THE TOKENIZATION OF CONSUMER SURPLUS: NEW ANTITRUST TOOLS IN WEB3 MARKETS

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Zero-price markets pose an interesting question for modern antitrust analysis. Central to this challenge is that modern antitrust law and economics is largely built on a foundation of industrial organization and price theory. Applying these economic tools to zero-price markets, therefore, is tricky. With the increasing prevalence of blockchain networks and Web3 applications, there may be opportunities to develop new methods and tools for unitizing (and thus measuring and comparing) value, even for "zero-price" goods. Certain blockchain applications – e.g. Decentralized Autonomous Organizations, Web3 games, and other participation- or patronage-driven online offerings – have unitized the value that users get out of the application and/or put into the application by their contributions in the form of tokens. This article discusses how these "social tokens" may make it easier to measure whether changes in the user experience are net positive or negative overall (and by how much).

01
INTRODUCTION

With the rise of the internet came the rise of "zero-price" markets, where firms set the price of their goods or services at $0. Indeed, zero-price markets are so pervasive in today's economy that consumers expect to receive many things for "free" such as search, messaging, video and audio content, software, games, and a wide array of other applications. Of course, the provision of goods for free still comes at some cost — after all, as anyone who has taken an economics course has been told, "there is no such thing as a free lunch." And so "free products" are often monetized indirectly through ads, upgrades from freemium offerings, charging customers on the other side of a multi-sided platform for access to the free user population, etc.

Zero-price markets pose an interesting challenge for modern antitrust analysis. Central to this challenge is that modern antitrust law and economics is largely built on a foundation of industrial organization economics and price theory. Applying these economic tools to zero-price markets, therefore, is tricky. Take, for example, the "SSNIP" test for defining a relevant market. The test can be used to determine if two goods are in the same relevant market by examining whether consumers are likely to switch to one in response to a "small but significant non-transitory increase in price" of the other. Absent a price, the best we typically can do is consider a change in quality, which is nebulous at best because it cannot be measured in as objective terms as dollars and cents provide.

Other challenges also exist. For instance, how would you measure whether users have been harmed by a platform's diminished incentive to protect the privacy of their personal data when they interact with that platform for free? Or what about the benefits of innovation? If a merger reduces the cost of rolling out features, how do you determine the value users place on those new features if they're incorporated into a free offering? From a theoretical standpoint, we might understand that value has been created, or diminished, but might not know the quantum of value or even the net direction. From a measurement standpoint, we might be able to tell through revealed preferences (users increasing or decreasing their consumption in response to a change) the direction of change in value, and maybe even relative magnitudes, but we still lack precision on how much value has been created.

Enter: Tokens. With the increasing prevalence of blockchain networks and Web3 applications, there may be opportunities to develop new methods and tools for unitizing (and thus measuring and comparing) value, even for "zero-price" goods. Specifically, certain blockchain applications — e.g. Decentralized Autonomous Organizations ("DAOs"), Web3 games, and other participation- or patronage-driven online offerings — have unitized the value that users get out of the application and/or put into the application by their contributions in the form of tokens. As we discuss below, these "social tokens" may make it easier to measure whether changes in the user experience are net positive or negative overall (and by how much).

02
SOCIAL TOKENS

Social tokens are a form of fungible cryptocurrency that put heavier emphasis on the branding and community underlying the token.[2] Social tokens derive their value from the growth of creators and their communities. They frequently exist in the context of DAOs or some other form of decentralized governance where the holders of the social tokens have the ability to make decisions about a broader application or protocol. There are several other implementations including integrations with blockchain-based games or "Web3 games," and other platforms where user engagement — through content creation or participation — makes the platform more valuable to other users. Social tokens are also used by online creators and brands to reward patronage with access, doled out in the form of social tokens.

DAOs are a kind of digital co-op that uses tokens to coordinate access, make payments, and vote on group decisions.[3] DAOs often run on open blockchain networks like Ethereum. One application of DAOs is to allow people to pool resources toward a common goal, whether it is buying historic copies of the Constitution,[4] managing NBA teams,[5]

2 What are Social & Community Tokens? Your All-in-one Guide, Zenledger (Aug. 10, 2022), https://www.zenledger.io/blog/what-are-social-community-tokens.

3 Erin Woo & Kevin Roose, *This Social Club Runs on Crypto Tokens and Vibes*, N.Y. Times (Mar. 2, 2022), https://www.nytimes.com/2022/03/02/technology/friends-with-benefits-crypto-dao.html.

4 See Nilay Patel, *From a Meme to $47 Million: ConstitutionDAO, Crypto, and the Future of Crowdfunding*, VERGE (Dec. 7, 2021), https://www.theverge.com/22820563/constitution-meme-47-million-crypto-crowdfunding-blockchain-ethereum-constitution.

5 Krause House (@KrauseHouseDAO), Twitter, https://twitter.com/KrauseHouseDAO.

or creating an online social club for creatives, like the social DAO Friends with Benefits ("FWB").[6] FWB is a network of creative individuals organized around $FWB tokens. Anyone can trade $FWB, whether they are members or not. FWB members host meetups and share resources and insights, and only they can earn $FWB as a reward for participation. The purpose of the tokens is to give members an incentive to contribute and make it fun. In turn, as the group becomes more fun and interesting, users join, and tokens increase in value.

More broadly, blockchain applications can reward contributions and participation with tokens. For instance, certain Web3 games reward time spent playing and/or time spent creating within the game with tokens. Those tokens in turn can be used in a number of ways (depending on the game), including purchasing in-game assets, earning rewards, and governance — or voting on changes to the game (e.g. features or growth). This allows users to play *and* be part of the game development. While purchasing in-game assets and earning rewards is common in many Web3 games, the use of tokens for governance — i.e. decentralizing decisions about how a game is run or grows — is still relatively new. Tokens can allow members of DAOs to make new proposals and vote for proposals that impact the future of the community. They distribute the power of decision-making from a centralized structure to an entire community.

Governance via token generally works as follows: A question is proposed to the community: Do users want the game to enable a new interactive feature? Users with tokens can then use them to vote yes or no, and the result of that vote will reveal not only how many users valued that new feature as a net positive, but how much they valued it based on the number of votes received. Moreover, the value of those votes can be translated into the value to the platform community for time spent creating or playing. For instance, if 10 hours of engagement with the community entitles the user to one voting token, and a user spends their one token to vote against the new feature, we now have a better (and more quantifiable) way of assessing that user's willingness to "pay" for the platform to stay "as is" without the new feature. The feature creates at least one token's worth of disutility for that user, which we can then relate to the user's opportunity cost of 10 hours of engagement. If two other users each are willing to pay one token each (at least 20 hours of engagement total) to implement the new feature, we could hypothesize that, on net, the new feature created positive value equivalent to 1 token, or 10 hours of engagement.

If a user values having a say in the direction of the game, that user is incentivized to earn tokens to be able to vote. For example, in May 2022, a member of the Merit Circle DAO, which loans non-fungible tokens ("NFTs") to people and at the time was worth over $370 million, proposed to terminate the membership of one of its earliest investors, Yield Guild Games ("YGG").[7] Eighty-seven percent of the tokens voted yes,[8] prompting a buy-out of YGG's allocation of tokens.[9] The more tokens a member has, the more power they have in the voting system.

In short, with tokens we can begin to develop intuitions for a demand function, without ever translating values into dollars and cents. That said, certain tokens can be traded for monetary value, which only expands the ways we can use them to analyze costs, benefits, and utility for technically zero-price goods. Below we discuss two potential applications for tokens to enhance quantitative applications of traditional antitrust economics to zero-price markets, market definition, consumer welfare, and competitive injury.

03

TOKENS OFFER NEW POSSIBILITIES FOR MARKET DEFINITION

The purpose of market definition and the related analysis of market power is to understand the competitive constraints that can limit the ability of a firm to engage in behaviors that harm competition. However, the conventional market definition and market power analysis is an awkward fit for zero-price markets. As discussed above, the SSNIP test, which identifies the smallest market within which a hypothetical monopolist could impose a "small but significant non-transitory increase in price," doesn't quite work. A small percentage of zero is still zero. Critical loss analysis,

6 See Justin Mart & Connor Dempsey, *DAOs: Social Networks that can Rewire the World*, COINBASE (December 22, 2021), https://blog.coinbase.com/daos-social-networks-that-can-rewire-the-world-128b73732547.

7 Margaux MacColl, *Tokens for We but Not for Thee: How a DAO Turned Against One of Its Earliest Investors*, Information (June 10, 2022), https://www.theinformation.com/articles/tokens-for-we-but-not-for-thee-how-a-dao-turned-against-one-of-its-earliest-investors.

8 MIP-13, Merit Circle (May 26, 2022), https://vote.meritcircle.io/#/proposal/QmT71tWtTwk6q5Cd2kvhoLzxm76SpNaQGBR9RE7p-CxBM58.

9 MIP-14, Merit Circle (June 7, 2022), https://vote.meritcircle.io/#/meritcircle.eth/proposal/QmanW7dTyF2LvvU9iAGwj3i9D4F3TS7ZbxR-33jVCmKMrgR.

an alternative method to the SSNIP test, also faces challenges because it is built to determine how much a seller can increase price before losing a critical quantity of sales to render the price increase unprofitable.

Tokens could allow consumers to assign value to goods and services. For example, if consumers can skip ads by spending tokens, the consumer essentially assigns a value — expressed in tokens — to the disutility of time and attention that would have been spent watching ads. Similarly, if consumers receive tokens as a reward for watching content on a creator platform, the activity of watching content could be evaluated by the token's monetary value (if they can be bought and sold) or simply measured in units of tokens instead of dollars.[10]

Translating this to a SSNIP test could take a few forms. Let's say that access to an exclusive chat feed requires users to have 100 tokens in their wallet. A SSNIP of 5 percent, or five tokens, would be the same as increasing the cost of feed access to 105 tokens. By observing how many users continue to obtain access by moving up to the 105-token mark, we might be able to predict whether a hypothetical monopolist could impose the SSNIP. Of course, we still need to answer the question of whether the increase was "profitable." This could be analyzed by looking at how the platform monetizes (in dollars) user engagement. But even absent monetized engagement, we can make observations about the self-sustainability of a platform (i.e. how users are incentivized to work together toward a common goal, which is another way to think about profitability) by asking how tokens are earned. Let's say tokens are doled out in return for time spent playing games on the platform because engagement is a critical driver of the value of the platform to other users. By observing how individual user demand for the platform (measured in time spent on the platform) varies as a function of overall user engagement, we may be able to assess returns to community participation and in turn determine when engagement drops below a level of self-sustainability.

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TOKENIZED CONSUMER WELFARE

Although zero-price services undoubtedly contribute to consumer welfare, the value of the contribution is difficult to evaluate. Consumer welfare can be broadly characterized as the difference between a consumer's willingness to pay for something and the price they actually had to pay for it. The first step to evaluating consumer welfare, then, is to understand the range of consumers' willingness to pay: the market demand curve. In markets with prices, we can observe willingness to pay by observing how many consumers buy a given good at different price levels. In zero-price markets, we have two options. We can survey customers (subject to the many inherent flaws of survey-based evidence). Or we can observe the revealed preferences (e.g. users' "stay" or "go" decisions). For example, does an increase in ads on a platform cause consumers to spend less time or more time?

One example of the survey method is the European Commission's Joint Research Centre's report, in which researchers measured the consumer welfare from using zero-price navigation apps and location-based services.[11] Researchers set up a discrete choice experiment and conducted an online survey of users of portable or in-car navigation systems in Poland. Participants of the survey could choose from the following attributes: (1) satellite-only navigation, (2) user-centric "state-of-the-art" navigation that offers location-based functionalities with which the user can preserve control over location sharing, (3) provider-centric "state-of-the-art" navigation that collects location data constantly, and (4) balanced "state-of-the-art" navigation. Participants were also asked to assign a monthly price for a subscription to an in-car navigation service based on its attributes. Through the survey, researchers analyzed the consumers' willingness to pay for certain attributes as well as the consumer surplus of particular alternatives.

Tokens may offer additional possibilities. For instance, governance tokens are units of decision power allocated to users that allow for assigning voting tallies to the approval (or rejection) of changes of the service. Social tokens provided in return for engagement also create a metric for assessing

10 Of course, this premise depends on there being a use case for these "reward coins." In practice, many such "reward coins" that have no use drop in value over time because the consumptive uses for the coin are diluted by the constant reward supply. One example is the STEPN coin, which rewarded users for walking. But, once users ran out of things to spend the coin on, the value of the token dropped. See e.g. Jimmy Aki, *STEPM (GMT) Price Prediction 2022 – 2025*, BUSINESS2COMMUNITY (Nov. 22, 2022), https://www.business2community.com/cryptocurrency/stepn-gmt-price-prediction.

11 Maciej Sobolewski, *Measuring Consumer Well-Being from Using Zero Price Digital Services: The Case Of Navigation Apps and Location Based Services* (European Commission Joint Research Centre Digital Economy Working Paper 2021-04, 2021), https://joint-research-centre.ec.europa.eu/system/files/2021-02/jrc123535.pdf.

relative values that the platform (and by extension its stakeholders) places on participation. When social tokens can be exchanged or used to address other things of value (experience, access, digital goods, voting, or even real money), we also obtain information about relative values that is helpful for quantifying the effect of changes even absent a monetary transaction. Exchanges also allow us to begin to assess "willingness to pay" even if we measure that willingness in the form of tokens or time instead of in fiat currency.

05
CONCLUSION

This article highlights only a few of the ways that blockchain networks and Web3 applications may open new ways to approach antitrust analysis for zero-price goods. As blockchain applications continue to evolve and become more universal, this space will be one to keep an eye on and will provide many opportunities for creative analytical solutions. Indeed, individuals are already starting to think about how to analyze competition in "network[s] of computer-generated worlds, also known as 'virtual worlds,'" including through the recently announced Metaverse Competition Agency, which is intended to produce case studies and advocacy work by using "the consensus of people of the decentralized metaverse" to make decisions and recommendations.[12]

"This article highlights only a few of the ways that blockchain networks and Web3 applications may open new ways to approach antitrust analysis for zero-price goods

12 Nicolas Petit et al., Metaverse Competition Agency: White Paper (Dec. 9, 2022), https://ssrn.com/abstract=4297960.

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