

# TL;DR

## Background

In the evolving landscape of blockchain technology, different types of tokens serve distinct purposes, creating unique economic dynamics and challenges. Governance tokens and memecoins are two prominent types of tokens with contrasting roles:

### 1. Governance Tokens

: These tokens are typically used for voting, decision-making, and protocol governance within a blockchain network. They hold significant importance in controlling and influencing the network's future direction. However, their critical role often results in low transaction frequency, as holders prefer to retain them for strategic governance purposes rather than regular transactions. This low velocity can lead to decreased liquidity and underutilization of their potential as a medium of exchange.

### 1. Memecoins

: Designed for high-frequency transactions, memecoins are intended to be used as everyday transactional currency. They offer fast transaction times and are widely adopted for various payment activities. Despite their high velocity and liquidity, memecoins usually do not contribute to the network's security or governance, leading to a separation between transactional utility and network governance.

This dichotomy creates a fragmented token economy where neither type of token fully exploits its potential, affecting the overall efficiency and stability of the blockchain ecosystem. Governance tokens remain largely inactive in everyday commerce, while memecoins, although frequently used, do not enhance the security or governance of the network.

## Problem

The key challenge within blockchain systems employing governance tokens and memecoins e.g. (DOGE)

or "Dogecoin

" revolve around the distinct usage intentions and transaction demands for each type of token. Governance tokens, typically used for voting and protocol governance, often lack incentives for regular transactions due to their importance in network control. This can lead to decreased liquidity and underutilization of the tokens' potential as a medium of exchange. Conversely, memecoins are designed for high-frequency transactions but might not contribute significantly to network security or governance. This dichotomy results in a fragmented token economy where neither type fully exploits its potential, thus affecting the overall efficiency and stability of the blockchain ecosystem.

## Proposal

To address these issues, an innovative system design is proposed dubbed "TTTs

" or "Turtle Time Tokens"

. (TTTs)

have intentionally delayed transaction confirmation times to harmonize the economic roles of governance tokens and memecoins. By intentionally extending the confirmation time for governance token transactions, their velocity can be decreased, promoting value stability and encouraging use in strategic, high-value transactions or staking for governance purposes. Conversely, memecoins can serve as the primary medium for everyday transactions due to their faster confirmations, enhancing the blockchain's usability and liquidity.

This dual-token system aims to create a balanced distribution of token utility across different network activities, fostering a robust economic environment that supports both governance and rapid transaction needs. The decoupling of governance and transactional roles enhances the efficiency and stability of the blockchain ecosystem, ensuring that each token type serves its intended purpose effectively.

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## Breakdown

The proposed solution aims to integrate the economic roles of governance tokens and memecoins more cohesively by altering transaction confirmation times and restricting the staking capabilities of the chosen memecoin being used as the native payment token, enhances the distinct utility of each token type, promoting a balanced and efficient blockchain ecosystem.

## Governance Tokens:

By intentionally extending the confirmation time for governance token transactions, we can decrease their velocity, thus stabilizing their value and encouraging their use in more deliberate, high-value transactions or staking for governance purposes. This design leverages longer confirmation times to disincentivize frivolous use and preserve the tokens for strategic decisions and network support. Governance tokens, therefore, become more valuable for long-term network governance and security.

## Wrapped Memecoins:

Wrapped Dogecoin (wDOGE) and similar memecoins can serve as the primary medium for everyday transactions due to their faster confirmations, enhancing the blockchain's usability and liquidity. To maintain this liquidity and usability, wrapped memecoins would be blocked from staking capabilities. This restriction ensures that memecoins remain liquid and readily available for transactions, preventing them from being locked up in staking contracts. By keeping memecoins out of staking, the focus for staking and network security remains on governance tokens.

## Benefits of the Dual-Token System

### 1. Balanced Token Utility

:

- Governance Tokens

: Used for high-value transactions, governance, and staking. Extended confirmation times encourage strategic use and value stability.

- Wrapped Memecoins

: Used for everyday transactions with fast confirmations, ensuring high liquidity and usability. Blocking staking capabilities maintains their transactional focus.

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### 1. Economic Stability

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- Governance Tokens

: Reduced velocity and increased stability due to longer confirmation times.

- Wrapped Memecoins

: Enhanced value stability as their valuation is decoupled from the fluctuating underlying value of the protocol's governance aspects.

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### 1. Security and Compensation

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- Transaction Fees

: The application of gas fees on memecoin transactions ensures that network validators are adequately compensated, maintaining network security and operational integrity without the need for memecoins to contribute directly to governance.

- Staking Focus

: Governance tokens are the primary focus for staking, enhancing network security and governance efficiency.

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## Implementation

### 1. Governance Token Design

:

- Implement extended confirmation times for governance token transactions.
- Design smart contracts for staking governance tokens to secure the network and participate in protocol governance.
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- Wrapped Memecoin Design

:

- Ensure fast confirmation times for memecoin transactions.
- Implement smart contracts that block staking capabilities for wrapped memecoins, ensuring their liquidity and transactional focus.
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- Economic and Security Models

:

- Develop models to calculate optimal confirmation times and transaction fees to balance liquidity, stability, and network security.
- Create incentives for validators to process both governance token and memecoin transactions, ensuring robust network security.
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By integrating these design choices, the proposed solution promotes a more balanced distribution of token utility across different network activities, fostering a robust economic environment that supports both governance and rapid transaction needs. This dual-token system enhances the overall efficiency and stability of the blockchain ecosystem, ensuring that each token type serves its intended purpose effectively.

## Utility Expansion and Demand

$$U = \sum_{i=1}^n u_i$$

where  $u_i$

represents a specific use case the token enables. All else equal, a higher  $U$

should correspond to increased demand  $D$

, which we can model simply as:

$$D = \alpha U - \beta P + \epsilon$$

where  $P$

is the token price,  $\alpha$

,  $\beta$

are coefficients representing the sensitivity of demand to utility and price respectively, and  $\epsilon$

captures all other demand factors. Therefore, the increase in utility from permitting  $T_g$

transactions should boost demand for governance tokens by  $\alpha \Delta U$

.

## Value Stability and Velocity Impacts

With intentionally long confirmation times  $\tau_g$

for  $T_g$

transactions creating a natural disincentive for using governance tokens in everyday payments and commerce compared to the memecoin with  $\tau_m$

confirmations. This should reduce the velocity  $V_g$

of governance tokens. From the equation of exchange:

$$MV = PQ$$

where  $M$

is money supply,  $V$

is velocity,  $P$

is price level, and  $Q$

is real economic output transacted in the token. Reduced  $V_g$

puts upward pressure on  $P_g$

. Compared to memecoins used for payments, this dynamic could make governance token prices  $P_g$

more stable.

We can quantify the velocity difference as follows. Let  $\lambda_g$

be the fraction of  $M_g$

governance tokens transacted per unit time and  $\lambda_m$

be the equivalent for  $M_m$

memecoins. Assuming the confirmation time drives usage, the expected velocities are:

$$V_g = \frac{\lambda_g}{\tau_g}, \quad V_m = \frac{\lambda_m}{\tau_m}$$

So the velocity ratio simplifies to:

$$\frac{V_g}{V_m} = \frac{\lambda_g \tau_m}{\lambda_m \tau_g}$$

If  $\lambda_g \approx \lambda_m$

(similar transaction demand) but  $\tau_g \gg \tau_m$

, then  $V_g \gg V_m$

. Memecoins should have much higher velocity and be the dominant medium of exchange.

## Fee Revenue and Security Budget

However, the governance token transactions  $T_g$

, though slower, still generate fee revenue for validators. If  $T_g$

transactions are a fraction  $\phi$

of all transactions and the average fee is  $\bar{f}$

, then the expected security budget from governance token usage is:

$$B_g = \phi \bar{f} \lambda_g M_g$$

Compared to a system with only memecoins, this design increases the total security budget by  $B_g$

, without inflating  $V_m$

and putting downward pressure on  $P_m$

. The security ratio between the two tokens is:

$$\frac{B_g}{B_m} = \frac{\phi \lambda_g M_g}{(1 - \phi) \lambda_m M_m}$$

Even if  $\phi$

and  $M_g$

are small compared to memecoins, this can still be a significant security contribution, especially if governance tokens have a higher average transaction size and therefore higher  $\bar{f}$

.

## User Experience and Economic Incentives

The contrasting confirmation times  $\tau_g$

and  $\tau_m$

create a natural UX and economic incentive for users to treat the two tokens differently in their activities:

### Algorithm 1 User Token Selection

$v \leftarrow$  value of transaction  $u_t \leftarrow$  user's time preference if  $v$  is low and  $u_t$  prefers fast settlement then Use memecoin else if staking or network utility dominates then Use governance token else Use either based on other factors end if end if

Users are incentivized to use memecoins for everyday small transactions given the faster  $\tau_m$

confirmations. Conversely, governance staking and protocol utility create a strong incentive to hold governance tokens despite their slower transactability.

In essence, the system economically "prices in" the opportunity cost of using scarce governance tokens in transactions through the longer confirmation times  $\tau_g$

. This encourages efficient allocation between staking and transacting. At the margin, a user should only transact a governance token if the economic gain exceeds the time value and staking opportunity cost.

## Memecoin Stability and Single-Purpose Design

As mentioned, a key factor in a memecoin's potential stability is its focused, single-purpose design optimized for payments. Unlike governance tokens or more complex multi-purpose tokens, a memecoin like Dogecoin aims to excel at one core function: facilitating fast, cheap, and reliable transactions.

This specialization has several potential benefits for stability:

### 1. Reduced Exposure to Protocol-Level Risks

: By being used across multiple networks, a memecoin can diversify its risk exposure. Even if a particular network

experiences issues or a decline in the perceived value of its governance token, the memecoin's value may remain more stable given its usage and acceptance on other chains.

### 1. Network Effect and Lindy Effect

: As a memecoin gains adoption as a payment method across multiple platforms, it can benefit from a strong network effect. The more users and merchants accept it, the more valuable and stable it becomes. Over time, this can create a self-reinforcing cycle of stability (the Lindy effect).

### 1. Decoupling from Platform Innovation

: A payment-focused memecoin's value is less strongly coupled to the technological progress and innovations of any single platform. As long as it continues to meet its core payment functionality, its value can remain relatively stable even if some networks advance faster than others.

We can formalize this concept of a memecoin's "stability advantage" SA

over a platform-specific governance token as follows:

$$SA = \frac{\sigma_g}{\sigma_m}$$

where  $\sigma_g$

is the price volatility of the governance token and  $\sigma_m$

is the price volatility of the memecoin. All else equal, we would expect  $SA > 1$

for a widely adopted memecoin used across many platforms.

## Quantifying Cross-Platform Adoption

The stability advantage of a cross-platform memecoin depends heavily on the degree and distribution of its adoption across networks. We can quantify this "adoption spread"  $A_s$

as:

$$A_s = 1 - \sum_{i=1}^N \left( \frac{T_i}{T} \right)^2$$

where  $N$

is the total number of networks the memecoin is used on,  $T_i$

is the transaction volume on the  $i$

-th network, and  $T$

is the total transaction volume across all networks.

$A_s$

ranges from 0 to  $1 - \frac{1}{N}$

, with higher values indicating more evenly spread adoption. An  $A_s$

close to 0 means the memecoin is heavily dominated by usage on a single network, while a value close to  $1 - \frac{1}{N}$

indicates relatively equal adoption across all  $N$

networks.

Putting it together, we can propose a simple model for the stability  $S$

of a cross-platform memecoin:

$$S = k \cdot A_s \cdot SA$$

where  $k$

is a constant reflecting other factors like overall cryptocurrency market conditions. This suggests that a memecoin's stability is driven by both its inherent stability advantage over platform-specific tokens and the breadth of its adoption across platforms.

## Factors Contributing to Stability

## 1. Increased Liquidity

:

- Widespread Use

: As wDOGE

is adopted across multiple blockchains, its liquidity would increase. High liquidity typically reduces price volatility, as large trades can be absorbed without significantly affecting the price.

- Liquidity Pools

: Enhanced liquidity pools and decentralized exchanges on multiple blockchains would facilitate seamless conversion and trading, further stabilizing the price.

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## 1. Broad Network Effect

:

- Adoption and Usage

: The more widely wDOGE

is used, the stronger its network effect becomes. As more merchants, users, and platforms accept and use wDOGE for payments, its utility and trust increase, contributing to price stability.

- Lindy Effect

: The longer wDOGE

is used successfully, the more likely it is to continue being used, enhancing its reputation and perceived stability.

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## 1. Diversified Risk

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- Cross-Platform Stability

: By being used on multiple blockchains, \$wDOGE's value is less tied to the performance or issues of any single blockchain. This diversification reduces the risk of value fluctuations due to problems on one specific network.

- Decoupling from Governance

: Since wDOGE

is not used for governance or staking, its value is decoupled from the complexities and risks associated with network

governance decisions and staking economics.

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### **Economic Model for Stability**

#### 1. Supply and Demand Dynamics

:

- Stable Demand

: As wDOGE

becomes a preferred payment token across multiple blockchains, the consistent demand for transactions helps stabilize its value.

- Predictable Supply

: Assuming the supply of wrapped Dogecoin is managed effectively (e.g., through minting and burning mechanisms that maintain a 1:1 peg with the original Dogecoin), the predictability in supply further contributes to price stability.

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#### 1. Velocity of Money

:

- High Velocity

: wDOGE

's use in frequent, everyday transactions ensures high velocity. According to the equation of exchange ( $MV = PQ$ )

(where (M)

is money supply, (V)

is velocity, (P)

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is real output), high velocity helps maintain a stable (P)

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(transaction volume) is also high and stable.

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### **Benefits of Stabilized wDOGE**

for Payments

#### 1. Reliable Medium of Exchange

:

- Price Stability

: With reduced volatility, wDOGE

becomes a more reliable medium of exchange, encouraging its use in everyday transactions without concerns over significant value changes.

- Merchant Adoption

: Merchants are more likely to accept a stable token for payments, reducing the risk of loss due to price fluctuations.

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#### 1. Merchant Adoption

: Merchants are more likely to accept a stable token for payments, reducing the risk of loss due to price fluctuations.

#### 1. User Confidence

:

- Trust and Acceptance

: Stability fosters trust among users, making them more comfortable holding and transacting with wDOGE

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- Wider Adoption

: As user confidence grows, wider adoption follows, creating a positive feedback loop that further stabilizes the token's value.

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## 1. Integration with Financial Systems

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- Easier Integration

: A stable payment token can be more easily integrated with traditional financial systems, such as point-of-sale systems, online payment gateways, and financial services.

- Regulatory Compliance

: Stability can also make it easier to comply with regulatory requirements, as regulators often favor less volatile assets for payment purposes.

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Widespread adoption of e.g. wDOGE

across multiple blockchains has the potential to significantly stabilize its value, making it an even more effective and reliable payment token. The increased liquidity, broad network effect, diversified risk, and stable supply and demand dynamics contribute to this stability. A stable Memecoin enhances user confidence, encourages merchant adoption, and facilitates integration with traditional financial systems, promoting its use as a preferred medium of exchange in the cryptocurrency ecosystem.

# Advantages

Allowing fungible governance tokens to be spent but with slower confirmations than memecoins is a powerful tokenomic design pattern. It creates a natural separation in token utility and incentivizes staking while still harnessing transactional usage for security. More broadly, it illustrates how subtle technical choices like confirmation times can be deeply interlinked with a cryptocurrency's economic structure and incentives.

# Applications

Improving our understanding of these tokenomic principles can help inform the rational engineering of future blockchain networks. Despite these challenges, the potential of a widely adopted, cross-platform memecoin to achieve relative stability compared to platform-specific tokens remains compelling. As decentralized networks continue to evolve, observing the dynamics of payment-focused memecoins like Dogecoin

can provide valuable insights into the future of cryptocurrency stability and adoption.

# Comparisons

The proposed dual-token system with differentiated confirmation times using TTTs

for governance tokens and memecoins like DOGE

, is a novel approach to harmonizing the economic roles of different token types in blockchain networks. To better understand its potential impact and significance, it's essential to compare it with other leading concepts and approaches in this area.

## 1. Dual-Token Economies

: The idea of using multiple token types within a single blockchain ecosystem is not new. Several projects, such as Decred and Cosmos, have implemented dual-token economies to separate the roles of staking, governance, and transactions. However, the proposed system takes this concept further by introducing differentiated confirmation times to optimize the utility and stability of each token type.

#### 1. Stablecoin Designs

: Stablecoins, such as Tether (USDT)

and USD Coin (USDC)

, have gained popularity as a means to mitigate the volatility of cryptocurrencies. These tokens are typically pegged to a stable asset, like the US dollar, to maintain a consistent value. While the proposed system's memecoin (e.g., wDOGE

) is not explicitly designed as a stablecoin, its focus on payments and stability shares some similarities with stablecoin concepts. The key difference lies in the approach to achieving stability - through widespread adoption and decoupling from governance, rather than an explicit peg.

#### 1. Velocity Reduction Mechanisms

: Some projects have explored mechanisms to reduce token velocity and encourage holding, such as transaction fees, demurrage, or time-locked staking. The proposed system's extended confirmation times for governance tokens can be seen as a novel velocity reduction mechanism that aligns with the token's intended use case. This approach is more organically tied to the network's economic incentives compared to external mechanisms.

#### 1. Interoperability and Cross-Chain Adoption

: The proposed system emphasizes the importance of widespread adoption of memecoins like wDOGE

across multiple blockchains. This aligns with the growing trend of interoperability and cross-chain solutions in the blockchain space. Projects like Polkadot, Cosmos, and Chainlink are working on enabling seamless communication and value transfer between different blockchains. The proposed system can leverage these advancements to facilitate the widespread adoption and stability of memecoins.

#### 1. Economic Incentive Design

: The field of tokenomics focuses on designing incentive structures that align the behavior of network participants with the overall goals of the system. The proposed dual-token system is a prime example of economic incentive design, as it creates a clear separation of roles and incentives for governance token holders and memecoin users. This approach is in line with the ongoing research and experimentation in the field of tokenomics.

While the proposed system introduces novel concepts, such as differentiated confirmation times and the specific focus on memecoins like wDOGE, it also builds upon and complements existing approaches in the blockchain space. The emphasis on stability, interoperability, and incentive alignment is consistent with the general direction of the industry.

## Conclusion

The design choices for blockchain governance and payment tokens have far-reaching implications for network dynamics, user behavior, and overall economic stability. By leveraging different confirmation times for governance and payment tokens, we can create a balanced ecosystem that encourages efficient token usage, enhances security, and promotes long-term stability. Further research and comparative analysis will continue to refine these models and inform the development of robust and scalable blockchain systems.