



Understanding Web3 “tokenomic” supply

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The first iteration of the World Wide Web (Web1) involved investors accessing static, templated pages. A set of successful companies emerged as these new offerings took hold, including eBay, Amazon and Google. Early investors into the commercial enterprises pioneering this new landscape earned outsized rewards. A similar pattern occurred when the underlying technology evolved, and the second iteration of the Web emerged. Web2 allowed individuals to interact through web technologies—facilitating the access to and sharing of resources, content and feedback. Another set of successful companies—Netflix, Uber, Airbnb and Facebook (now Meta Platforms). Once again, early investors into these enterprises earned outsized rewards. We are now seeing the emergence of the third iteration of the web—Web3.

Web3 and the importance of tokenomics

Web3 marks a significant progression in how individuals can use web technologies. Rather than just viewing information or accessing/sharing resources and content, Web3 allows individuals to initiate and complete commercial transactions directly without relying on an intermediary or a third-party platform provider. This is possible because Web3 uses new technologies—*smart contracts* that users can set up on their own that detail and auto-execute the terms of a transaction; *consensus mechanisms* that allow a constellation of network participants to verify transactions and check each other’s work; and *blockchains* that transparently record the details of a transaction and distribute the ledger to make it nearly impossible to alter or falsify.

This Web3 ecosystem is also being built and run differently. Web1 and Web2 were both driven by commercial enterprises—companies that created, built and controlled access to platforms that enabled user engagement, measuring their success in the scale of their network and the revenues generated. Web3 is being built around commercial protocols—open architecture software that can be accessed and run by anyone with an internet connection—where a variety of tokens are used to orchestrate activities and where success is measured by the robustness of the community of participants that contribute resources—expertise, time, assets and engagement.

In Web1 and Web2, investors obtained ownership in the top companies shaping the space through either the private or public equity companies issued. In Web3, investors cannot directly own the commercial protocols driving engagement because these protocols are simply codes run by development teams affiliated with foundations. They can, however,

own the tokens that each protocol issues, which raises a fundamental issue—the value of the commercial protocol and the value of the token it issues are not always correlated.

There are two reasons for this lack of correlation. First, not all tokens are meant to be investing tokens; for example:

- Some tokens are meant to access a service, much like buying a ticket to ride a roller-coaster at an amusement park. The cost of accessing a service does not equate to the value of the protocol offering the service just like the ticket price for a ride does not equate to the value of the amusement park offering those rides.
- Other tokens entitle the holders to vote on proposed initiatives or changes to a protocol. The value of being able to participate in the community and vote on issues does not necessarily correlate to the value of the protocol itself.
- Some tokens are stablecoins and are specifically designed not to go up (or down) in value.
- Finally, some tokens are simply “meme coins” and have nothing more than entertainment, affiliation and speculative value.

Most investors do not differentiate between the different types of tokens and their reasons for investing in them. For our strategies, we only select tokens we consider as correlated with the value of the protocol that issued them—that is, we try and identify “investment” tokens.

Yet, even in these cases, the tokens are being issued by private entities and there are no standards or regulations that dictate how the token pools are run. This is the second reason why the value of the token and the value of the commercial protocol may not be correlated. To determine the strength of this relationship, a new evaluation framework is being created to understand the token supply, demand and value-accrual mechanisms, and how all these token-related considerations might reflect the value of the protocol. This new framework is called tokenomics.

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Fundamentals of tokenomics

Investors hoping to identify and evaluate the most promising new opportunities in Web3 must understand three aspects of tokenomic supply. We base our token-level research around the following three principles and hope that the nuances will become well understood in coming years.

1. Understand definitions of supply and its impact on market capitalization

When considering tokens for investment purposes, most investors focus only on a token’s current price without evaluating the supply dynamics around the token pool. Because tokens are driven by code, there’s typically a schedule around how the supply will change over time, and this schedule can be evaluated and modeled. There are three key supply measures to consider:

- **Circulating supply:** the current supply of tokens issued and in circulation.
- **Total supply:** the total amount of tokens minted to date—regardless of whether those tokens are in circulation or locked up—less any tokens burned.
- **Maximum supply:** This represents the maximum number of tokens that can ever be generated. Knowing this figure provides a guideline to how the token value may evolve over time. Some projects have opted to not set a maximum, which can create uncertainty about how to evaluate the supply of that token and the relationship it has to its governing protocol.

Furthermore, because market capitalization is a metric calculated by multiplying token price by token supply, there can be vastly different market capitalization figures for the same token based on which supply metric is used. The following analysis of Ripple (XRP) illustrates these points.

- From a price perspective, XRP may appear cheap at only US\$0.50 as of November 4, 2022, especially when compared to the token's all-time price high of US\$3.10 on January 6, 2018. The stated market capitalization for Ripple on November 4, 2022, was US\$25 billion, which by convention, uses circulating supply. Yet, a closer examination of Ripple's token supply shows that only half of its 99.9 billion total token supply is in circulation, even though Ripple was first introduced in 2012 and is the fifth-oldest cryptocurrency.^{1,2}
- Ripple's market capitalization looks quite different when calculated on a fully diluted basis—multiplying Ripple's token price by the maximum supply rather than the circulating supply. In fact, its fully diluted market capitalization is two times greater (US\$49 billion vs. US\$25 billion) than its circulating market capitalization. This means that XRP would need to double its value by the time the remaining tokens are unlocked simply to justify its current token price. This severe supply overhang adversely impacts the correlation of the commercial protocol and its underlying token.

The takeaway is that—all else being equal—investors should be more cautious about projects where a material number of tokens is not yet in circulation. Investors should also look at and consider fully diluted market capitalization in addition to circulating market capitalization.

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2. Factor in token supply emission and lock-up schedule

There is a programmatic element to how, when and to whom tokens are released. The journey of how today's token supply becomes the future supply is encapsulated within the token's emission schedule. There are three types of risks that need to be understood to analyze this emission schedule: 1) the duration of time tokens are issued and the amount of supply scheduled to be released at each milestone; 2) whether there is a pre-programmed release schedule for the supply; and 3) the amount of new token supply earmarked for concentrated accounts. Each of these risks can impact the correlation between the protocol's value and the underlying token's value and offer important signals for assessing upcoming selling pressure on a token.

For example, gaming company Axie Infinity published its emission schedule showing specific step-ups in the token AXS supply on specific dates. On October 25, 2022, 21.5 million tokens were scheduled to enter the circulating supply—a figure that would be equivalent to 27% of the circulating supply. Anticipation of this large increase in the upcoming circulating supply resulted in a material selloff of the token going into the unlock date. On October 17, 2022, the price of AXS was US\$11.20. By October 24, 2022, just before the unlock date, the price had fallen to US\$8.37. By October 30, 2022, AXS rose to \$9.24, regaining 31% of the lost value in just six days.⁴

For other protocols, there may be a daily token release schedule. Since this schedule is encoded into the contract that governs the token supply, these releases are made daily regardless of whether there is enough trading volume to absorb the new supply. Understanding which coins are subject to these pressures and watching the relationship of daily trading volume to daily issuance provides an important signal about whether that token can effectively reflect the value of the underlying protocol over time.

When tokens are issued to early token holders, there is typically a vesting period—also known as a lock-up period—during which time recipients are unable to sell their assets. The vesting period for tokens is much shorter than in traditional security issuances.

In addition to scheduled token releases, unexpected releases may also occur due to the expiration of a lock-up. When tokens are issued to early token holders, there is typically a vesting period—also known as a lock-up period—during which time recipients are unable to sell their assets. The vesting period for tokens is much shorter than in traditional security issuances. Every project determines its own distribution schedule and there are (yet) no legal or regulatory requirements nor standard terms. If early recipients have an advantageous cost basis on these tokens, they may choose to sell those tokens and take profits when the lock-up expires. Tracking the concentration of holdings in the ownership pool and when those owners are no longer constrained to hold tokens is an important consideration and might signal a period when the value of the token and its underlying protocol may diverge.

The takeaway is that not only is knowing the total supply important (and how much of that total supply is not yet in circulation), but it is also critical to understand how much of that supply is unlocked and when new supply is coming to market.

3. Identify if structural supply factors exist

The final tokenomic supply factor to monitor is the structural allocation of the token supply. Initial token distribution typically takes place in two rounds—first a private sale to raise capital and then a public sale (or air drop) when a project is ready to launch. Tokens are created and distributed to the initial ownership pool. This typically includes founders and insiders, the foundation's treasury, early investors, set-asides earmarked for the community, and a sleeve of tokens reserved for the public. Ideally, the token allocations are relatively balanced across these different constituents.

During the private sale, insiders and investors may often receive tokens at a significant discount to the eventual public issuance price and thus have an extremely low-cost basis. Knowing how much of the envisioned token pool is going to these recipients is an important consideration. An overly large allocation to investors may result in more significant pressure when the lock-up ends. Conversely, an overrepresentation of insiders in a token sale creates higher risks for potential manipulation—like a sudden dump or an unnatural pump in supply.

The recently released tokenomics for the newly launched Layer 1 blockchain Aptos (APT) has drawn a lot of scrutiny for its initial token distribution. The following table from the Aptos Foundation illustrates the concern.

Tokenomics for New Aptos (APT) Draw Scrutiny

Exhibit 3: Initial Supply for APT

Category	% of Initial Token Distribution	Initial Tokens
Community	51.02%	510,217,359.77
Core Contributors	19.00%	190,000,000.00
Foundation	16.50%	165,000,000.00
Investors	13.48%	134,782,640.23

Source: "Aptos Tokenomics Overview." Aptos Foundation. October 17, 2022.

Initially, breakdown seems diversified. Early investors receive 13.5%, core contributors (insiders) 19%, the Foundation receives 16.5% and the balance—51%—goes to the Aptos community. Further scrutiny of that breakdown, however, shows that the "Community" allocation is initially awarding 41% of the total initial tokens to the Foundation and 10% to Aptos Labs.⁵ In other words, insiders and investors own the entire token pool. This makes

the token a higher risk for “structural” supply pressure and less likely to reflect the actual value of the underlying protocol. When it comes to digital assets, the two most common structural sellers are miners and insiders—investors and their affiliates.

The takeaway is that it is important to understand how a protocol’s tokens are initially distributed as well as the project’s plan for increasing distribution going forward. Investors should consider which stakeholders are structural sellers and, if possible, they should perform a deeper analysis of token distribution that would drill down into the specific wallet addresses of the largest holders and set up monitors to watch the movement of coins from those accounts.

Conclusion

Significant opportunities may be forthcoming in the digital asset space as Web3 dynamics take hold. Unlike earlier periods, however, accessing these opportunities in Web3 requires an understanding of both the value of the entity offering the services—the commercial protocol—and whether the token pool it provides accurately reflects the value of that protocol. Even in cases where the correlation is high, understanding the measures and factors that impact the token supply is a requirement to accurately assess both the near-term and longer-term pressures that may affect the relationship between the token and the underlying protocol—and to accurately assess the investment opportunity.

Endnotes

1. Sources: Ripple (XRP) price today, XRP to USD live, marketcap and chart. CoinMarketCap. As of November 4, 2022;
2. Source: “9 Oldest Cryptocurrencies Ever Released.” Oldest.org.
3. Crypto P/E ratio equals market capitalization (fully diluted) divided by total earnings (protocol revenue annualized). Fully diluted market capitalization equals the maximum supply of tokens multiplied by the price per token. Protocol revenue annualized is calculated by the total revenue the protocol generates in transaction fees from users of the blockchain.
4. Source: Axie Infinity (ACS) price today, AXS to USD live, marketcap and chart. CoinMarketCap. As of October 30, 2022.
5. Source: “Aptos Tokenomics Overview.” Aptos Foundation. October 17, 2022.

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