No Route | No Slippage | No Impermanent loss | Commission Allocation by Role | Lower Gas

TTSWAP

Detailed Design Whitepaper based on Market Value Transaction Conservation Principle

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1 Overview

TTSWAP (token-token swap) is an automated market-making protocol built on EVM-compatible blockchains, meaning it does not rely on centralized institutions or individuals to conduct transactions. Its core principle is to automatically trigger the transfer of market value based on user behavior, thereby creating a protocol based on a constant value trading model.

This project's whitepaper explains the design logic of TTSWAP, covering the following aspects:

1. Token Trading: Users can directly exchange one token for another without needing an intermediary token.
2. Value Token Investment and Withdrawal: Users can invest in specific value tokens and withdraw their investments when needed.
3. Regular Token Investment and Withdrawal: In addition to value tokens, users can also invest in regular tokens and withdraw their investments at any time.
4. Token Fee Generation and Distribution: Fees generated during transactions are distributed according to specific rules to incentivize more participants to join the market.
5. Token Economic Model: Designed with the aim of safeguarding the rights and interests of all members (including regular users, marketers, service providers, community builders, etc.), the model outlines the token distribution, unlocking details, and associated rights.

In summary, TTSWAP provides a simple, transparent, and efficient cryptocurrency trading protocol for ordinary users, using an innovative AMM logic—the constant value trading model. It aims to create a convenient, secure, and low-GAS fee protocol.

2 Features

1. Constant Value Trading Model
   The core idea of this model is to ensure that the value of the transaction remains constant throughout the process. This means that regardless of when the transaction occurs, it objectively reflects the market value of the tokens, allowing for free, simple, and fast token trading.
2. Direct Trading Without Intermediaries
   On this protocol, any two tokens can be traded directly without needing to convert one token

into an intermediary token first. This direct trading model simplifies the transaction process, saving time and costs.

3. No Slippage Trading
   Slippage refers to the phenomenon where the transaction price deviates from expectations due to market price fluctuations during the transaction. In this protocol, as long as the transaction amount is below a specific threshold, there will be no price slippage, meaning the transaction is stable and reliable under certain conditions.
4. No Impermanent Loss
   Impermanent loss refers to the loss suffered by liquidity providers due to market fluctuations when providing liquidity. This trading model avoids the issue of impermanent loss through its design logic, meaning liquidity providers or token investors can maintain the original value of their investment when withdrawing and also earn profits from providing liquidity.
5. Low Gas Fees
   Gas fees are the costs required to execute smart contracts on the Ethereum network. Due to the relatively simple logic and low computational requirements of this trading model, Gas consumption is low, allowing users to save significant Gas fees during transactions, making trading more economical and efficient. Compared to other trading models, it can save 50% to 90% in Gas fees.
6. Fee Distribution by Role
   On the protocol, fees are distributed according to the different roles of participants, including merchants (token sellers), token investors (liquidity providers), gateways, referrers, and ordinary users. Anyone has the opportunity to participate in the protocol's operations and share the profits from the protocol's development, thereby incentivizing more users to participate in the protocol's construction.
7. Native ETH Support
   The protocol supports direct exchange of native ETH for any token.
8. Proof of Investment Secondary TTS Mining
   When users invest in tokens, the protocol automatically mines for them based on the investment value.
9. Community-Driven
   TTSWAP embraces the community, driving project improvements and refinements through community involvement.

3 Constant Value Trading Model Principle

3.1 Constant Value Trading Model

$$\frac{V_a}{Q_a} * \Delta a = \frac{V_b}{Q_b} * \Delta b = ... = \frac{V_z}{Q_z} * \Delta z \tag{1}$$

$$V_a : Record \quad token \quad a's \quad market \quad value \tag{2}$$

$$Q_a : Record \quad token \quad a's \quad quantity \tag{3}$$

$$\Delta a : Record \quad token \quad a's \quad change \quad amount(buy \quad or \quad sell) \tag{4}$$

$$V_b : Record \quad token \quad b's \quad market \quad value \tag{5}$$

$$Q_b : Record \quad token \quad b's \quad quantity \tag{6}$$

$$\Delta b : Record \quad token \quad b's \quad change \quad amount(buy \quad or \quad sell) \tag{7}$$

$$V_z : Record \quad token \quad z's \quad market \quad value \tag{8}$$

$$Q_z : Record \quad token \quad z's \quad quantity \tag{9}$$

$$\Delta z : Record \quad token \quad z's \quad change \quad amount(buy \quad or \quad sell) \tag{10}$$

Market value measures the degree of user demand for tokens in the protocol. When users sell tokens, it indicates a decrease in demand for the tokens in the protocol, leading to a decrease in the token's market value. When users buy tokens, it indicates an increase in demand for the tokens in the protocol, leading to an increase in the token's market value.

3.1.1 Calculation Logic

- State of $Token_a$ and $Token_b$ before the transaction

$$a's \quad market \quad value \quad in \quad protocol : V_a \tag{11}$$

$$a's \quad quantity \quad in \quad protocol : Q_a \tag{12}$$

$$b's \quad market \quad value \quad in \quad protocol : V_b \tag{13}$$

$$b's \quad quantity \quad in \quad protocol : Q_b \tag{14}$$

alter trading Δa for Δb

$$a's \quad market \quad value \quad in \quad protocol : V_a - \frac{V_a}{Q_a} * \Delta a \tag{15}$$

$$a's \quad quantity \quad in \quad protocol : Q_b + \Delta b \tag{16}$$

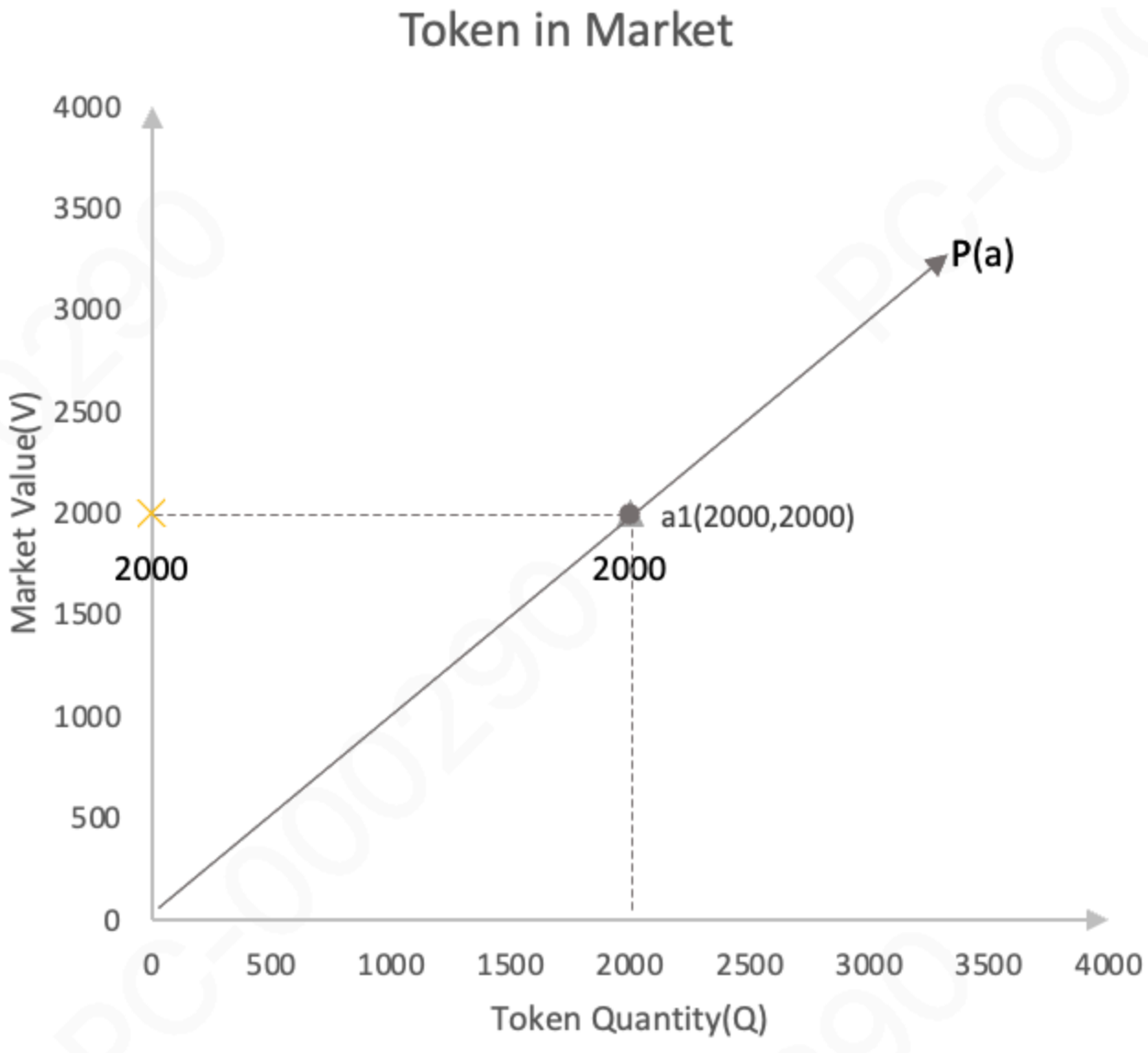
$$b's \quad market \quad value \quad in \quad protocol : V_a + \frac{V_a}{Q_a} * \Delta a \tag{17}$$

$$b's \quad quantity \quad in \quad protocol : Q_b - \frac{\frac{V_a}{Q_a} * \Delta a * Q_b}{V_b} \tag{18}$$

$$receive \quad \Delta b = \frac{\frac{V_a}{Q_a} * \Delta a * Q_b}{V_b} \tag{19}$$

3.2 Market Value of Tokens

When a token is added to the protocol, its market value is the same as its real value.
Example: When 2000 Tokena1 is added to the protocol, its real value is 2000, so the market value of the token is 2000.



Definition:
Market value V_{a1}: 2000
Token quantity Q_{a1}: 2000.
Unit value P_{a1}: 1, the market value per unit quantity.

3.3 Relationship Between Tokens in the Market and User Trading Behavior

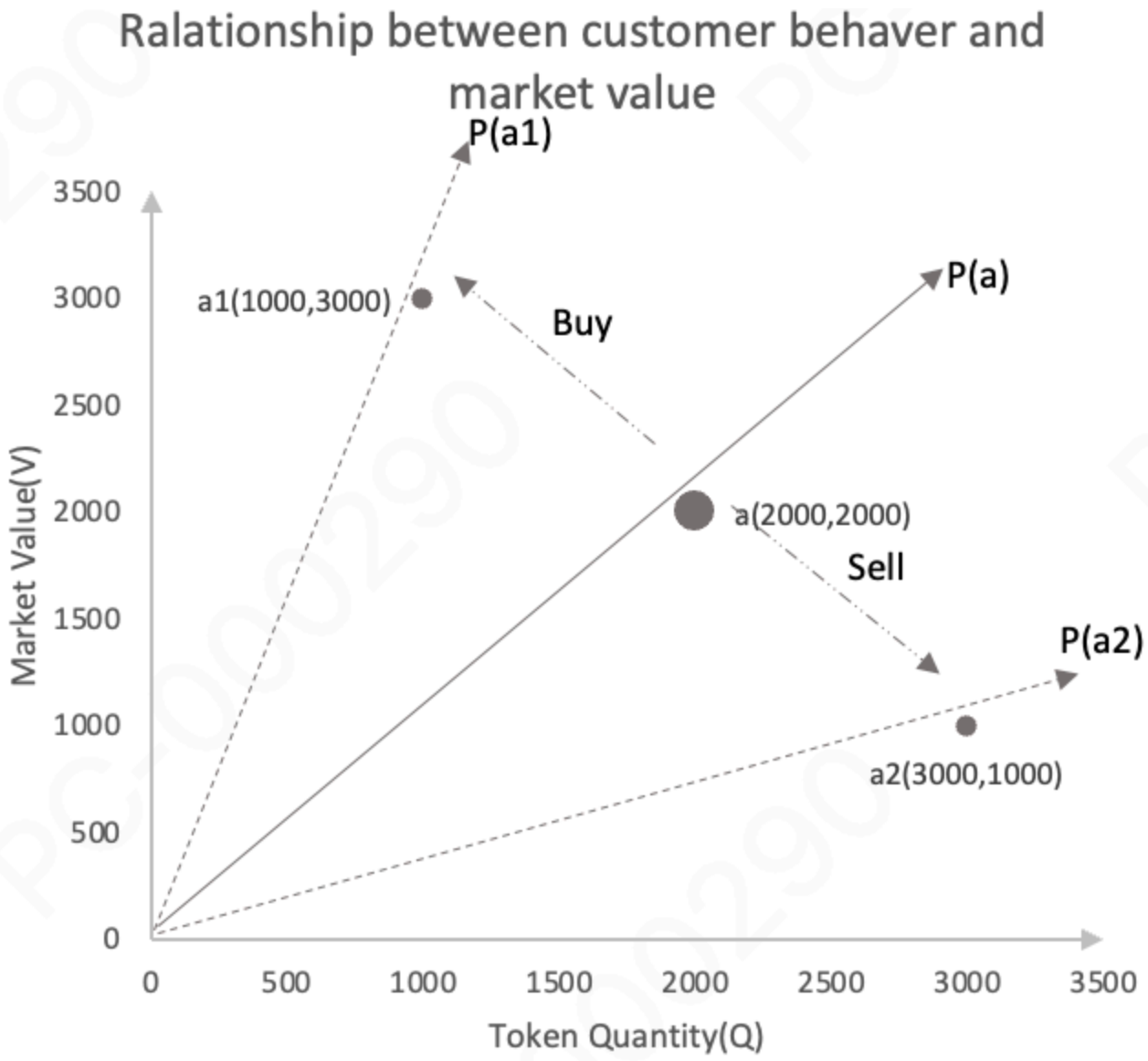
- Example 1: a user spends 1000 to purchase $Token_a$.

When a user purchases, it indicates an increase in the token's market value V. V_{a1}=2000+1000=3000
When a user purchases, the token quantity Q in the protocol decreases. Q_{a1}=2000-1000=1000
The unit value P of the token in the protocol changes to P_{a1}=3
User purchases lead to an increase in the token's unit value.

- Example 2: a user sells 1000 to purchase $Token_a$.

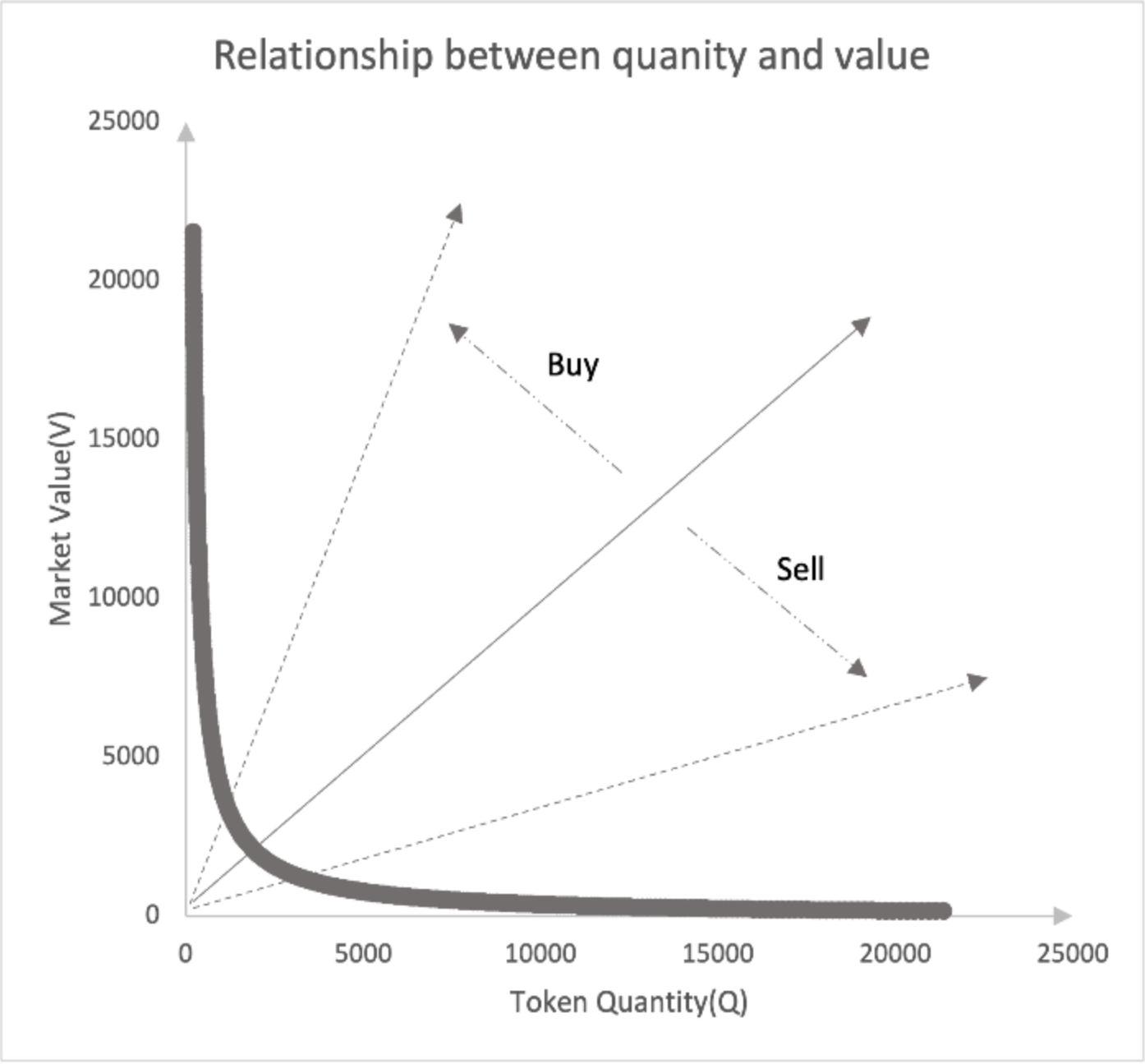
When a user sells, it indicates a decrease in the token's market value V. V_{a2}=2000-1000=1000
When a user sells, the token quantity Q in the protocol increases. Q_{a2}=2000+1000=3000
The unit value P of the token in the protocol changes to P_{a2}=0.3333
User sales lead to a decrease in the token's unit value.

As shown below



3.4 Relationship Between User Behavior and Token State in the Market

User sales and purchases cause changes in the token's market value V and token quantity Q, and the token's price also changes accordingly. The changes in the token's market value V and token quantity Q are shown in the figure.

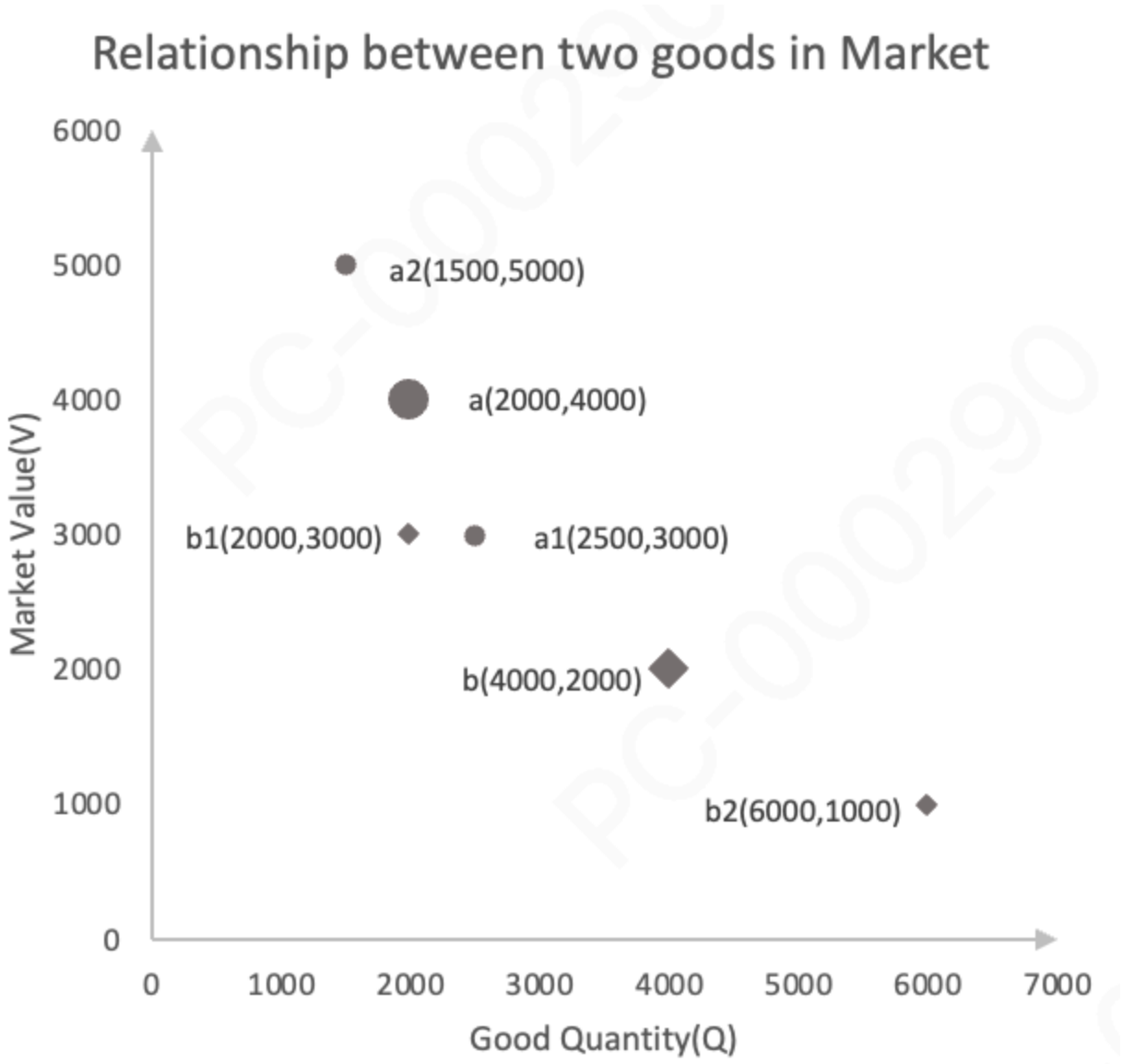


3.5 Relationship Between Two Items in the Market

There are two tokens in the market, $Token_a$ (2000,4000) and $Token_b$ (4000,2000).

- A user uses 500 $Token_a$, corresponding to a market value of 1000. The market value of 1000 corresponds to 1000 $Token_b$.

When a user purchases 500 $Token_a$, they spend 1000 $Token_b$, and the tokens in the protocol move from position a to position a1 in the figure, and from position b to position b1.
When a user sells 500 $Token_a$, they receive 1000 $Token_b$, and the tokens in the protocol move from position a to position a2 in the figure, and from position b to position b2.

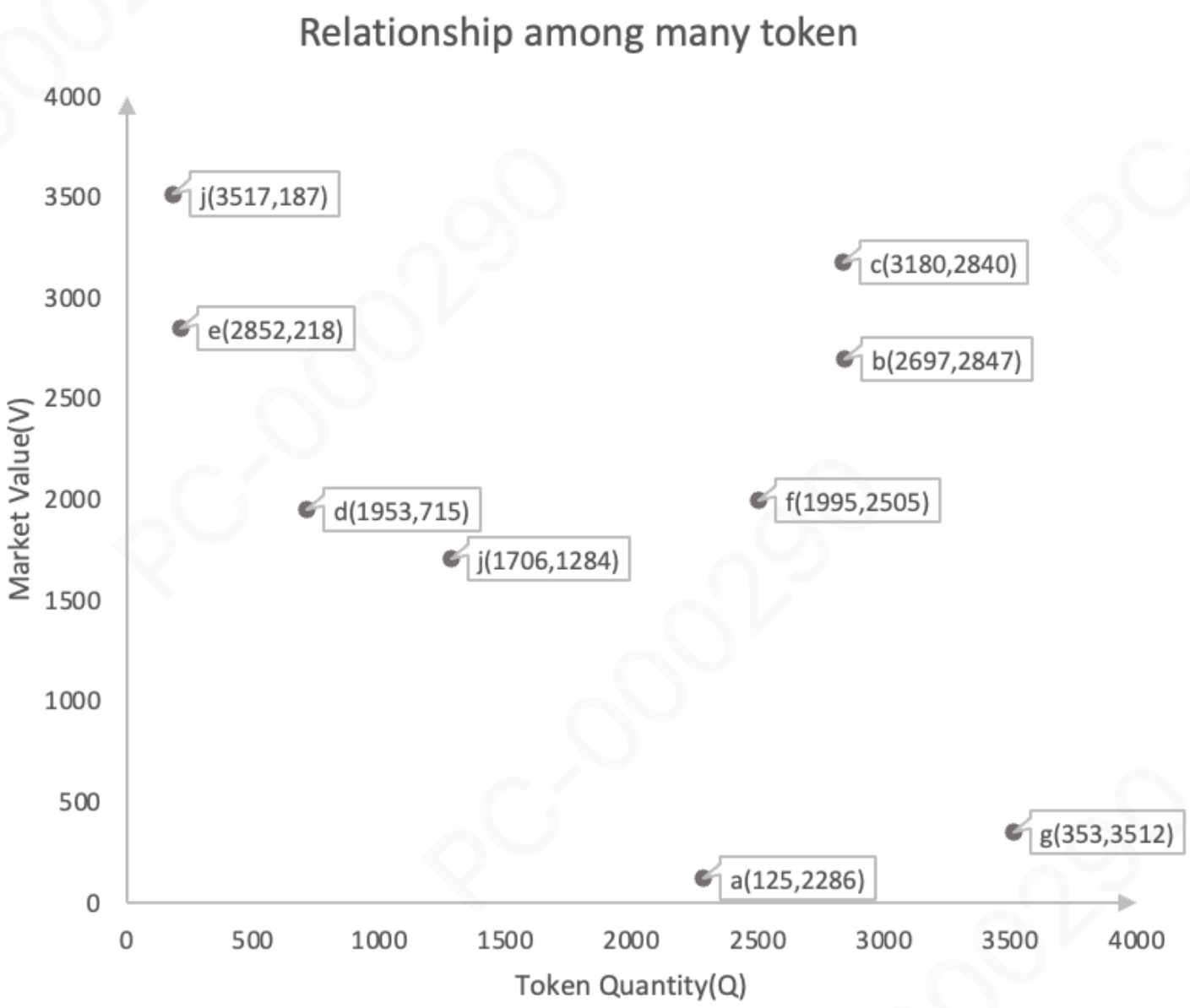


Because the positions change, P(a) and P(b) also change, and the price of $Token_b$ relative to $Token_a$ changes. If there is a difference with the external market price, other transactions will promote the unification of the market price and the external market price.

> Note: If the purchase quantity is too large relative to the market data, it will cause strong fluctuations in the relative price of the two tokens. Therefore, each transaction will be split into multiple small orders.

3.6 Relationship Between Multiple Tokens in the Market

Any two tokens will change positions due to user transactions, causing changes in their positions relative to other tokens and resulting in synchronized price changes.



3.7 Relationship Between Token Transaction Size and Price in the Market

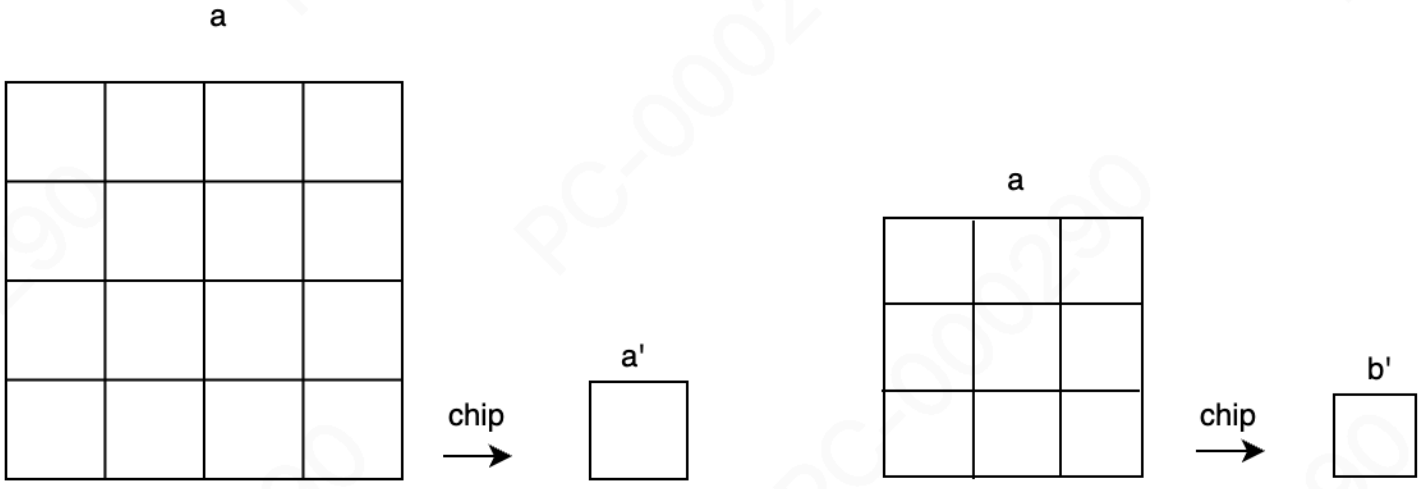
The token quantity in the market is 100,000,000, and the market value is 100,000,000.

Transaction Size	Price Change
10	0.000000200000
50	0.000001000000
100	0.000002000002
500	0.000010000050

Transaction Size	Price Change
1000	0.000020000200
5000	0.000100005000
10000	0.000200020002
50000	0.001000500250
100000	0.002002002002
500000	0.010050251256
1000000	0.020202020202
5000000	0.105263157895

3.8 No-Slippage Threshold (Transaction Threshold)

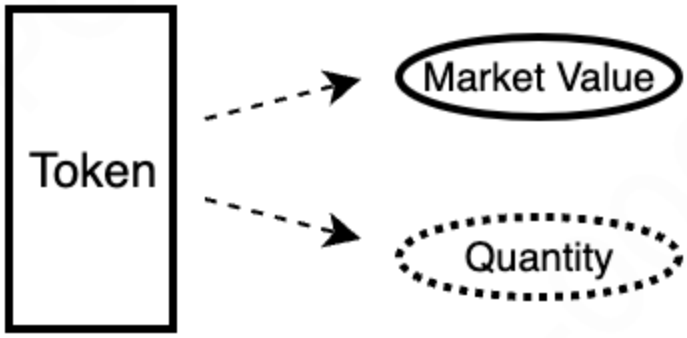
To avoid user transactions causing a run on the protocol's tokens, each token is initialized with a split number, and each split size is the no-slippage threshold for that token. Therefore, when a user transacts, if the transaction value is less than the token's no-slippage threshold, there will be no impermanent loss. If the transaction is larger than the token's no-slippage threshold, the transaction will be split into multiple orders based on the threshold.



4 Tokens

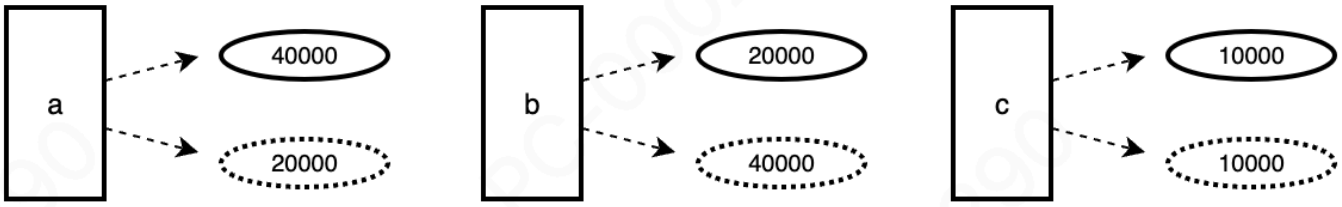
4.1 Token Introduction

Description of the token: The protocol has 15 $Token_a$ with a market value of 3000, so the token has two attributes: market value and current quantity. As shown below



- Terminology Explanation
  Market Value: Used to measure the degree of user demand for the protocol's tokens. If a user purchases a token, it indicates an increase in demand for that token, and thus the token's market value increases. Conversely, if a user starts selling a token, it indicates a decrease in demand for that token, and thus the token's market value decreases.
  Current Quantity: Records the current quantity of tokens in the protocol.

- Other tokens can be described as follows, for example



4.2 Token Classification

Token Classification	Description	Do Transactions Generate Fees	Can It Be Invested Alone	Can It Be Invested with Other Value Tokens
Meta Token	The first token added to the market	Yes	Yes	No
Value Token	Tokens recognized by the market, with good ecology and team	Yes	Yes	No
Regular Token	Personally added tokens, with market value to be confirmed	Yes	No	Yes

4.3 Token Configuration

- Token configuration occupies 255 bits

4.3.1 Adjustable by the Market

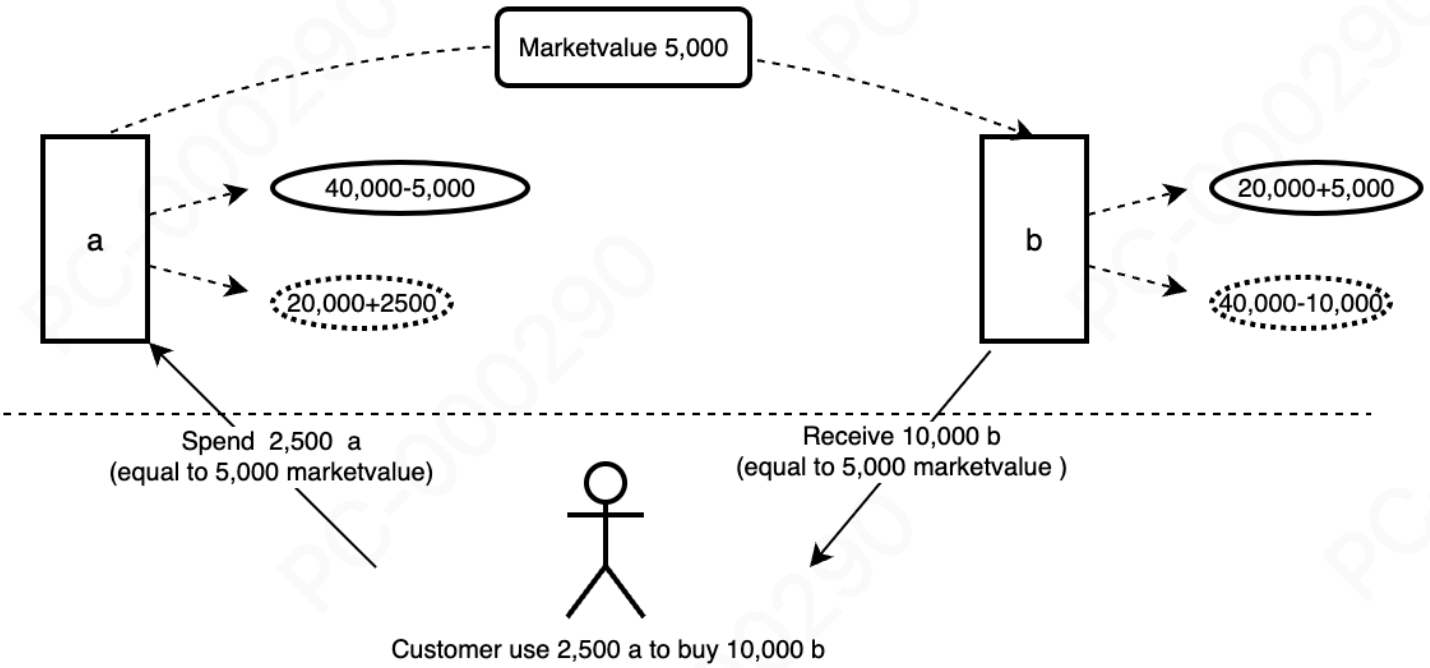
id	Configuration Item	Bits	Unit	Max Value	Min Value	Start Bit	End Bit	Description
1	Market Value Token	1	BOOLEAN	1	0	1	1	
2	Reserved	28	1	1023	0	2	27	Reserved Field
...								

4.3.2 Configurable by Users

id	Configuration Item	Bits	Unit	Max Value	Min Value	Start Bit	End Bit	Description
1	Flash Loan Fee Rate	6	One ten-thousandth	63	0	28	33	Flash Loan Fee Rate
2	Investment Fee Rate	6	One ten-thousandth	63	0	34	39	(0~63)/10000
3	Withdrawal Fee Rate	6	One ten-thousandth	63	0	40	45	(0~63)/10000
4	Purchase Fee Rate	7	One ten-thousandth	127	0	46	52	(0~127)/10000
5	Sale Fee Rate	7	One ten-thousandth	127	0	53	59	(0~127)/10000
6	Transaction Slice Number	10	64	1023	0	60	69	(1~1023)X64
7	Withdrawal Slice Number	10	1	1023	0	70	79	(1~1023)

5 Token Exchange

Token exchange essentially involves users swapping their $Token_a$ for $Token_b$ in the market. When users choose to give up $Token_a$, it indicates a decrease in the market value of $Token_a$, as users no longer need it. Conversely, when users choose to purchase $Token_b$, it signifies an increase in the market value of $Token_b$, as users desire it.



- As shown in the figure, when users give up Token_a, the quantity of Token_a in the protocol increases, while its market value decreases. When users acquire Token_b, the quantity of Token_b in the protocol decreases, while its market value increases. This results in an increase in the price of Token_b relative to Token_a. Therefore, if another transaction is conducted, the same amount of Token_a will yield fewer Token_b than before.

5.1 Calculation Process

$$\frac{V_a}{Q_a} * \Delta a = \frac{V_b}{Q_b} * \Delta b \tag{20}$$

$$before \quad trading: \quad P_{ab} = \frac{V_a * Q_b}{Q_a * V_b} = 4 \tag{21}$$

$$\Delta B = \frac{V_a * \Delta a * Q_b}{Q_a * V_b} = \frac{40000 * 2500 * 40000}{20000 * 20000} = 10000 \tag{22}$$

$$V_a = V_a - \frac{V_a}{Q_a} * \Delta a = 40000 - \frac{40000}{20000} * 2500 = 35000 \tag{23}$$

$$Q_a = Q_a + \Delta a = 20000 + 2500 = 22500 \tag{24}$$

$$V_b = V_b + \frac{V_b}{Q_b} * \Delta B = 20000 + \frac{20000}{40000} * 10000 = 25000 \tag{25}$$

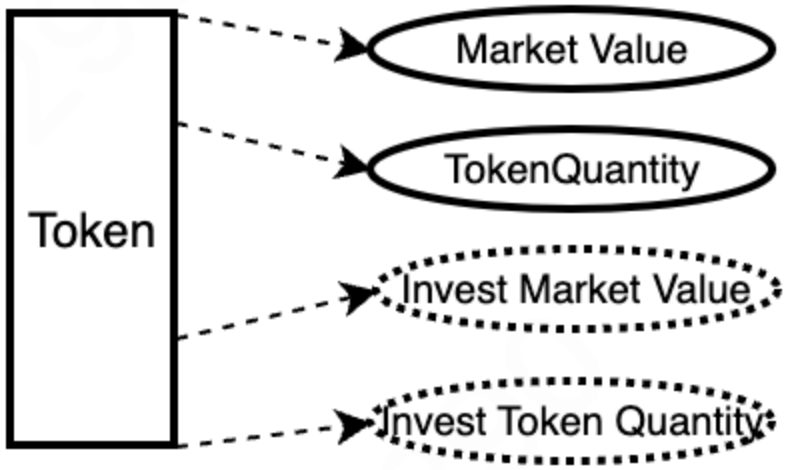
$$Q_b = Q_b + \Delta B = 40000 - 10000 = 30000 \tag{26}$$

$$after \quad trading: \quad P_{ab} = \frac{V_a * Q_b}{Q_a * V_b} = 1.86666 \tag{27}$$

6 Token Investment and Withdrawal

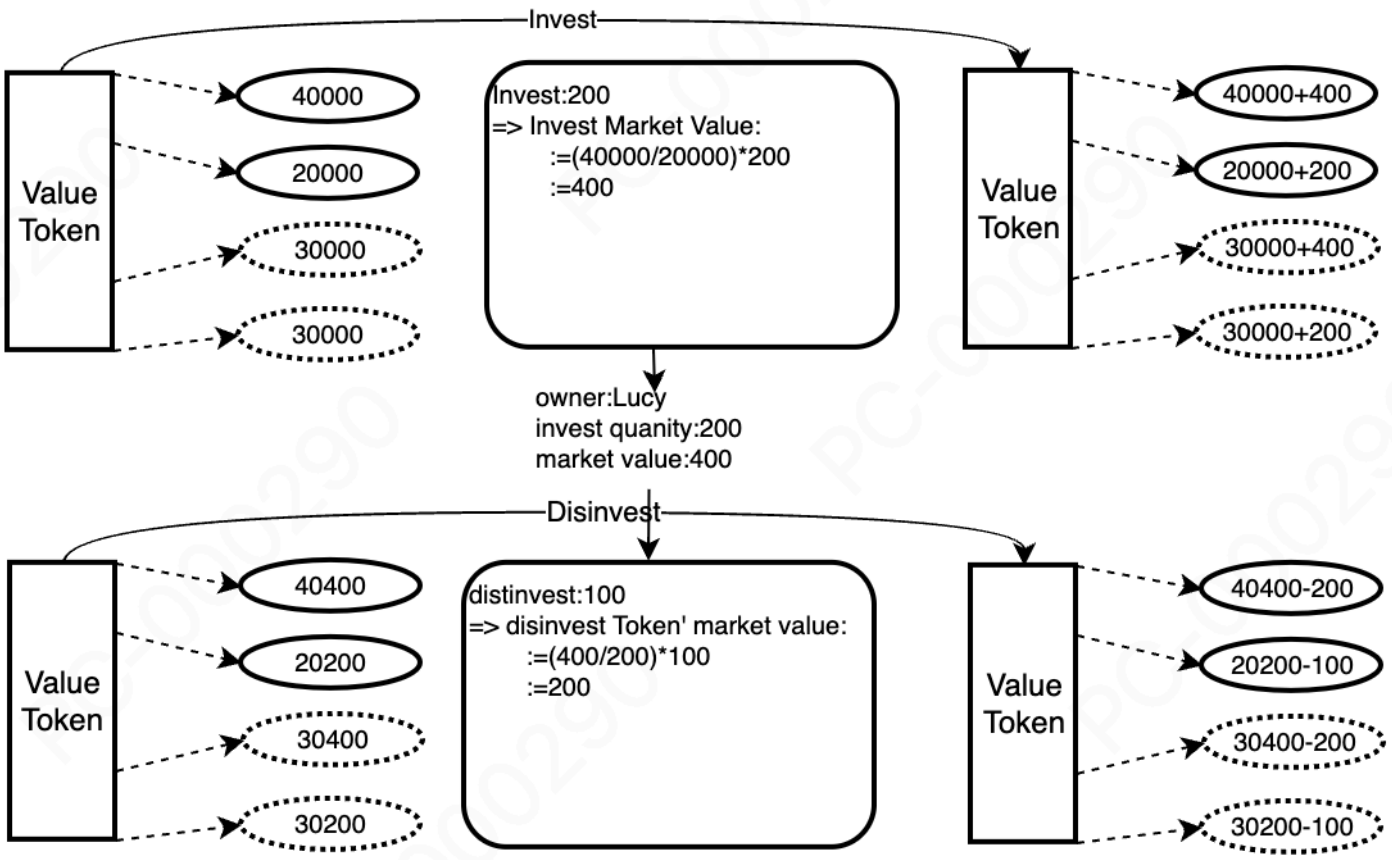
6.1 Recording Investment and Withdrawal

Token transactions in the market require users to provide liquidity. Therefore, the total market value and total quantity of token investments must be recorded.



- Terminology Explanation
  Investment Value: The total market value of tokens at the time of user investment.
  Investment Quantity: The total quantity of tokens at the time of user investment.

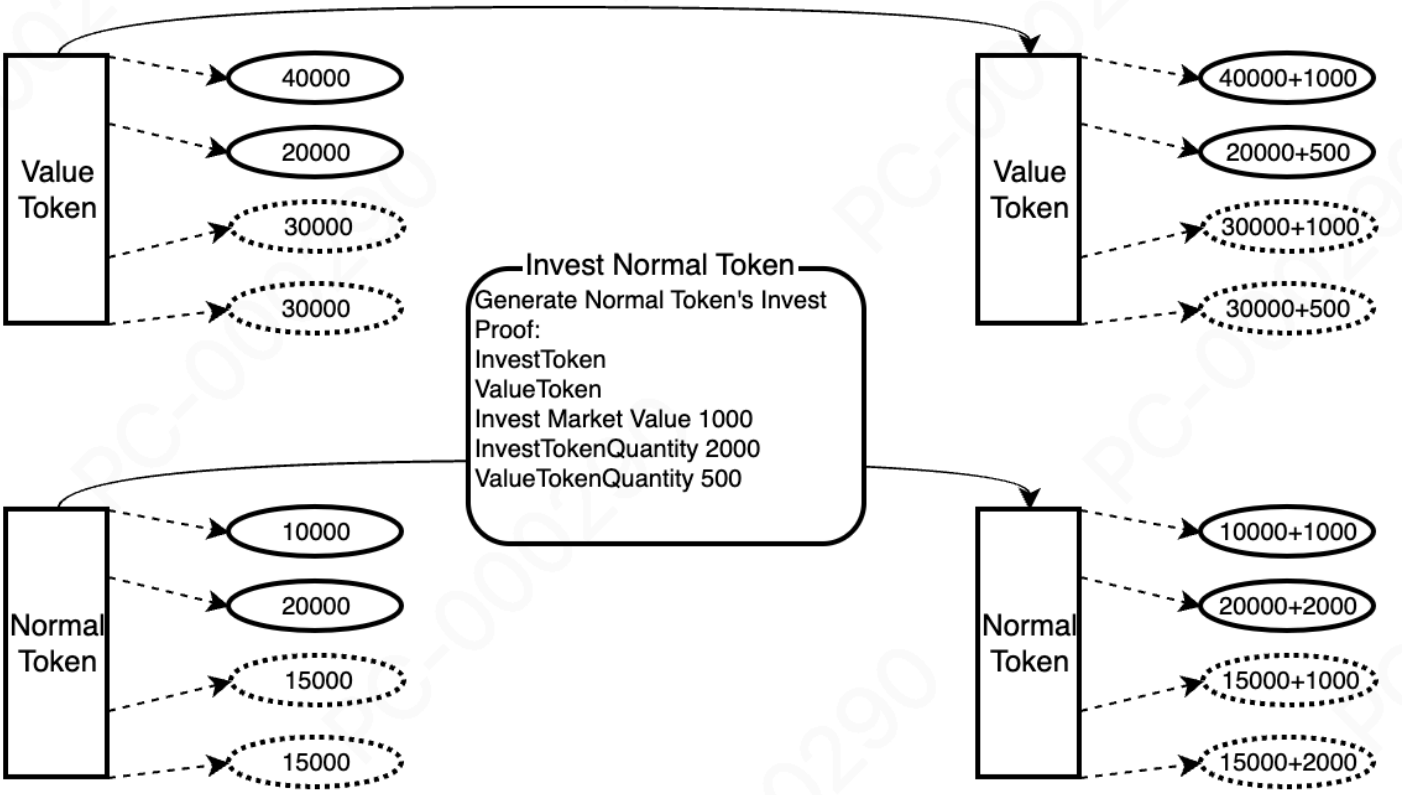
6.2 Value Token Investment and Withdrawal Process



- User Investment in Value Tokens
  Users calculate the market value corresponding to the investment quantity based on the current state of the value token. This facilitates profit calculation during withdrawal.
- User Withdrawal of Value Tokens
  Users calculate the profits generated from the investment based on the investment records.

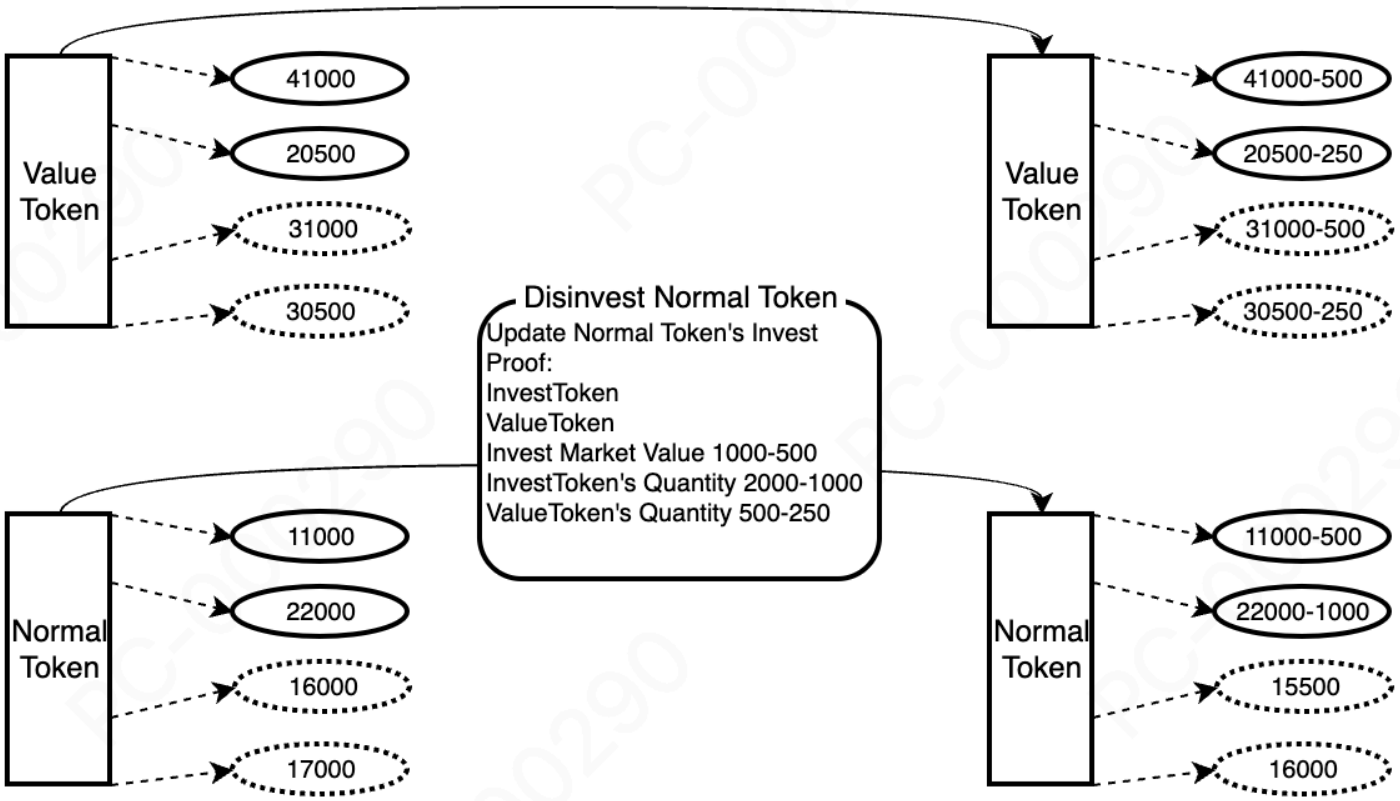
> When withdrawing tokens, the withdrawal quantity must be less than the total token quantity divided by the withdrawal slice number, and the market value corresponding to the withdrawal quantity must be less than the total token value divided by the withdrawal slice number.

6.3 Regular Token Investment



- User Investment in Regular Tokens
  Due to the high volatility of regular tokens' market value, arbitrage within the protocol may occur, leading to losses for token investors. To prevent this, investments must be made in value tokens of equivalent market value. Both the invested value tokens and regular tokens generate investment returns. Refer to the fee distribution section for details.

6.4 Regular Token Withdrawal

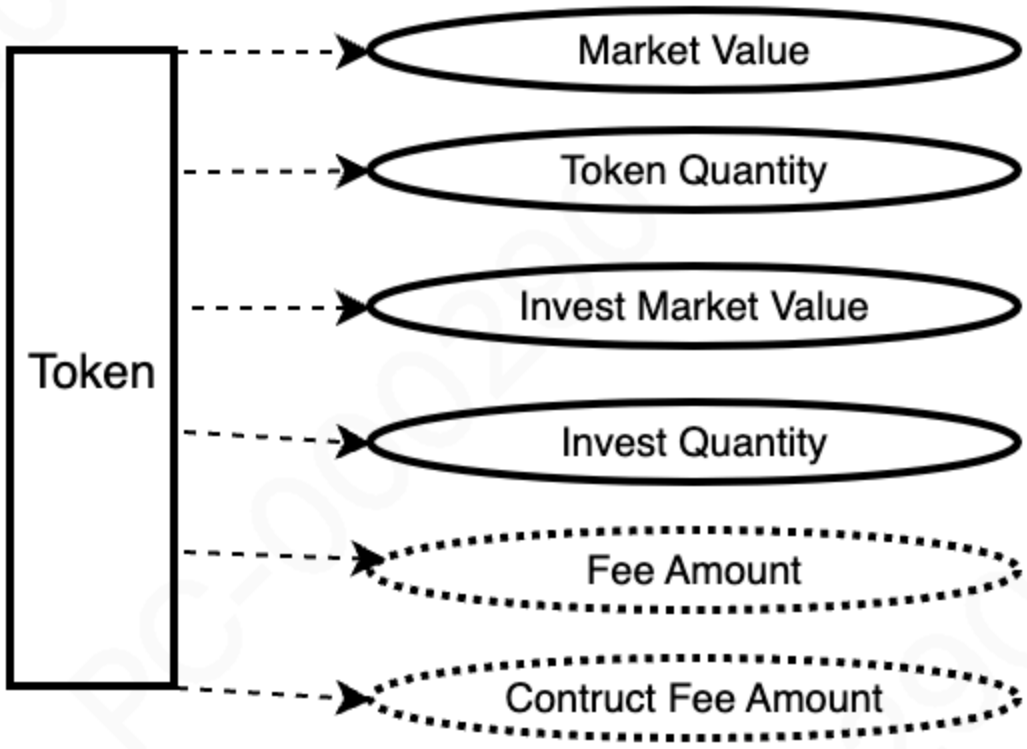


- User Withdrawal of Regular Tokens
  Based on the investment records, calculate the profits from regular tokens and invested tokens. Refer to the fee distribution section for details.
  When withdrawing tokens, the withdrawal quantity or the market value corresponding to the withdrawal quantity must be less than the total token quantity or total value divided by the maximum withdrawal ratio.

7 Token Fees

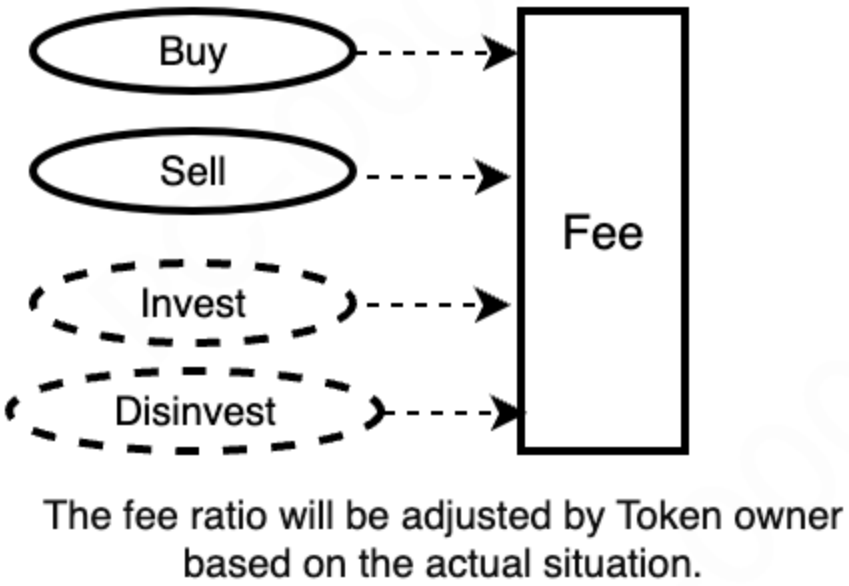
Fees are generated when users conduct transactions or make investments. These fees are stored in a pool and distributed when users remove liquidity.

7.1 Token Fee Recording Method



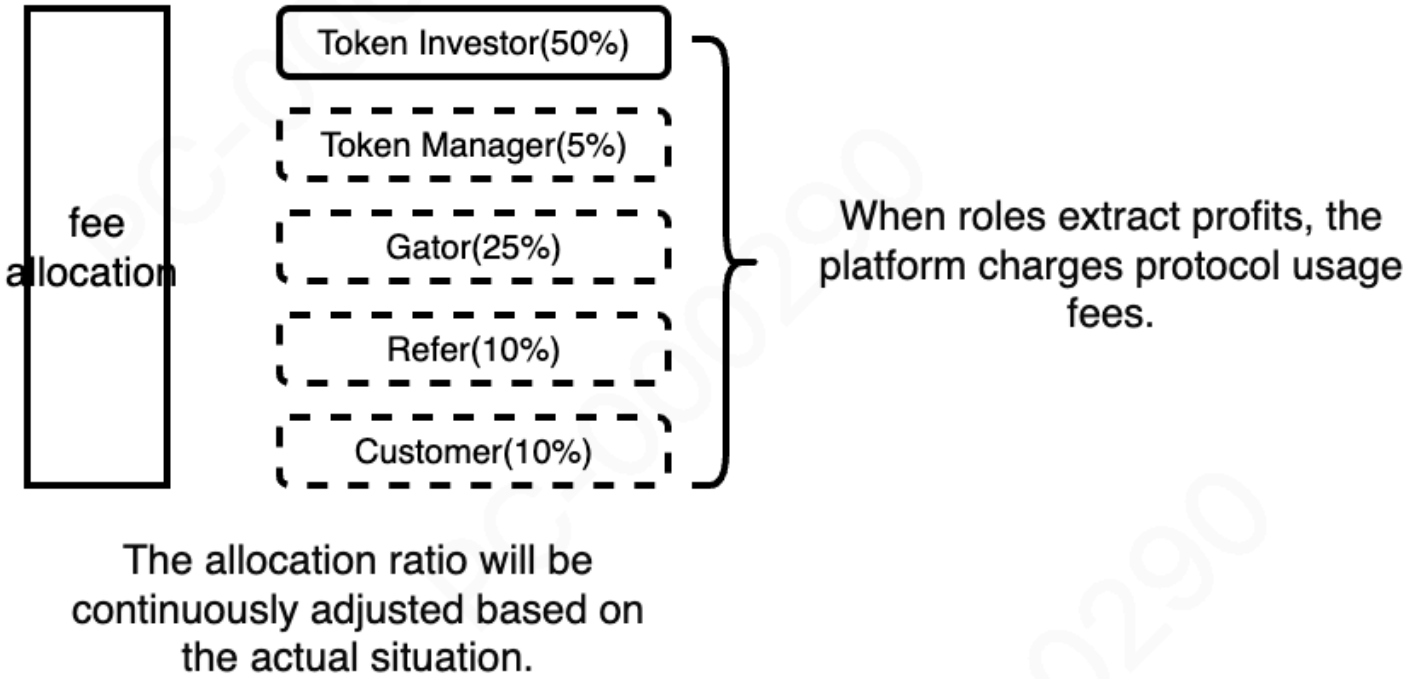
- Terminology Explanation
  Total Fees = Actual Fees Generated + Constructed Fees
  Constructed Fees = Virtual fees introduced to calculate user investment profits, not actual fees.
  Refer to sections 7.4 and 7.5 for details.

7.2 Fee Sources



Fees (actual fees) are generated based on the token's fee rate when users perform operations.

7.3 Fee Distribution

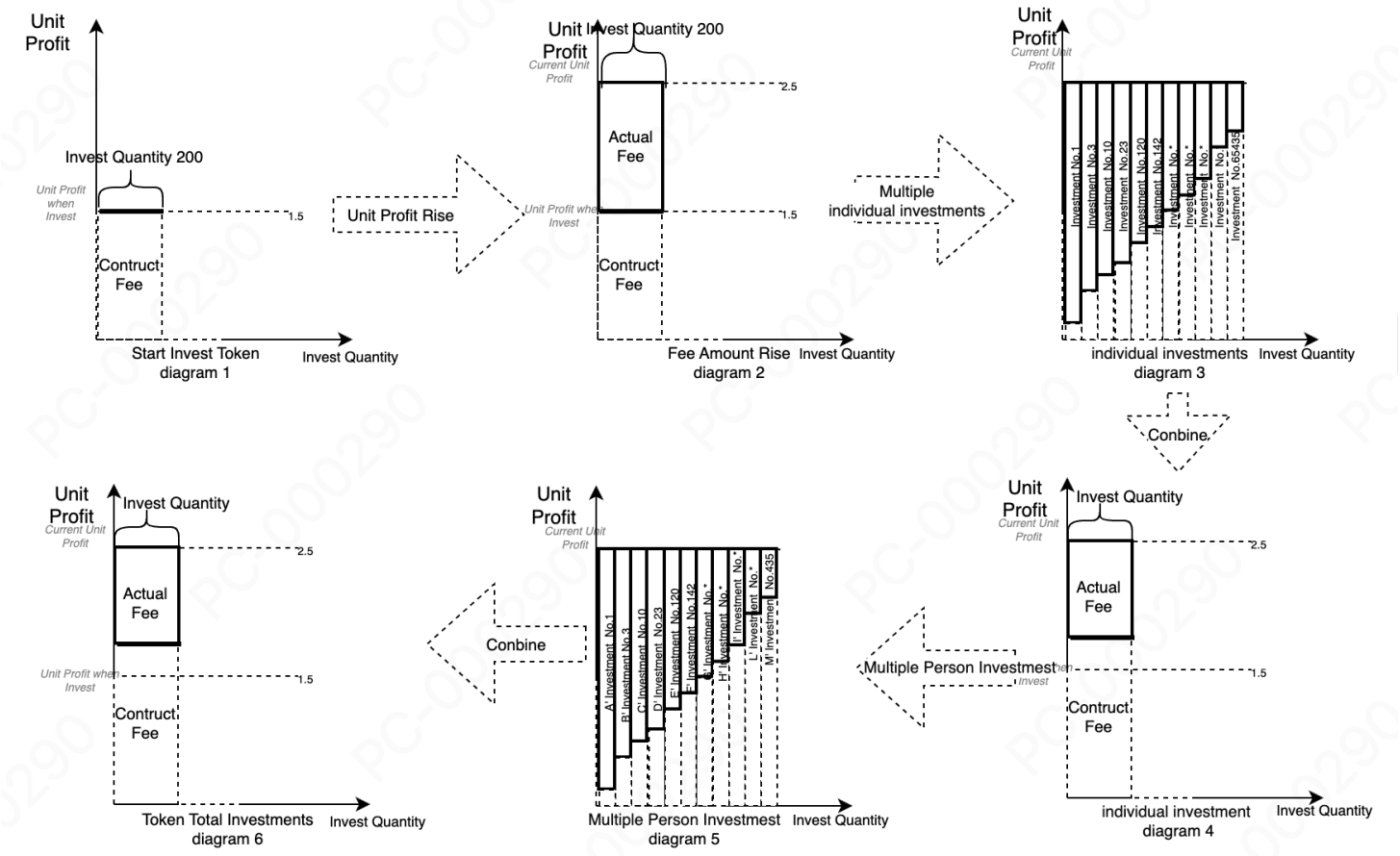


The protocol involves protocol technology, gateway operations, referrers, users, and liquidity

providers. The protocol will distribute profits fairly.
The fee distribution for liquidity providers is detailed in sections 7.4 and 7.5.

- If the user has a referrer:
  Fees are distributed in real-time based on the user's relevant roles.
- If the user does not have a referrer:
  The user's share of the fee distribution is allocated to the token administrator.
  The referrer's share of the fee distribution is allocated to the gateway role.

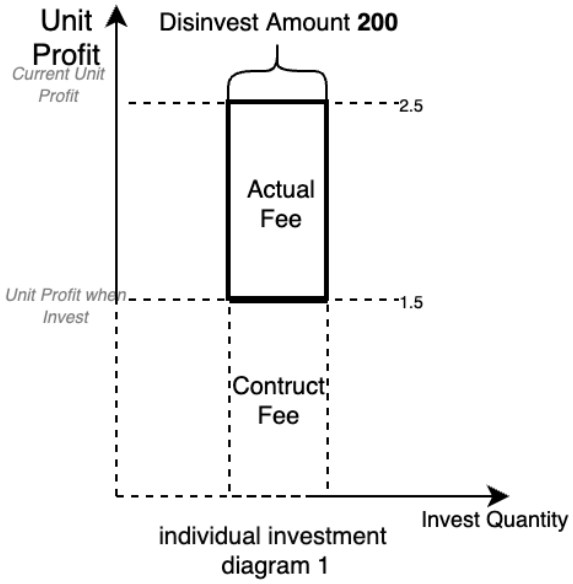
7.4 Fee Calculation Process (Investment)

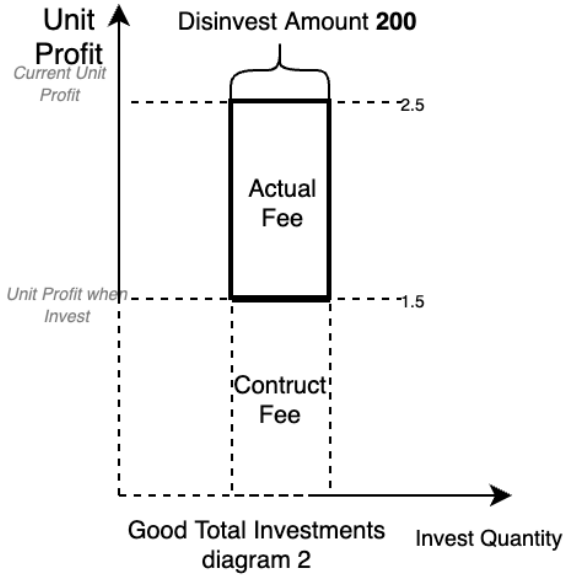


- Figure 1: Token State Before User Investment
  Unit Fee refers to the fee per unit of investment. Unit Fee = Total Fees / Total Investment Quantity.
  As transactions proceed, fees are continuously generated, increasing the total fees and unit fees.
  Constructed Fees represent the total fees that the user should not enjoy at the time of investment.
  Constructed Fees = Investment Quantity * Unit Fee at the Time of Investment.

- Figure 2: Fee Accumulation After User Investment
  As fees are continuously generated in the protocol, unit fees keep increasing.
  User Investment Profit = Unit Fee * Investment Quantity - Constructed Fees.
- Figure 3: Multiple Investments by a User on a Token
  When a user makes multiple investments on the same token, they can be consolidated into a single investment record.
  Consolidated Constructed Fees = Sum of Constructed Fees Before Consolidation.
  User Investment Profit = Unit Fee * Investment Quantity - Consolidated Constructed Fees.
- Figure 4: Consolidation of Multiple Investments by a User on a Token
  This figure shows the consolidated investment status.
- Figure 5: Multiple Users Investing in a Token
  When multiple users invest, the total investment quantity, total market value, and total constructed fees for the token are aggregated.
  The total actual investment profit for the token = Total Current Fees - Total Constructed Fees.
- Figure 6: Consolidation of Multiple Users' Investments in a Token

7.5 Fee Calculation Process (Withdrawal)





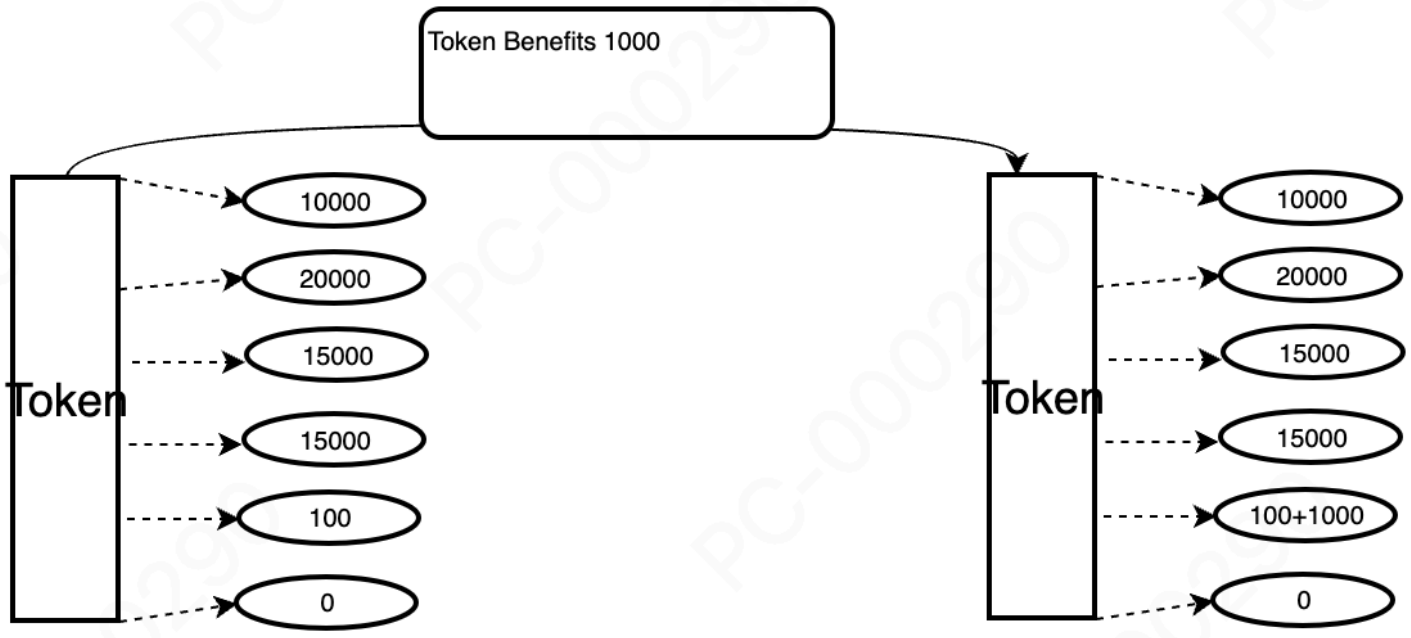
- Figure 1: Individual Token Investment (This figure represents no impermanent loss when providing liquidity)
  This figure shows an individual's investment in a token. When a user withdraws, the calculation logic is as follows:
  Current Unit Fee of the Token = Total Current Fees of the Token / Total Current Investment Quantity of the Token.

Constructed Fees at Withdrawal = Constructed Fees * (Withdrawal Quantity / Total User Investment Quantity).
When a user withdraws, the profit obtained = Current Unit Fee * Withdrawal Quantity - Constructed Fees at Withdrawal.

- Figure 2: Total Token Investment
  The calculation logic for the token after user withdrawal:
  Total Current Fees of the Token = Original Total Current Fees of the Token - User Profit at Withdrawal - Constructed Fees at Withdrawal.
  Constructed Fees of the Token = Original Constructed Fees of the Token - Constructed Fees at Withdrawal.
  Investment Quantity of the Token = Original Investment Quantity of the Token - User Withdrawal Quantity.

7.6 Token benefits

Project parties or sellers can deposit tokens into the fee pool to increase investment annualization and enhance investment attractiveness.



8 Market Configuration

id	Configuration Item	Bits	Unit	Max Value	Min Value	Start Bit	End Bit	Description
1	Token Investor Commission	6	One percent	63	0	256	251	
2	Merchant Commission	6	One percent	63	0	250	245	
3	Gateway Commission	6	One percent	63	0	244	239	
4	Referrer Commission	6	One percent	63	0	238	233	
5	User Commission	6	One percent	63	0	232	227	
6	Protocol Fee Rate	6	One percent	63	0	226	221	
...								

9 Main Code Implementation (Refer to Code)

9.1 Contract Deployment GAS

Deployment Cost	Deployment Size
5644297	26543

9.2 Contract Functions (Partial Main Functions) GAS

Function Name	First	Second	Third	Remarks
buyGood	77728	42128	42128	Purchase Token
disinvestProof	153111	53811	53811	Withdraw Regular Proof
disinvestProof	100438	40438	40438	Withdraw Value Proof
initGood	406979			Initialize Regular Token
investGood	291576	48099	48099	Invest in Regular Token
investGood	216564	36187	36187	Invest in Value Token
collectProof	209386	42486	42486	Collect Regular Investment Proof Profits
collectProof	125979	38479	38479	Collect Value Investment Proof Profits
warefare	54688	33588	27988	Add Fees for Benefits

When a user transacts with a token for the first time, GAS consumption is at the MEDIAN level. For the second or subsequent transactions with the same token, GAS consumption is generally at the MIN level.

To promote better project growth and protect the interests of project supporters, the following token plan is introduced.

10 Roles in the Protocol

The protocol supports five roles: Token$_a$dministrator, Token Liquidity Provider, Service Provider, Referrer, User, and Platform.

10.1 Token Administrator

When a user adds a token to the platform for the first time, they become the token's administrator, equivalent to being entrusted by the community to manage the token. They enjoy a commission of 1%-3% of the fees. Tokens not directly operated by the project are evaluated every two years.

10.2 Token Liquidity Provider

When a user provides liquidity for a token, they automatically become a liquidity provider for that token and share a commission of 50%-80% of the fees. The calculation method is detailed in the fee calculation logic section.

10.3 Service Provider

Service providers offer trading, investment, and other services to users and can enjoy a commission of 5% to 25% of the fees.

10.4 Referrer

When a user refers other users, they can enjoy a commission of 5%-10% of the fees from the referred users.

10.5 User

When a user adds a referrer, they enjoy a 10% discount on fees.

10.6 Community

The community provides technical support and can enjoy a commission of 2%-8% of the fees.

11 Token Economic Plan

1. Initial token issuance: 50 million tokens (all in a locked state, requiring conditions to be met for unlocking).
2. Annual addition: (200 million - number of unfrozen tokens) * 0.02 to liquidity providers.
3. All community earnings are used to purchase official tokens on the market for burning. They are prohibited from being used for other purposes.
4. The earnings of community builders, operators, and supporters come from the increase in token value, not through dilution, over-issuance, or other means.
5. Any changes to the community allocation of tokens must be announced at least 30 days in advance.

6. Token holders have the right to propose and vote on proposals, participating in the growth and development of the community.
7. Referral relationships are maintained within this token, and once confirmed, they cannot be modified. All future versions of this project will use this referral relationship.

11.1 Initial Token Allocation Principles

Allocations must be configured with an unlocking ratio (not exceeding 20%) and an initial price (not lower than the current price). When the price doubles, users can unfreeze the remaining portion * unlocking ratio.
For example, if user A is allocated 20,000 tokens with an unlocking ratio of 18%, and the allocation price is 0.05, then 20,000 * 0.18 tokens can be unfrozen when the price reaches 0.05. When the price reaches 0.1, 20,000 * 0.18 * 0.18 tokens can be unfrozen.

11.2 4C Growth Community Token Economic Model

The 4C Growth Community Token roles are divided into four categories: Founders, Partners, Value Contributors, and Capital Contributors.

11.2.1 Founder Portion

The Founder portion is for the project initiators who provide significant human capital to develop the product, establish the brand, expand the market, recruit talent, and build the management system, while bearing substantial failure risks and enjoying the benefits. (Initial price is 0.05, price doubles, unlocking ratio is 1/10).

11.2.2 Partner Portion

The Partner portion is for members who, during the initial stages of the project, utilize their team's strong execution capabilities to overcome various difficulties, persist, and firmly believe in growing the community together.

1. Partner Portion Type A
   The initial price is confirmed upon member joining. When the token price doubles, the remaining portion is unlocked at a ratio of 1/8. The ununlocked portion is not burned if the member leaves the community.
2. Partner Portion Type B
   The initial price is confirmed upon member joining. When the token price doubles, the remaining

portion is unlocked at a ratio of 1/6. The ununlocked portion is burned if the member leaves the community.

11.2.3 Value Contribution

The community provides token pre-allocation incentives for members contributing to community building. The initial price is the allocation price, and the unlocking ratio does not exceed 1/5 when the price doubles. Specific agreements and announcements will be made with relevant personnel. The allocated but ununlocked portion may be adjusted by the community based on achieved results. When a member no longer serves the community, the allocated but ununlocked portion will be reclaimed by the community.

1. Community Position Portion:
   The position portion is determined by the importance of the roles within the community. This portion is allocated to the responsible persons of important positions, with the corresponding ratio determined by the community at the beginning of each year. The community may convert a certain portion to Partner Type A or Partner Type B for qualified and excellent responsible persons through community decision-making.
2. Community Member Portion:
   This portion is reserved to incentivize members to grow with the community. The community may convert a certain portion to Partner Type B for outstanding members through community decision-making.
3. Other Portions:
   Used for treasury, operations, activities, advisors, etc.

11.2.4 Capital Contribution

1. Public Sale Portion (refer to the public sale plan):
   Provides financial support for team building, product development, and liquidity building. (The public sale portion is fully unlocked and not locked).
2. Investment Portion:
   Provides financial support for team improvement and product refinement. The initial price and unlocking ratio will be determined through communication.
3. Airdrop Portion:
   Compensates for the risks taken by early protocol users. The initial price and unlocking ratio will be determined based on specific event plans.

11.3 4C Growth Community Token Allocation Detailed Design

Allocation Dimension	Founder Portion	Partner Portion	Value Contribution			Capital Contribution		
			Position Portion	Member Option Portions	Other	Crowdfunding Portion	Airdrop Portion	Investment Portion
Rate	20%	12%	13%	10%	21%	10%	5%	9%
Founder	20%	3%						
Partner A		3%						
Partner B		3%						
Reserved		3%						
Crowdfund participant						10%		
Airdrop participant							5%	
Investor								9%

12 Legal Permissions

12.1 Explanation

To protect the project's rights and facilitate user understanding of the protocol, different files have different open-source licenses. Violations of the license will be legally pursued.

12.2 Protocol Explanation

Files using the MIT license are freely available for use.
Files using the BUSL-1.1 license can only be used for learning purposes during the protocol's validity period and cannot be used for commercial purposes. For specific license details, refer to:
LICENSE file in the project: https://github.com/tt-swap/ttswap-core/blob/529db0eb94ac1c5631beb03c4697222a6ce1cd79/LICENSE.
If the project unintentionally violates other projects' open-source licenses, please contact us, and we will make adjustments promptly.

12.3 File Open-Source License Information

```
Contract
├── TTSwap_Market.sol(BUSL-1.1)
├── TTSwap_Token.sol(BUSL-1.1)
├── interfaces
│   ├── I_TTSwap_Market.sol(MIT)
│   └── I_TTSwap_Token.sol(MIT)
└── libraries
    ├── L_Currency.sol (MIT)
    ├── L_Error.sol (MIT)
    ├── L_Good.sol(BUSL-1.1)
    ├── L_GoodConfig.sol(MIT)
    ├── L_MarketConfig.sol(MIT)
    ├── L_Proof.sol(BUSL-1.1)
    ├── L_Transient.sol (MIT)
    ├── L_TTSTokenConfig.sol (MIT)
    ├── L_TTSwapUINT256.sol (MIT)
    └── L_UserConfig.sol(MIT)
docs
├── ebook
├── whitepaper-cn
│   └──whitepaper-cn.pdf(BUSL-1.1)
└── whitepaper-en
    └──whitepaper-en.pdf(BUSL-1.1)
tests
```

13 Participation and Collaboration Contact Information

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We welcome talents from all regions to join the community.