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IMPROVING WEB3 MONETIZATION: PRICING THROUGH SUPPLY CONTROL

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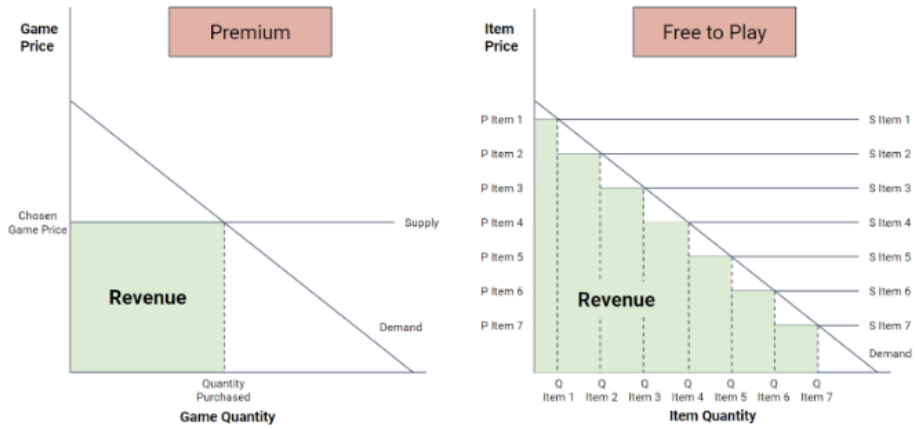
ASSET PRICING IN F2P VS WEB3

While the surface level change between F2P and Web3 game monetization is legitimised real money trading, there are deeper changes that studios need to be aware of to be economically sustainable. This includes reframing expectations about how pricing works and adjusting ways of distributing items to players.

F2P: Set Primary Market Pricing with Unlimited Supply

In free-to-play gaming, the cost of an item for players is determined by the studio and there is generally no legitimate secondary market. Any real-money secondary markets that do arise undercut primary market revenue, without sharing any trading fees with the studio or contributing to a higher willingness to pay for items on primary markets.

As F2P economies are often designed without trading in mind, the studio can issue an unlimited quantity of each asset. With no marginal cost to produce and sell each item, studios try to use the primary market prices to maximize their revenue. They can create a wide variety of items and services for players to spend on at different price points to allow for a high degree of price discrimination, meaning that players are able to have something to pay for that closely matches their personal willingness to spend.



Decisions on price drive revenue for both premium (e.g. $60 boxed game) and F2P, given no marginal cost of digital distribution. However, price discrimination through selling different items at different price points increases revenue as there are more price points to match with willingness to pay for various players. In the above example, selling 7 different items at different price points (P) drives the cumulative quantity of items sold (Q), though each item has a theoretically unlimited supply (S).

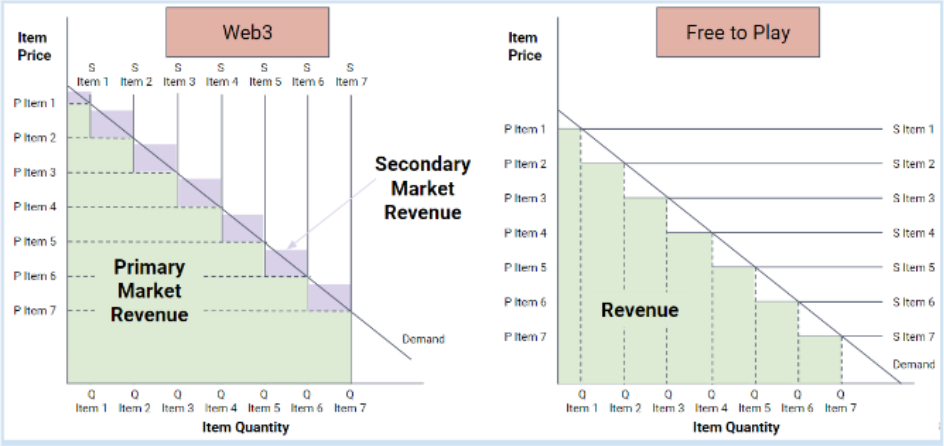
ASSET PRICING IN F2P VS WEB3

Before diving into comparing free-to-play monetization with Web3 monetization, I should make some disclaimers. First, Web3 and F2P monetization can both be used within the same game.
Second, while I'm using Web3 terminology, the same rationale also applies to other open economy designs built on centralized databases. Lastly, not all Web3 items should be monetized the same. They can be differentiated based on how accessible the studio wants that asset to be. A highly accessible asset should have a high or unlimited supply (or be non-tradable), otherwise there is a risk that speculators will push the price out of reach of the target users.
On the other hand, some assets are meant to act as status symbols that signal wealth, which benefits from having a known limited quantity. The status vs accessibility question is a spectrum that can be used as a starting point to make decisions on asset supply.

WEB3: SET SECONDARY MARKET PRICING THROUGH FIXED SUPPLY

The most common NFT monetization strategy focuses on distributing a limited quantity of NFTs. The strong limitation improves the asset's collectability and ability to signal wealth, similar to how blue party hats had a limited supply that helped signal wealth in Runescape. Studios can capture revenue from high secondary market sales and avoid costs associated with combating secondary market trade that may otherwise exist in alternative business models. For example choosing to build a MMO with an open economy would make secondary market trading a revenue source, where it otherwise would have ongoing costs to identify and ban real money traders.

But having a limited supply of NFTs doesn't mean they only have to be targeted towards extremely high spending players. Studios can price discriminate in web3 by controlling the supply of each NFT type to make sure there are assets at varying price points that match the willingness to pay of different player types.

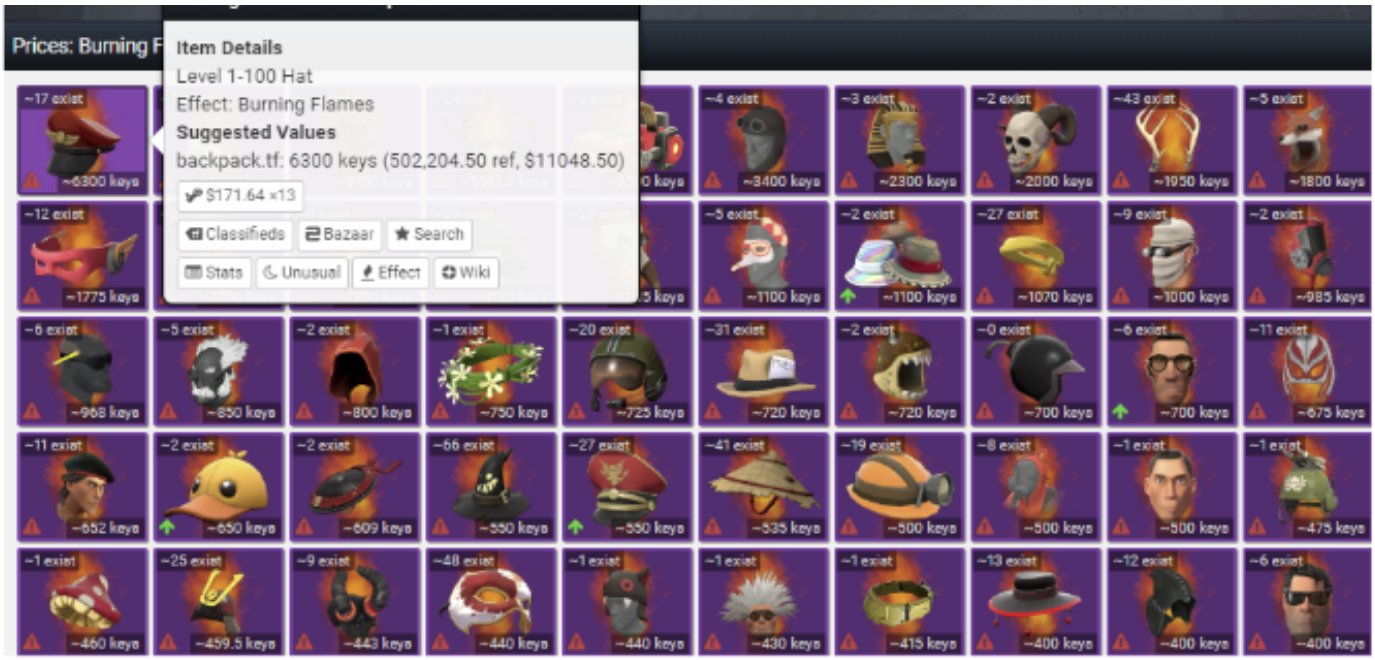


Decisions on supply drive revenue, instead of price, for Web3 monetization. Supply is fixed and decided by the studio, while secondary market price will be discovered based on market activity. In the web3 graph above, item demand is modeled as higher than F2P with players being willing to pay more, due to an expectation that they will be able to resell it in the future.

Note though that this is reduced by cannibalization of primary market purchases for future releases of a similar item targeting the same type of player. A portion of those cannibalized sales translate into secondary market revenue. For example, a F2P game can sell an item twice to 2 players for $1 each. A web3 game can sell that item to 1 player for $2, who (even though using it is only worth $1 to them) expects to be able to resell for $1 later. When they resell it, the game captures a 10% fee leading to $2.10 total profit vs $2.

One way of distributing limited NFTs is through a drop, where the studio will sell a specific quantity. This drives primary market revenue, which is supplemented by secondary market revenue as the assets start to change hands.The studio still controls the primary market price, but the chosen supply crucially affects the prices they will be able to sell future items for (due to players' ability to choose between the new item or a similar old item on the secondary market). This is a similar model to sneaker companies like Nike, who do limited supply drops that often see higher secondary market prices. However, monetization in the physical sneaker model is generally restricted to just the primary sale, with Nike suing the StockX secondary marketplace instead of owning it. A notable Web3 example is IMVU, which is an almost 20 year old metaverse that switched from traditional game items to issuing some tradable NFTs through a drop system, with a focus on these items providing a status benefit. Their initial prices were in the $5-10 range and while some were speculated on with 4-digit trades, most NFTs maintained secondary market prices that were reasonable for much of their target audience.

As demand grows over time from the addition of new spending players, the team can issue new drops to refine the price discrimination. While they could drop more of the same item (which would not require new art spending), this would anger existing asset holders. The more diplomatic strategy is to release a new item that has similar supply and some overlap in traits, so that it is seen as an approximate, but not exact substitute. For example, holders of the famous Burning Flames Team Captain hat in Team Fortress 2 would be furious if many more of them were suddenly introduced, but the release of different, new hats over time with the Burning Flames effect is acceptable. This provides a middle ground of giving more users access to a category of benefits and more price points, while mitigating impact on the value of existing assets.



Source: Backpack.tf

The risk to watch out for though with this strategy is running into "substitutive inflation," where too many new substitutes are introduced that excessively devalue existing assets, even though each individual item has a fixed supply. This can be observed in the NBA Top Shot economy, where demand for NFT "moments" could be attributed to desire to collect or speculate. While there may be collector interest in a legendary Lebron James moment with 23 copies, that demand is diluted when 11 other legendary moments with 23-99 copies each are dropped as well without a corresponding rise in fundamental demand.

In some cases, studios opt to distribute a limited quantity of NFTs for free. The goals of free distribution are generally to profit from secondary market trading, if the ecosystem is set up to incentivize a high volume of trade, and/or to help with retention and user acquisition. Nexon is pursuing this strategy for MapleStory Universe, where they will issue a limited quantity for each item per server. The supply control helps the items retain value, where otherwise players (or bots) could keep grinding to get items and selling them until the item value was pushed down to the opportunity cost of their time to do so.

WEB3: SET PRIMARY MARKET PRICING WITH FLEXIBLE SUPPLY

For other types of game items, studios may choose to target accessibility over status, meaning everyone should be able to get access at a reasonable price. This involves actively disincentivizing speculators from pushing the price above a target level. One way to address this is by just having accessible assets be non-tradable items, which is the strategy taken by the trading card game Skyweaver by having non-tradable base cards, separate from NFT versions.

There is also another option of selling them as tradable NFTs with a theoretically unlimited supply. This means that if the secondary market price rises too high for an asset, a player can buy a new one from the studio. For example, the team behind the trading card game Gods Unchained reserves the right to “reprint” NFTs from all of their expansion sets (other than the first) if needed to push down pricing of these cards to acceptable levels.

This monetization strategy does have risk as it relies on players being willing to spend more on the asset due to the ability to resell (compared to an equivalent non-tradable item) and actually resell it more slowly than expected, in order to be a profitable monetization method (though secondary market royalties help). Leveraging the Endowment Effect, which is the finding that ownership can make people value an asset more highly, through design decisions that improve the feeling of ownership can help reduce the resale rate and corresponding primary market revenue cannibalization. For example, personalization or stat tracking attributes could enhance the feeling of ownership and willingness for players to hang onto their assets.

IMPORTANCE OF SUPPLY CONTROLS

Given the importance of having assets at various supply (and corresponding price) levels to cater to a variety of players, it is imperative that studios have strict control over the supply of assets in their economy. If not, they at best miss out on revenue from a lack of careful price discrimination and at worst heavily devalue assets through uncontrolled inflation that hurts long-term revenue and retention.

This means that item distribution strategies commonly found in MMORPGs that revolve around individual player actions (e.g. a player kills a monster and gets a sword) are not economically sustainable if that dropped asset has a legitimate secondary market. Botting or organised play from people with a relatively low opportunity cost to their time would drive down secondary market pricing for those items and decimate revenue potential and player engagement.

Supply Control Methods and Examples

The following section provides an overview of various strategies for distributing a fixed quantity of items to players in ways that control the total item supply. Note that “lever” refers to a mechanic to control the supply, while “allocation” refers to a method of allocating the asset to users. Some examples include both and some only include one.

SUPPLY CONTROL METHODS & EXAMPLES

Lever & Allocation: Randomised distribution of fixed discretionary supply (ex. Raffle)

- Description: Randomly allocate a fixed quantity of rewards based on a proportional measure of valued player activity
- Pros
  - Precise control over inflation of all asset types
  - Psychological separation between gameplay and earning
  - Expected returns to value extraction are inversely proportional to number of extracting players in short run, not just long run
- Cons
  - Lower barrier to entry to bot profitably than a skill-based allocation system
  - Rewards delayed due to coordinated allocation across multiple users

Example: Sparkadia

- Earn raffle tickets for progressing through the battle pass.
- Players can enter tickets into prize pools for various types of rewards (NFT/token/blueprint).
- Periodic raffle drawings allocate prizes with a chance of winning an on-chain item proportional to the players' share of total ticket entries. Off-chain items given as consolation prizes.
- Entry to certain prize pools is reserved for various types of asset holders.
- Secondary note: consumable blueprints also act as a supply control component to bottleneck output of the crafting system.

SUPPLY CONTROL METHODS & EXAMPLES

Lever & Allocation: Intermediary allocation currency for fixed discretionary rewards

- Description: earn an off-chain currency/points through gameplay that are solely use to determine the player's proportional share of a fixed pool of rewards
- Pros
  - Quantity of assets distributed can be exactly controlled, regardless of the activity of users
- Cons
  - Lower barrier to entry to bot profitably than a skill-based allocation system
  - Rewards delayed due to coordinated allocation across multiple users

Example: Gods Unchained

- Earn Fragments from winning games (max 10 games/day).
- Fixed pool of GODS tokens per day is allocated to players proportional to their share of fragments earned that day.

- Note: An intermediary allocation currency can be a useful step for proportionally distributing a variety of assets, but is easier for highly divisible ones. Having a discretionary, rather than fixed, supply distribution schedule better enables balancing of supply and demand through adjustments though.

Lever & Allocation: Rivalrous skill-based distribution (ex. Leaderboard)

- Description: allocate a fixed quantity of assets based on quantified skill metric
- Pros
  - Quantity of assets distributed can be exactly controlled, regardless of the activity of users
  - Higher difficulty to profit from botting
- Cons
  - Rewards delayed due to coordinated allocation across multiple users

Example: Axie Origin

- Seasonal AXS token rewards for Axie Origin have a fixed prize pool and a set prize per leaderboard position at the end of each period

SUPPLY CONTROL METHODS & EXAMPLES

Lever & Allocation: Limited supply of production-permitting assets

- Description: release a limited amount of NFTs that grant the right to produce other assets at some max rate
- Pros
  - Provides at least a max cap on total NFT supply
- Cons
  - Only have loose control over the inflation rate of the asset. While there is a ceiling on the inflation rate (the theoretical 24/7 production rate), the actual total output is an unknown that is based off of actual user activity
  - Ongoing obligation to permit holder to continue inflation of that asset
  - Giving users market power over the production of an asset, which they may use to coordinate and charge higher prices for. Correcting this through additional inflation from other sources creates conflict as it devalues their production asset.
  - Very financially focused, given sale of the production asset.

Example: Heroes of Mavia

- Limited number of NFT bases (team can add more at their discretion) and only NFT bases can earn the RUBY token, while non-NFT bases cannot

Lever: Depleting pool

- Description: allocate a specific quantity of assets to a pool, which is allocated to players through some mechanism. The pool is not automatically refilled, only refilled on a discretionary basis.
- Pros
  - Creates competition that can spur spending
  - Quantity of assets distributed can be exactly controlled, regardless of the activity of users
- Cons
  - Incentives are reduced as the pool depletes

Example: Illuvium

- There is a fixed supply for the pool of illuvial NFTs, which the governance council could replenish at their discretion

SUPPLY CONTROL METHODS & EXAMPLES

Lever: Limited supply lootbox

- Description: distribute a fixed amount of a lootbox with variable asset rewards
- Pros:
  - Enables rough probabilistic supply control
- Cons:
  - Potentially legally problematic due to gambling laws if allocation method involves direct financial input and the secondary market is not properly at arms length. Also may violate policies of platforms, like Google Play

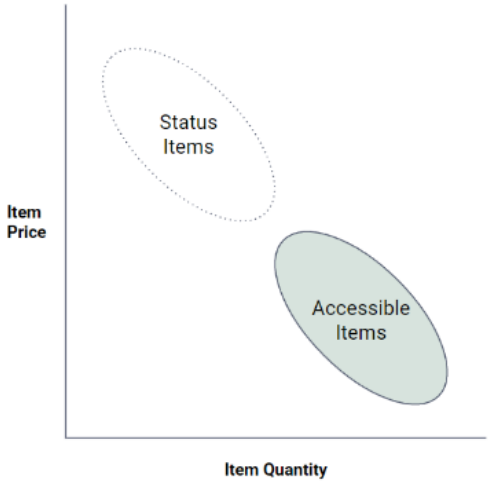
Example: TF2, CSGO

- Both games dropped limited runs of crates to users that had set probabilities of dropping certain items
- Real money secondary market trading was not facilitated by Valve, though they did indirectly benefit from it (not factoring in Steam Marketplace given lack of real money withdrawals)

SHRAPNEL CASE STUDY

Shrapnel provides an interesting case study for exploring the process of balancing game pillars with economic sustainability. When working with Shrapnel on their economy, this type of conflict arose for vanity weapon skins. The team had a key goal of accessibility for these cosmetics and planned to allow anyone to create one.

While this is accessible, the lack of barriers to entry to creating them was expected to drive down secondary market prices and eliminate the potential for status symbol vanity as anyone could copy and create an unlimited quantity of items that at least looked similar to a desirable skin. This would underserve a subset of players and be a large missed revenue opportunity for both the studio and the game's best potential UGC creators.



SUPPLY CONTROL METHODS & EXAMPLES

We tackled this issue by splitting vanity cosmetics into two tiers. One accessible tier with the same strategy, and the other with a limited supply and distinct class of effects that would distinguish them in-game and allow for status signalling. The status symbol tier would be limited in supply through a limited quantity of input material, which the team could distribute at their discretion, for example through grants to high quality UGC creators. This separation into accessible and status symbol goods allowed servicing players of a variety of budgets, as well as enabling high value secondary market trades that will drive revenue to the studio and UGC creators.

Takeaways

- Web3 NFT monetization still allows for profitable price discrimination and serving the needs of a variety of players, but through focusing on controlling supply more than on primary market price.
- It is possible for studios to keep selling accessible goods as NFTs, while capturing a higher willingness to pay due to resale premium, but cannibalization risks should be considered.
- Issuing too many different “limited supply” items can still create substitutive inflation on the overall asset class.
- Games can enable status symbol NFT assets at varying levels to capture whale and speculator revenue at different budgets, not only the very high end.