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UNDERSTANDING TOKEN VELOCITY

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Basically, all token pitches include a line that goes something like this: "There is a fixed supply of tokens. As demand for the token increases, so must the price."

This logic fails to take into account the velocity problem.

In this post, I'll explain the velocity problem by providing an in-depth example. Then I'll examine mechanisms that reduce velocity.

A HIGH-VELOCITY EXAMPLE

Ticket fraud (literally reprinting and selling a ticket multiple times) for events is a huge problem (<https://www.cnbc.com/2014/05/02/making-your-summer-concert-plans-how-not-to-get-scammed.html>).

There's a reasonable case to be made that tickets for live events should be issued on blockchains. If venues come to accept blockchain-issued tickets, this solution should stomp out all fraud. You can't double spend blockchain-based assets.

Issuing tickets on blockchains can bring other benefits, including disallowing resale, profit sharing on resale back to the venue, capping resale amounts, etc. Ticketing on-chain should create a lot of value for venues, artists and consumers: it eliminates fraud, reduces scalping, and reduces fees to middlemen like Ticketmaster and StubHub.

Although I love this use case for blockchains, there is no reason that I, as a full-time crypto investor (speculator), want to actually hold Aventus (<http://aventus.io/>), Ticketchain (<https://ticketchain.ie/>) or Blocktix (<https://www.cnbc.com/video/2017/07/28/headed-to-a-concert-or-game-watch-out-for-ticket-scams.html>) tokens (all three are blockchain-based ticket issuance platforms). Even if these platforms become widely used and process tens of billions of dollars of transactions, their underlying token mechanics are not structured so that the price of the underlying token will materially appreciate.

Consider a hypothetical platform that we'll call Karn, in honor of the show that never ends (<https://genius.com/Emerson-lake-and-palmer-karn-evil-g-1st-impression-pt-2-lyrics>).

Consumers want to pay for tickets denominated in dollars. They may purchase Karn tokens as part of the ticket acquisition process, but they won't hold the tokens for more than a few minutes at a time. There's simply no incentive to hold them and incur price risk relative to the dollar.

Venues also don't have an incentive to hold Karn tokens because they, too, want to avoid price risk. After consumers trade their tokens for concert tickets, venue hosts will trade Karn tokens for their preferred currency. Note that this cycle can be completed in seconds by leveraging decentralized exchanges such as [ox](#):

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No one actually wants to hold Karn tokens. The presence of a proprietary token actually creates a worse UX for consumers by introducing an unnecessary layer of friction into the ticket purchasing process. The moment anyone receives Karn tokens, they exchange them for something else – either a ticket (consumer) or dollars (venue).

Even if Karn becomes the global standard for ticket issuance, no one will want to hold it. BTC/ETH/USD-denominated trading volume for Karn tokens may skyrocket as the platform becomes the global ticketing standard, but the price will grow sub-linearly relative to transaction throughput.

The primary stakeholder group who will profit from the rise in trading volume of Karen tokens will be market makers who provide liquidity for those entering and exiting the market. This is not a bad thing. As asset pairs increase in volume and become highly liquid, bid-ask spreads collapse to near 0 percent, which is good for consumers and venue hosts.

To be clear, in this scenario the venue hosts still win by cutting out scalpers, and consumers win because of increased fraud protection. But despite delivering real, tangible benefits to marketplace participants, our fictional Karn token won't actually capture the value the protocol is creating.

QUANTIFYING VELOCITY

Here's where velocity comes in. It's defined as:

Velocity = Total Transaction Volume / Average Network Value

Therefore:

Average Network Value = Total Transaction Volume / Velocity

Velocity can be measured over any time span, but is normally measured annually. Trading volume can be difficult to measure. This not only includes trading volume that occurs on exchanges, but over-the-counter trades and actual usage of the platform.

We can say that an asset has a velocity of 0 if, over the course of a year, no one buys or sells it. The lack of liquidity would cause the asset to trade at a discount to its "intrinsic" value. Assets need some velocity to achieve their full intrinsic value. The difference is known as the liquidity premium (<https://www.google.com/search?q=liquidity+premium>).

In the case of a proprietary payment token that nobody wants to hold, velocity will grow linearly with transaction volume. Per the second equation above, transaction volume could grow a million-fold and network value could remain constant. Almost all utility tokens suffer from this problem.

REDUCING VELOCITY

There are a few ways a protocol can reduce the velocity of its associated asset.

1) Introduce a profit-share (or buy-and-burn) mechanism: For example, the Augur (<http://augur.net/>) (\$REP) network pays REP holders for performing work for the network. REP tokens are like taxi medallions: you must pay for the right to work for the network. Specifically, REP holders must report event outcomes to resolve prediction markets. A profit-share mechanism reduces token velocity because as the market price of an asset decreases, its yield increases. If the yield becomes too high, market participants seeking yield will buy and hold the asset, increasing price and reducing velocity.

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Also, a cash-flow stream makes a token easier to value using a traditional discounted cash-flow (<https://www.google.com/search?q=discounted+cash+flow+model>) (DCF) model. Note: see the Multicoin Capital Augur analysis and valuation (<https://multicoin.capital/rep2017/>).

2) Build staking functions into the protocol that lock up the asset: This includes proof-of-stake mechanisms for achieving network-layer consensus. However there are far more compelling reasons to stake than simply to achieve node consensus. For example, FunFair (<https://funfair.io/>) is a platform that powers online casinos. FunFair only supports one-against-one games such that the player is playing the house directly (therefore no poker). The house must maintain reserves to pay out highly unlikely events, such as a user winning big in slots or winning 10 times in a row in blackjack. The casino operators will need to lock up far more than 50 percent of all tokens.

3) Balanced burn-and-mint mechanics: Factom (<https://www.factom.com/>) is the best, and perhaps only, example.

A number of protocols have implemented the burn concept (without minting), notably FunFair. I am highly skeptical of currencies that are explicitly deflationary to create upwards price pressure on the value of the token. In the long run, deflationary currencies will create weird incentives for holders, causing unnecessary volatility due to excessive speculation. Burn-and-mint addresses this problem.

In Factom, the cost of using the protocol is denominated in U.S. dollars at \$.001. Each use is \$.001, regardless of the price of FCT. Users burn tokens to use the protocol as designed. Independently, the protocol mints 73,000 new tokens each month and distributes them to validators (Factom is its own chain, not an ERC20 (<https://www.coindesk.com/ethereums-erc-20-tokens-rage-anyway/>) token). If users don't burn 73,000 tokens in a month, supply increases, which should exert downwards price pressure. Conversely, if users burn more than 73,000 tokens per month, supply decreases, exerting upward price pressure. In the long run, there should be linear relationship between the usage of protocol and price.

The burn-and-mint dynamic is possible because Factom is its own chain. ERC20 tokens do not have network validators who can be compensated via inflation. Burn-and-mint is possible for ERC20 tokens, albeit trickier. There's not a generic, obvious set of network participants who should receive the tokens that are generated by inflation. Also, more technically: inflation is tricky to implement because smart contracts cannot run as daemons that auto-inflate; they must be triggered.

Note: see the Multicoin Capital Factom analysis and valuation (<https://multicoin.capital/fct2017/>).

4) Gamification to encourage holding: Let's revisit ticketing. Since many concerts sell out quickly, venues could prioritize customers based on having held X tokens for Y days. If enough venues adopt this mechanic, velocity will fall.

Another example: YouNow (<https://www.younow.com/>) is rolling out a proprietary in-app cryptocurrency called PROPS (<https://www.propsproject.com/>) that allows users to tip content creators during live video broadcasts. YouNow also has a "discover" tab. The YouNow service is more likely to rank a creator's content highly if they hold tokens. This creates an interesting dynamic in which content creators are paid in PROPS, but need to convert to fiat to pay the bills. On the other hand, they want to hoard tokens to become more discoverable, fueling more attention and generating more tip-based income.

5) Become a store of value: This is by far the most difficult to achieve as it's not a function of a specific design mechanic, but rather a question of broader technical viability and market acceptance. If people genuinely come to believe in a token as a store of value, there will be a significant probability that they're willing to hold onto excess tokens rather than sell them for something else.

One reason to hold an asset is an expectation that it will increase in price. In theory, this should dampen velocity and drive up the price of the asset. This basically defines bitcoin today (<http://avc.com/2017/08/store-of-value-vs-payment-system/>). Bitcoin's value is a function of a speculative value game, not from intrinsic utility as a payment system.

Another reason to hold an asset is the expectation that its value will be stable. A number of stablecoin projects such as Maker (<https://makerdao.com/>) and Basecoin (<http://www.getbasecoin.com/>) are trying to create trustless assets that are price-stable on the

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open market.

Becoming a general-purpose store of value is extremely difficult. There are only a handful of projects even attempting to fulfill this vision today. It's not clear how dominant the long-run winner will be. You can make perfectly rational arguments for a handful of currencies with 20-30 percent of global value each, a 75-5-5-5-5-5 percent split, or an 80-20 percent split. Although money has a strong network effects, it's not clear how strong those effects are, or how much the market will demand viable competition to mitigate macro-level risk associated with a single mega currency.

CONCLUSION

Velocity is one of the key levers that will influence long-term, non-speculative value.

Most utility tokens don't provide a compelling reason for token holders to hold the token for more than a few seconds. Absent speculation, assets with high velocity will struggle to maintain long-term price appreciation.

Hence, protocol designers will be well served to incorporate mechanisms into their protocols that encourage holding, not just usage.

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