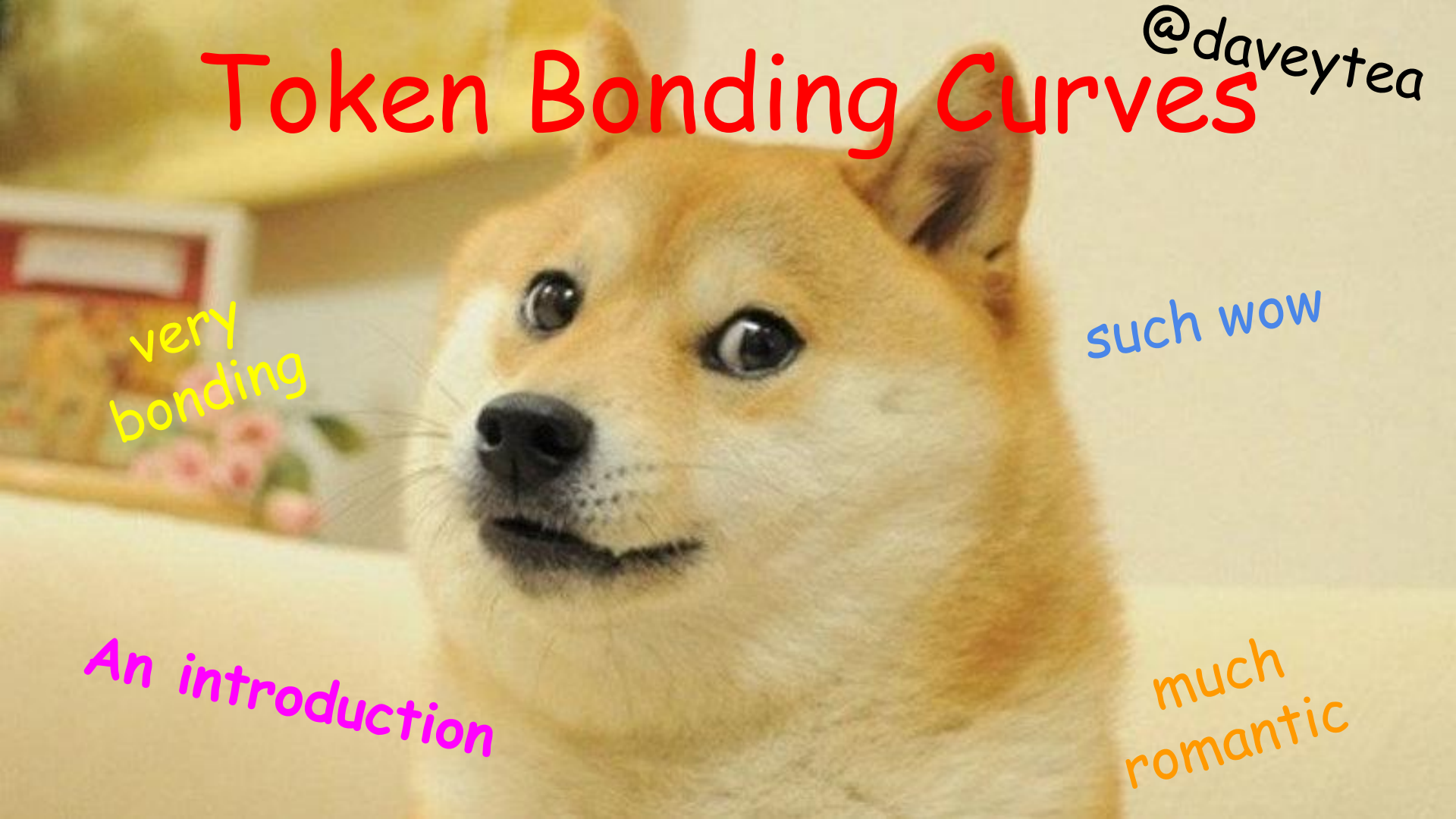
Token Bonding Curves

@daveytea

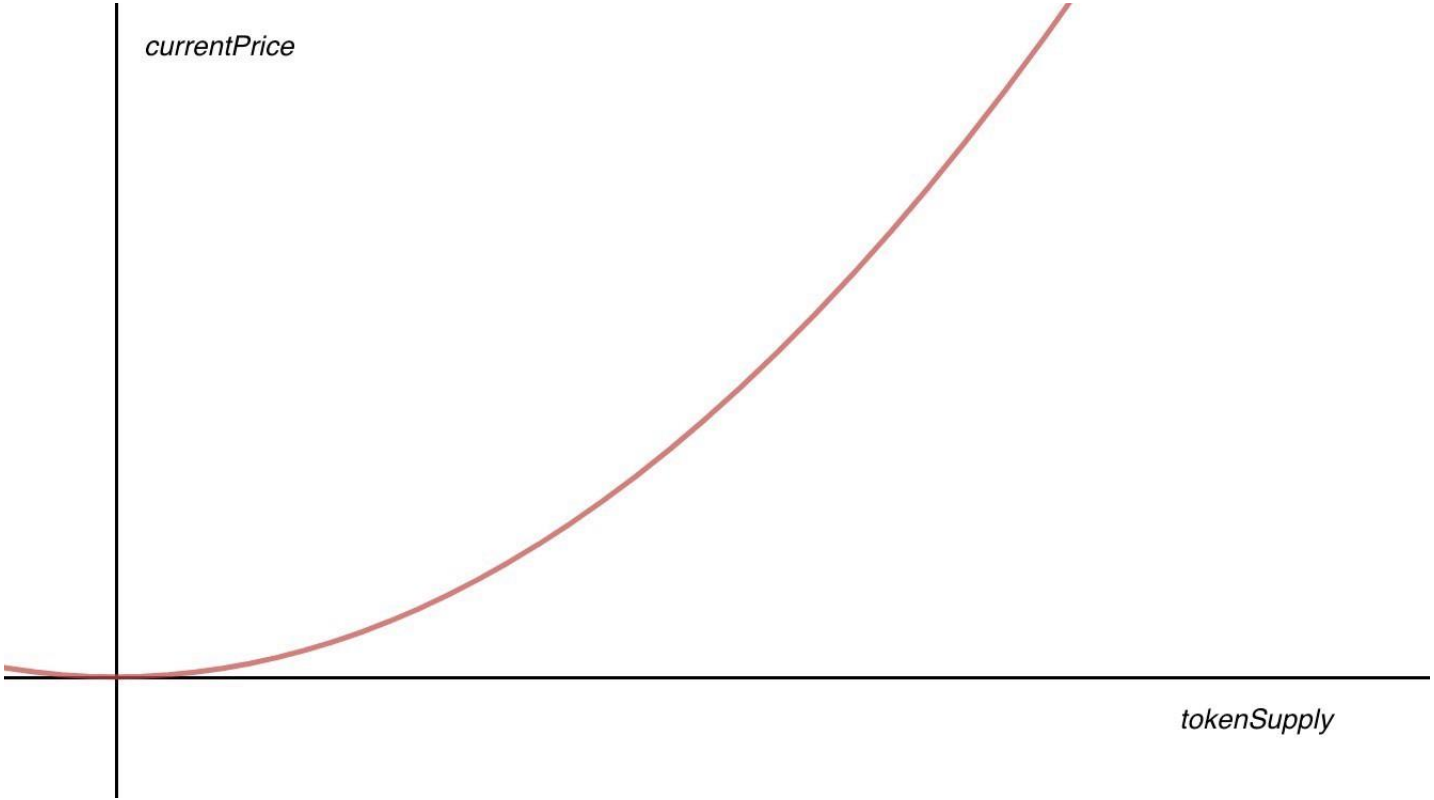


(Crypto) Background

2014: ETH
2015: Coinbase ‘analyst’
2016: Coinbase app
2017: ‘Crypto’ Investor
2018: #BUIDL - R&D, Solidity,
khana.io, buidl.amsterdam
2019: ??


WDF

$$currentPrice = tokenSupply^2$$



currentPrice = tokenSupply²

Buys $100

Receives 1.0 token

(0) tokenSupply = 10 tokens, backed $100

(1) Price per token: (10 tokens)² = $100

(2) Price per token: (11 tokens)² = $121

(3) tokenSupply = 11.826446281
Total backing funds = $300

Buys $100

Receives 0.826446281 tokens

currentPrice = tokenSupply²

Sells 1.0 token

Receives
$139.8648316374

(0) tokenSupply = 11.826446281
Total backing funds = $300

(1) Price per token: (11.826446281 tokens)² = $139.8648316374

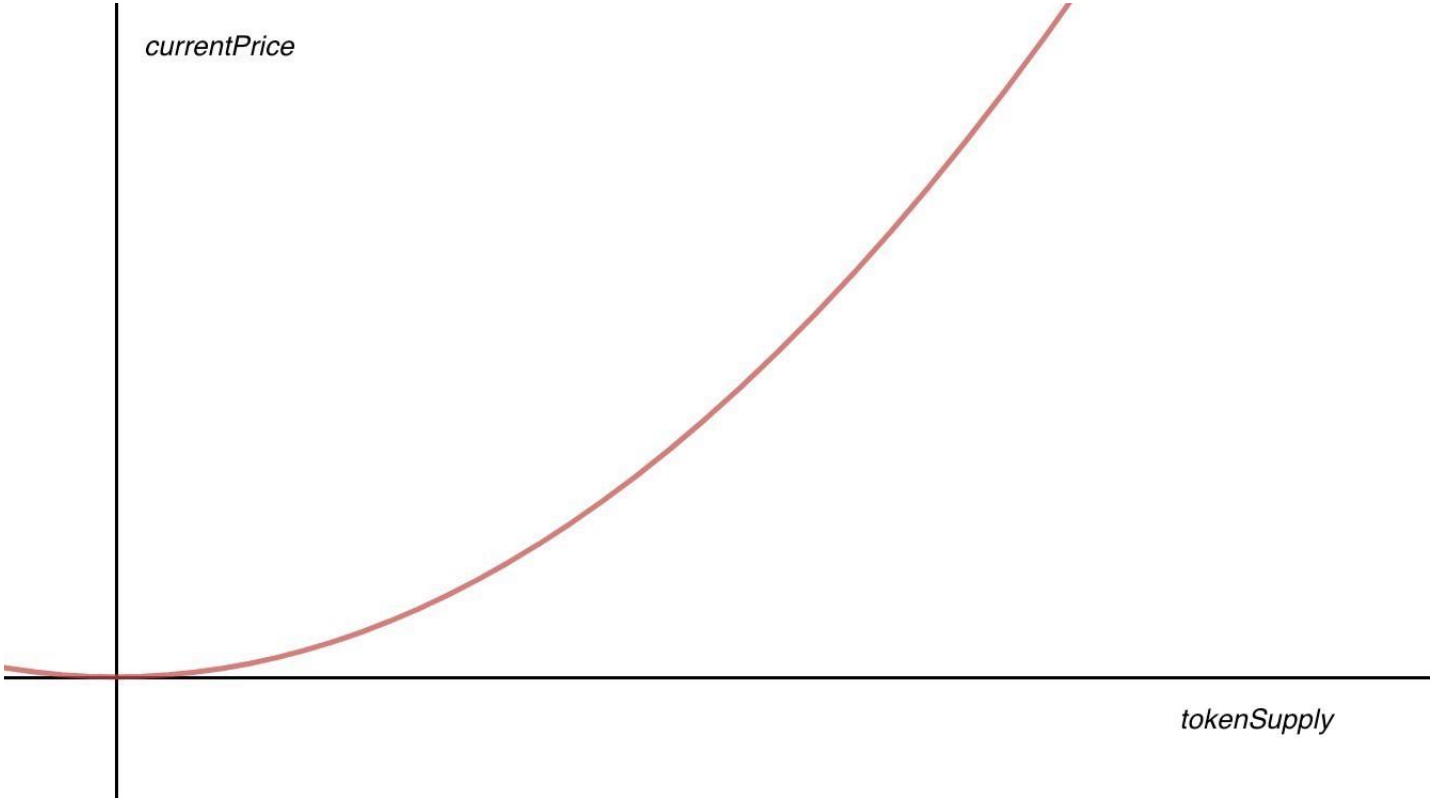
(2) Price per token: (10.826446281 tokens)² = $117.2119390754

(3) tokenSupply = 10
Total backing funds = $63.2657972249

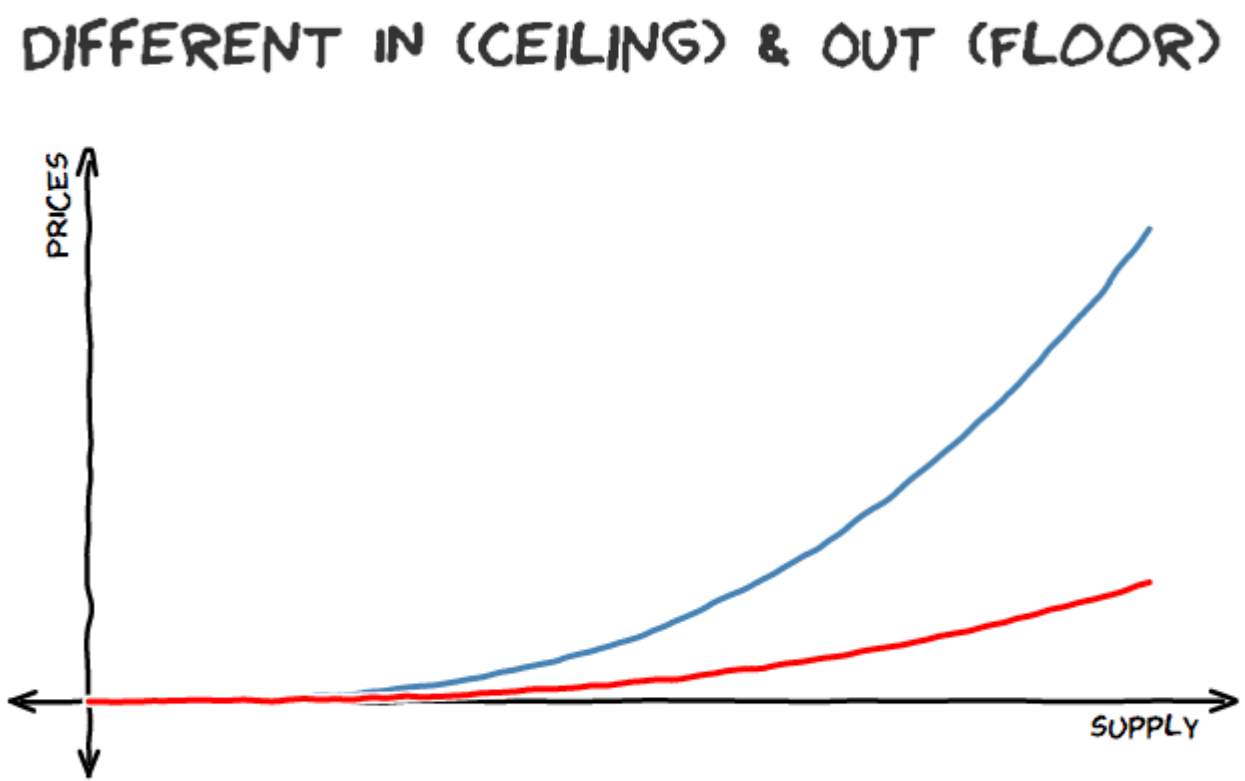
Sells 0.826446281
token

Receives $96.8693711377

$$currentPrice = tokenSupply^2$$

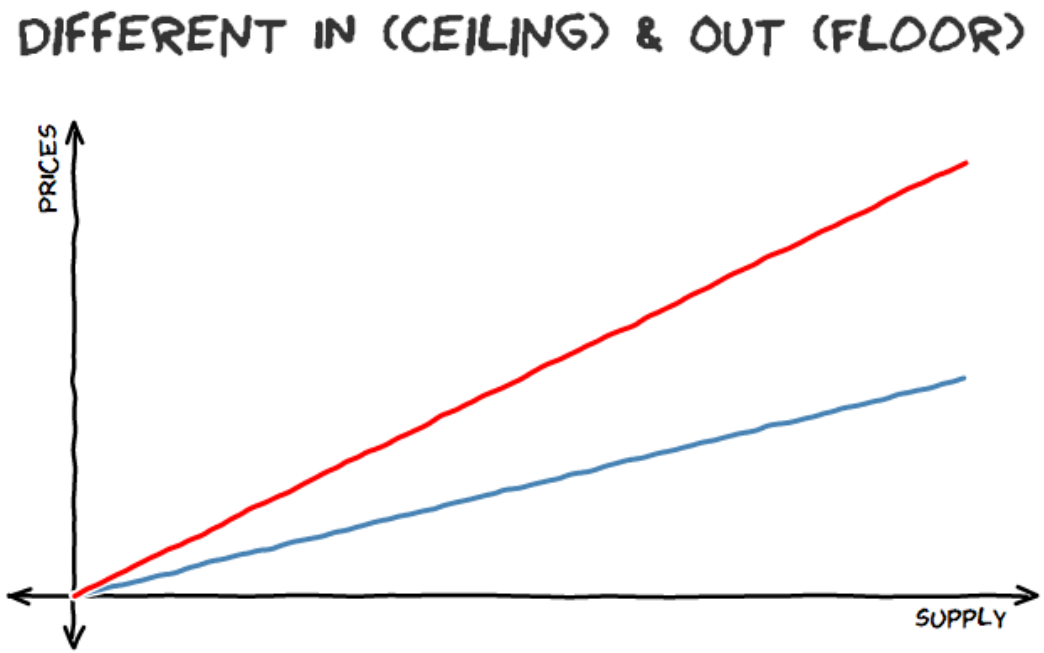


Exponential

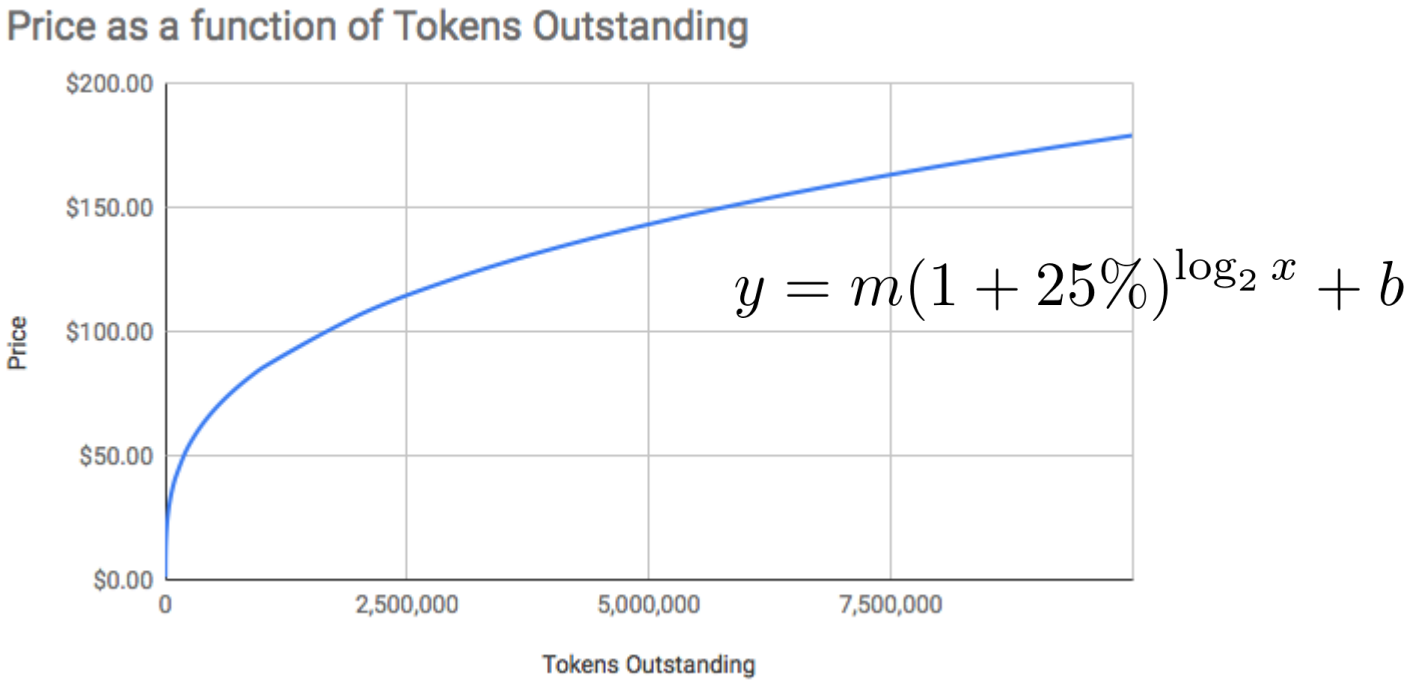


Floor != Ceiling

Linear

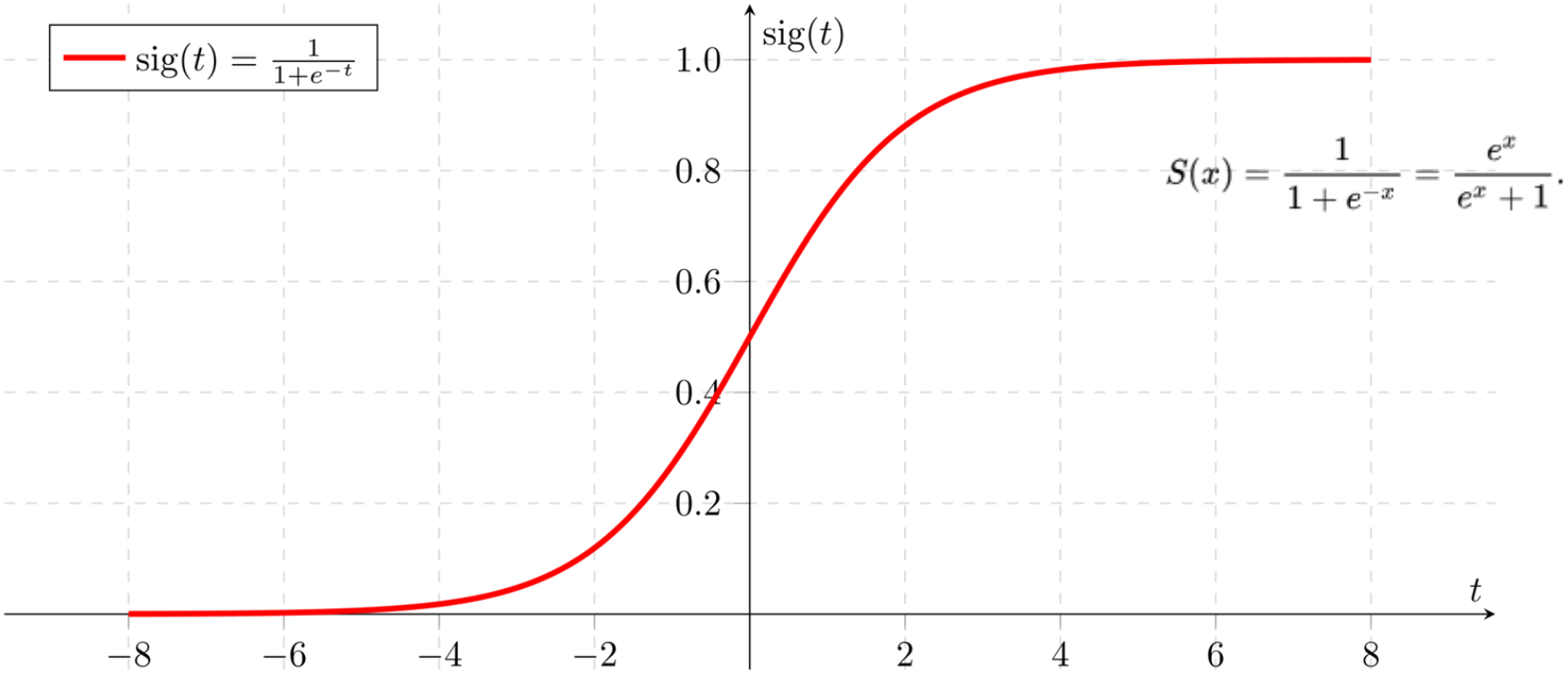


Rule based function



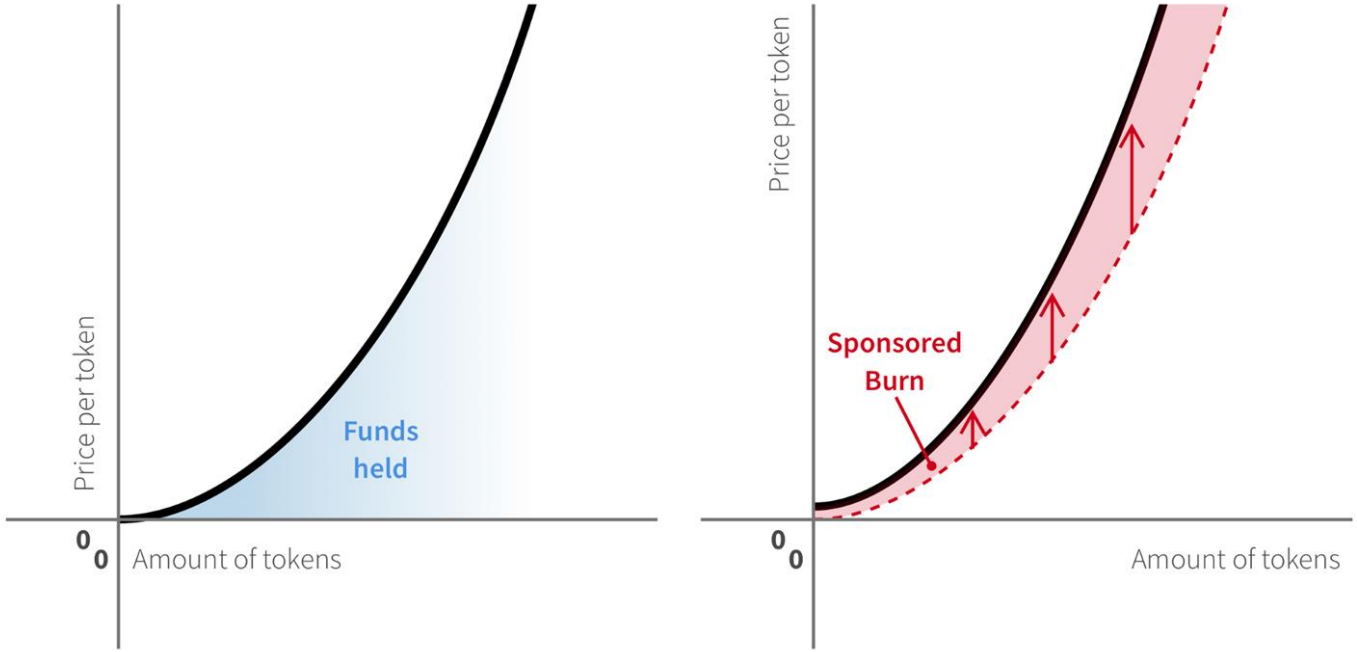
Token will appreciate by 25% for every doubling of the number of tokens issued

Sigmoid function

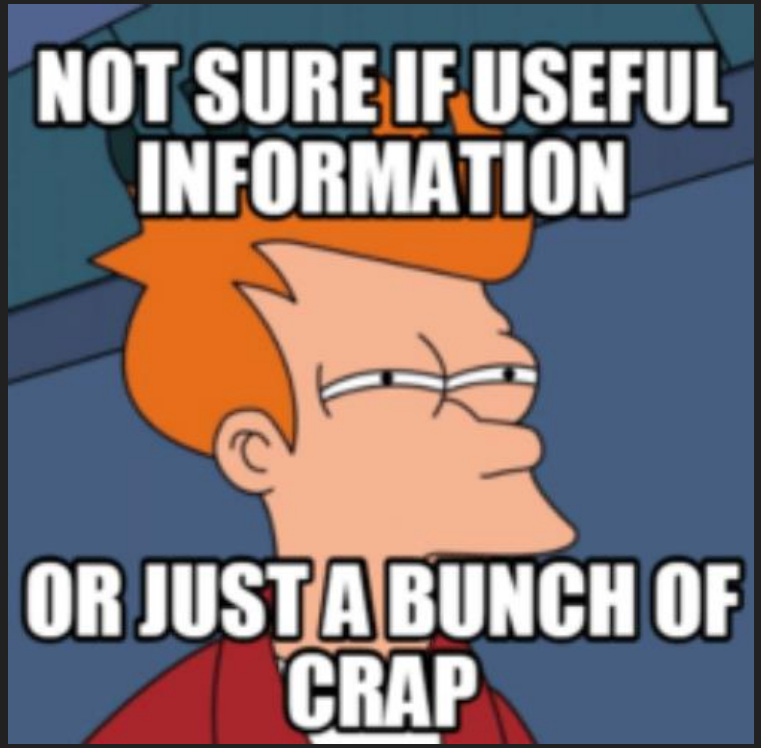


If we want price to stabilize after a certain point

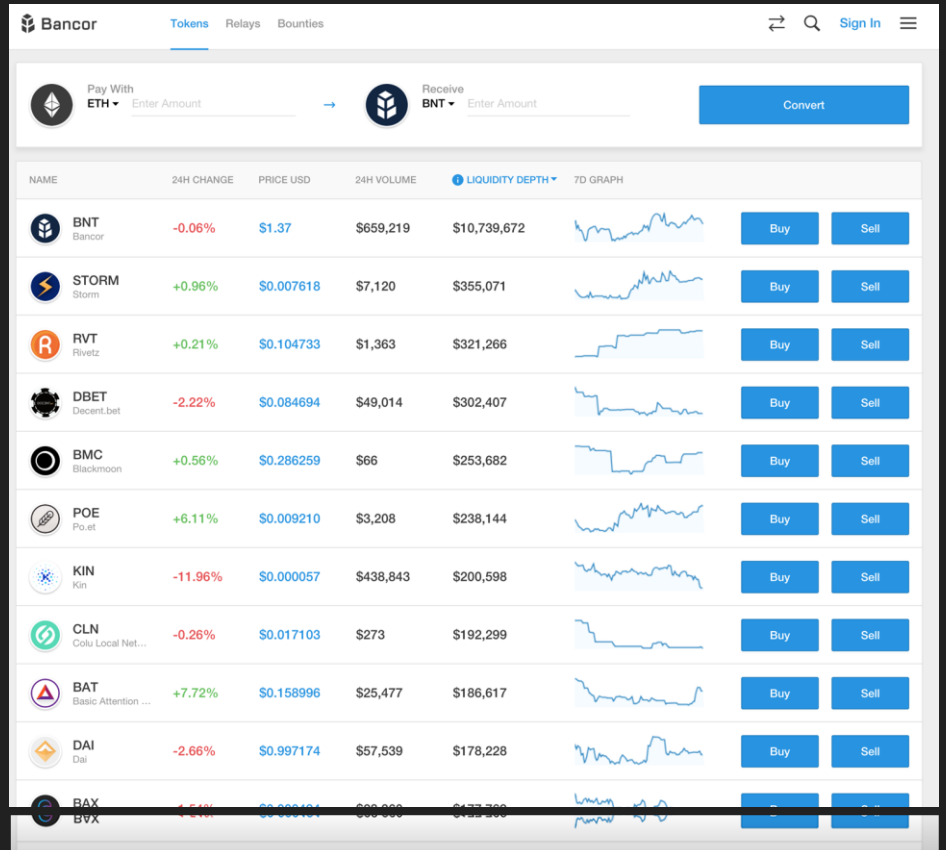
Sponsored burn



Everyone profits as curve is funded


NOT SURE IF USEFUL INFORMATION
OR JUST A BUNCH OF CRAP

Bancor



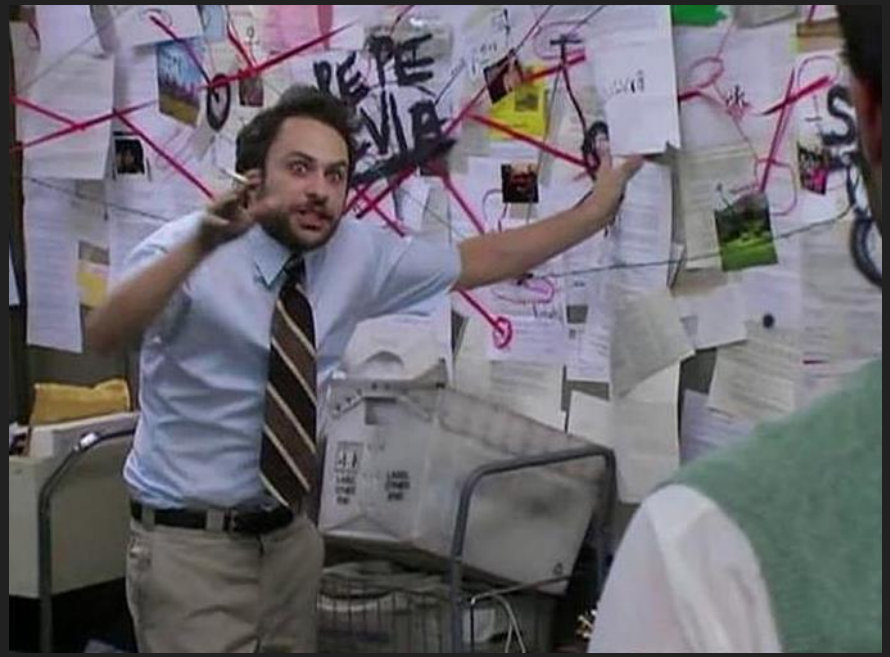
If a user buys a total of T tokens, bringing the total supply from S_0 to $S_0 + T$, the total paid amount is

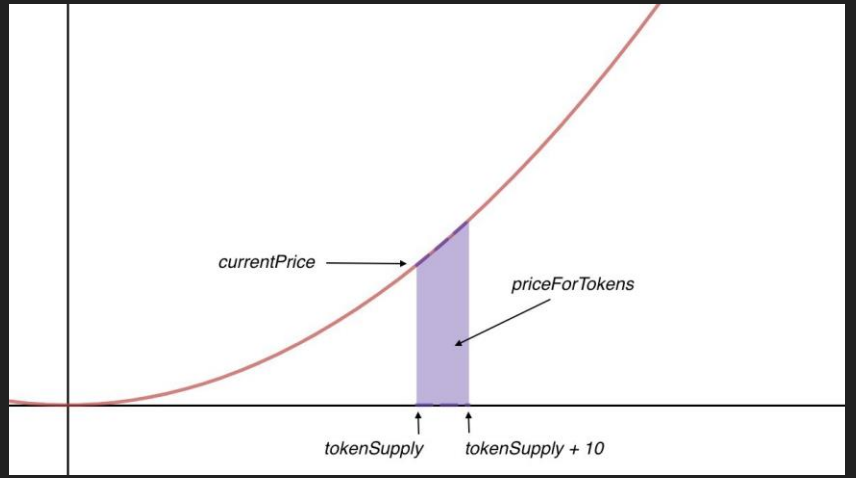
$$
\begin{aligned}
E &= \int_{S_0}^{S_0+T} P\, dS = \int_{S_0}^{S_0+T} P_0 \left(S/S_0\right)^{\alpha}\, dS = \\
&= P_0 S_0 \frac{(S/S_0)^{\alpha+1}}{\alpha+1}\Bigg|_{S=S_0}^{S_0+T} = P_0 S_0 \left(\frac{((S_0+T)/S_0)^{\alpha+1}}{\alpha+1} - \frac{(S_0/S_0)^{\alpha+1}}{\alpha+1} \right) = \\
&= \frac{P_0 S_0}{\alpha+1} \left(\left(1 + \frac{T}{S_0}\right)^{\alpha+1} - 1 \right) = F P_0 S_0 \left(\left(1 + \frac{T}{S_0}\right)^{1/F} - 1 \right) = \\
&= R_0 \left(\left(1 + \frac{T}{S_0}\right)^{1/F} - 1 \right) = R_0 \left(\sqrt[F]{1 + \frac{T}{S_0}} - 1 \right)
\end{aligned}
$$

From this we can deduce the amount of tokens T obtained by paying E:

$$
\begin{aligned}
E &= R_0 \left(\sqrt[F]{1 + \frac{T}{S_0}} - 1 \right) \\
1 + \frac{E}{R_0} &= \sqrt[F]{1 + \frac{T}{S_0}} \\
\left(1 + \frac{E}{R_0}\right)^F &= 1 + \frac{T}{S_0} \\
T &= S_0 \left(\left(1 + \frac{E}{R_0}\right)^F - 1 \right)
\end{aligned}
$$

Bancor




currentPrice
priceForTokens
tokenSupply
tokenSupply + 10

Ocean

Problem: Getting good quality AI datasets

Each datastore gets its own bonding curve

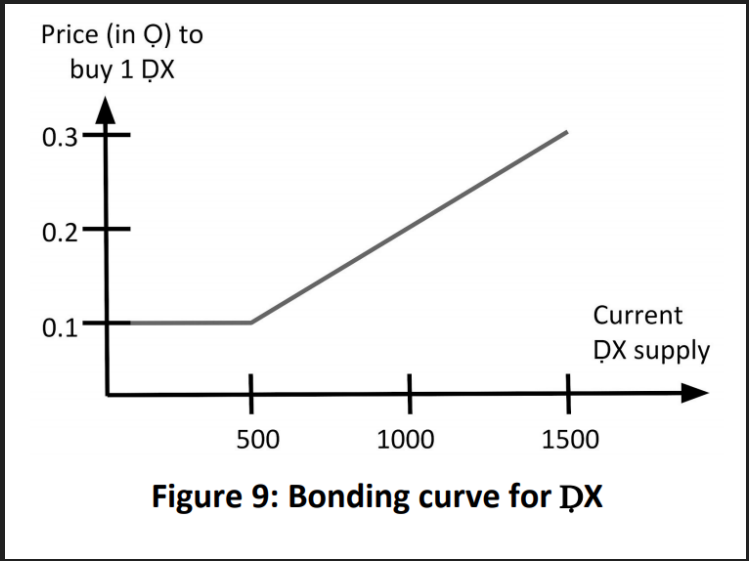


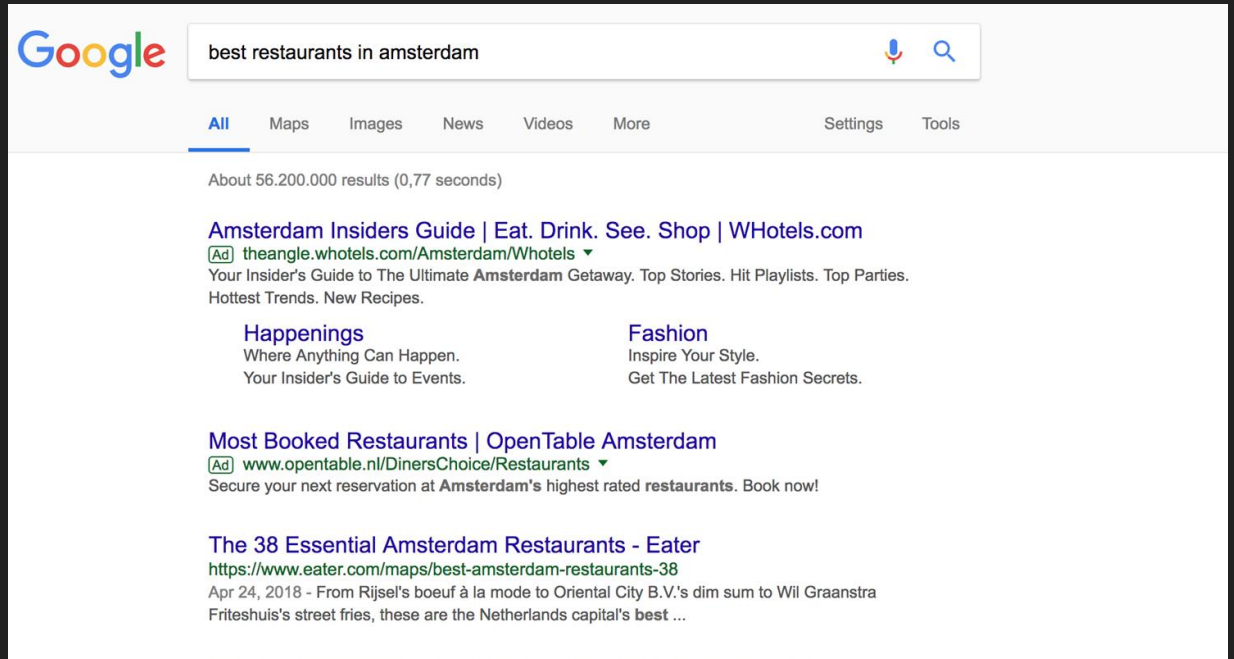
Figure 9: Bonding curve for Ḍ̣X

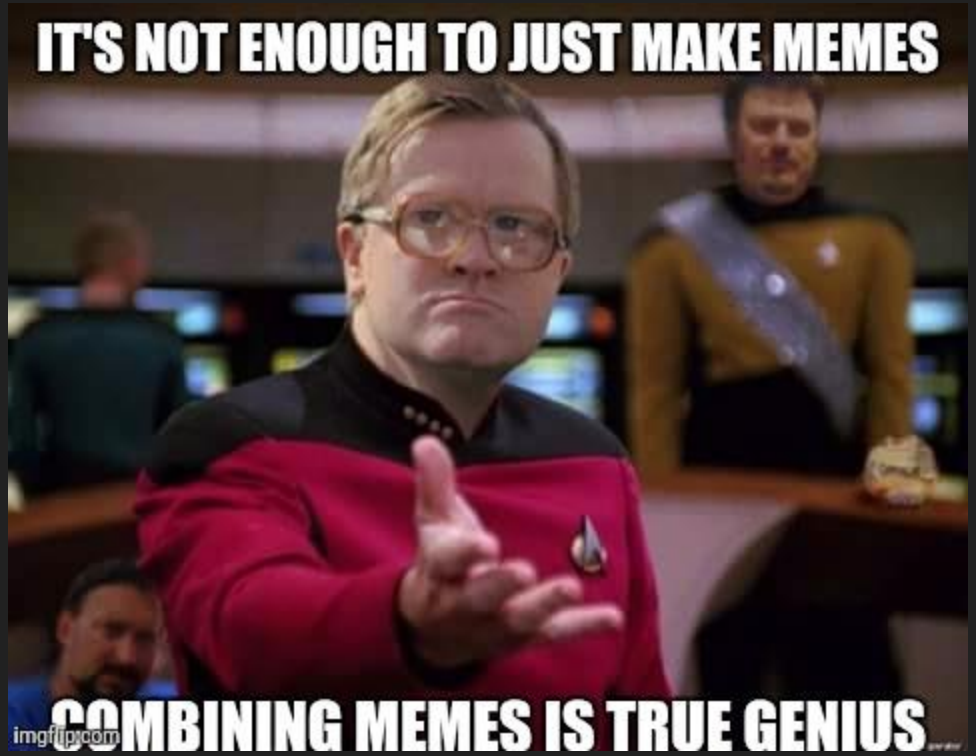
Token Curated Registries (TCRs)

Curate a list, in a decentralised way, using economic incentives

Token Curated Registries (TCRs) / Curation markets

Curate a list, in a decentralised way, using economic incentives

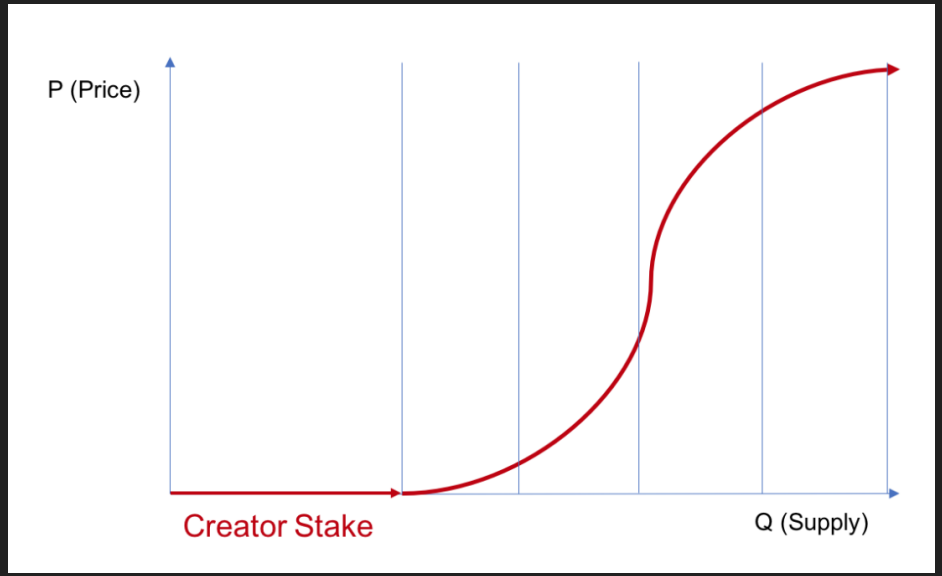


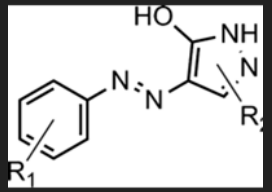

IT'S NOT ENOUGH TO JUST MAKE MEMES
COMBINING MEMES IS TRUE GENIUS
imgflip.com

Molecule.to

Problem: funding potentially world changing drugs

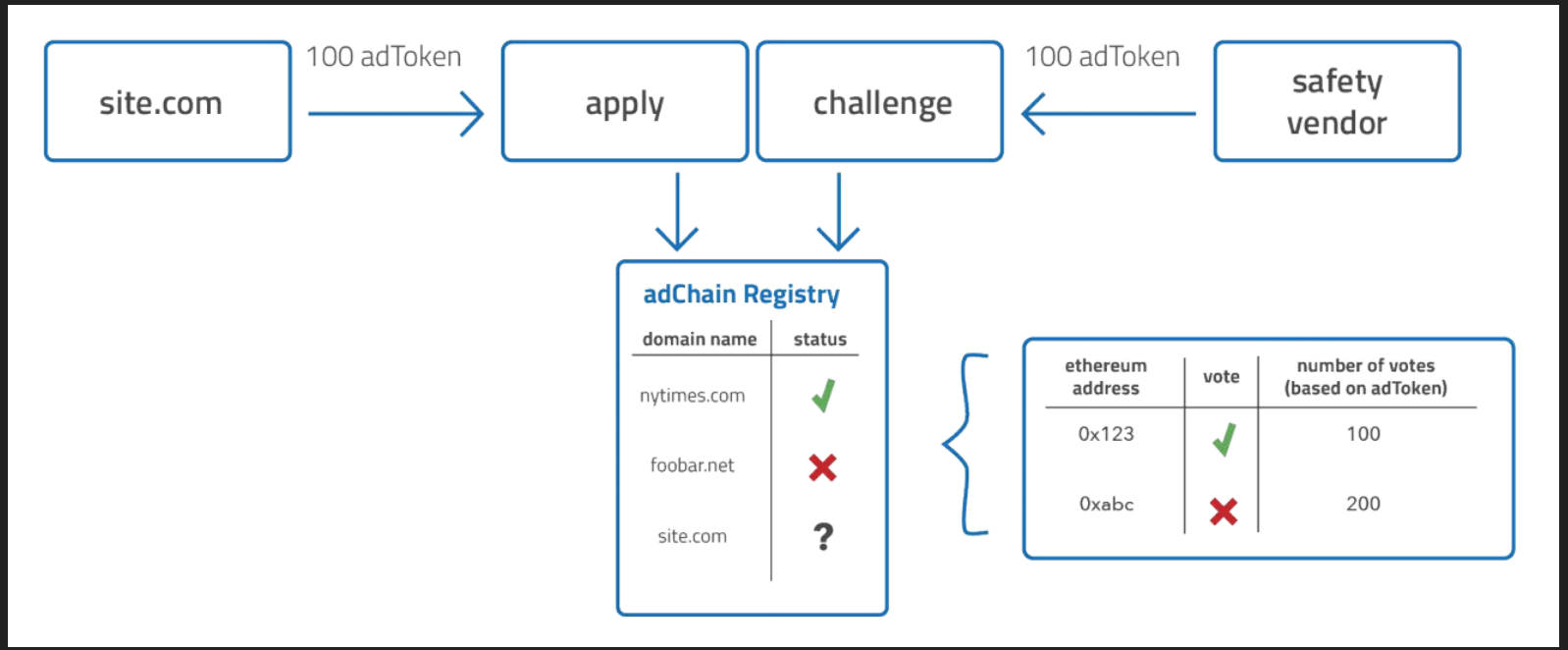
NFTs, Funding, TCR, Token bonding curves





AdChain

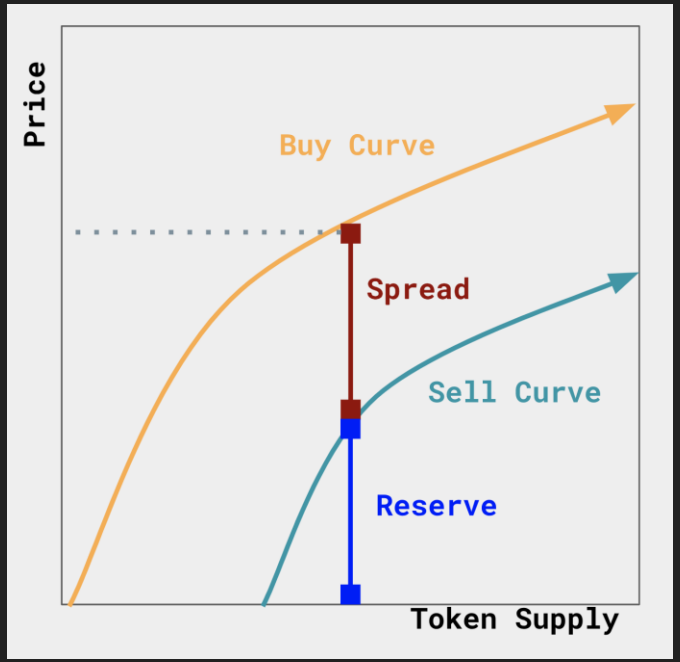
Problem: Advertisers having the ads shown on fraudulent websites




BUT WAIT!
THERE'S MORE!
ICANHASCHEEZBURGER.COM

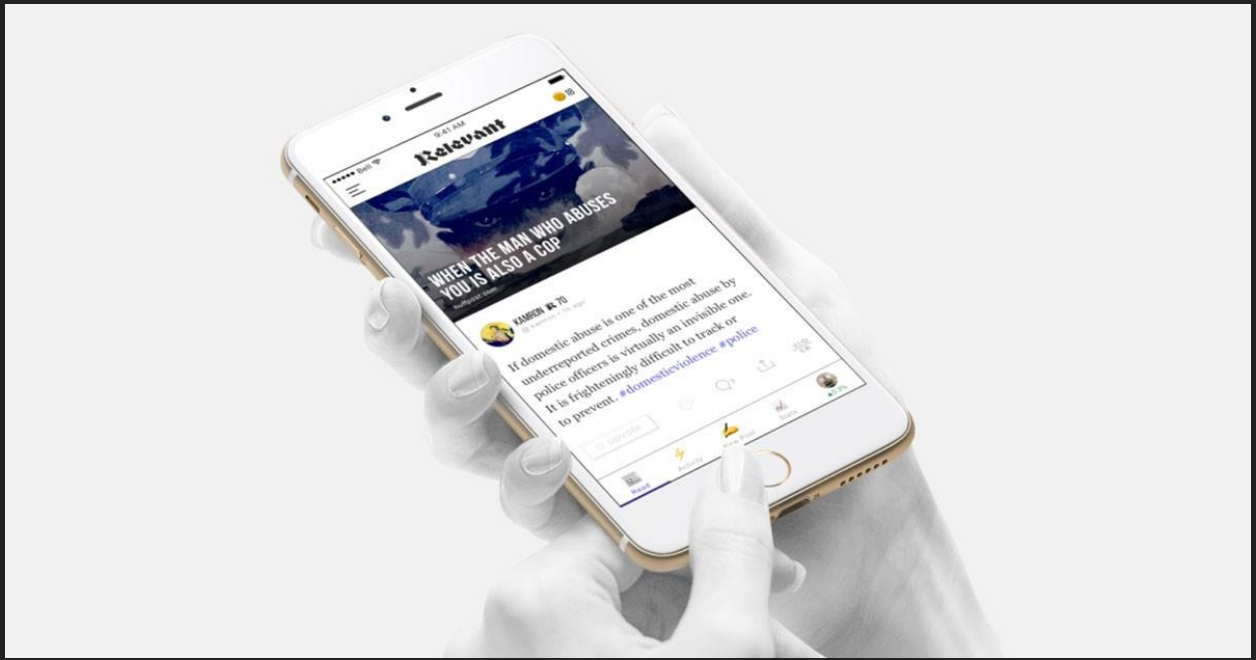
Convergent

Personal tokens to tokenize your work



Relevant

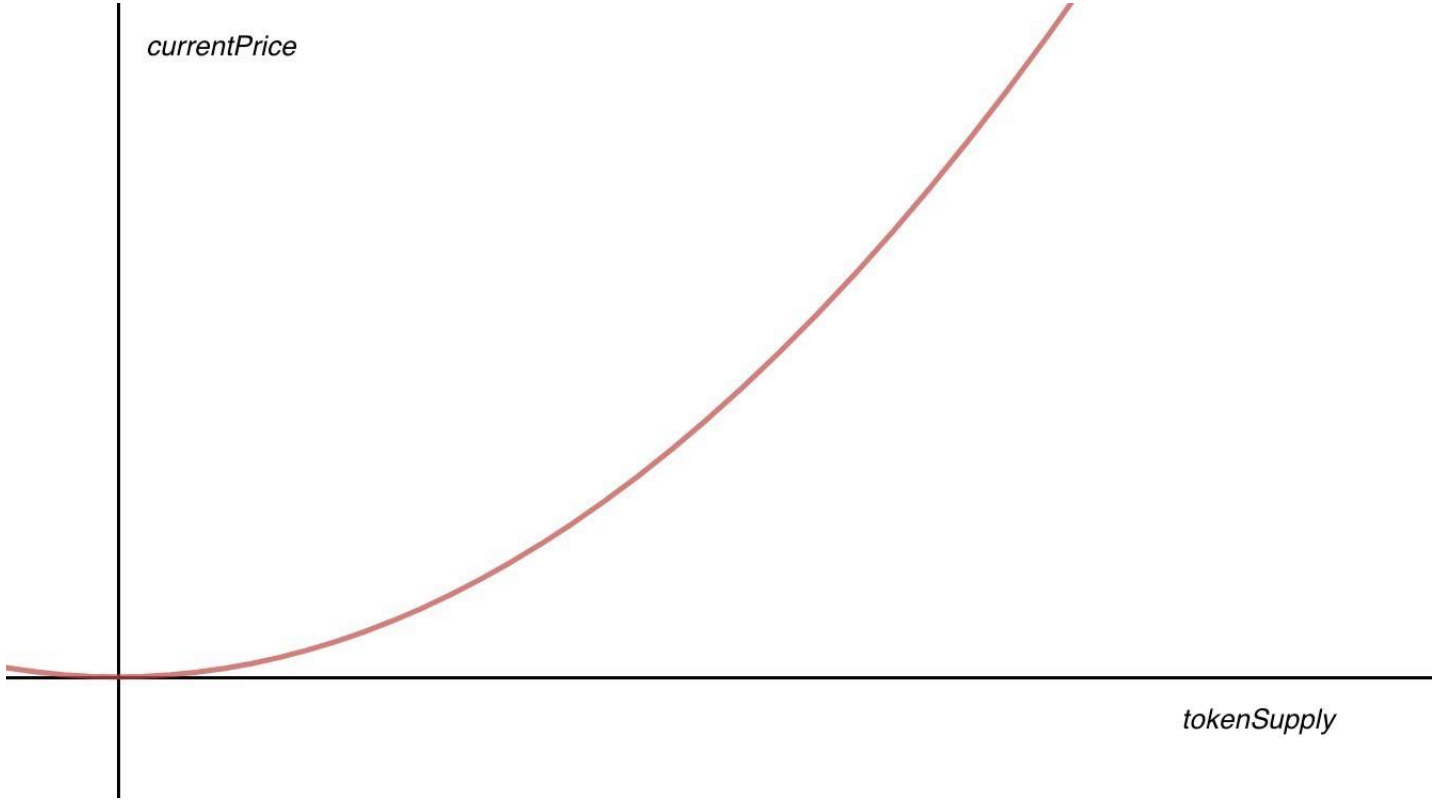
Curating news and content with bonding curves (instead of clicks)

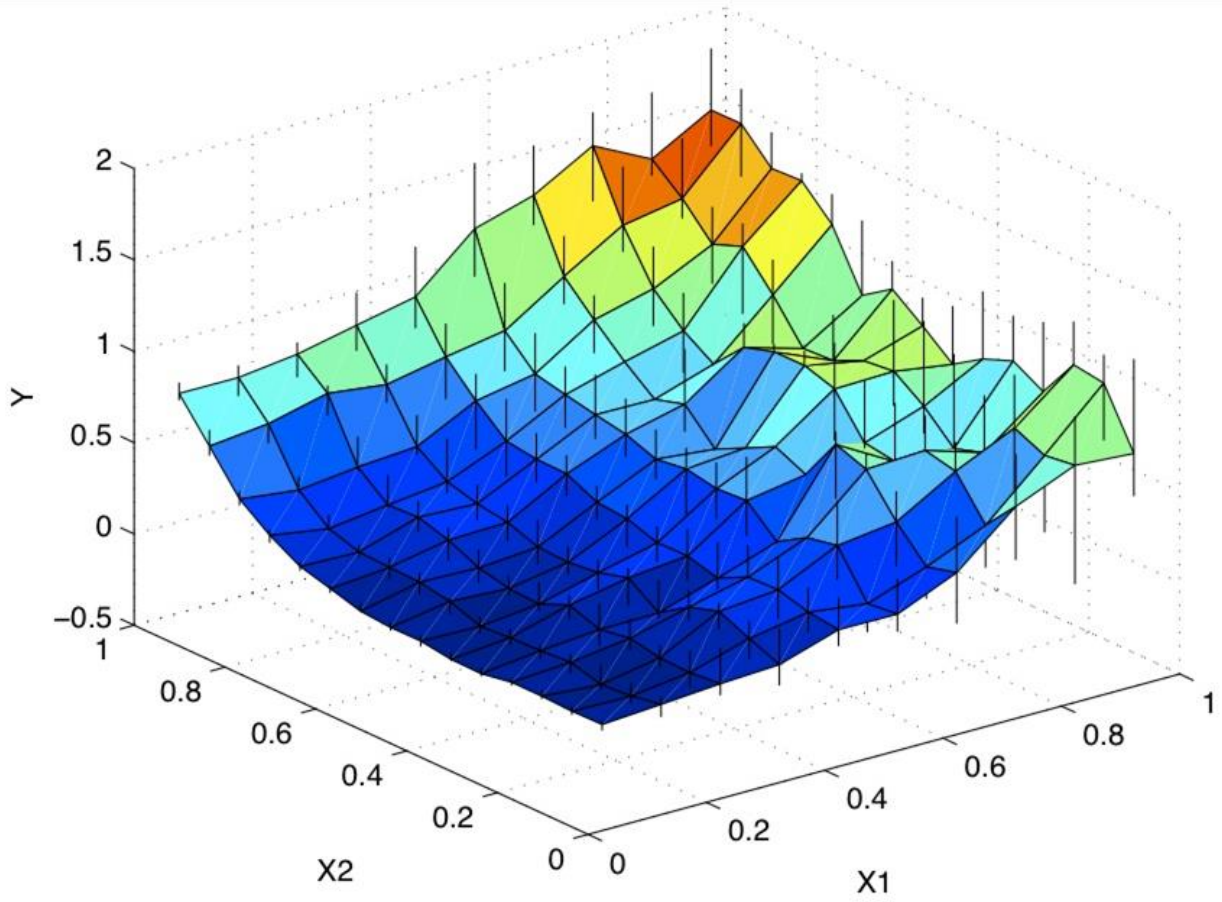



IS THAT ALL YOU GOT?
memegenerator.net

Bonding curves can be multi-faceted

However most of the research and applications focus on 2D

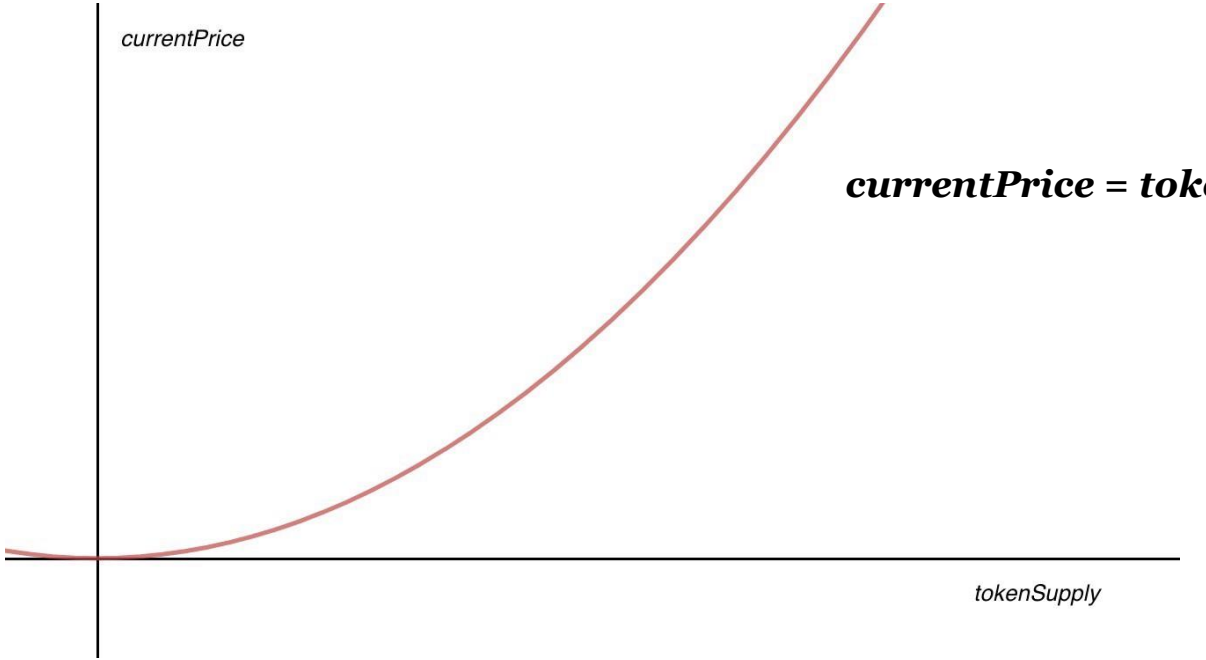

currentPrice
tokenSupply


Y
2
1.5
1
0.5
0
−0.5
X2
1
0.8
0.6
0.4
0.2
0
X1
0
0.2
0.4
0.6
0.8
1


I WANT IT TO BE
DYNAMIC
memegenerator.net

Dynamic Token Bonding Curves

Problem: how to incentivise and reward early participants fairly, penalise ‘free-loaders’



$$currentPrice = tokenSupply^2$$

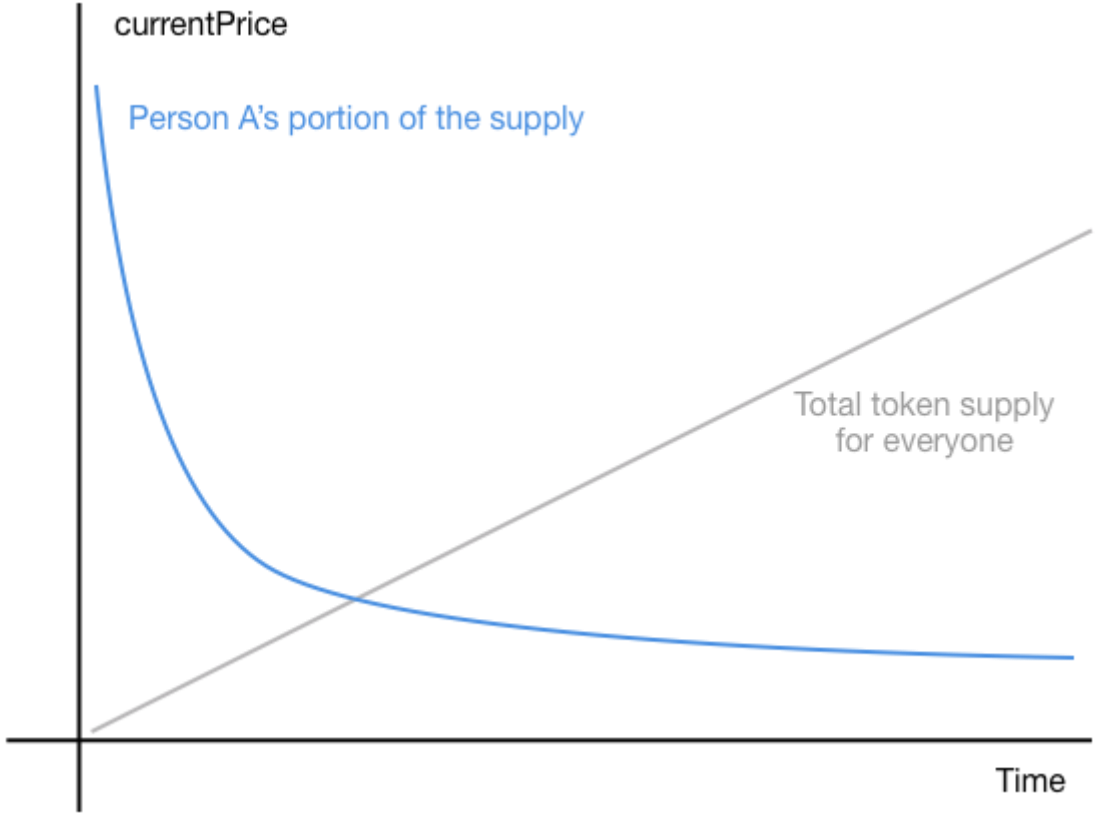
Dynamic Token Bonding Curves

Problem: how to incentivise and reward early participants fairly, penalise ‘free-loaders’

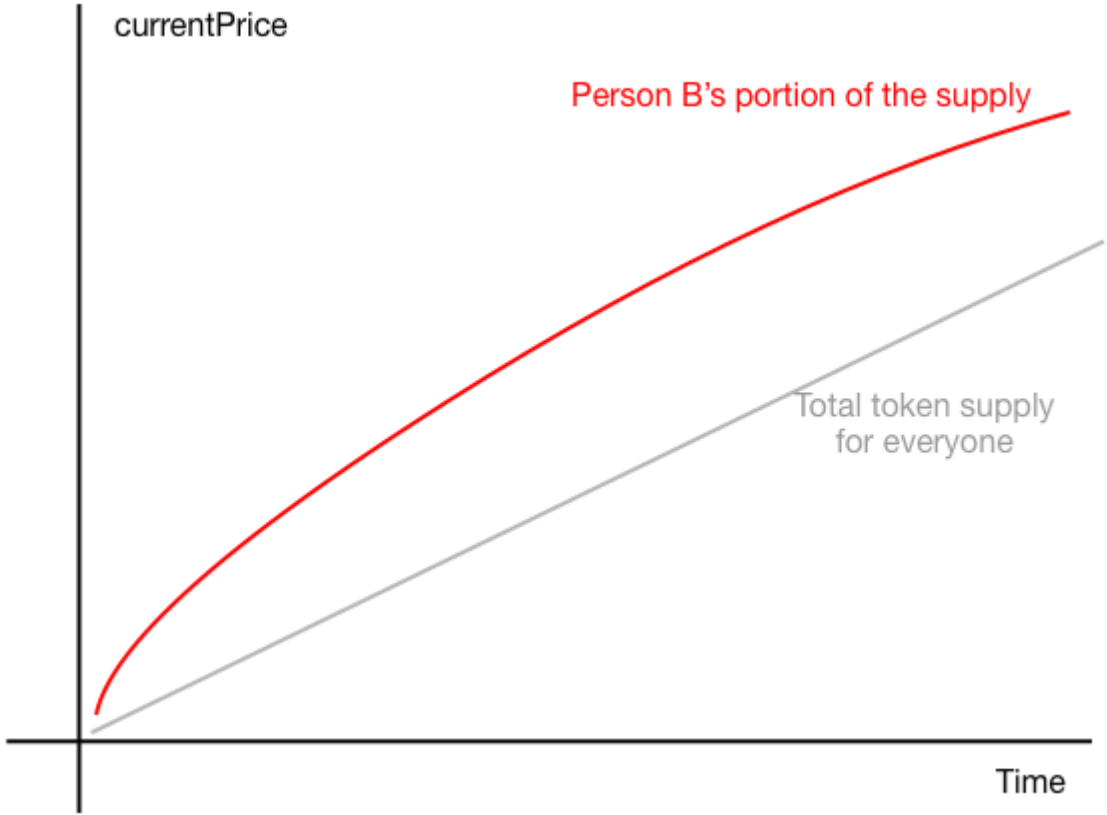
$$currentPrice_i = f\left(\frac{numberOfTokens_i}{tokenSupply_{total}}\right)$$

The current price of the token is a function of the individual’s portion of the total supply.

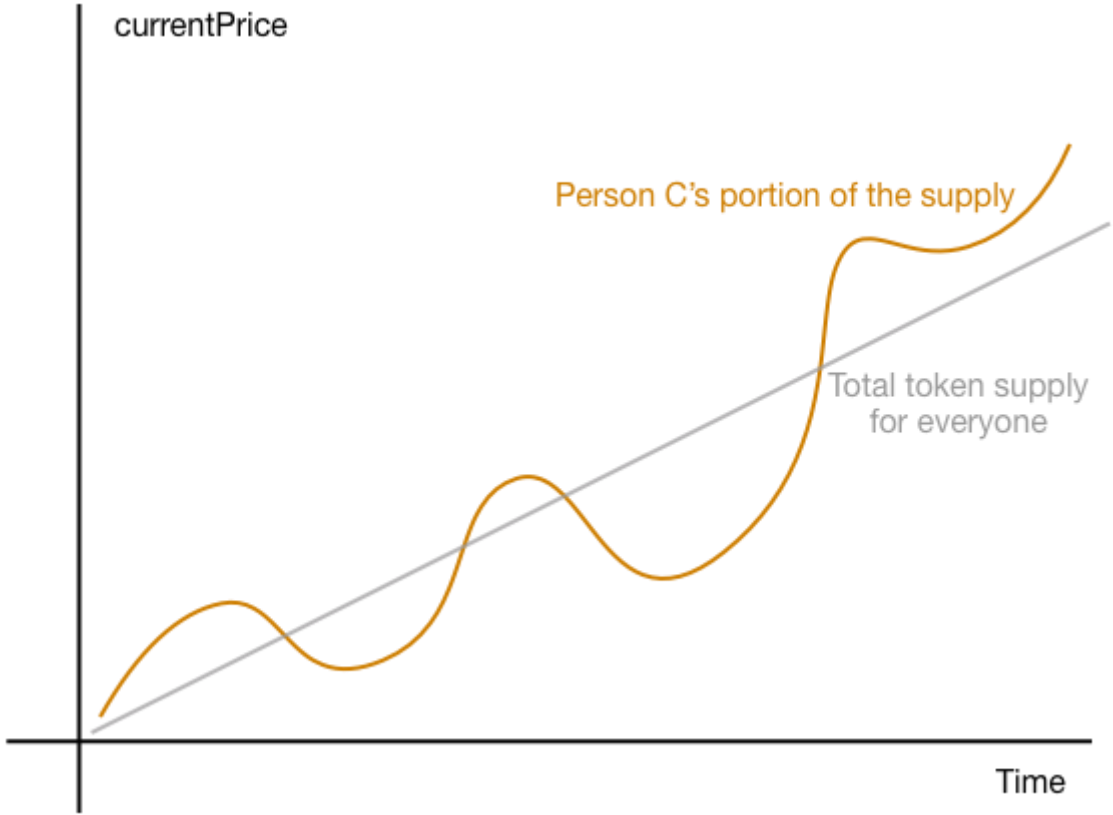
Dynamic Token Bonding Curves



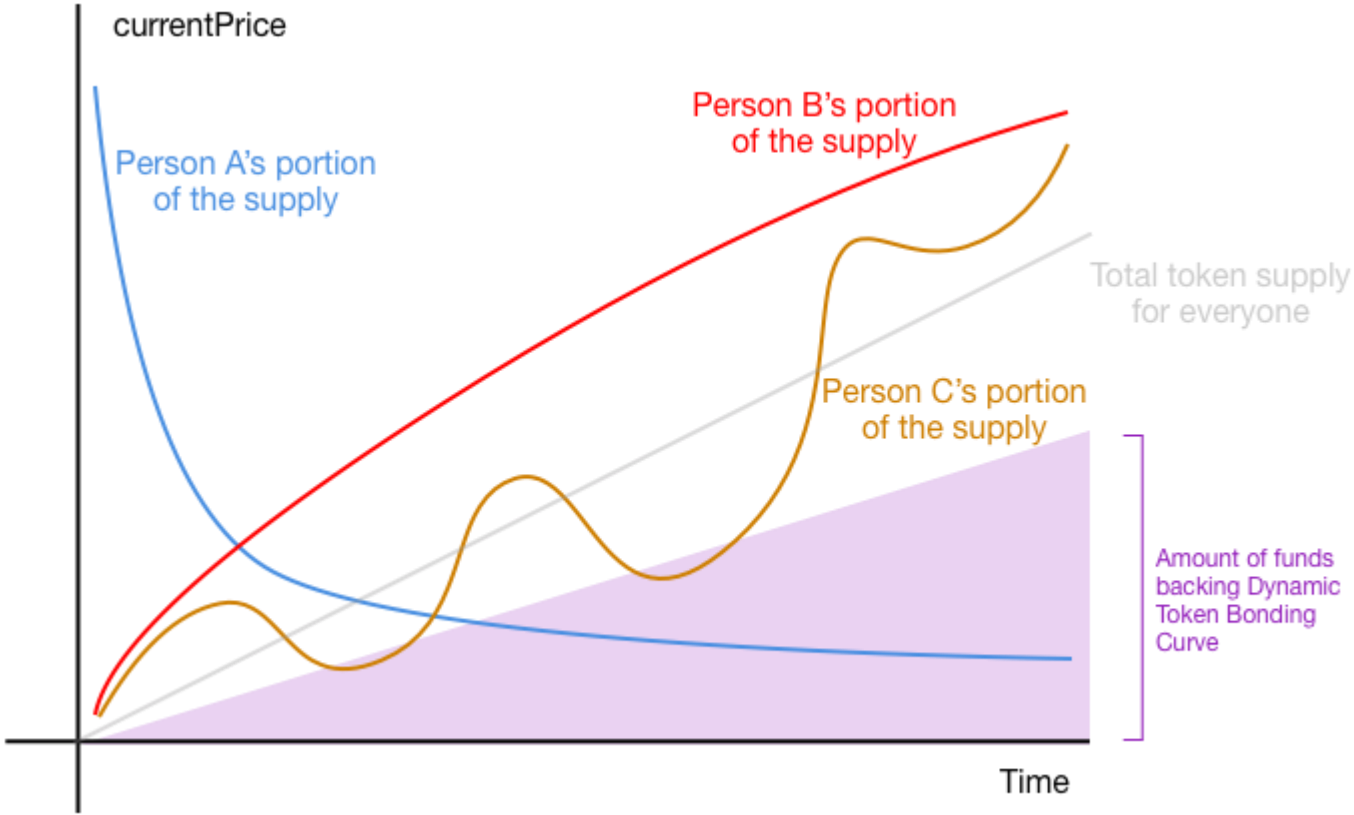
Dynamic Token Bonding Curves



Dynamic Token Bonding Curves



Dynamic Token Bonding Curves



Dynamic Token Bonding Curves

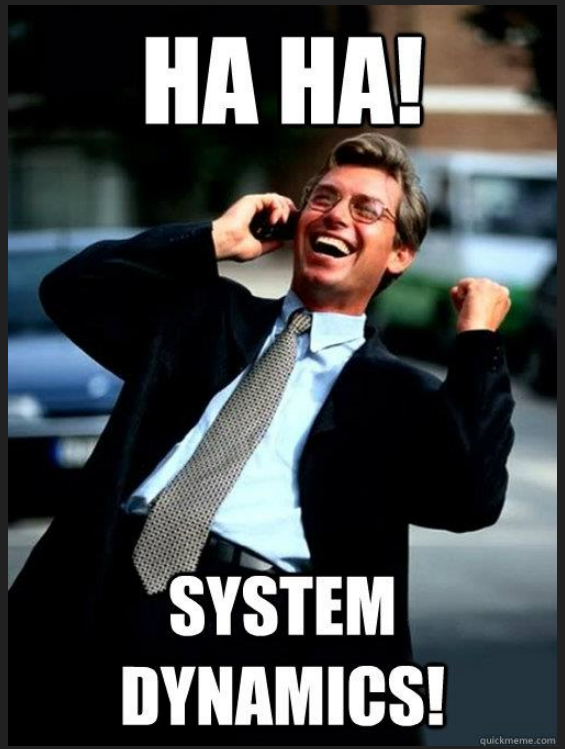
Contribute early and often = very high value

Contribute often = high value

Contribute occasionally = some value

Contribute rarely = small value

Never contribute = no value



Other use cases for Dynamic Token Bonding Curves

Bonded contributions (communities, product development, bounty allocation)

Bonded donations (who has helped charity the most)

Bonded governance (who gets to govern)

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http://khana.io

http://buidl.amsterdam