

## Notes on HTKN Economics

### The equation of exchange: transaction velocity and network transaction volume

Economic analysis of cryptocurrencies and tokens is difficult and requires a hybrid approach combining traditional methods with some new ideas.

HoToKeN can be considered as having intrinsic value because it is spendable to buy services and discounts in the HotNow network.

Because of its role as a network currency or medium of exchange, we can also look to macroeconomic and currency models (the kind of model used to study whether, say, the British pound is overvalued). This includes balance of payments, equation of exchange, interest rate parity, purchasing power parity and so on.

It is also useful to think about sources and sinks for the token, particularly if the money supply is not fixed. The total number of HTKN is fixed. However, there is a large reserve which causes the number of tokens in circulation (float) to be variable and leaves room for nontrivial monetary policy and a sources-and-sinks analysis.

Perhaps most prominent among the currency models in cryptoeconomics is the observation known variously as the Equation of Exchange or Quantity Theory of Money. This is an equation that must hold when terms are correctly defined, and so gives us an understanding of the levers of the token economy.

The equation of exchange states that

$$MV = PQ$$

where  $M$  is the money supply (number of tokens),  $V$  is the velocity of money (average number of times a token changes hands per period, where if A pays B one token, it counts as 1, and the denominator is  $M$ ),  $P$  the price level (the reciprocal of the dollar price of the token), and  $Q$  the real expenditures in the token economy (which we can take for our purposes to be the dollar volume of transactions in the token economy in the period).

If we write  $T$  for the total token transaction volume in tokens and  $X_c$  for the dollar price of the token, the velocity  $V = T/M$  and the "GDP",  $Q = X_c T$ , the equation of exchange holds as:

$$M(T/M) = (1/X_c)X_c T.$$

Equivalently we can write  $H = M/T$ , whose unit is days, representing the average time (fraction of a period) a token is held. Then the equation of exchange can be written as

$$\frac{1}{M} \frac{1}{V} = \frac{1}{P} \frac{1}{Q}$$

or

$$QH = X_c M,$$

that is, dollar transaction volume times average fraction of a period a token is held equals market capitalization (token price times number of tokens).

So, token price in dollars (or whatever our comparison currency is) increases as the dollar value of tokens grows, the average holding period grows, or the token supply shrinks.

This form of the equation shows that all other things being equal and fixing token supply, factors that increase “GDP” (total HTKN-denominated transactions), or that provide reasons to hold a balance of HTKN rather than immediately dispose of them will tend to put upward pressure on the dollar price of a HTKN.

In a typical currency analysis, much of the demand for balances for a currency comes from the need to pay liabilities and expenses denominated in the currency. Persons generally choose to hold Baht if their rent, taxes, and other expenses will be in Baht. Speculation usually (but not always) plays a secondary role. In the crypto space, speculation arguably plays a larger role in the demand for balances. This is particularly true for developing token economies in the early stages of life, which today covers all token economies.

We might also consider the equation of exchange as applying to the current float of the token, rather than the total money supply, if some tokens have been taken out of circulation effectively permanently (e.g. by loss of keys, burning, or freezing) or are held in reserve by a foundation, sponsor, or other large holder. In this context we can consider a dynamic money supply  $M$  subject to *sources* (ways HotNow or other large holders inject HTKN into the economy) and *sinks* ways HTKN are removed from the economy.

In the next section we look at the flow of tokens and how the factors of the exchange equation, including sources and sinks, are affected by the token design.

## Reasons for participants to acquire, spend, and hold tokens

Presently, the anticipated flow of tokens is roughly as follows.

### HotNow

- HotNow acquires tokens
  - initial balance
  - disbursements from foundation
  - receive from merchants for running promotions managing customer relationships, and other services such as collective buying

- prices and foundation release mechanism are to be determined and will be tuned during initial deployment
- HotNow spends or releases tokens
  - Awards for mission completion and other activities deemed to grow or benefit the network, paid to consumers or merchants
  - Award quantities are to be determined and will require adjustment; not unlike managing an in-game virtual currency
  - In connection with the opening of a new geographical market
- HotNow or the foundation holds tokens
  - As ballast and to ensure smooth operation of the network

### Merchants

- Merchants acquire tokens
  - purchase from HotNow for fiat
  - receive from HotNow for promotions that are high-value or receive high conversion rate or attention
  - receive from HotNow for other network-building activities
  - purchase in the open market for fiat
  - receive them from consumers purchasing coupons
  - receive them from consumers purchasing goods, if they choose to accept HTKN
- Merchants spend tokens
  - to use marketing, promotion, and customer-management tools (to HotNow)
  - to offer targeted promotions they now pay fiat for (to HotNow)
  - optionally to reward customers
- Merchants hold tokens
  - for convenience and hedging against future liabilities denominated in the token
  - to pay HotNow primarily
  - possibly to reward users
  - to speculate on price

### Consumers

- Consumers acquire tokens
  - from the HotNow company for network-growing activities such as inviting friends, sharing deals, writing reviews, viewing ads.
  - from HotNow as bonuses when HotPoint thresholds are reached
  - from merchants for taking merchant-defined actions (e.g. like a giftcard for purchases above a threshold)
  - purchase from HotNow company
  - purchase in open market
- Consumers spend tokens
  - pay to merchant to purchase coupons or access deals, promotions, and games

- to purchase goods and services from merchants that accept them
- Consumers hold tokens
  - for convenience and to hedge against token-denominated liabilities, primarily to pay merchants to access deals and to purchase goods and services from merchants that accept them (although they probably get a better price paying in fiat)
  - to speculate on price
  - because they receive them and choose not to spend them on promotions or attempt to sell them

## Balance of Payments

Taking a balance of payments point of view, what are the major “exports” of the token economy? Roughly this is a good or service with expenses denominated in HTKN and revenues in other currencies. This is expected to be primarily marketing activities, where a portion of a merchant’s fiat receipts are matched against HTKN marketing spend.

## The Value Proposition of HTKN

HotNow and HTKN will level the playing field for smaller merchants in Asia. HotNow will enable businesses to earn more revenue while, at the same time, maximizing value for money for customers.

HTKN is the first token devoted to improving the entire value chain of businesses and provides businesses with the toolkits to perform digital marketing, customer relationship management, customer analytics, gamification, and microlending.

HTKN also uses the Stellar blockchain, allowing for fast, low-fee microtransactions, for the benefits of both regular customers and retail merchants.