

# Economics of token-based projects

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# | Agenda

1. Introduction
2. Platform economics
3. Monetary economics
4. Application
5. Discussion

# About cryptecon



## Who we are

- Blockchain research and consulting since 2013
- Advice to large enterprises and start-ups worldwide
- Division of swiss economics
- Co-operation with academia



## What we do

- Economic mechanisms in Blockchains
- Economics of Blockchain applications
- Analysis of Token Economies



## How we do it

- Numerical simulations
- Game theoretical analysis
- Financial modelling

## About us



**Dr Christian Jaag**  
Founder & Counsel

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Christian Jaag is Founder and Counsel of the Center for Cryptoeconomics. He is also Founder and Counsel of Swiss Economics and Lecturer at École polytechnique fédérale de Lausanne. He advises corporate and public-sector clients on strategic issues pertaining to blockchain technology and cryptoeconomics. After his studies in St.Gallen (HSG) and Paris (ESCP) he received a Ph.D. in Economics and Finance. He was a visiting scholar at the Economics department of Rutgers University.



**Matthias Hafner**  
Managing Director

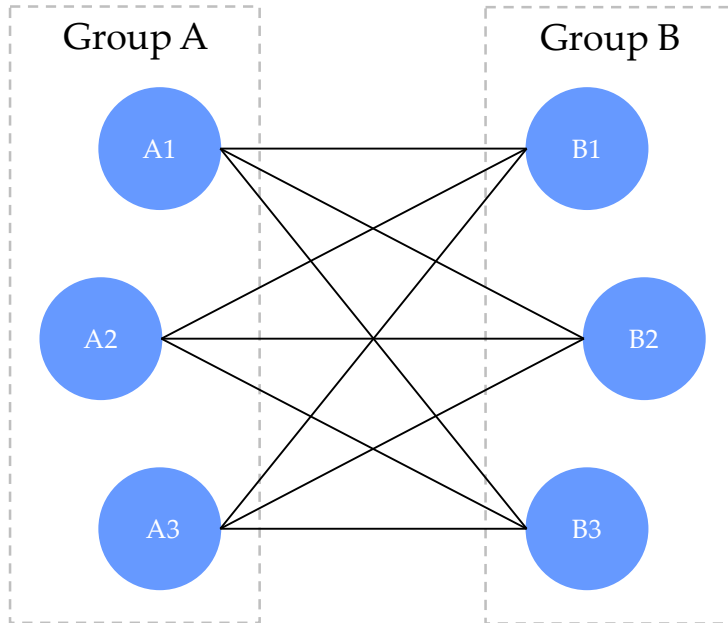
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Matthias Hafner is Managing Director with the Center for Cryptoeconomics. He focuses on projects related to competition, blockchain applications, and token economics. Using economic theory and simulations techniques he has successfully advised numerous Blockchain projects up to date. Matthias is also a Project Manager with Swiss Economics where he focuses on projects related to competition, valuation, and regulation. Before he joined cryptecon and Swiss Economics he worked for the Swiss Competition Commission and completed his master's degree in Economics at the University of Zurich.

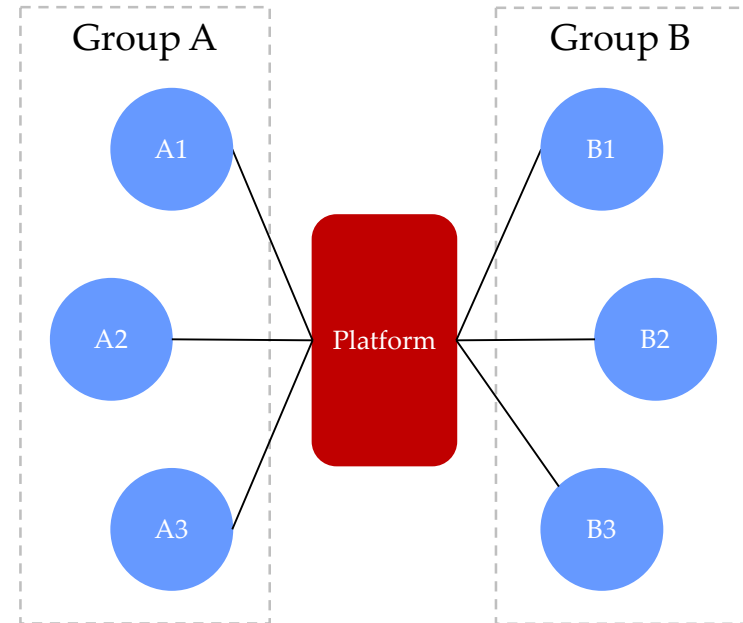
# Platform economics

# Platform characteristics I

Direct interaction between groups



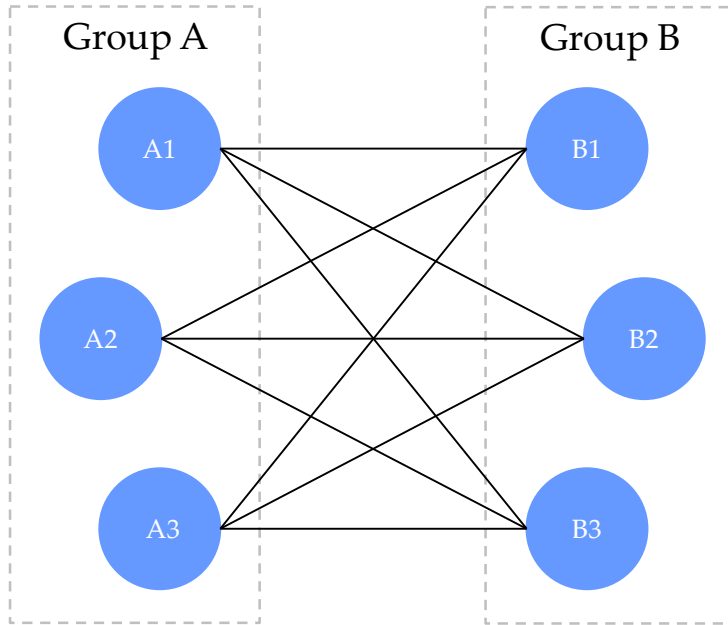
Intermediary between groups



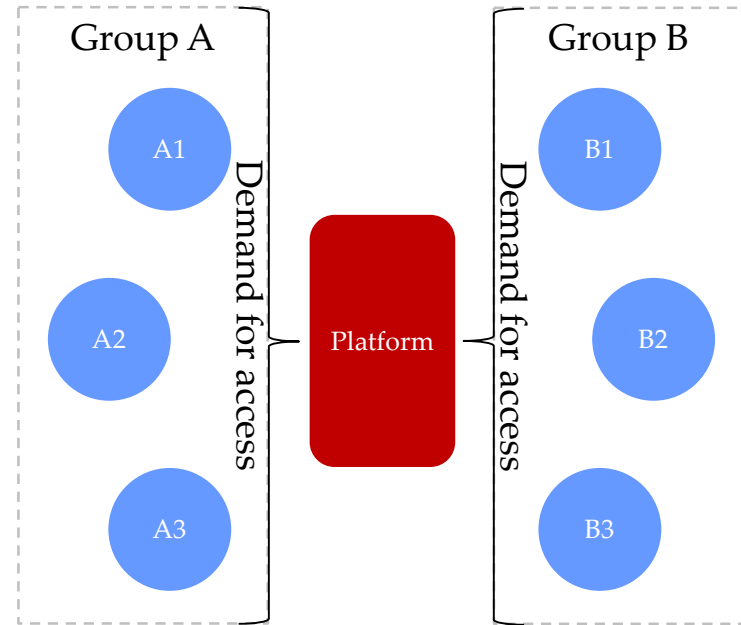
A platform is an institution that facilitates interactions between groups by reducing search costs

## Platform characteristics II

Direct interaction between groups



Intermediary between groups

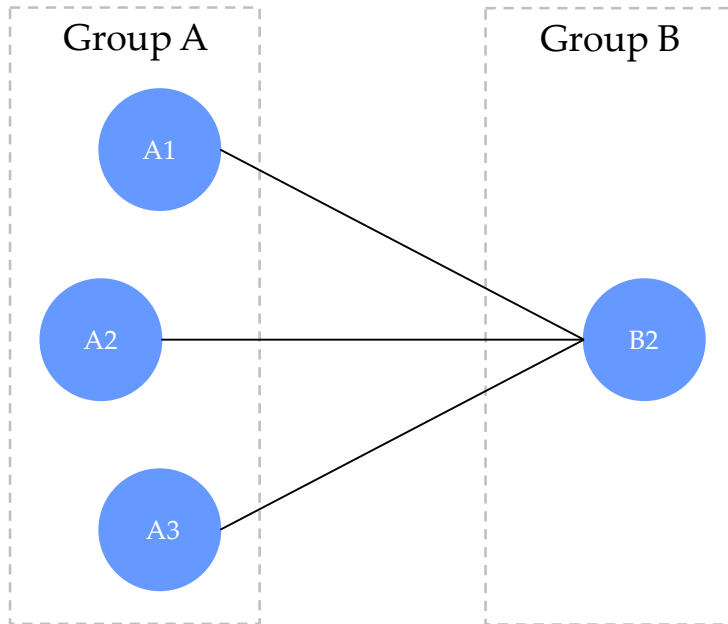


Platforms create multi-sided markets

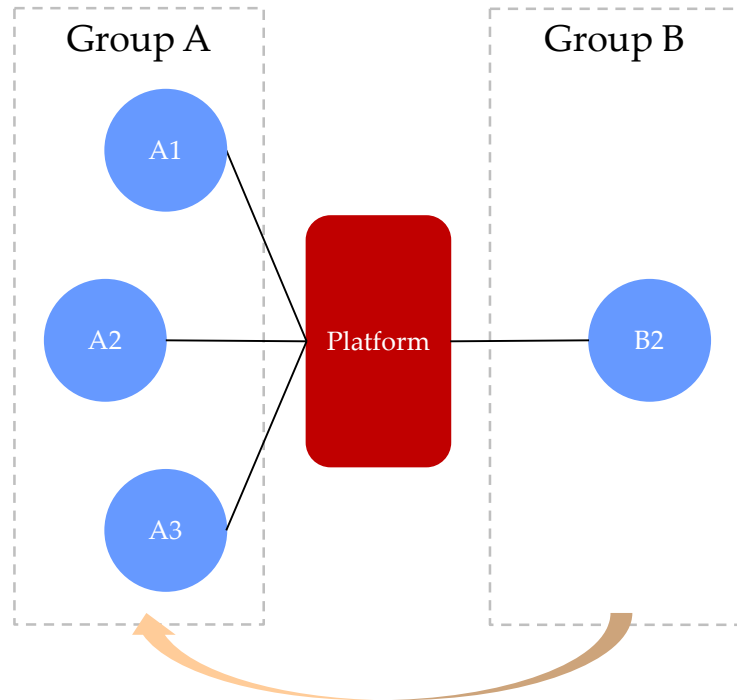
Each multi-sided market includes a platform

## Platform characteristics III

Direct interaction between groups



Intermediary between groups



Network effect: the higher number of one group the higher the utility of the platform for the other group (at least in one direction)

A platform becomes more valuable for one group if number of individuals of the other group increases (at least in one direction)



# Main decisions

## Pricing

Price type

Price level

Subsidy

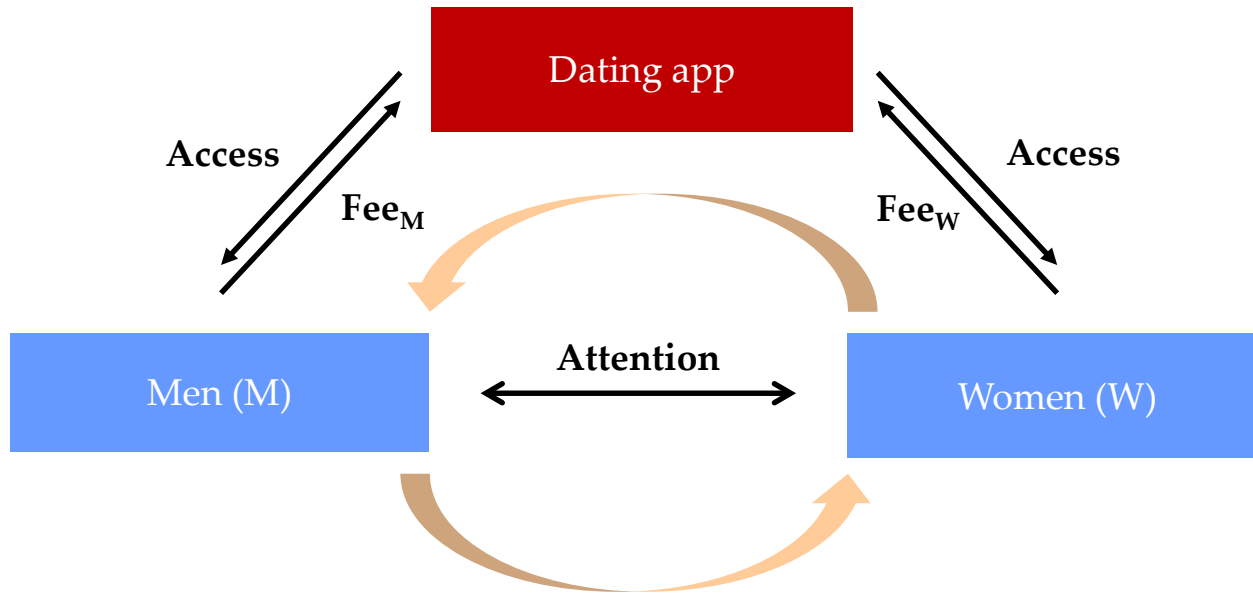
## Information

Review system

# Price type: Platform categorization

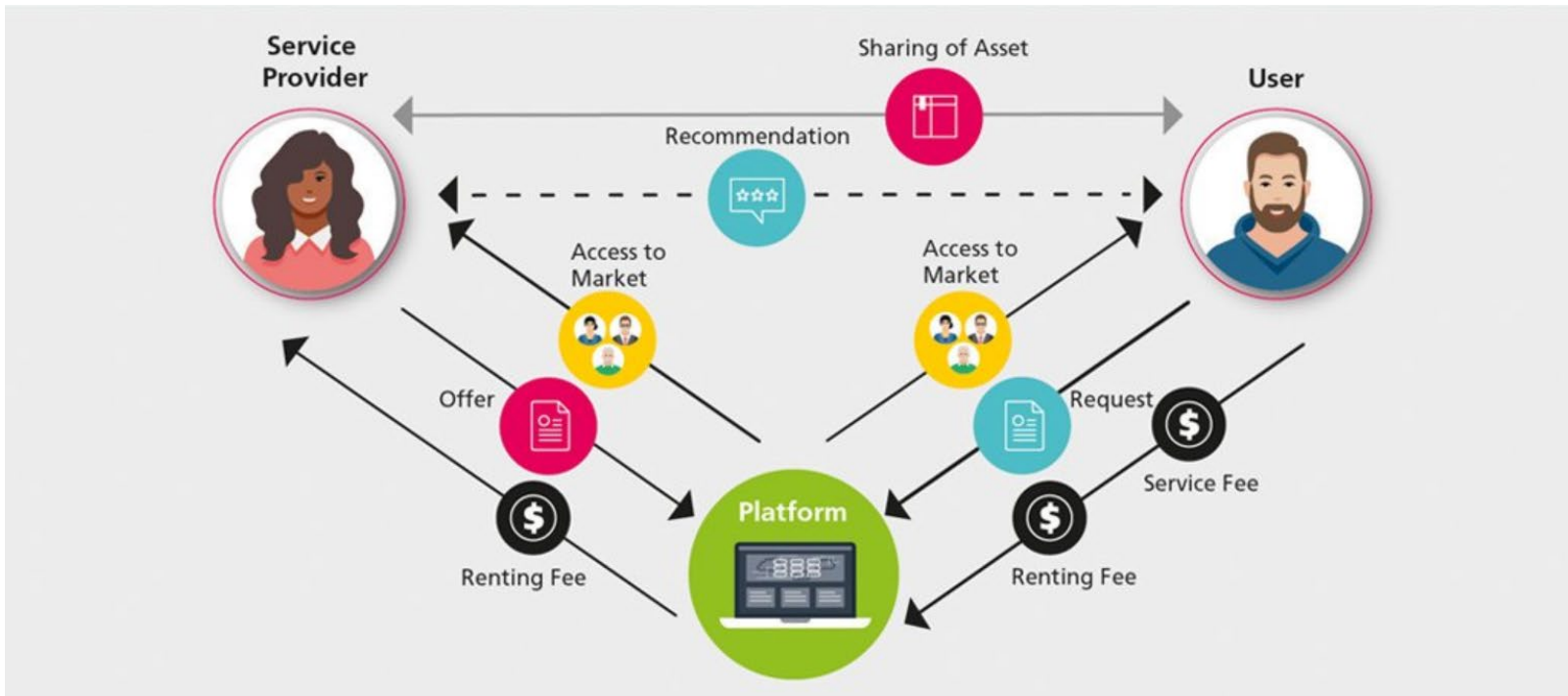
	<b>Non-Transaction</b>	<b>Transaction</b>
<b>Matching Service-based</b>	<ul style="list-style-type: none"><li>• Dating apps</li><li>• Real estate platforms</li></ul>	<ul style="list-style-type: none"><li>• Airbnb</li><li>• Amazon</li></ul>
<b>Audience-Providing Subsidy based</b>	<ul style="list-style-type: none"><li>• Newspapers</li><li>• Other media</li></ul>	<ul style="list-style-type: none"><li>• Youtube</li><li>• Facebook</li></ul>

## Price Type: Example Dating app



Platform cannot observe whether the transaction was successful  
Both groups exert a positive externality on each other  
Usage fees which are different for the two groups

## Price Type: Example Airbnb

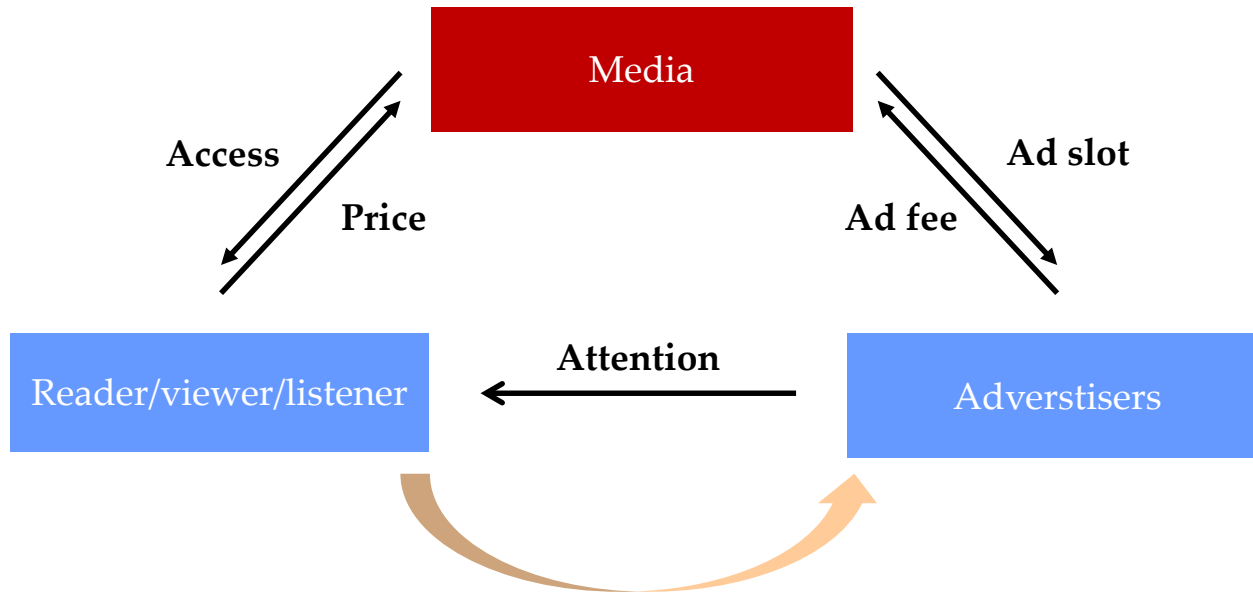


Platform can observe whether the transaction was successful

Both groups exert a positive externality on each other

Fee per transaction which are different for the two groups

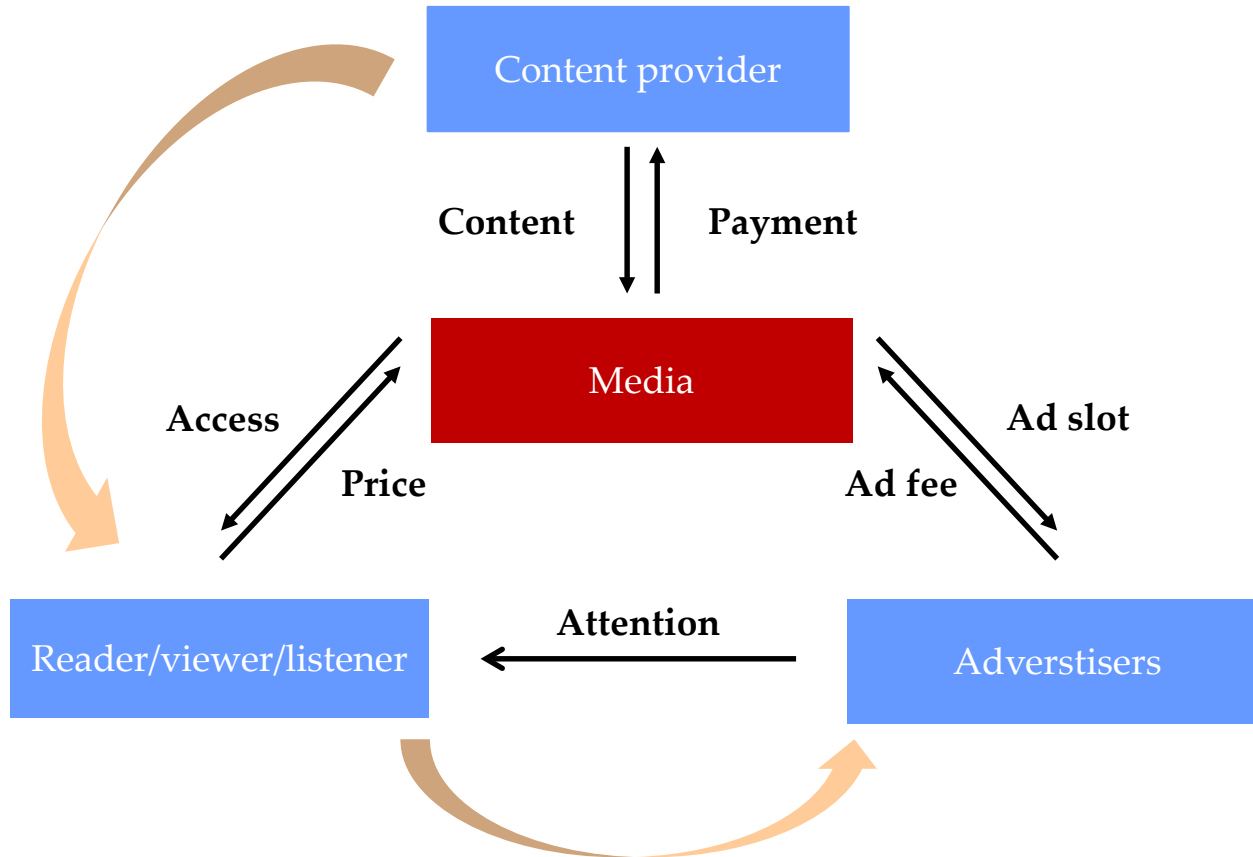
# Price Type: Example Media (newspaper, TV, radio) I



Platform cannot observe whether the transaction was successful

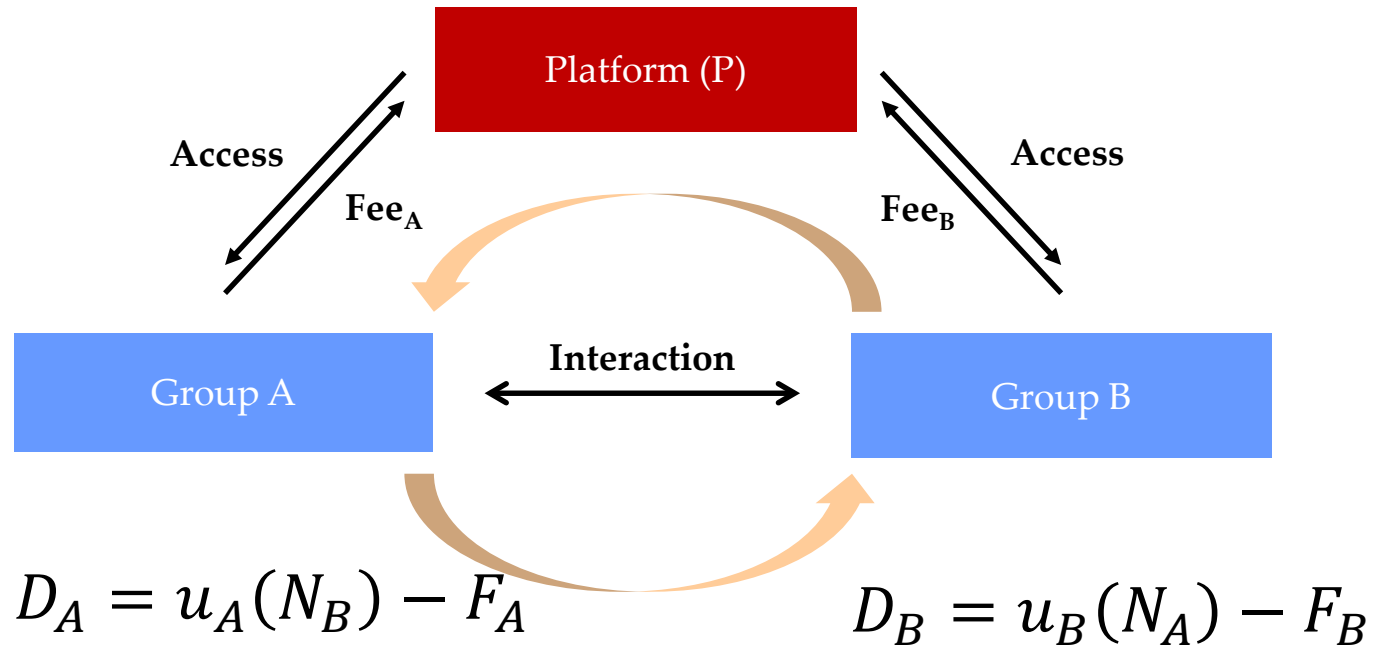
Mainly readers/viewers/listener exert a positive externality on advertisers (not vice versa)

# Price Type: Example Media (newspaper, TV, radio) II



Platforms can be very complex

## Subsidy: Demand and Supply



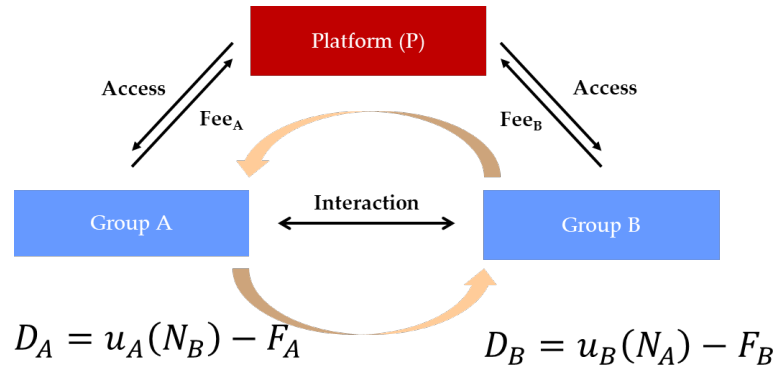
$D$ : Demand for the platform

$u$ : Utility of the interaction with the other group

$N$ : Number of individuals in the other group

$F$ : Fee to access the platform

## Subsidy: Price elasticity of demand I



Group A's demand increases the more individuals of Group B are on the platform (vice versa)

Utility (e.g.  $u_A(N_B)$ ) of the platform may be different for different groups

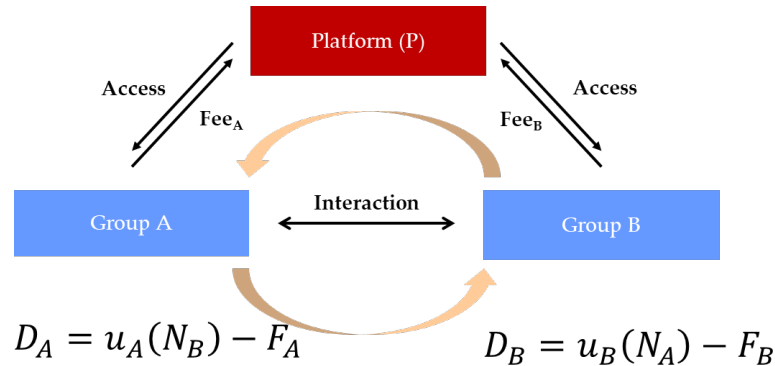
Balancing demand from both groups is crucial for the success of the platform

Solution: different access prices for the two groups

→ Subsidy for group with higher price elasticity of demand



## Subsidy: Price elasticity of demand II



Factors affecting the price elasticity of demand:

- Substitutes on the market (+)
- Homogeneity of the traded goods (+)
- Search costs (-)
- Multihoming: Possibility and costs to be active on multiple platforms (+)

# Review Systems

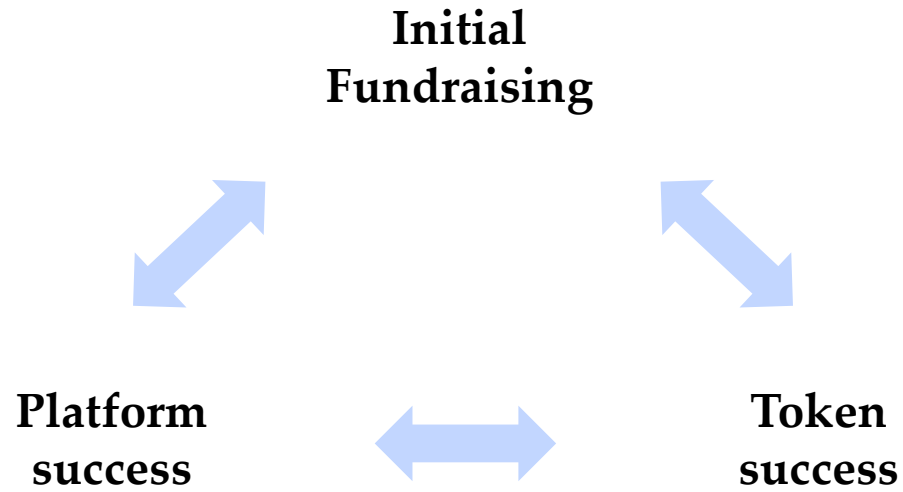
- Platforms often include review systems
- Reason: Asymmetric information
  - Individuals have limited knowledge about the quality of the transaction (pre- and/or post-transaction)
- Review systems constitute a platform themselves
- Should a platform implement a review system itself?
  - Is asymmetric information present?
  - Is it for the groups costly to use other review systems outside of the platform?
  - Do individuals frequently interact on the platform?
  - Is there a lag between the deal and the interaction?

# Summary

Topic	Considerations	Decisions
<b>Pricing</b>	<ul style="list-style-type: none"> <li>• Possibility to observe transactions</li> <li>• Group's utility of the interaction</li> <li>• Outside options for the groups (multihoming)</li> <li>• Homogeneity of the product</li> </ul>	<ul style="list-style-type: none"> <li>• Usage fee vs. price per transaction</li> <li>• Subsidy</li> <li>• Price level</li> </ul>
<b>Additional services</b>	<ul style="list-style-type: none"> <li>• Asymmetric information</li> <li>• Lag between signing the contract and the transaction</li> <li>• Frequency of interaction</li> </ul>	<ul style="list-style-type: none"> <li>• Review system</li> <li>• Incentive system</li> </ul>

# Monetary economics

## | Main objectives



## Main decisions

### Monetary autonomy

Use your own  
token?

### Money supply

Discretionary vs  
rule-based  
monetary policy

Managed or  
variable exchange  
rate

### Currency acceptance

Exclusivity vs  
diversity

### Platform price setting

Fixed vs variable  
price

## Monetary autonomy

### Why use your own coin

Raise money (revelation of consumer demand)

Decentralized remuneration for platform services

Reduced transactions cost through native token usage for platform pricing

### Why not

Danger of artificially restricting demand for platform services

# Discretionary vs rule-based monetary policy

Government of money supply

(Maximum supply, total current supply, circulating supply)

	Discretionary	Rule-based
Managed (e.g. fixed) exchange rate	Need for «institutional» trust	Possibility of stablecoin without full reserves
Free exchange rate	Weak commitment; flexibility for future fundraising	Strong commitment; high revenues in initial fundraising



## Currency acceptance

### Exclusivity

Direct link between token value and platform success

Weakening of platform; strengthening of token

Example: Bitcoin as payment network

### Diversity

Flexibility in trading off platform and token success

Example: Binance

## Platform price setting

### Variable price

Token as accepted currency

Flexibility in platform price setting

### Fixed price

Token as a voucher

Forgone growth opportunities?  
(depending on monetary policy)

Price of the platform service ~  
value of the token

## | Fisher's equation of exchange

$$M \cdot V = T \cdot P$$

*M*: total amount of money in circulation

*V*: velocity of money; average frequency with which a unit of money is spent

*T*: real value of transactions

*P*: price of transactions

# Token supply and demand

## Supply

Maximum supply

Total supply

Circulating supply

## Demand

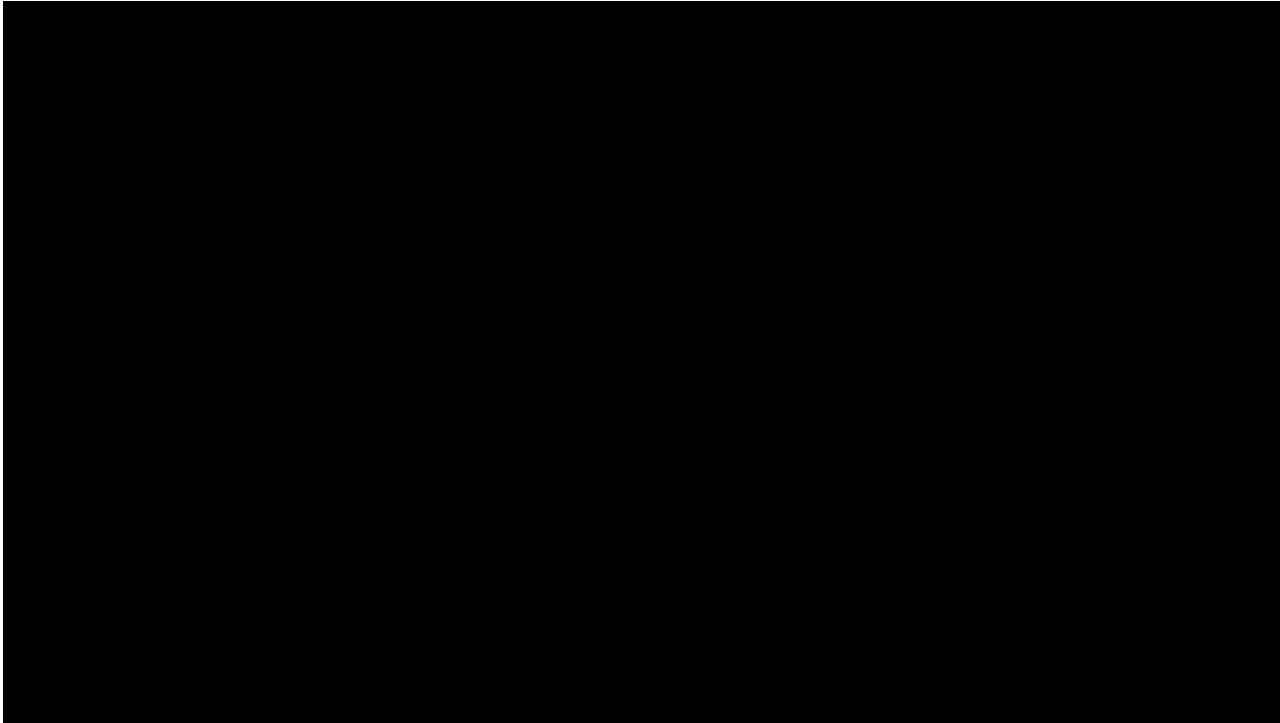
Transaction motive

- Staking
- Payment channels

Portfolio motive

# Examples

# | Veracity



# Veracity

Figure 1: Structure of the Veracity economy

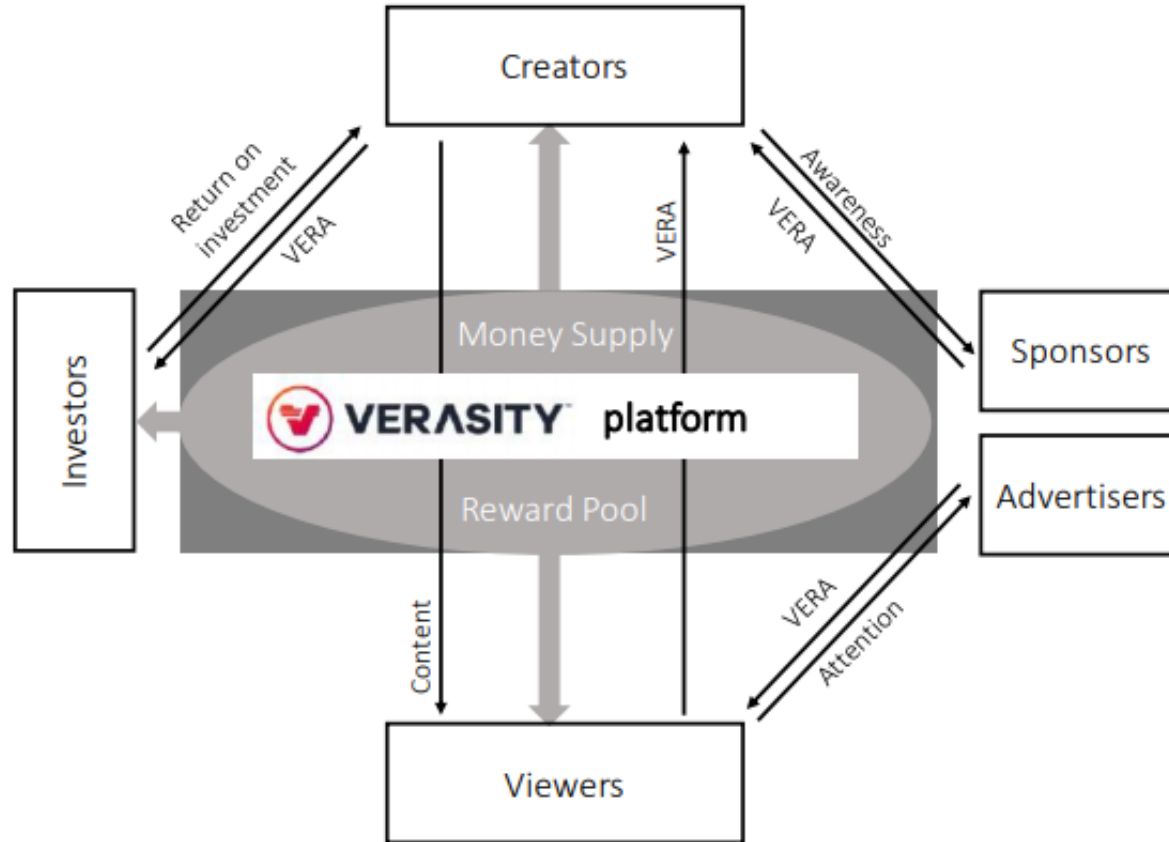


Figure: cryptecon

# Veracity

*“A key goal for Veracity in 2019 is getting video publishers onboard. To facilitate this, we are developing integrations with many industry-leading tools like JW Player to allow publishers to quickly and easily start using Veracity technology and therefore increase demand for VRA.”*

*“JW Platform & JW Player (Bits on the Run) is a leading full-service video hosting, management, and analytics solution. By integrating Veracity's Video Rewarded Player into JW Player, publishers who use JW Player can now quickly and easily add VRA rewards into their offering through an SDK.”*

Veracity is built on an existing video and ads distribution platform including





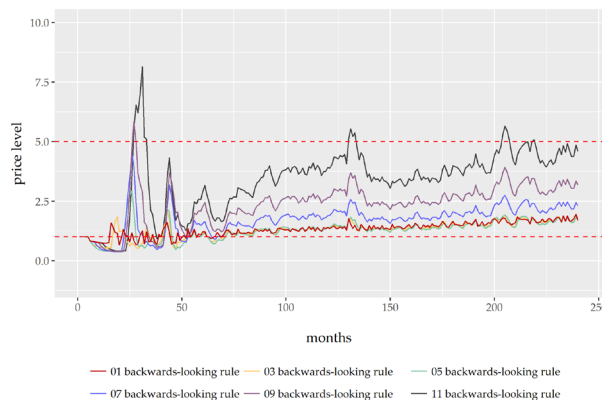
# Veracity: Our contribution

Review and input for the Whitepaper

Explanation and formalization of the activities of the different groups in economic terms (incl. the interaction between platform and monetary economics)

Advice on minting mechanism

- Game-theoretical analysis of incentives on the platform and numerical simulation based on assumptions



# Discussion

**More?**

## **Our services**

**Pricing**

**Token auctions**

**Numerical simulations of  
economic systems**

**Design of stable coins**

**Review of whitepapers**

**Design of monetary  
systems**

**Design of incentive systems**

**Valuation**

**Game theoretical analysis  
of economic systems**

**Contact**

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