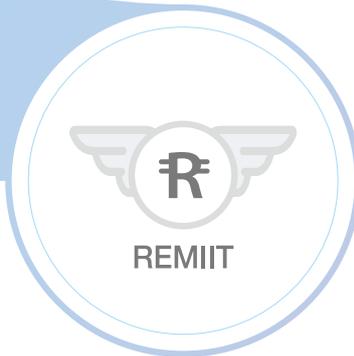


# REMIIT Token Economy

—  
Decentralized Remittance & Payment Platform  
Crypto Paradox The Impossible Trinity RemD Exchange  
System  
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Ver. 1.0.5



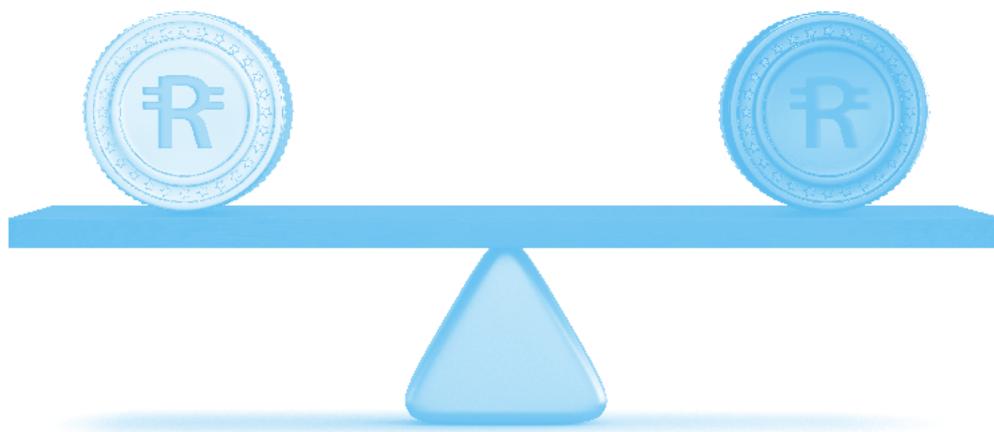
# Token Economy

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# Abstract

The trend of the cryptocurrency market is changing. All cryptocurrencies, including Bitcoin and Ethereum, suffered a sharp price volatility during the year from September 2017 to September 2018. This sudden price change was somewhat predictable, because the price of the cryptocurrencies rose due to people's expectations of increase in future value, without clear economic value and no way to stabilize this value. Although monetary economics research which is a part of traditional economics have argued that the value of money is not fundamentally a bubble but in reality, as cryptocurrencies partly perform the role of money as a means of payment and partly as an asset, this kind of sudden rise and fall of their values become a problem. To cope with this issue, stabilized cryptocurrencies, namely stable coins have recently emerged. As an overseas remittance payment and settlement platform service, our REMIIT Platform would provide users the token ecosystem for overseas remittance with abundant liquidity and stabilized price of the token by using two-tier stable token economy. To this end, we introduced various mechanisms of financial economics into the ecosystem. The introduction of these financial economics mechanisms is possible because the cryptocurrencies or tokens play a limited role as a kind of global currency within the economic system which has its own fiat currency. This is because foreign exchange also plays a partial role as money and a partial role as an asset within one economic system. We will further refine and evolve the mechanism to provide more sophisticated value to users.





# Introduction

The trend of the cryptocurrency market is changing. From September 2017 to September 2018, cryptocurrencies, including Bitcoin and Ethereum, suffered drastic price fluctuations. In fact, this was partly due to the fact that the price of cryptocurrencies rose sharply due to people's expectations of increase in future value without presenting a clear economic value and a clear usage of the cryptocurrencies. Of course, according to the theory of monetary economics of modern economics, money is a means of trading that must be owned proactively for the purchase of goods or services, and the value of money is the present value of the shadow price of liquidity that the money supplies in the future, thus the price of money is not fundamentally a bubble (Samuelson 1985, Stockson 1982, Svensson 1985, and Lucas and Stokey 1987).<sup>1)</sup> However, based on this economic theory, the rise in the price of cryptocurrency, which partly plays the role of currency as well as part of the investment asset, cannot expect a rise in the future price or if external (especially government) regulations on these expectations intervene, it is likely to sharply break down. External interventions could change the expectations of market participants and potential participants. This mechanism could also apply to cryptocurrencies. It is an undeniably brilliant idea that Satoshi Nakamoto has clearly presented in his white paper : "a purely peer-to-peer version of electronic cash for payment on behalf of a financial institution." However, this idea of Satoshi Nakamoto has a decisive disadvantage. Except for the technical aspect that the total issue volume is limited to 21 million coins and each coin can be divided into infinitesimally small units, there were little economic explanations why the total issue amount of coins are limited, in what circumstances the coins are divided into smaller units, and concrete use of those coins. In addition, existing tokens have fatal flaws. The four functions of money are: a measure of value, a store of value, a medium of exchange and a means of payment to the state. It is the stabilization of monetary value that should be the fundamental assumption to fulfill this role within an economic system. If the value is not stable, it is impossible to carry out the four roles mentioned above. For example, if the value of money is not stable, then the value of the money itself, which is the basis for trading and paying for any goods or services. Since the value of the underlying currency itself is changing, it means that the currency does not function as a measure of value and as a medium of exchange. Therefore, if cryptocurrencies were to build their own ecosystem and play their role as a payment instrument in money or its equivalent, the stability of value is absolutely necessary.

The recent emergence from the above-mentioned demand for value stabilization of cryptocurrencies has grown great interest in the stable value currency. The stable value currency is literally a cryptocurrency to pursue not a token price increase but a stabilized value. The type of value stabilization and its specific mechanism of operation will be described later, but to briefly mention, the REMIIT Project is also pursuing to build a stable token. As mentioned in the White Paper, the basic goal of the REMIIT project is to provide value to users through transparent and convenient overseas remittance. If the value of the token is not stable in this process, it means

1) This theory is called Cash-in-Advance Theory.

that no matter how transparent and convenient the process is, people would not be able to gain value through it. So, in this token economy paper, we are going to draw the big picture of a stable token economy that will make the REMIIT project work smoothly and bring value to users in the process.

# Crypto Paradox

## : Dillema faced to cryptocurrency

Money is trust. In some ways, the existing fiat currency which is just a piece of paper is accepted and used by people because of the trust in the central bank and government guaranteeing their value. In addition, as described above, fiat currency is used as a means of payment of a country. People who live in the system of a sovereign state must use the fiat currency. These natural facts are the basis for building trust in money. Unfortunately, cryptocurrency is not. The fact is that the current cryptocurrencies do not have an authorized institution that all market participants can trust, so it is difficult to gain people's trust in the mechanism. There are of course cryptocurrencies like Bitcoin and Ethereum, but it is blockchain network-based trust that is formed because many people use it, not because there is credible authority. In other words, unlike legal currency, people's active participation and use in cryptocurrency market or expectations for future value increases are the basis to sustain the trust of cryptocurrency. The acquisition of universality in the use through public participation causes a dilemma in the nature of cryptocurrency. In order to function as a means of payment and settlement, it is important to secure the value of the cryptocurrency. This is like the fact that in the real economy we see high price fluctuations of money as bad signals and stable prices as good signals. For example, during the foreign currency crisis in 1997, the Korean won depreciated to the daily price limit. This sudden change in value of money is a bad signal for the economy as a whole. In contrast to this reality, cryptocurrency is listed on exchanges and traded between people, which amplifies price volatility. This leads to the reality that cryptocurrency is not used as a payment and settlement instrument following fiat currency according to the original purpose but is used as an investment asset to acquire investment gains, and this dilemma is a serious problem. In other words, cryptocurrency pursues a stable value and aims to function equivalently to a fiat currency while being traded on the exchanges for the purpose of engagement and active use from the users. Thus the expectation of the future price fluctuation occurs and therefore the characteristics of cryptocurrency changes. This causes two potential problems where either the cryptocurrencies are exited from market for the purpose of capital gains from the future price increase or that the use of cryptocurrency becomes difficult due to the rapid price fluctuation.

Therefore, REMIIT aims to resolve this problem by separating the tokens into two parts, REMI and REMD. First, all tokens are issued by default as REMI only. REMI is a token that is listed on an external exchanges and traded freely with other fiat or cryptocurrencies. The most important function of REMI is to stake it and acquire REMD with the corresponding value. REMD is at the heart of REMIIT's blockchain mechanism, and market participants can use this token to carry out overseas remittance transactions. In other words, a person who intends to perform remittance work using the REMD must first obtain REMI from the market and then stake it to exchange it to REMD. In order to make this exchange process work smoothly, market participants who exchange REMI to REMD are incentivized according to the percentage of REMI in proportion to the amount and duration of the REMI he or she stakes. Concrete information of REMD and REMI through such staking, as well as trading mechanisms and value stability, will continue below.

# Relations to the Fiat Currency

## : The Impossible Trinity

This theorem, which is an important implication of the Mundel-Fleming model, which considers the international balance of payments in the international economics explains that the three goals of monetary policy in small open economy like stability of the exchange rate, independence of monetary policy, and free capital movement could not be achieved at the same time and so one of those goals must be abandoned. If a certain economic system wants a stable exchange rate, it should choose a fixed exchange rate. If such a fixed exchange rate is chosen, the central bank must abandon its independence of the monetary policy, as it cannot implement an autonomous monetary policy to adjust its amount of money in circulation or exchange rate. If the central bank simultaneously pursued the stable exchange rate and the independence of the monetary policy, the economic system should abandon liberalization of capital movement because it is impossible for foreign capital to freely move along with changes in economic conditions and to change the exchange rate autonomously in the process. Finally, if we pursue the independence of monetary policy and liberalization of capital mobility, the economy should abandon the stability of the exchange rate. Thus, the stability of the exchange rate, the independence of monetary policy, and liberalization of capital movement cannot be pursued at the same time. This is also true in cryptocurrency.

cryptocurrency could be said to play a foreign exchange role in the economic system in which the fiat currency exists because the cryptocurrency performs the payment function although it is only a limited role in its own ecosystem. Then, naturally, the cryptocurrency must follow the impossible trinity theorem in the process of exchanging it with the fiat currency. In other words, in the relations with the fiat currency, the cryptocurrency should abandon one among the following: stability of exchange rate, independence of monetary policy, and liberalization of capital movement. For example, in the case of the Tether where it is a 1:1 peg with the USD has achieved stabilization of the exchange rate and liberalization of the capital movement, however it should always have a reserve for the dollar equivalent to the total amount of Tether issued by them. In this process, they must abandon their own governance, that is, free monetary policy. This rigid currency management system is in fact similar to the Bretton Woods system or the gold standard prior to the declaration of Nixon's suspension of the US dollar conversion to gold in 1971. In other words, this rigid operating system is not easy to apply to complex modern economies.

According to the impossible trinity theorem, if the cryptocurrency must abandon one of the three functions for smooth operation in its own ecosystem and the relationship between it and fiat currency, it should abandon the stability of the exchange rate. Instead of abandoning the stability of the exchange rate in relation to the fiat currency, the cryptocurrency could freely exercise its own monetary policy and free movement of capital. In fact, this is also the basis for many countries to operate their monetary policy. Thus, the REMIIT project would also maintain the rate of exchange with the fiat currency reliant entirely to the market mechanism as it conforms to the demand-supply law which is natural. Instead of abandoning fixed exchange value and adopting uncertainty in relation to a certain part of the fiat currency, we could govern independently and operate the cryptocurrency in our own ecosystem, and the free capital movement itself promotes the sound market operation. Of course, this is true not only in relation to fiat currency, but also in relation to other cryptocurrencies. In other words, the cryptocurrency we operate is interlocked with the key cryptocurrencies and could also apply the impossible trinity theorem.

Through the application of these economic mechanisms, it is possible for us to operate our own ecosystems economically sound.

# After the Impossible Trinity

## : Operation of REMIIT

As the tokens are used for overseas remittance and payments, REMI and REMD play a role equivalent to the foreign exchange in the aspect of that they are exchanged with fiat currencies. Foreign exchange is subject to the impossible trinity theorem as described above where among those three, we would pursue independence of monetary policy and liberalization of capital movement, instead, abandoning the stability of the exchange rate. As a token that is exchanged for other fiat or cryptocurrency used for remittances and payments, REMI and REMD are required to have freedom of capital movement. If we seek the freedom of capital movement, we must give up the independence of monetary policy (i.e. self-regulation of currency issuance and volume) or the stability of the exchange rate (fixed exchange rate with fiat currency). As the issuer and distributor of REMI and REMD, the independence of monetary policy cannot be abandoned, which means that REMIIT owns the governance for the stable operation of REMIIT as an overseas remittance and payment platform. Therefore, we give up the stability of the exchange rate. Abandonment of exchange rate stability means allowing the volatility of the tokens we issue (even if it can be raised to a fairly high level) means that free capital movements can be controlled and adjusted through the issuance and volume control. What REMIIT is going to introduce for the stable operation of this market is the staking mechanism that is to be described later. The staking mechanism allows users to obtain and use REMD without worrying about REMI value changes, and REMIIT could provide a long-term stable liquidity to the market.

# Concrete Operation Mechanism of REMIIT

## 1. Division of Tokens

As mentioned above, existing cryptocurrencies partially play as a currency used for payment and settlement, but it is recognized as a sort of an investment asset being listed and traded on the exchange. To solve these dilemmas or role conflicts and provide remittance and payment services using stable tokens with low volatility in value for people who use REMIIT services, REMIIT issues and operates a two-tier token.

REMI, which is the first to be issued as an ERC-20 token, is a token that will be listed and traded on the external exchange and staked as collateral, where the collateralization will be the means of obtaining REMD, a token that is use for remittance and payment services provided by the side chain. In this process of staking REMI and acquiring REMD, we want to give an incentive proportional to the amount of REMI being staked and the staking period. This allows our users to convert REMI to REMD and supply them with the overseas remittance and payment systems, making the system a very liquid market. Such abundant liquidity is essential for smooth market operation. These incentive mechanisms are discussed in separate sections. REMD is traded between participants through the side chain as described above and is used for overseas remittance and payment services. The exchange between REMI and REMD is made at a fixed rate at the beginning of issuance, and thereafter is adjusted from time to time in accordance with the price change of REMI and REMD in the market. Specific adjustment mechanisms based on these price changes are also discussed in a separate section.

REMD is used in overseas remittance and payment systems, so anyone who wants to participate in the market must obtain it. The value of REMI comes from acquiring REMD. Therefore, REMD is the core of REMIIT's platform and plays an important role in deriving the intrinsic value of REMI. REMD that is used for overseas remittance business needs stable value in order to give intrinsic value to REMI which is traded on external exchanges. In the following sections, we will describe the REMI and REMD value stabilization mechanisms.

## 2. Value Stabilization Mechanism of REMI and REMD

As mentioned in the above, people could acquire REMD by staking REMI, and REMD is used in the overseas remittance and payment network. Thus, the process in which we seek value stabilization is as follows: (a) stabilization of REMI and REMD exchange value (b) stabilization of REMD price. Some may wonder why REMI was excluded from this stabilization. However, since REMI is listed and traded on

external exchanges and traded with fiat currencies, we cannot control the stability of its value. Therefore, we do not pursue price stabilization of REMI, but instead seek to stabilize the exchange value of REMI and REMD while supporting the value of REMI through stabilizing the value of REMD. The specific mechanism of such stabilization is as follows.

Let the amount that the user returns at the expiration time is  $P_F$ . Let the amount of staking is  $P_N$ . In this case, we could think of the market situation in two parts. The first situation is that prices in the market are continuously rising or at a standstill even though there are short-term fluctuations. In the case of a standstill, we could admit up to  $\pm 10\%$ . The second situation is that prices in the market are steadily falling. In this case, users need to compensate for the loss at the time the staking expires.

The first situation is simple. In the case of having 100,000 REMI with a 3-month consignment, the incentive will be paid at the expiry date at the rate twice the interest rate reported by the Central Bank. For every additional 50,000 REMI staked above 100,000 REMI the user will receive an incentive equivalent to the interest rate of the Central Bank. Whenever the maturity increases from 3 months to 6 months, 9 months, and one year, an additional incentive will be rewarded by further applying the interest rate of the Central Bank. This can be expressed as:

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$$P_F = 100,000(1 + 2r^*) + (P_N - 100,000)(1 + r^*) + (P_N - 100,000)(1 + Ar)$$

, where  $r^*$  = Basis Rate reported by the Bank of Korea,  $A$  = Maturity Weight

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The second situation is somewhat complicated. In this continuous price decreasing situation, the user must be compensated for the loss they are faced. So the repo is applied in this situation. Repo is an abbreviation of Repurchase Agreement, and in this contract, the user borrows a certain amount of money by using some financial instrument as a collateral and at the expiry date the user pays back the principal and interest, then retrieve the collateral. Of course, in the case of the staking contract, the entity that pays interest is REMIIT rather than the user. In this case, the payment formula is as follows:

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$$P_F - P_N \times (t_F - t_N / 365)$$

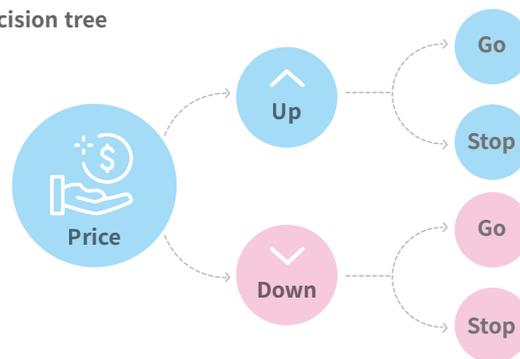
, where  $P_F$  = Price at contract expiration,  $P_N$  = Price at time of contract,  
 $t_F - t_N$  = Contract period

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This case also applied with minimum 100,000 REMI and 3 month staking contract. Therefore, a person who has a one-year contract can receive the full amount of loss due to the price drop in the market, and deduct 3, 6 and 9 months.

These staking contracts are settled when the market participants at the maturity date request the termination of the contract by returning the equivalent amount of REMD issued. However, with the contract extension option, market participants can choose to extend the contract, and if the user chooses to extend the contract, additional incentives will be granted to the user depending on the REMI and REMD market conditions. If the staking period is extended, the above staking incentive is also extended. This contract extension option has the character of a real option as it can be determined by looking at the performance during the initial staking period. The real option is a decision to invest a small amount of money in a number of projects in the early stage to resolve the uncertainty in the capital budget decision of corporate finance, and then to intensively invest in the good project when the market situation is fixed. Likewise, market participants who have staked their REMI tokens decide whether to extend the staking contract according to market conditions at maturity. In the case of the staking option, we have already described the incentive mechanism, which is divided into two parts: price rising and falling. Therefore, it is not the incentive that accompanies the staking option, but the incentive for the contract extension option. Let's look at a decision tree where decisions are made based on whether the REMI price at the time of expiry either rises or falls early on:

Figure 1: decision tree



In case of the price continuously increasing, the reason for staking is that the price is expected to continuously rise in the future, and the reason for stopping the staking is the realization of capital gain. Conversely, if the price declines, the reason for continuing the staking is the expectation for the future price rebound, and the reason of stopping the staking is the exit. Of course, the biggest factor influencing this decision will be the actual market situation, but REMI is likely to be affected by variables that cannot be controlled as it is traded on the external exchanges. Therefore, with the exception of these uncontrollable market conditions, the incentive mechanisms we present for each situation are as follows:

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**up and go :**

$$P_F = 100,000(1 + 2r^*) + (P_N - 100,000)(1 + r^*) + (P_N - 100,000)(1 + A^*r^*),$$

where  $r^*$  = Basis Rate reported by the Bank of Korea,

$A^*$  = Basis Rate reported by the Bank of Korea + Extension of term incentive

**up and stop :** no incentive

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**down and go :**

$$(P_F - P_N) \times t_F - t_N / 365 + (P_F - P_N) \times (1 + A^*r^*)t_F - t_N / 365,$$

where  $P_F$  = Price at the Expiry Date of Extending Contract,

$P_N$  = Price at the date of Renewal of Contract ,

$t_F - t_N$  = Contract Period,

$r^*$  = Basis Rate reported by the Bank of Korea,

$A^*$  = Basis Rate reported by the Bank of Korea + Extension of term incentive

**down and stop :** no incentive

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Through the implementation of these incentive systems, we will be able to give the staking contractors incentives to extend the contract at the expiration of the original contract, and these incentive systems will provide rich and stable liquidity to REMIIT's internal market.

Finally, the REMIIT ecosystem will provide Liquidity Incentives to market participants who have provided a level of liquidity for a total commitment period in order to create a liquidity-rich, stable international remittance network. This liquidity incentive borrows the concept of a currency multiplier. In other words, during the contract period, if the user supplies REMD to the REMIIT network with a currency multiplier of 2 or more, an incentive will be paid, which gradually increases as the multiplier increases. These liquidity incentives provide incentives for market participants to actively make remittances and payments during the term of the agreement. The abundant liquidity through these incentives is an effective factor in stabilizing the REMD value through the stable operation of our market. This multiplier effect mechanism is as follows. In monetary economics, the currency multiplier is a measure of the credit creation effect that occurs when a commercial bank lends money other than the reserves deposited under the central bank guidelines under the partial reserve system. This credit creation effect, expressed as a currency multiplier, allows an economy to distribute more money than the amount issued by the central bank. Therefore, this mechanism can be a tool to measure the abundant liquidity of REMD distribution due to the distribution of more than the actual issued amount.

Usually the currency multiplier is measured as  $1/1-r$ , where  $r$  is the reserve ratio. That is, if the reserve ratio is 20%, the monetary multiplier is 5. Therefore, in order to achieve the above-mentioned monetary multiplier of 2, the reserve ratio or the internal reserve of the business participants should be 50%. Generally, the higher the reserve ratio, the more unstable the market. Therefore it is assumed that the 50% reserve is appropriate. In addition, the measurement of the volume could be measured easily using the smart contract. The remaining problem is the mechanism to provide liquidity incentives. The mechanism by which staking incentives are divided into two categories are examined above: the situation of price rising and falling. Liquidity is paid irrespective of price increases and decreases. When the total amount of REMD traded on the internal side chain reaches a currency multiplier of 2, 1% of the money will be distributed proportionally to the amount contributed to market participants. Then, every time the multiplier of the currency increases by 1, the incentive is paid again by 1%. The formula is as follows:

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### The Contribution of Market Participants

:  $C_1, C_2, \dots, C_n$ , and  $\sum_{i=1}^n (C_i) = M$ ,

where  $M$  is total currency  $M_I = 2M$ , then each market participant receives  $0.01M / (C_i / M)$  as an incentive. If  $M_I = 3M$ , then each market participant receives  $2(0.01M / (C_i / M))$  as an incentive.

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Let's investigate the REMD price stabilization mechanism in the REMIIT network. Before looking at the trading mechanism in earnest, it is necessary to briefly review the problems facing our market. As described above, since REMD is used in the overseas remittance network, it is continuously exhausted from the sending side and accumulated continuously on the receiving side. This problem must be solved for the smooth operation of the remittance network. Thus we provide the REMIIT Decentralized Exchange (REX), which enables market participants to solve the problem of excess and deficiency of REMD. The operating mechanism of the REX is described in the next section.

Through the price stabilization mechanism between REMI and REMD, we can maintain the stable value of REMD in the internal remittance market, which can support the value of REMI traded in the external market.

# The Exchange Relationship Between REMI and REMD and the Use of the Index

REMI is exchanged for REMD through staking. In implementation of this exchange mechanism, a fixed exchange rate between REMI and REMD is applied in the early stage of the platform. However, since both REMI and REMD are traded on exchanges, the price of the two face constant yet independent fluctuation. In addition, coupling or decoupling may occur in price fluctuations of the two tokens. Therefore, the problem that needs to be resolved is determining the exchange rates between REMI and REMD, which are traded on fiat currency in external exchanges and are traded with other cryptocurrencies in the internal exchange where prices fluctuate continuously. In this case, the most important issue is on how to calculate the value of REMI and REMD, which are the basis of the exchange rate. We then capitalize on the index used in the stock market to calculate the value of the exchange. Generally in the stock market, the index reports the movements of the stock price based on the price at a specific point in time so that the market participant understands the overall price of the stocks traded on the exchange. In the case of REMD, there are a variety of currencies exchanged to be used as a means of remitting money abroad, such as Korean Won, Thai Baht, Vietnamese Dong, and Philippine Pesos. Indexing the value of REMD in exchange for such a variety of currencies is important in terms of providing appropriate information to market participants. We want to use the US dollar as a key to creating the REMD index. In other words, in the real economy, the currencies of each country are exchanged with US dollar with proper ratio in the foreign exchange market. Using this, the ratio of exchange between REMD and each currency is derived using the exchange rate of each currency denominated in US dollar. This allows us to provide market participants with the appropriate value of REMD by indexing the exchange rate between the REMD and other fiat currency used in the real economy. We also want to report the exchange ratio of REMD and highly liquid cryptocurrencies (for example, the Bitcoin or Ethereum). The exchange between REMD and major tokens is used as a means of settlement of transactions between business participants. The exchange rate between REMD and other major cryptocurrencies is determined by the situation of the market after the first issue. The formula for deriving the index is:

Let index of REMD is  $RD^*$  and set the exchange rates between REMD and other fiat currencies to  $f_k, f_v, f_p,$  and  $f_t$ . Here, subscripts means xchange rates in Korea, Vietnam, the Philippines and Thailand, respectively. We can now change the above exchange rates back to  $f_{kd}, f_{vd}, f_{pd},$  and  $f_{td}$  by using the exchange rate between each national at currency and the US dollar at each point in time.

Now, let's assume that the REMD price denominated as US dollar for each country is  $RD_k, RD_v, RD_p,$  and  $RD_t$ , and let the total market transaction amount by multiplying each countries' transaction amount to the prices describe in the above is  $M^*$ . Namely,  $M^* = \text{sum}(RD_k \times M_k + RD_v \times M_v + RD_p \times M_p + RD_t \times M_t)$ . By using this, we could find the share of each country in total trading volume as  $w_k, w_v, w_p, w_t$ . The REMD index traded at the market at this particular time is calculated as follows.

$$RD^* = f_{kd} \times w_k + f_{vd} \times w_v + f_{pd} \times w_p + f_{td} \times w_t$$

Likewise, we set the index of REMI as  $RM^*$  and let the exchange ratios between REMI and fiat currencies of the countries that the exchanges which REMI is listed and exchanged be  $d_k, d_j, d_c$ . Here, the subscripts are the exchange rates of Korea, Japan, and China, respectively. If tokens are traded on different exchanges and traded at different price ratios, the numberings are again  $k_1, k_2, \dots$ . Then, by using the exchange rate between the fiat currencies of each countries and US dollar, REMI price denominated as US dollar could be obtained as  $RM_{kd}, RM_{jd}, RM_{cd}$ . Here, by applying the same method as REMD, we calculate the index as follows.

$$RM^* = RM_{kd} \times w_k + RM_{jd} \times w_j + RM_{cd} \times w_c$$

Finally, we report the exchange rate between  $RD^*$  and  $RM^*$  using index. For example,  $100 RD^* = 1 RM^*$ .

The advantages of using the index to report prices to the market are as follows: First, we can provide appropriate information to market participants. Namely, by indexing and reporting transaction rates that are separately reported between each individual country or individual fiat currencies and other tokens, it is possible to provide convenience of transactions by reducing the time and effort required for market participants to obtain price and analyze information. In other words, providing this transparent index can provide convenience by reducing the search and transaction costs of market participants. Second, price fluctuations can be stabilized based on the index. If we look at the exchange rate between each country's currency and the REMD / exchange ratio between major cryptocurrencies and REMD without these indexes, not only business participants but also market

participants have to go through complicated information processing process and they have difficulty to grasp the volatility by aggregating each country's information. On the other hand, through the indexing process described above, it is possible to conveniently acquire and analyze information on REMD as if people obtain information on the stock market through stock price index. REMI is the same. If REMI is traded on a single exchange in Korea, it is not necessary to calculate the index. However, if it is traded on several exchanges or countries, it is necessary to provide price information to market participants by using index for smooth acquisition and analyzing of the market information.

# REX Operation Mechanism

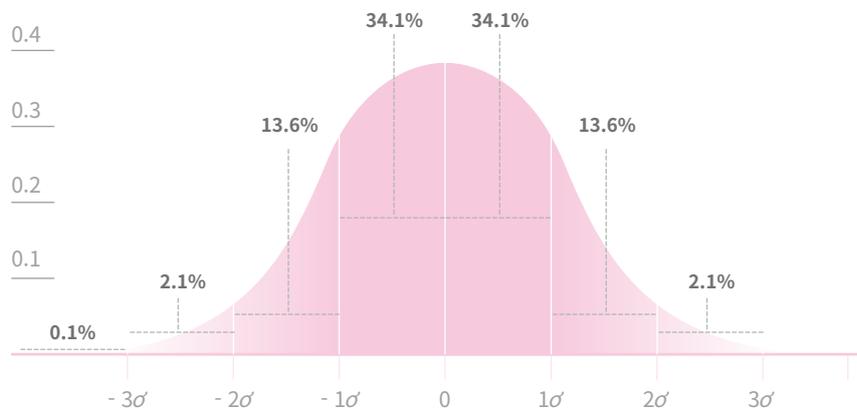
The operating mechanism of REX is basically the same as an order book transaction used in the stock market transaction. The Order Book is generally a list of sell orders and buy orders in the stock market. In the stock market, the seller and the buyer each have a different quantity and price of stocks to be traded. So to make a deal, the market needs to create a list of these orders, called the Order Book. The closing and clearing of a transaction is accomplished by a matching engine matching the buy and sell orders that meet the reciprocal conditions using the Order Book. These Order Book mechanisms apply equally to REX. Of course, as a commodity traded in REX, the token is REMD, but the means of payment of the transaction are various, such as Bitcoin or Ethereum. Of course, this can be considered the opposite. In other words, you may think that the cryptocurrencies such as Bitcoin or Ethereum are a commodity and the means of payment is REMD. Either way in reality, the number of products is much more limited than the financial market.

Orders may also be made on market orders or on limit orders. Therefore, the Order Book method is considered suitable for the smooth transaction. In particular, those who are mainly trading on REX are assumed to be general remittance users, i.e., Business participants who provide remittance services to these end users, not end users themselves. Therefore, this method seems more appropriate. Of course, there is always the risk that the transaction will not be cleared for a long time. To solve this problem, a Market Making Incentive is introduced. The mechanism of this

incentive system is as follows: For market participants, it is best for the transaction to be settled at the current price without any sharp price fluctuations. Therefore, to encourage the Market Makers, a greater amount of incentives will be given when they sell and buy orders closer to the current market price, and to gradually reduce the incentives as they move away from the market price. With this mechanism, the prices can be stabilized within the REX, and the liquidity can be enriched. The specific mechanism is as follows.

Let the market price of REMD in REX is  $P^*$ . This  $P^*$  is updated every hour. Once  $P^*$  is determined, we can construct a normal distribution graph in which  $P^*$  is the mean and the standard deviation is  $\sigma$ . In the normal distribution graph, 68.2% of the entire distribution is located within  $\pm 1\sigma$ ; 95.4% in the range of  $\pm 2\sigma$ ; and 99.6% in the range of  $\pm 3\sigma$ . Therefore, we pay incentive as 1% of the transaction amount to Market Makers who settle the transaction at the price within  $\pm 0.1\sigma$ ; that is, within 6.82 % based on  $P^*$ . This incentive is reduced by 0.1 % for every  $\pm 0.1\sigma$ ; so the incentive is 0 for transactions that occur outside  $1\sigma$ .

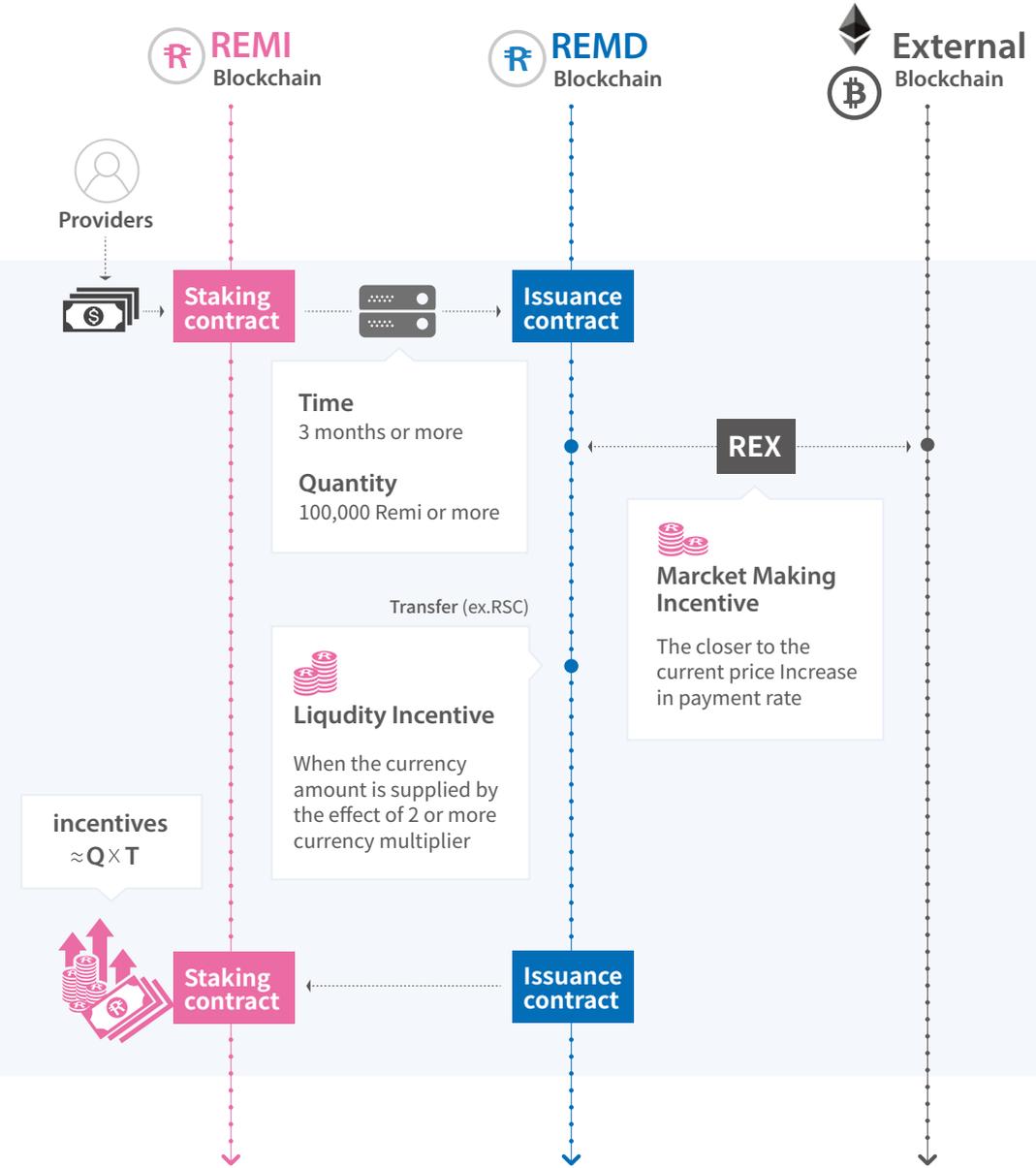
**Figure 2: Normal Distribution**



These processes could give incentives to market participants to clearing orders on current market prices.

The above mentioned incentives are summarized as follows.

Issuance and Collateralisation Rewards to Stabilizers



# Early Stabilization of Market

In order for the aforementioned mechanisms to work smoothly and to provide value to our users, the first thing that must be preceded is the initial stabilization of the market. This means that it is required to secure a large number of users and form a network in the early stage of the service launch. If this network is not formed, the services become useless. The first thing that should be premised on this network formation is the building of trust. As Diamond and Dybvig (1983) pointed out, the cause of the banking crisis in the financial market is the distrust of depositors who cannot believe that banks and other financial institutions will return their deposits under the partial reserve system. This applies equally to REMIIT's services. If the value of REMI and REMD cannot be maintained above a certain level, or if there exists a lack of trust that the REMIIT ecosystem may not work well, this will lead to a Bank Run and the collapse of the REMIIT service itself within ecosystem. So what matters the most is the early stabilization of the market and trust building with users.

It is important to find a reliable partner for the overseas remittance service using the token, unlike the bank-to-bank wire transfer using the SWIFT network. Failure to find a reliable counter-party means that market participants are exposed to counter-party risk, which is linked to the reliability of REMIIT's entire service. The blockchain system is the REMIIT Smart Contract (RSC) mentioned in the White Paper. The biggest problem faced by money transfer service providers is that it is hard to find a reliable business partner.

Unlike the current SWIFT system, where counter-party risk is unlikely to arise due to the existence of intermediary banks, counter-party risk is high because micro-remittances are made between money transfer service providers whose sizes are relatively small. If counter-party risk cannot be resolved, it is highly possible that the small scale money transfer service providers would not operate smoothly and that the market confidence in REMIIT's service itself will collapse. So REMIIT aims to create the RSC to build a platform on which money transfer service providers compete with their services. In other words, REMIIT is responsible for finding and recommending business partners as platform operators, and the money transfer service providers involved are willing to help them faithfully carry out their business without worrying about counter-party risk. Making reliable small business remittances by recommending reliable business partners through the RSC is a means of bringing initial stabilization of the market by making participants trust in REMIIT's service.

# Conclusion



So far, we have investigated REMIIT's market operation mechanism and its specific exchange rate and price index calculation. As an overseas remittance and payment platform service, REMIIT's goal is to provide reliable services that users can use with confidence. This goal can be achieved through the formation and maintenance of a token ecosystem that has high liquidity and circulates at a stable value. We have applied various economic mechanisms to create a token economy that has such high liquidity and is maintained as tokens with stable value. In an economic system in which statutory currency exists, a token or cryptocurrency functions as a foreign currency playing a limited role, and therefore it is important to apply the economic methodology applied in the real world in order to maintain its stable use and maintenance. This is because it has already been proven in reality. In the future, we will continue to develop our token management mechanism by continuously applying economic methodology and analysis developed in real economics and strive to provide stable services through it.

## References

- [1] Diamond, D. and P. Dybvig, 1983, "Bank Run, Deposit Insurance, and Liquidity," *Journal of Political Economy* 91(3), 401-419.
- [2] Lucas, R. and N. Stokey, 1987, "Money and Interest in a Cash-in-advance Economy," *Econometrica* 55(3), 491-513.
- [3] Nakamoto, S., 2008, "Bitcoin: A Peer-to-Peer Electronic Cash System," White Paper.
- [4] Samuelson, P., 1958, "An Exact Consumption-Loan Model of Interest with  $o_l'$  without the Social Contrivance of Money," *Journal of Political Economy* 66, 467-482.
- [5] Stockman, A., 1981, "Anticipated inflation and the capital stock in a cash-in-advance economy," *Journal of Monetary Economics* 8(3), 387-393.
- [6] Svensson, L., 1985, "Money and Asset Prices in a Cash-in-advance Economy," *Journal of Political Economy* 93(5), 919-944