

Token-based Platform Finance

A Brief Summary

Link to the full paper: https://yeli-macrofinance.com/token_finance.pdf

Platforms that facilitate economic transactions—much like countries—can introduce their own currencies (“tokens”). What prevents a platform from doing so? A natural concern is that issuance would be excessive, resulting in runaway inflation. However, “excessive” can be defined only in relative terms: issuing money to finance positive-NPV projects does not lead to inflation (Bolton and Huang, 2018).

We develop a dynamic model of token ecosystem: the token demand side is modeled following the money-in-utility literature, and the token supply side involves several decisions about the platform’s “monetary policy”. The platform issues tokens for investing in productivity growth or for rewarding its owners. It can also buy back tokens from the market using externally raised funds, subject to a financing cost. Our first contribution is to provide a unified framework for analyzing endogenous token price and token-supply policies. Our model delivers several insights into the economics of tokens and platforms.

First, tokens are akin to durable goods but defy the prediction in Coase (1972). Even though the marginal cost of producing token is zero, the equilibrium price can be positive. The owners’ concern over the franchise (continuation) value can generate incentive against over-supply and even induce the owners to buy back tokens. The endogenous growth of platform productivity and the resulting growth of user base and token demand are the ingredients that distinguish our model from standard models of durable goods and stationary demand (e.g., Stokey, 1981).

Second, under-investment arises from conflict of interest between the owners and users. Token-financed investment in productivity increases the token supply, but the impact on productivity is random. If productivity is improved, it benefits both the owners and users; if not, the downside is mainly borne by the owners. While the token users realize capital loss as the token price decreases, such risk was fairly priced when they bought the tokens in a competitive market. The owners care about the franchise value of the platform and, to maintain user base, may choose to support token price by buying back the token supply in excess (relative to platform productivity). Such buyback is externally funded and thus costly. The asymmetry in exposure to investment risk between the users and owners discourages the owners from token-financed investing and tilts the proceeds from token issuance towards financing the payout to the owners, which in turn reduces the users’ welfare, the token price, and the long-term value of owners’ token payouts.

The root of the under-investment problem is the owners’ time inconsistency. If the owners were able to commit against under-investment and against excessive payout, the users would have demanded more tokens, which increases the token price and the long-term value of owners’ token payouts. However, the predetermined rules of token-financed investment can be deemed sub-optimal ex post when the conflict of interest between the users and owners arises. Blockchain technology addresses this problem by enabling commitment to predetermined rules. Resolving the time inconsistency can increase both the platform owners’ and users’ welfare.

References

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