needs no special privileges. Any actor monitoring the system can call the function to increment system generations.

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[22] It is possible that Eco may spread to other blockchains and Ethereum protocols via the use of 'wrapped tokens' or similar mechanisms. These representations of ECO and ECOx will enable new use cases and tradeoffs to be tested, and ultimately help the community determine where Eco should exist in the long run.

3.3 Monetary Policy Governance

ECO Trustees initially vote on monetary policy settings once per cycle (every two weeks) to stimulate (i.e. 'loosen' monetary policy) or restrain (i.e. 'tighten' monetary policy) the *Eco*nomy by altering token supply and/or introducing incentives to promote or curb spending activity. During the first 10 days of each voting cycle, Trustees submit and debate alternative proposals for the next monetary policy cycle. Each proposal must specify a value for all possible policy settings, even if the proposed setting is zero or no-change. Proposal submissions are limited to one per Trustee, and may be modified or withdrawn until the end of the 10-day submission period (so the maximum number of potential proposals is equal to the number of Trustees).

After the submission period closes, a three-day voting period commences. Trustees vote through a modified Borda count system[23] in which each Trustee may rank any number of submitted proposals, and vote scores are assigned based on the total number of proposals submitted.[24]   Trustee votes are submitted via secure commit and reveal scheme. This voting period is followed by a single day reveal window after which the new policy is put into effect. In the event that no new proposals are submitted, or if no votes are cast, a 'default proposal' is automatically enacted to set all other parameters such that there is no new inflation or interest rate enacted.[25]

Initially, Trustees will be empowered to vote on three specific monetary policy functions: (1) linear supply changes (proportional adjustments to all ECO balances), (2) randomized inflation (new supply distributed to randomly selected ECO balances), and (3) interest rates on 'locked' ECO. A fourth monetary policy function, variable transaction fees, is planned for future introduction via community governance as part of a broader system upgrade. Each of these functions is described in additional detail below.

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[23] See https://en.wikipedia.org/wiki/Borda_count#Truncated_ballots.

[24] Unranked proposals on a ballot are given the minimum score. Invalid votes (empty ballots, ballots that are not revealed, and ballots for trustees that never submitted a commitment) are counted as ballots ranking the default proposal as the first choice, with all other proposals left unranked.

[25] If the vote results in a tie, the winning proposal is the one whose last revealed vote was revealed prior to the final revealed votes of each proposal tied for first place.

3.3.1 Linear supply change

The linear supply change mechanism allows the quantity of circulating tokens to be adjusted on a pro rata basis to maintain relative 'wealth' for all holders.[26] This function allows the account balances of all ECO token holders to be adjusted by a multiplier, effectively 'minting' or 'burning' new ECO on a per-wallet basis. The multiplier coefficient may be either greater than or less than one, enabling ECO Trustees to enact both supply-inflationary and deflationary policy. When a linear supply policy is enacted, a new scale factor is applied to individual wallet balances network-wide.[27]

3.3.2 Randomized supply inflation

The random inflation mechanism allows Trustees to allocate ECO tokens to addresses based on random selection, in order to create nonlinear wealth effects within the *Eco*nomy.[28] Addresses are issued 'tickets'[29] based on an algorithm which factors in the most recent ECO balance snapshot and is proven on-chain. Each selected address entitles the owner to a share of newly minted tokens.

In triggering random inflation, Trustees specify two parameters: *Inflation Reward* (which translates into a total number of new ECO tokens that each recipient will receive) and a *Recipient Number* (which is the number of recipients to be selected).[30]

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[26] This quantity adjustment is similar to Ampleforth's "rebase" mechanic (see here for description), although there are significant differences, including that it is triggered by discretionary Trustee voting rather than a predictable oracle schedule.

[27] Initially new supply distribution or reduction is executed in a single event. In a future upgrade the distribution or reduction may be spread over the next generation cycle.

[28] "Wealth effects" here refers to the feeling of an increase in purchasing power relative to other Eco users. The primary motivation for this policy would be to attempt to more efficiently spur spending than would be the case if every user's wealth increased proportionately. Interestingly, Trustees could also leverage this function to keep users in the system amidst a confidence shock (presumably by narrowing the spread to induce the potential for an outsized return for fewer users).

[29] Note that "ticket" is used as an analog here; they are cryptographic representations of a token holder's balance store from the perspective of the smart contract selecting inflation recipients, and token holders do not actually interact with this process.

[30] Given these parameters, an invocation of random inflation could range from being very close to linear inflation (but with a little bit of randomness), all the way to being a large payment for a single user. Most often, the policy is likely to fall somewhere in between.

Random distribution of newly minted supply is done by instantiating a new contract, which issues all tokens required by the policy. Ticket distribution to ECO holders is proven on-chain using a Merkle inclusion proof, and a randomness beacon (currently based on a verifiable delay function) is used to select recipients to share in the new supply distribution.

To calculate and distribute random inflation supply, Merkle trees are computed off-chain and the root is proposed to the chain.[31] Selected token holders may claim their portion by calling the inflation distribution contract. Any address can claim inflation on behalf of any other address, but the tokens are always deposited to the address that owns the selected ticket.

3.3.3   Interest rates and funds lockup

Trustees are also able to trigger interest rates on ECO holdings, payable to users who elect to lock up funds in vault contracts for specified periods. To trigger a new interest rate contract, Trustees specify values for two variables: *Lockup Duration* (the minimum time tokens must be locked into a deposit contract to earn interest payable) and *Interest Rate* (a simple non-compounding rate).[32] Any ECO holder may elect to transfer funds to deposit contracts to earn interest. However, if users elect to withdraw funds prior to the specified *Lockup Duration*, a penalty is imposed equal to the total amount of interest that ultimately would have been payable to the user at the end of the duration period, or to the total amount deposited in the lockup contract by the withdrawing user (whichever is less).

3.3.4   Transaction Fees[33]

Some ECO transfers are also expected to incur a nominal transaction fee (paid in ECO).[34] A constant portion of this fee, which cannot be altered by Trustee vote, accrues to a holding contract which liquidates pro rata at the end of each

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[31] Any observer of Eco may compute and propose this root. However, proposals require stake, and must be defended using a gamified challenge/response mechanism.

[32] The default Lockup Duration is one month. Where the Lockup Duration exceeds one generation cycle (i.e., Lockup Duration extends past the next Trustee voting cycle), deposited funds are factored into (and subject to) future inflation policies.

[33] As noted above, fees are not yet implemented and are expected to be introduced via community governance as part of a future upgrade.

[34] The network transaction fee is separate from Ethereum gas fees. Infrastructure and application providers supporting Eco may also elect to subsidize gas costs for certain use cases.

generation cycle to ECOx staked to the holding contract.[35] However, Trustees may also impose a variable *Supplemental Transaction Fee* (on top of the flat fee accruing to staked ECOx) to influence monetary velocity. Fees collected through this mechanism are placed in a treasury contract to help fund future governance actions and/or interest resulting from policy decisions.[36]

3.4   Community Updates and Governance

Eco users are empowered to propose and vote on upgrades or changes to virtually every function in the underlying system contracts. This is accomplished through the community governance process. This process can also be used to push timely security updates. Community governance proceeds in two phases: proposal and support, and active voting.

3.4.1   Proposal Submission and Support

Anyone may submit a network update proposal at any time. Once submitted, proposals remain open for review by all ECO and ECOx holders, who can indicate support for an open proposal up to their total balance (measured from the most recent snapshot).[37] Since voting power is based on the balance store, supporting a proposal does not require locking up funds in a voting contract. Support may be withdrawn by a user at any time, or moved to a different proposal. Each generation cycle, open proposals which have not earned sufficient support will be automatically closed and archived (but may be resubmitted in future generations).

3.4.2   Network Voting

To trigger active voting, a proposal must earn a significant level of support—with the initial threshold proposed to be 15% of total system voting power in the current snapshot generation. All ECO and actively staking ECOx holders may vote. Each ECOx holds one vote, and ECO's total voting power is equal to (a) ECOx's total voting power at network launch, times (b) the ratio of ECO supply at the most recent balance snapshot to ECO's supply at network

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[35] Only ECOx staked to the holding contract for the entire generation cycle will be eligible to share in the fee distribution from the prior generation. ECOx must also be staked to this holding contract to vote in ECO community governance.

[36] Future interest could be partially funded through this transaction fee revenue. It will be the Trustees' responsibility to track debt obligations accruing due to open lockup contracts. The funds in the treasury contract may also be reallocated by community vote.

[37] Again, only ECOx staked as of the most recent snapshot is eligible to participate in community governance.

launch. If ECO is ultimately inflationary (both from monetary policy and/or ECOx conversion), this means that over time, ECO holders' cumulative voting power relative to that of ECOx holders is likely to increase.

The voting window opens immediately after a proposal satisfies the support threshold, and remains open for up to 72 hours (or until the end of the generation, whichever comes first). ECO holders and staking ECOx holders[38] may openly vote in favor of or against a proposal while the voting period remains open. Where an upgrade proposal is approved by a majority of *all* potential voting power (in the current generation), the proposal takes effect immediately; where the upgrade proposal is approved by a majority of *participating* voting power, but less than a majority of all potential voting power, it takes effect after a 24-hour delay.

4 Conclusion: Building Toward A Crypto Payment Economy

The Eco currency represents an important—and ambitious—contribution to the cryptocurrency community. Two classes of cryptocurrencies have reached meaningful adoption: floating 'reserve' assets (BTC and ETH), and stablecoins with pegged exchange rates (via both collateralized and algorithmic strategies). Eco anticipates the need for an alternative crypto reserve currency, decoupled both from BTC/ETH and from the fragility of fixed exchange rates.

This whitepaper has introduced the design for the Eco currency, and the features that differentiate Eco from other cryptocurrencies. We conclude by discussing *why this matters* and *what must come next*: how does Eco uniquely deliver the benefits of crypto to consumers; what payment vision does it enable; and how will Eco contribute to the evolution of crypto toward its eventual position as a legitimate, everyday form of currency.

4.1 From Token, To Money

Cryptocurrency began as a protocol for transferring digital cash, motivated by a desire to disintermediate money transfer. But the Bitcoin blockchain launched with a cryptic coinbase message that inspired a much bigger idea: the possibility of decentralizing and de-politicizing money *itself*. With the subsequent invention of smart contracts, decentralized finance and distributed governance protocols,

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[38] In order to be eligible to vote, ECOx must be staked to the holding contract at the beginning of the current generation cycle

the crypto community continues to progress toward this new ideal of money as merely a technology for enabling economic activity, rather than a political tool.

But how can we ultimately reach that goal? We can debate the finer points of currency design, but more fundamentally, a currency's status as *money* is a function of its users trusting that it will function effectively as money. A cryptoasset isn't a currency because we call it one, or because we make it necessary for fee payment within a network. A cryptoasset becomes a currency as a function of adoption—as a medium of exchange and eventually as a trusted store of value, then as a unit of account.

Put simply, a compelling vision for a new money (its economic model, governance, and initial characteristics) *is not enough*. An asset cannot be money until people believe it is money and use it as such.

For Eco to be successful, it will need to be used by many communities for many different purposes. There will need to be payment systems, applications, and financial infrastructure built to enable its use. Bridges will need to be built between the existing financial system and this new Ecosystem. We look to the present and future Eco community to support these needs. The end goal is a currency that is spendable within a variety of use cases, distributed fairly among users (both existing and future) who have a long-running stake in the growth of the Eco network—a currency which unites people rather than dividing them along arbitrary lines of nation or class.

Ultimately, we seek to build toward a vision enabled by Satoshi after being pondered by Friedrich Hayek a half-century ago: *"A money deliberately controlled in supply by an agency whose self-interest forces it to satisfy the wishes of users..."*[39]

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[39] Hayek, Denationalizaton of Money, available at https://mises.org/library/denationalisation-money-argument-refined.