

Evolution of Two-Sided Markets

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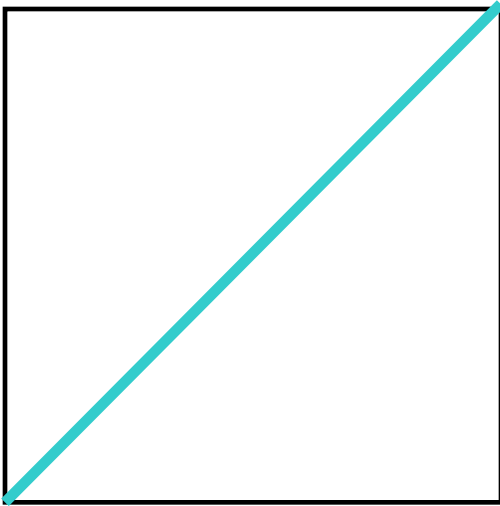
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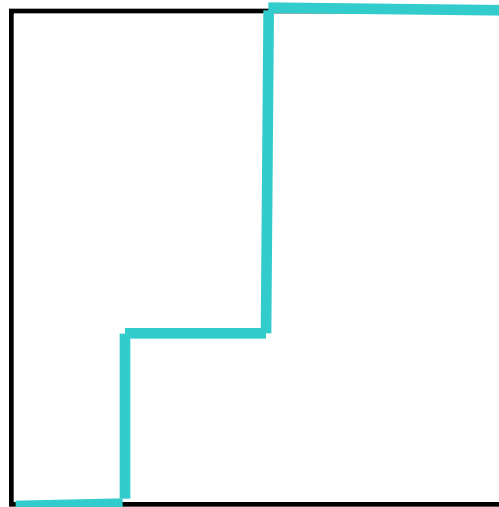
Attachment curves model

$$a' = V(b) - a$$

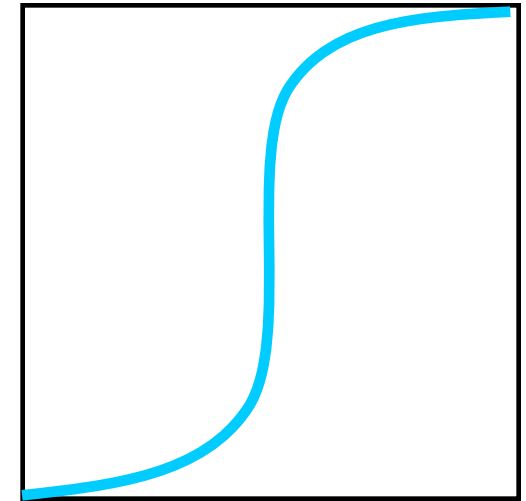
$$b' = W(a) - b$$



**preferential
attachment**

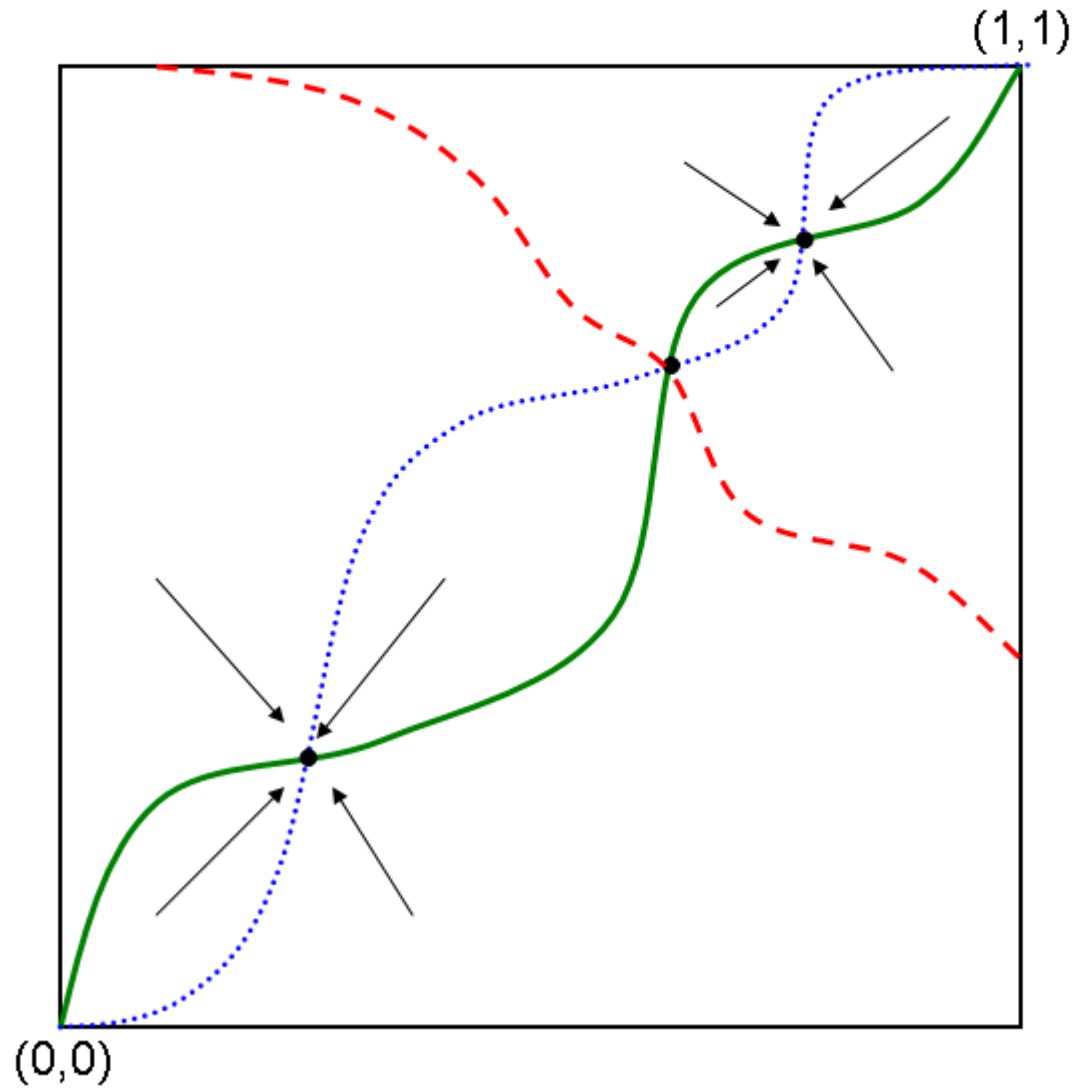


**crossing
the chasm**



**social
influence**

Market shares convergence



Two-sided markets: algorithmic perspective

Model: Attachment curves

Convergence result

Coalitions

Measurements



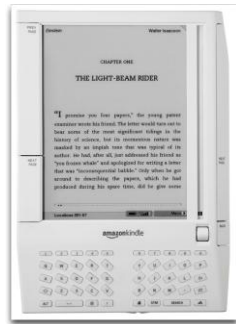
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CouchSurfing,
HospitalityClub, AirBnB

Hulu, justin.tv, ustream

Alibaba.com

Carfax, Experian, Bloomberg

Research Agenda

Evolution

- Network effect
- Market structure
- Evolution prediction

Coalitions

- When centralization will happen?
- When does it make sense to form a coalition?

Investment strategies

- When to invest? Which side of the market? Critical mass?
- Can we predict opportunities for snowball dynamics?

a%
market share

platform

b%
market share

platform

platform

$$a'(t) = ?$$

$$b'(t) = ?$$

$$\mathbf{a}' = \mathbf{b}$$

$$\mathbf{b}' = \mathbf{a}$$

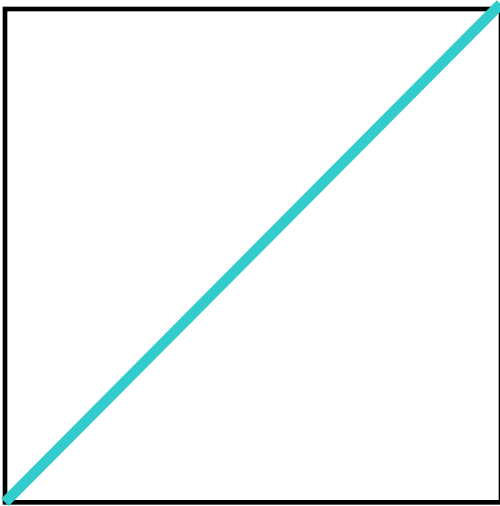
$$\mathbf{a' = b - a}$$

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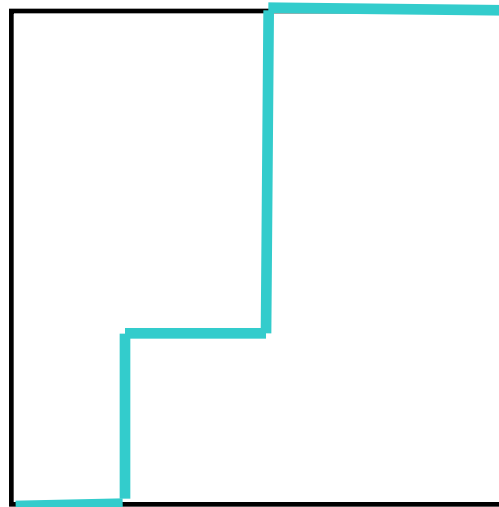
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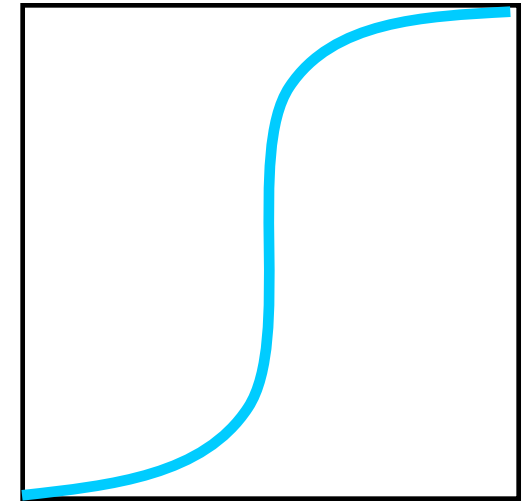
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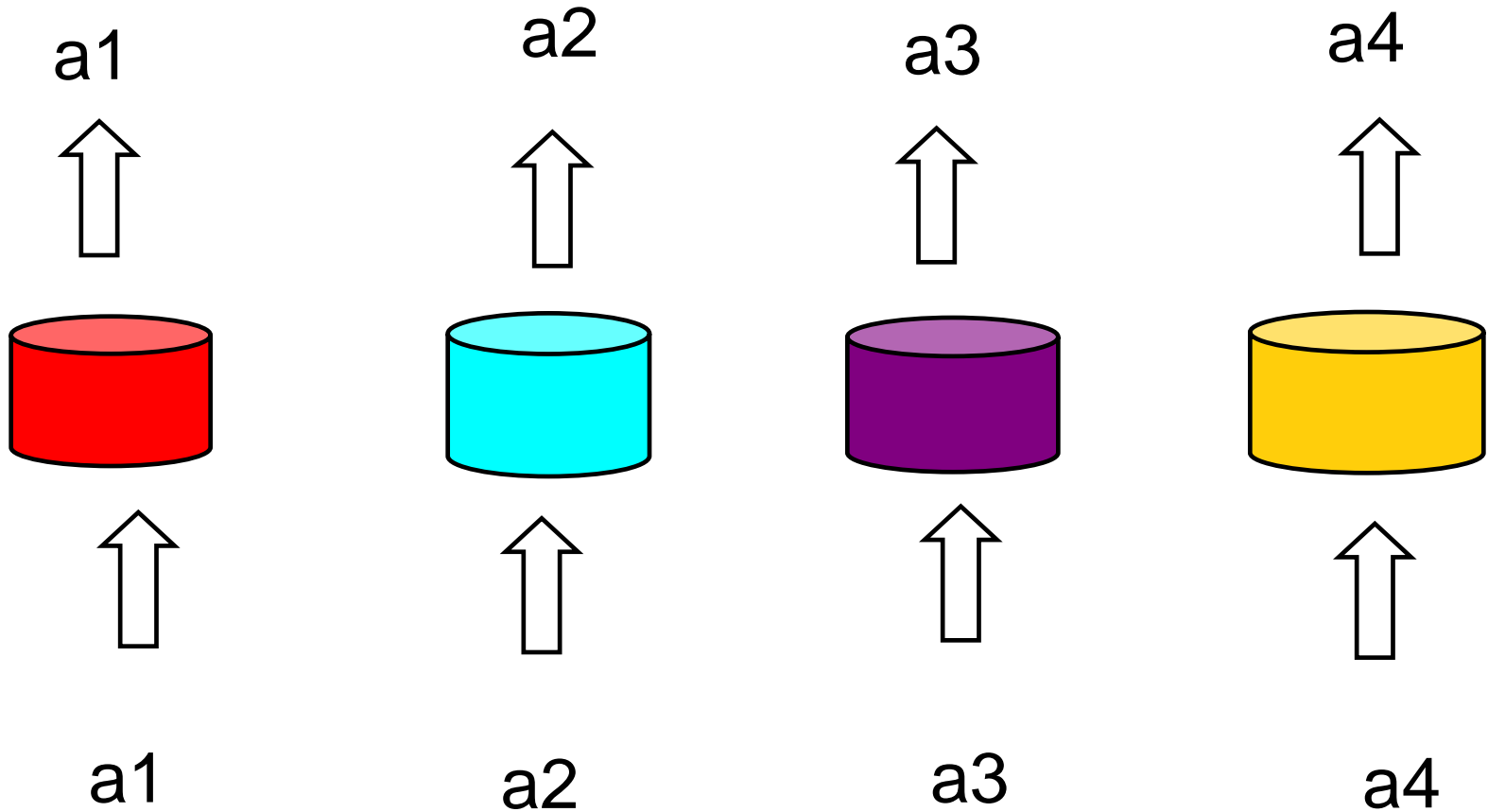


**crossing
the chasm**



**social
influence**

Independent platforms



Market Shares Dynamics

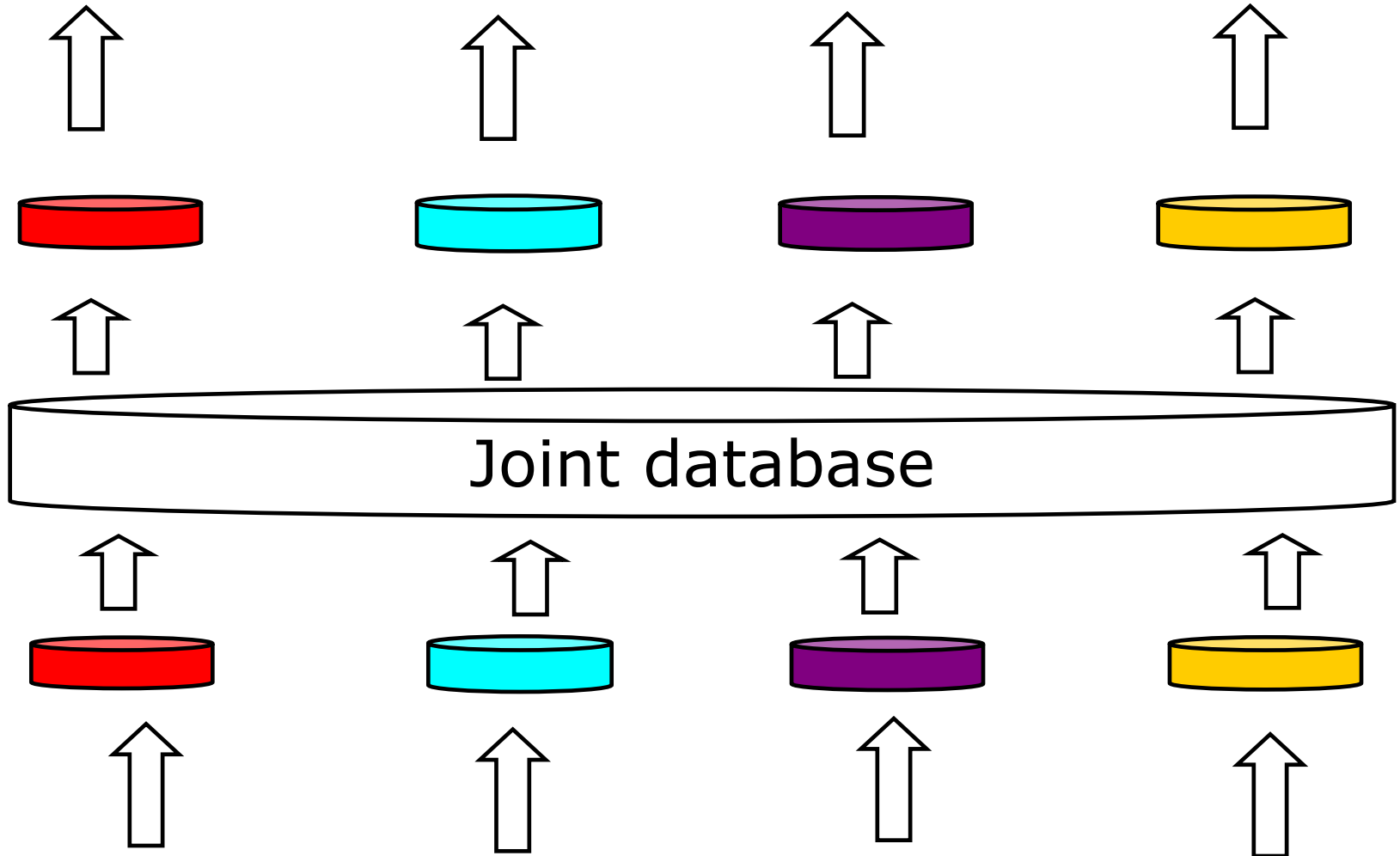
$$A' = B - A$$

$$B' = A - B$$

Theorem

Market shares stay the same

Coalition



Technical Coalition

Theorem

If all market shares are below $1/\sqrt{k}$
coalition is profitable for all distributors

Corollary

Coalitions are not monotone

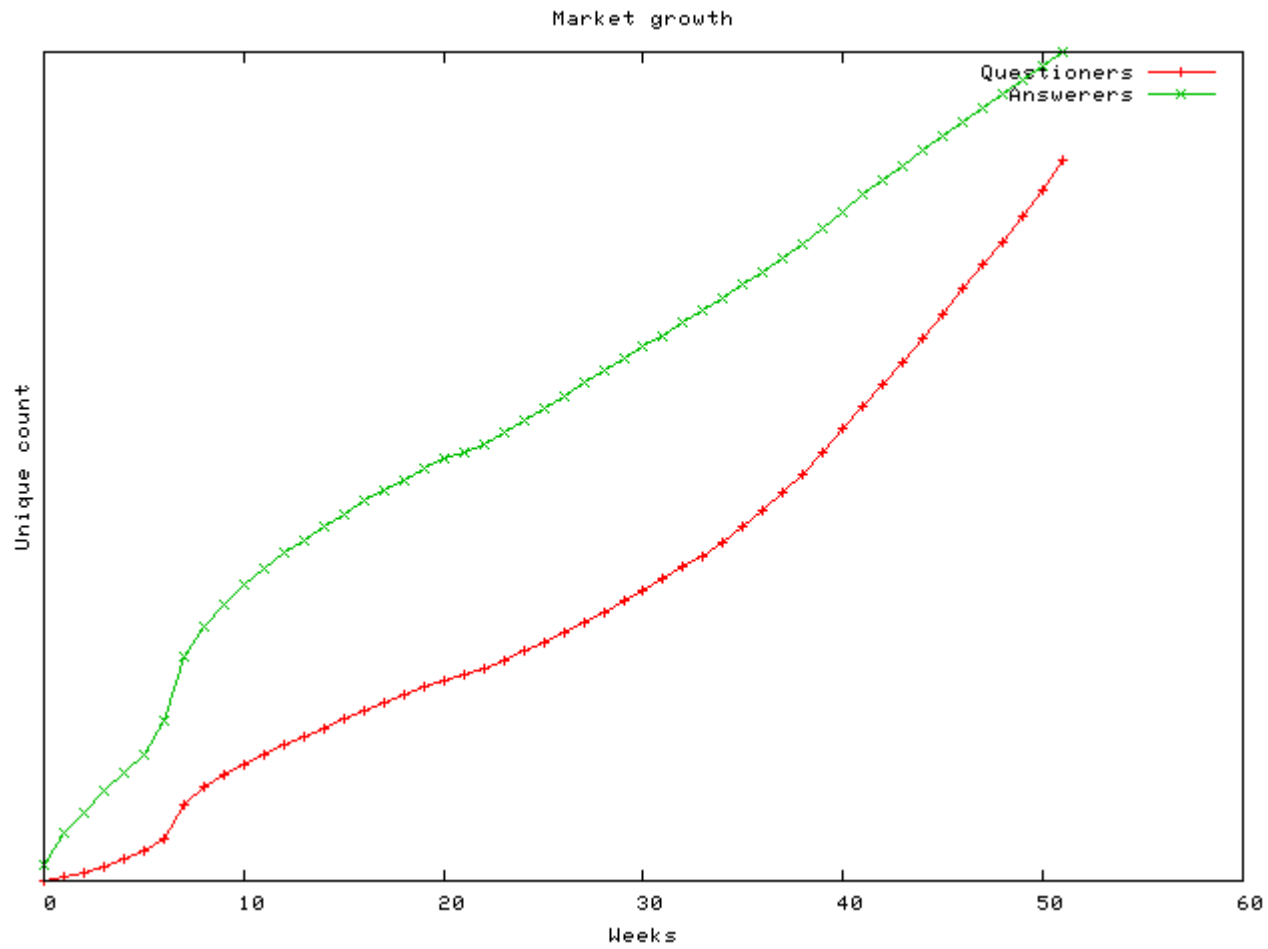
Example: 5 : 4 : 1 : 1

Business Coalition

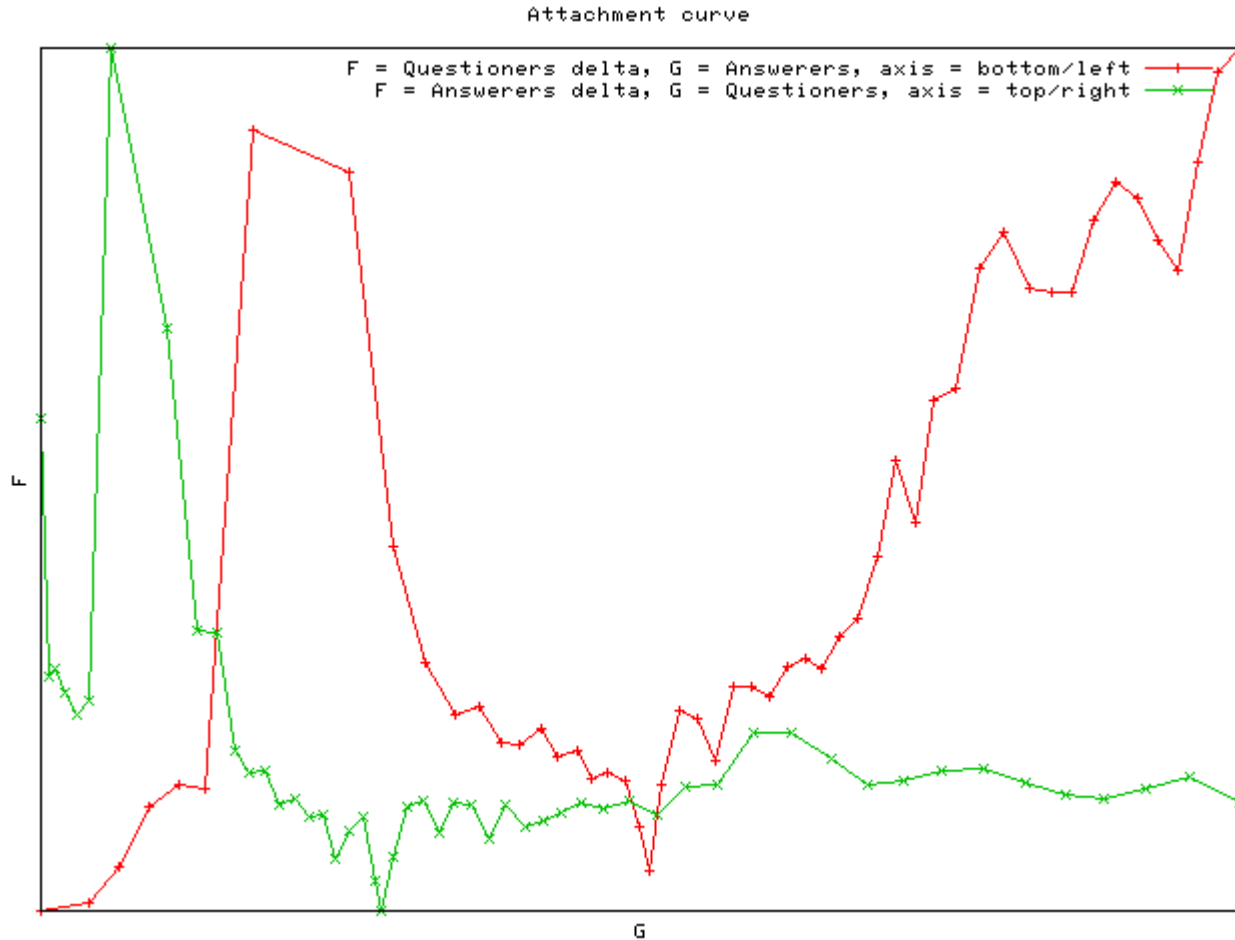
Theorem

One can re-distribute revenue for full coalition in such a way that no subset has an incentive to walk away and form a sub-coalition.

Stackoverflow.com



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Future work

Algorithm for solving attachment curve equation (starting position \rightarrow stable state)

Stability under noise?

Predictive power?

Revenue redistribution for coalitions?

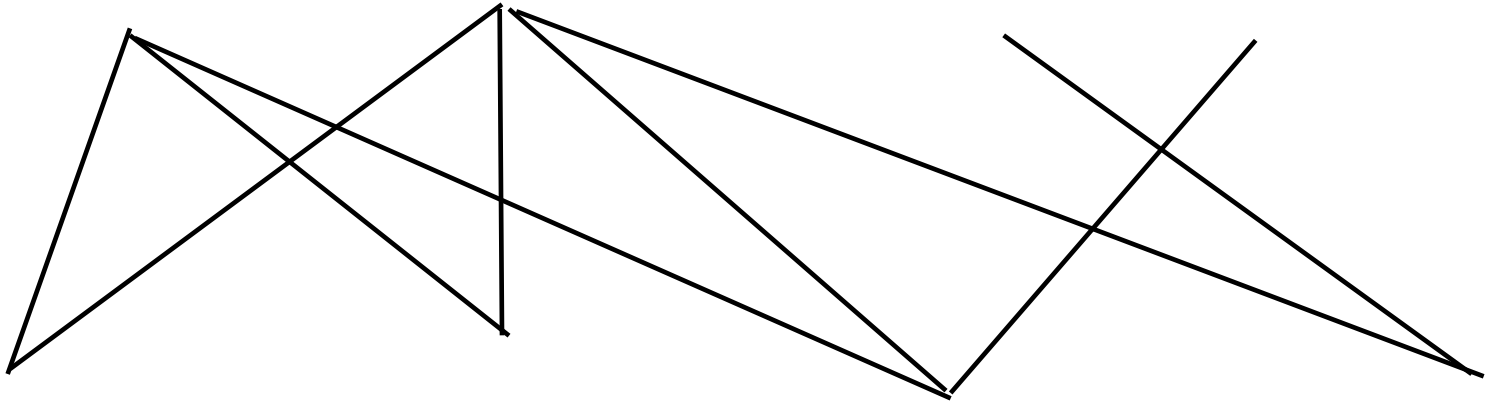
Investment strategies?

Thanks!

[@yurylifshits](https://twitter.com/yurylifshits) just presented “Evolution of Two-Sided Markets” at #wsdm
<http://bit.ly/twosided>

Please, retweet 😊

Open Problem

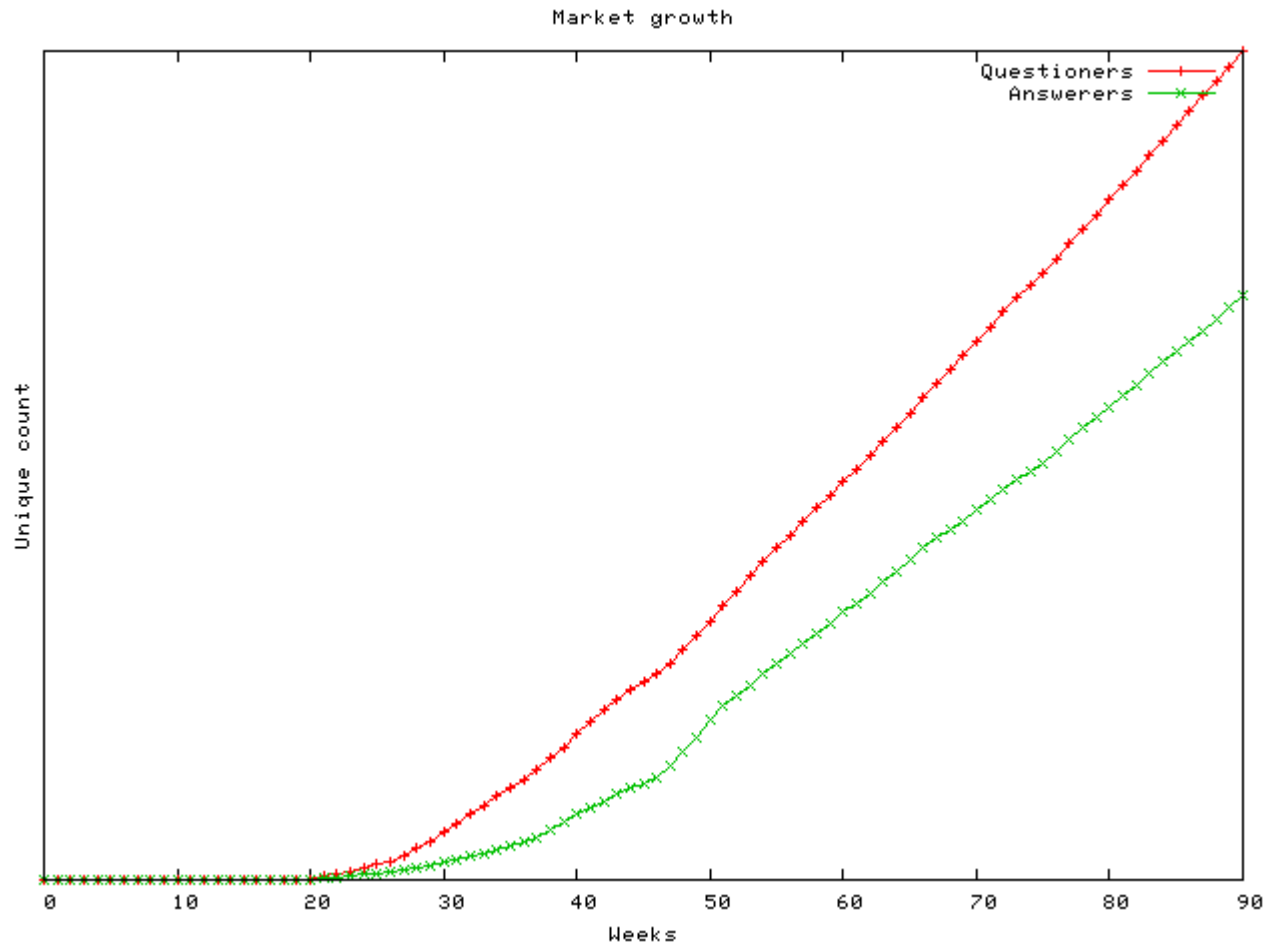


An agent joins if number of opposite-side connections to current platform users is at least T

You can pay uninterested agent to join

How much do you have to pay to get everyone on board?

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