Objective Functions

Making the Subjective, Objective

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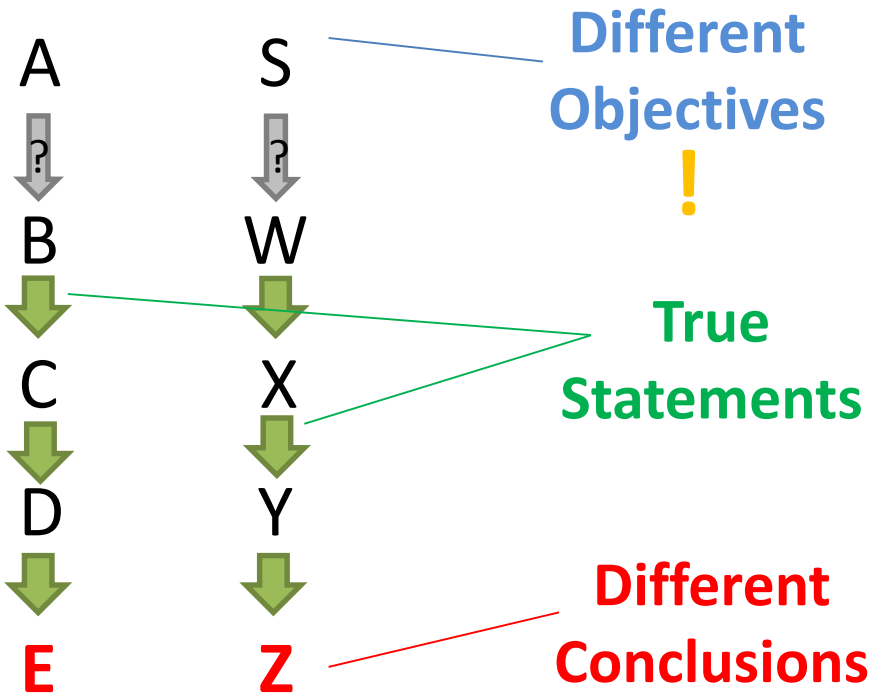
Agenda

1. Emergency **discussion assistance** (2 Slide)
2. Can we **measure decentralization** (with a number)? (3 Slides)
3. **P2P Governance** / Measuring Bitcoin's Objective(s) (18 slides)

Principles of Discourse

- Without an **agreed OF** , all conversation is **meaningless**.
- If reasoning is tied to **objective principle**, conclusion will always be true.



Flowchart

Has speaker stated ***what they believe the blocksize does for Bitcoin***?

No

(Believe it or not) impossible to tell if speaker's reasoning is *even related* to "Improving Bitcoin".

Yes

Has speaker stated ***conditions under which blocksize should decrease?***

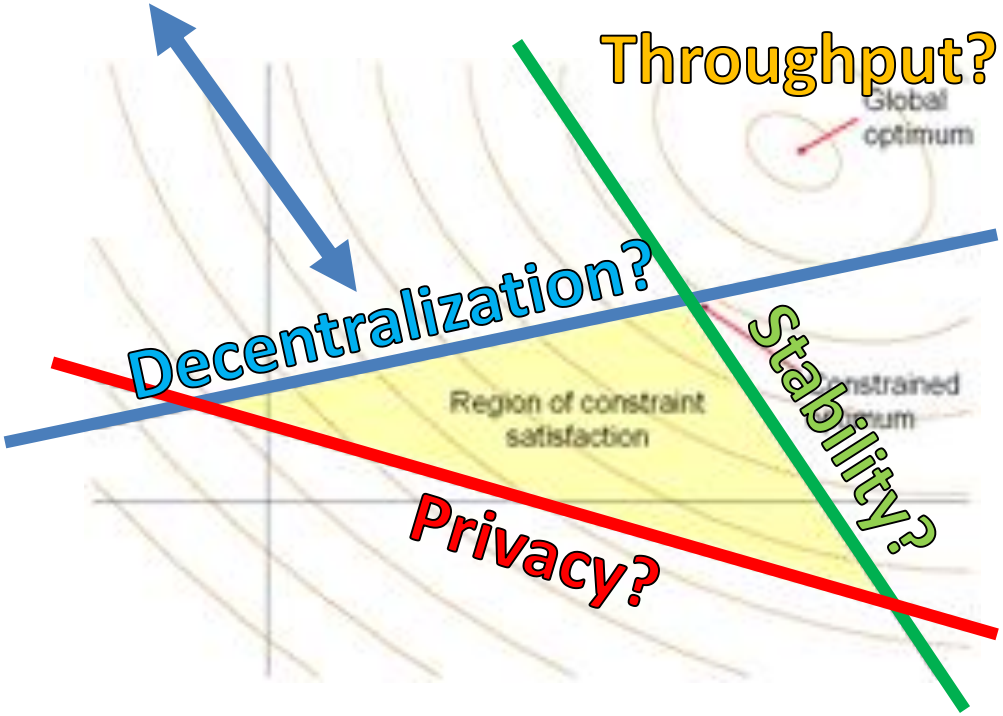
No

(Believe it or not) speaker hasn't expressed a thought related to *increasing* blocksize, either.

Yes

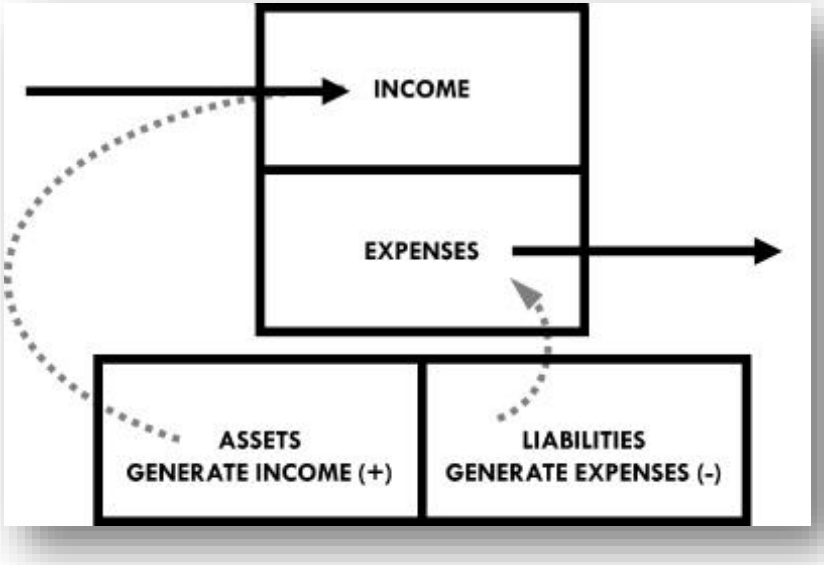
Measuring Decentralization (3 Slides)

- "Not agreeing on an objective function"?
- Almost as bad: "not agreeing on a constraint".
- "Decentralized Payments"
  - What is "Payments"?
  - What is "Decentralized"?

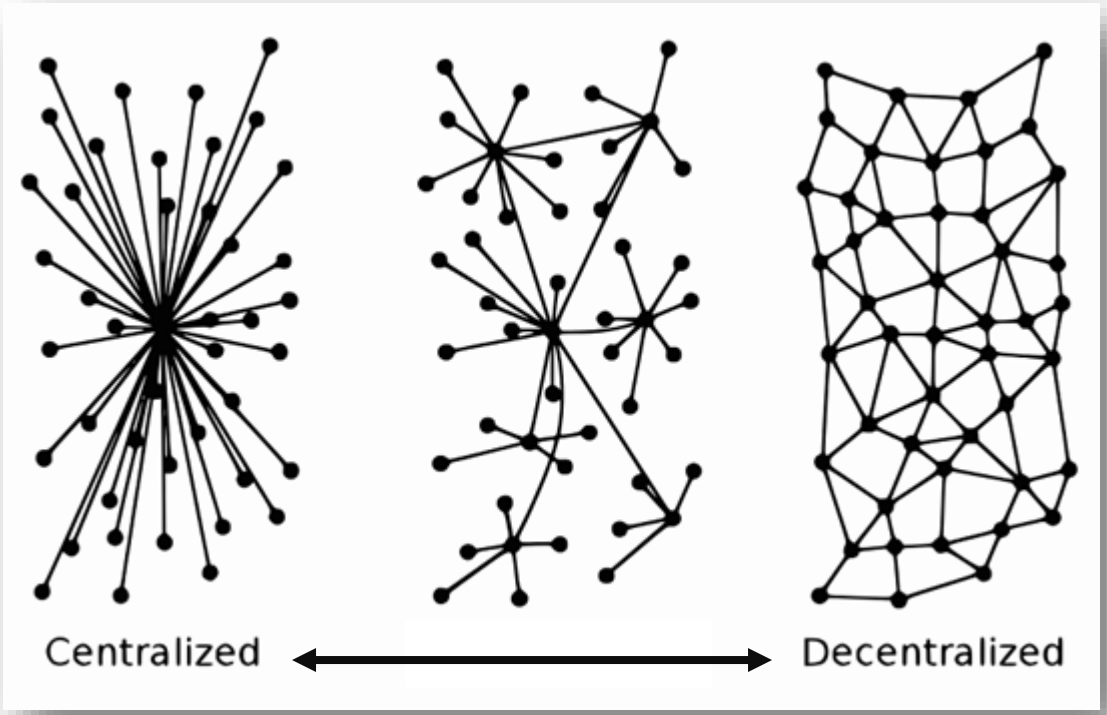


Money

- Abstraction of “favors”.
  - “Know you’ve gotten ‘credit’ for your favor”.
  - “Convince trading-partner they’ll get ‘credit’ for their favor.”
  - Those ^ ^ are actually mirrors (the same).
- We need the system to show us “we’ve been paid”. (“Paid” = finality).

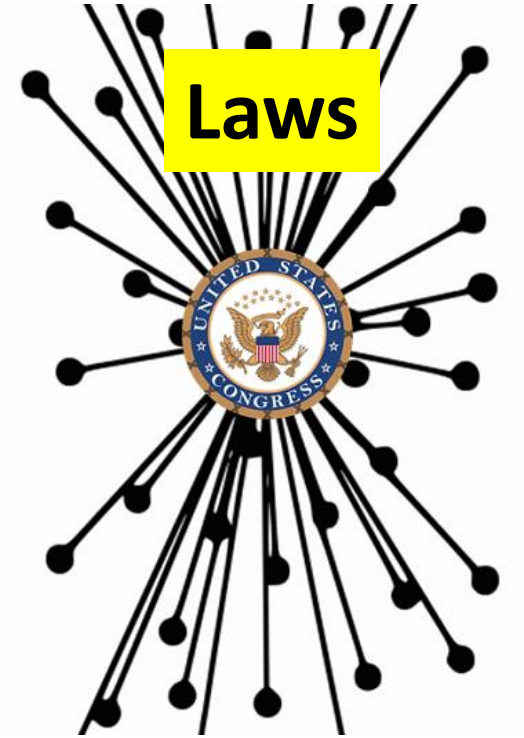


When is Money Decentralized?



Who knows ("decides") who's been paid?
1 person ---------- "Everyone"

Who *can or can't* know?
(Who can afford to *run a full node*?)



Privacy constraint: tor bandwidth.

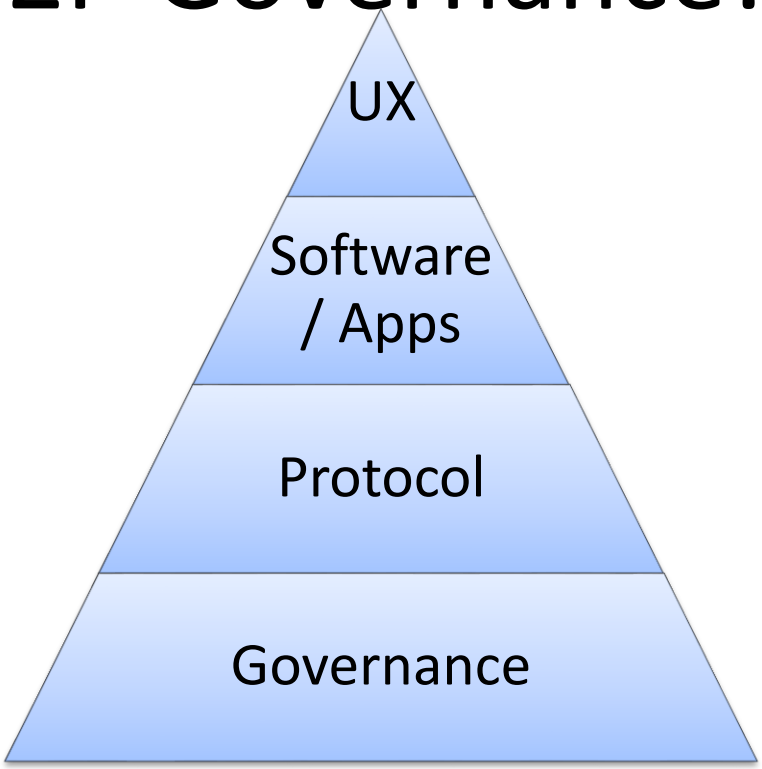
Tor Metering with Bitcoin:

1. Be able to measure decent.
2. Vastly improve decent.
3. (Improve all upstream bandwidth)

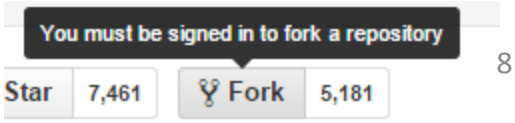
A P2P System *needs* P2P Governance!

18 slides

- Governance > Software
  - Can *break* software rules!
    - Privacy?
    - 21 million coin limit.
  - Can *allow* Bitcoin to become obsolete!
  - Bitcoin's weakest link (?)
  - LR Scaling? Likely only gov.



- But How to Govern?
  - Trade-offs: Censorship vs Spam, Coercion vs Sybil, Groupthink vs Review-Cycle Burnout. (As hard as BTC ?)
  - "Experts?", Who chose them? "Who watches the watchers?" (vs. Foolish non-experts). Excluded people.
- **No one has ever done this before.**



Markets: Proof of Expertise

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Economic calculation problem

From Wikipedia, the free encyclopedia

The **economic calculation problem** is a criticism of using economic planning as a substitute for market-based allocation of the factors of production. It was first proposed by Ludwig von Mises in

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Price System: how individual subjective values are translated into the objective information necessary for rational allocation of resources in society.

In market exchanges, prices reflect the supply and demand of

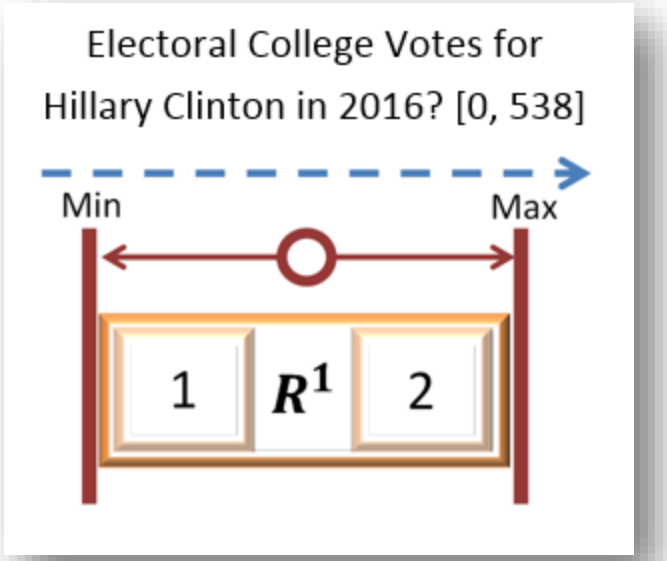
Trades:

1. Knowledge and meta-knowledge (#1).
2. **Constantly** and **unanimously** acceptable.
3. Prices are **common knowledge**.

Succinct, easily-verifiable "expertise proof".

Event Derivatives ("Prediction Markets")

(Only) one of these pays $1



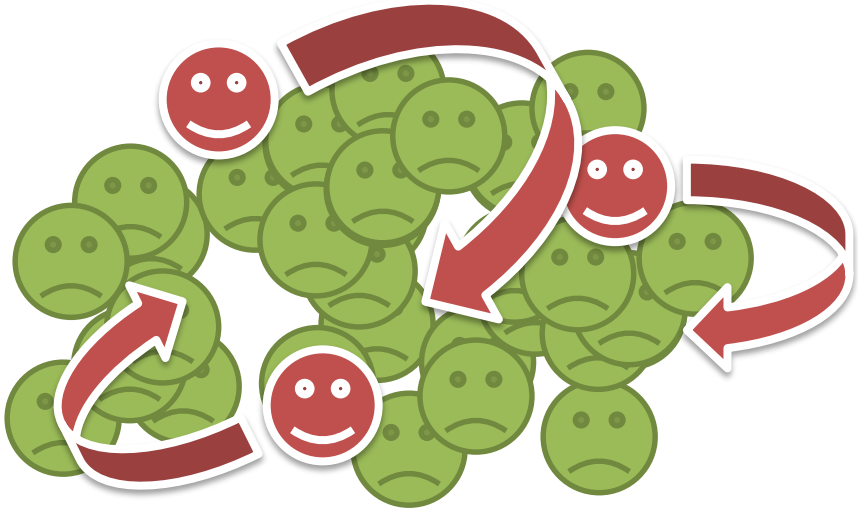
Splits a dollar and pays it proportionally.

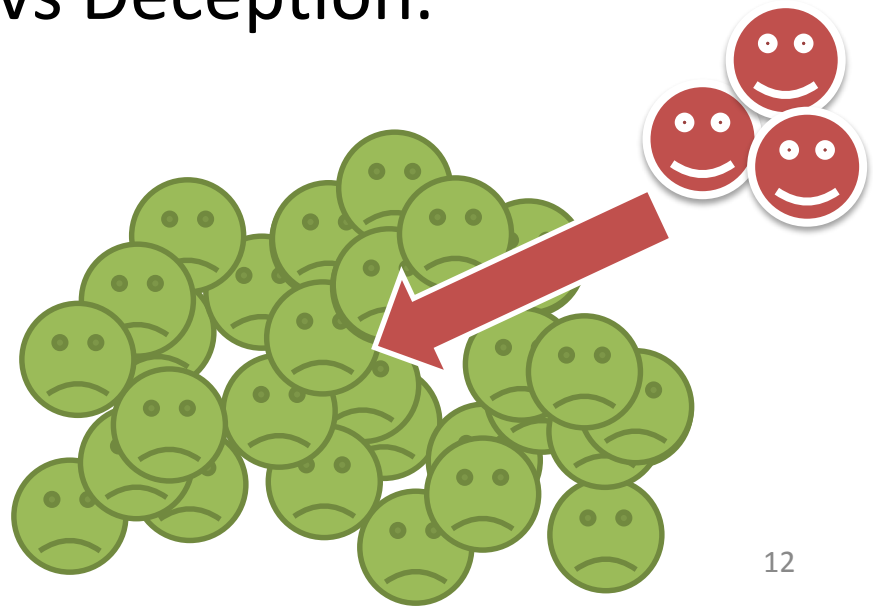
Prediction Markets: The Costs

1. **Oracle**
    1. …exactly once, we are going to need to have [easy-to-find] data be reported, honestly.
    2. OF reported…*after the fact*. (Not during.)
2. **Market Infrastructure**
3. **Traders**
    1. …to be interested enough.

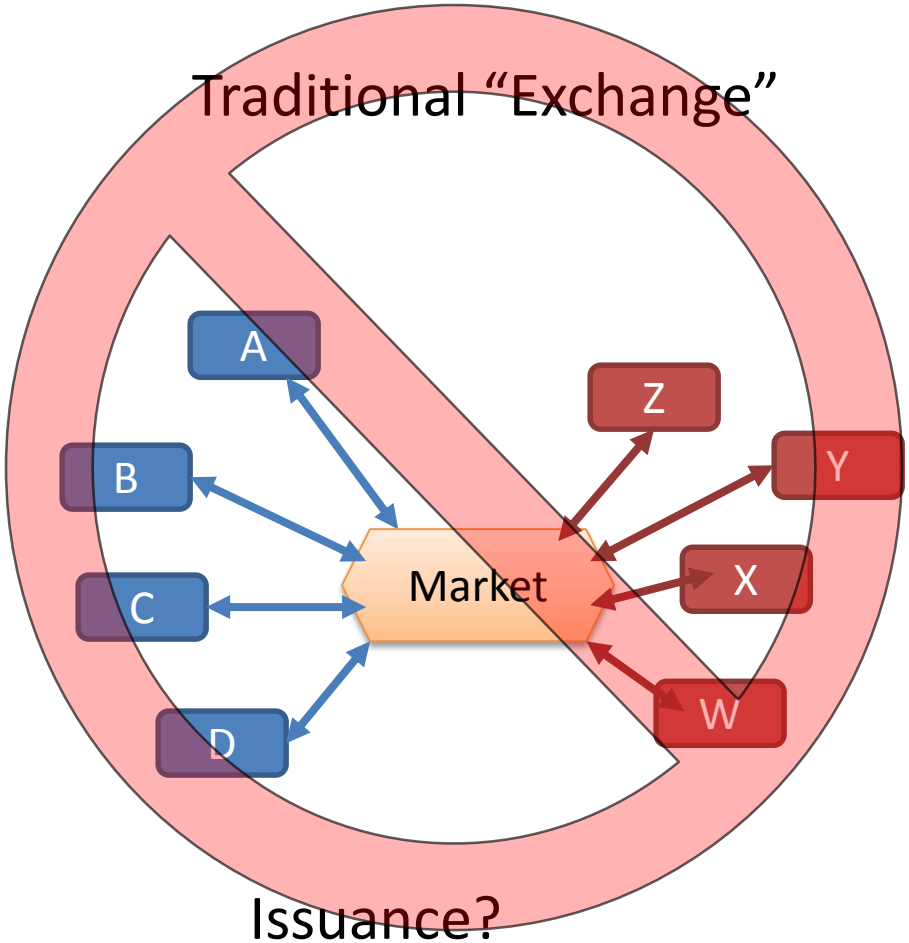
Worst News 1st: The Oracle

- Truthcoin (experimental, requires pegged sidechains)
- Federated Sidechain / Multisig Functionaries
  - People who own a lot of Bitcoin.
  - Bitcoin co's we plan to do business with.
- Trade-off: "Experts" (circular !) vs Representatives.
- Trade-off: Meta-Deception vs Deception.

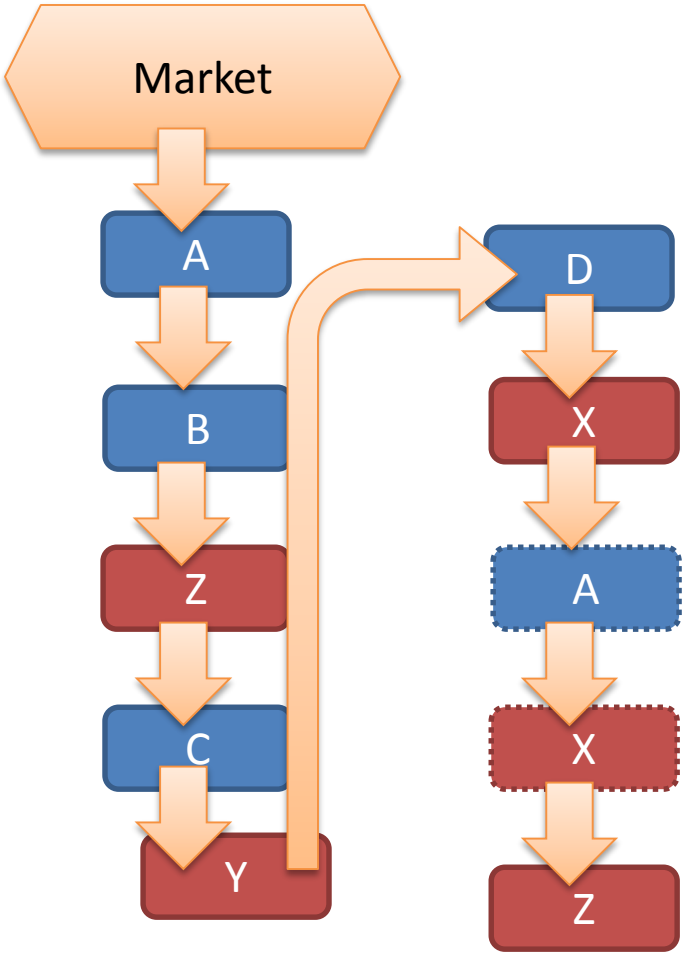




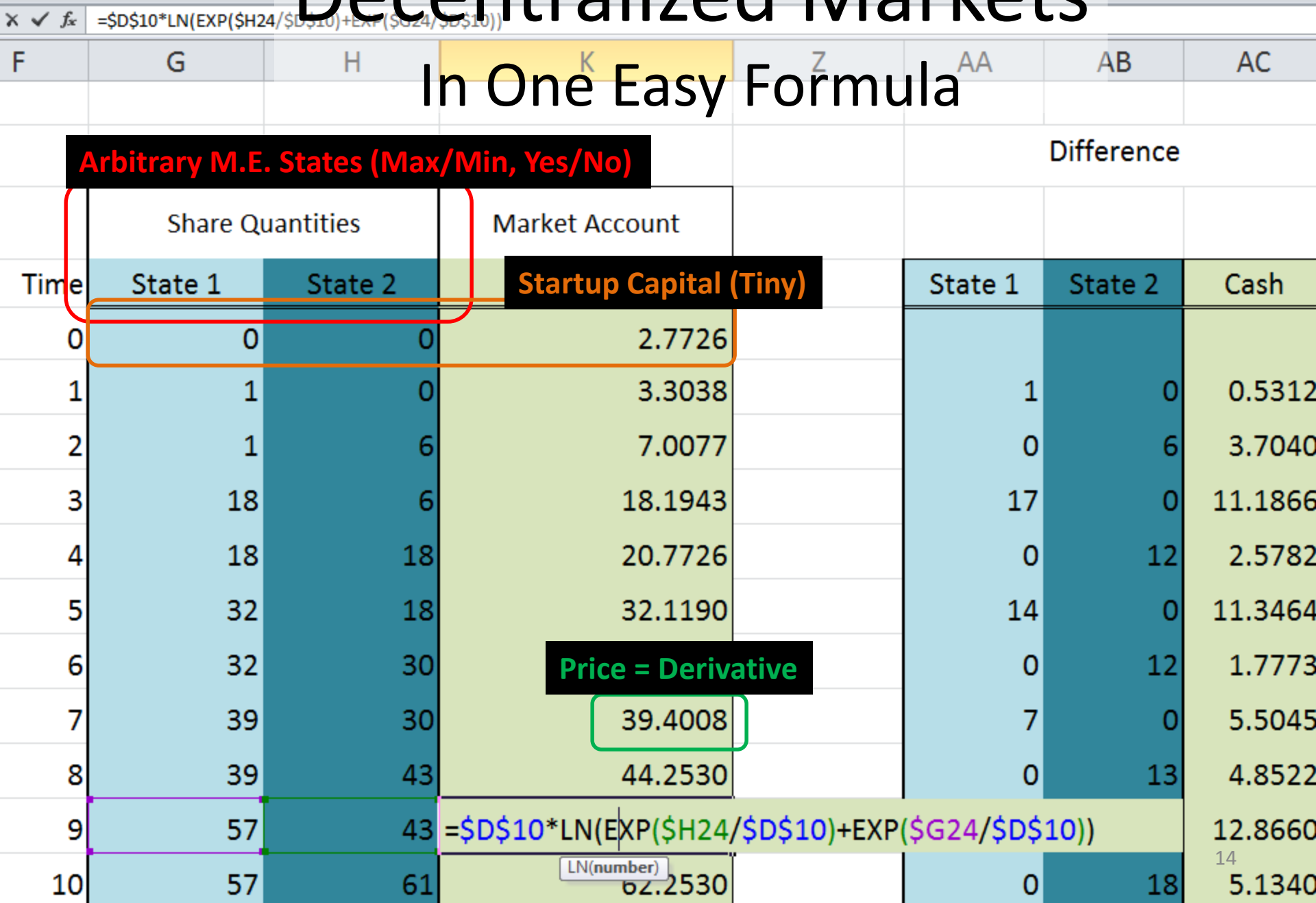
2. Market Infrastructure



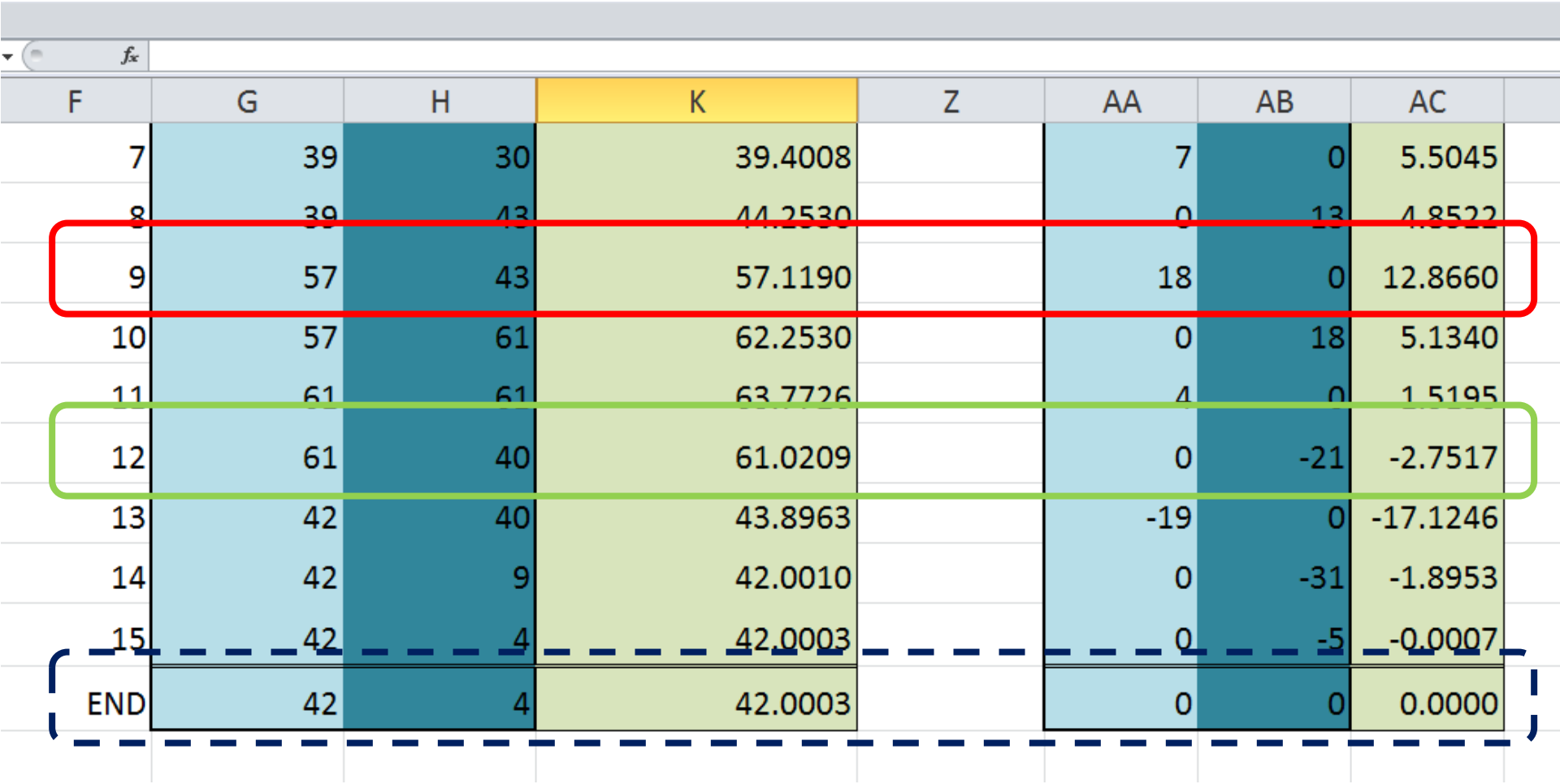
Issuance?
Exchange?
Redemption?



Decentralized Markets
In One Easy Formula



Issuance, Buying, Selling, Redemption

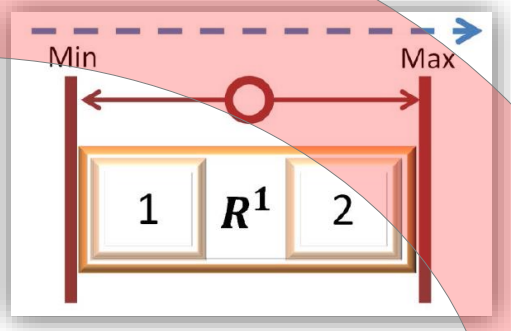


F	G	H	K	Z	AA	AB	AC
7	39	30	39.4008		7	0	5.5045
8	39	43	44.2530		0	13	4.8522
9	57	43	57.1190		18	0	12.8660
10	57	61	62.2530		0	18	5.1340
11	61	61	63.7726		4	0	1.5195
12	61	40	61.0209		0	-21	-2.7517
13	42	40	43.8963		-19	0	-17.1246
14	42	9	42.0010		0	-31	-1.8953
15	42	4	42.0003		0	-5	-0.0007
END	42	4	42.0003		0	0	0.0000

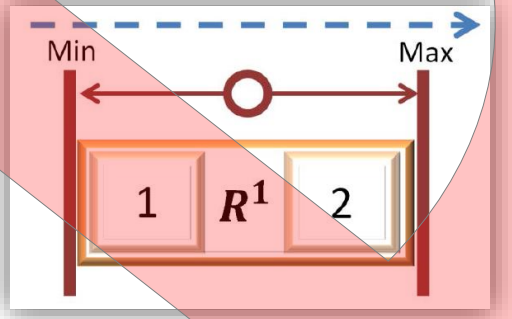
Simplicity = Maximized

3. Users

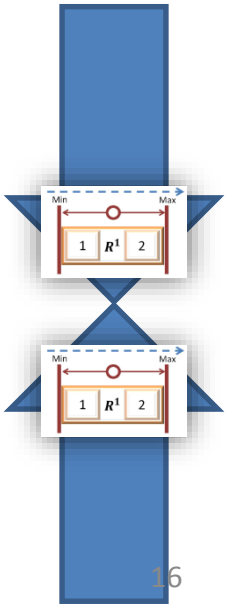
OF of 1 MB Blocksize Bitcoin:



OF of 20 MB Blocksize Bitcoin:



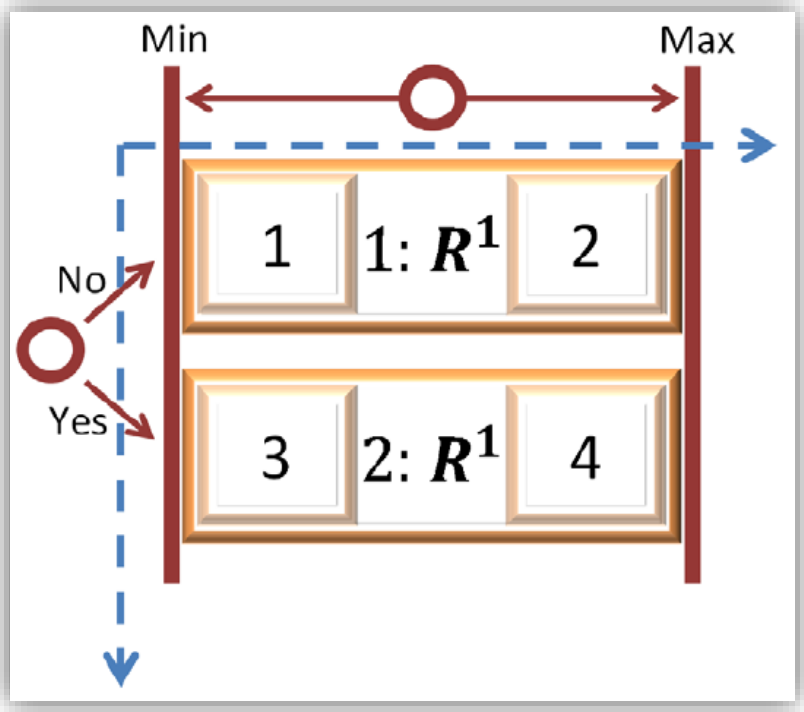
Compare



Combinatorial Markets
(Are Really Cool)

Blocksize > 1MB

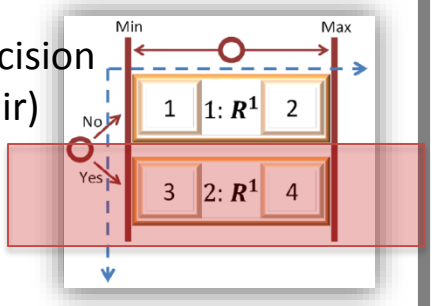
Exchange Rate



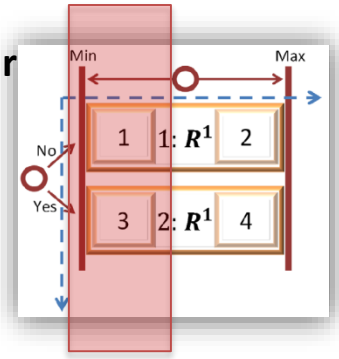
1. Simpler
2. More liquidity / better marketing.
3. For each n dimensions (blue arrows), we get (n-1) *relationships.*

Why?

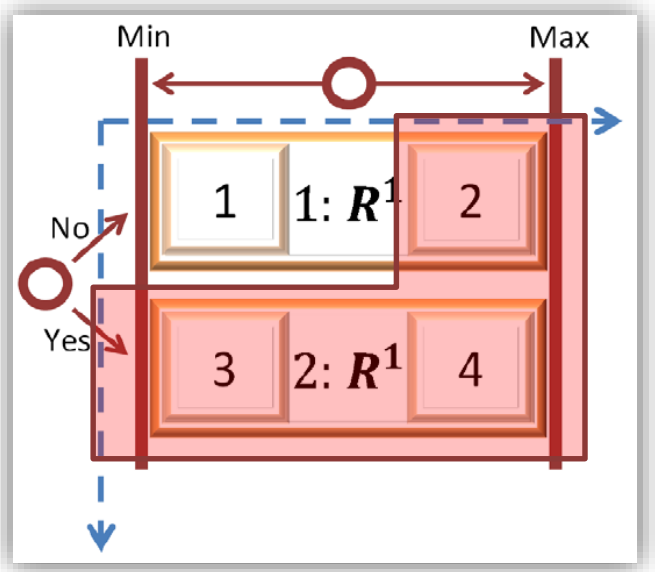
Decision Insurance
(pays if a specified decision is made, actuarially fair)

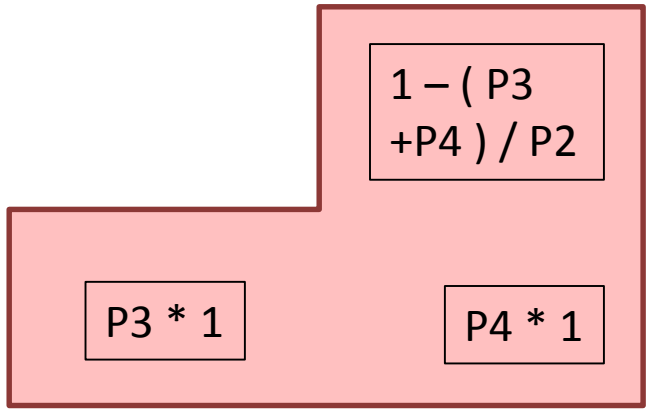


StableCoin / VolCoin Pair
("BitUSD")
(if OF = exchange rate)



Win-Win Trading

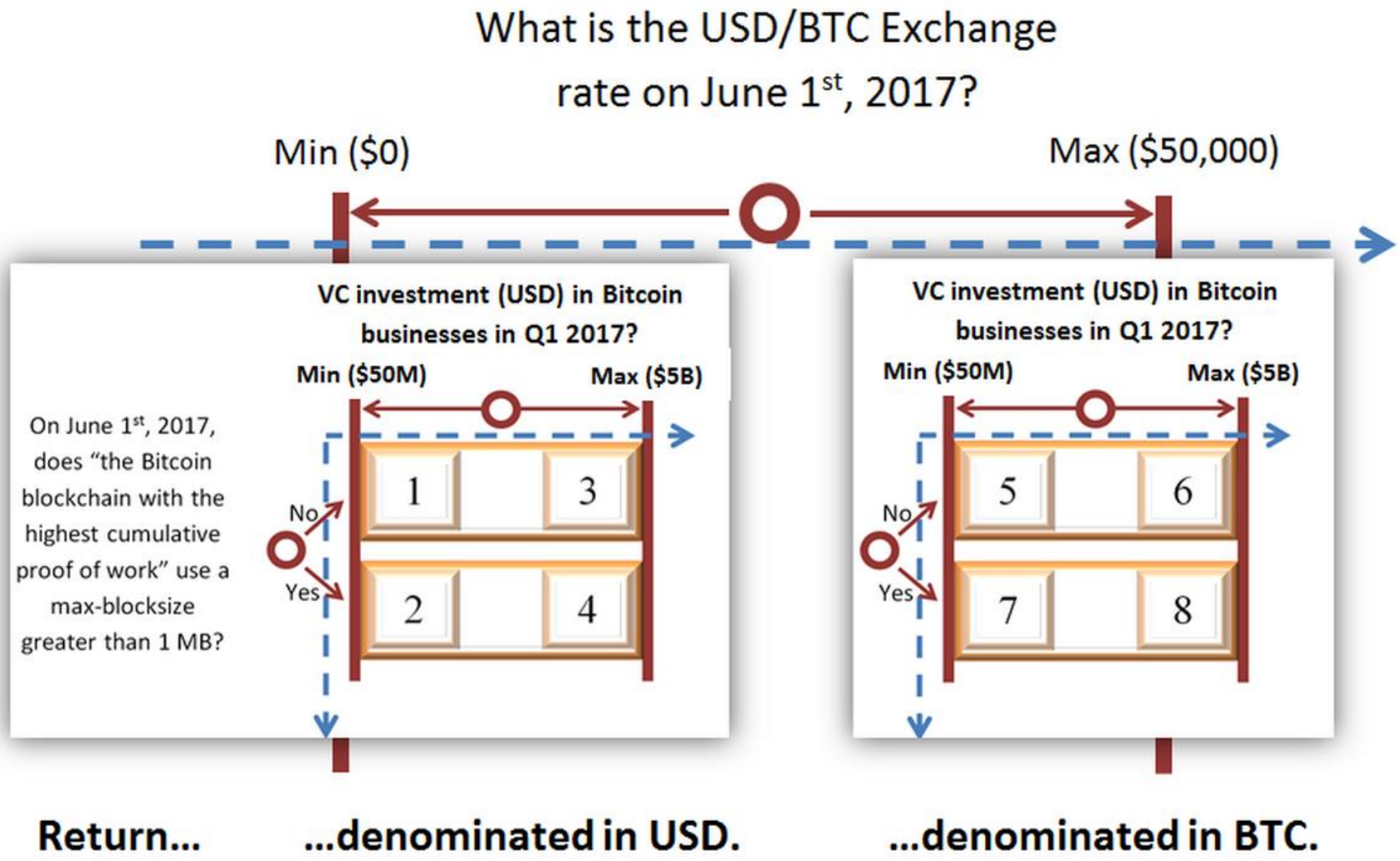




- Total cost must equal 1.
- Get 1 if “Yes”. (Min/Max ignore-able)
- Get ***r*** if “No”. ***r*** = Bitcoin return.

Buy a Bitcoin *that you can return* if Devs make a decision User doesn’t like.

Betting “in Fiat”



Full Refund ("Time Travel")

Principal
$500.0

Results

	Initial				Future				
	Cash	Invest	BTC	Shares	Shares	BTC	Sale ($)	Cash	Return
*	$469.3	$30.7	0.030	0.046545	0.046545	0.032102	$33.1	$502.4	100.5%
**	$469.3	$30.7	0.030	0.046545	0.046545	0.014745	$15.2	$484.5	96.9%

- "Lock in" getting 100% of your FIAT money back (or more!).
- If 'Good Decision' then User gets this, co-varies with OF.

- (Completely incentive compatible).
- Charge fee and amp. liquidity (?)

Costs Met

- ☑ Oracle **– Slightly annoying.**
- ☑ Market Infrastructure **– MSRs**
- ☑ Users **– Fully Incentive-Compatible**

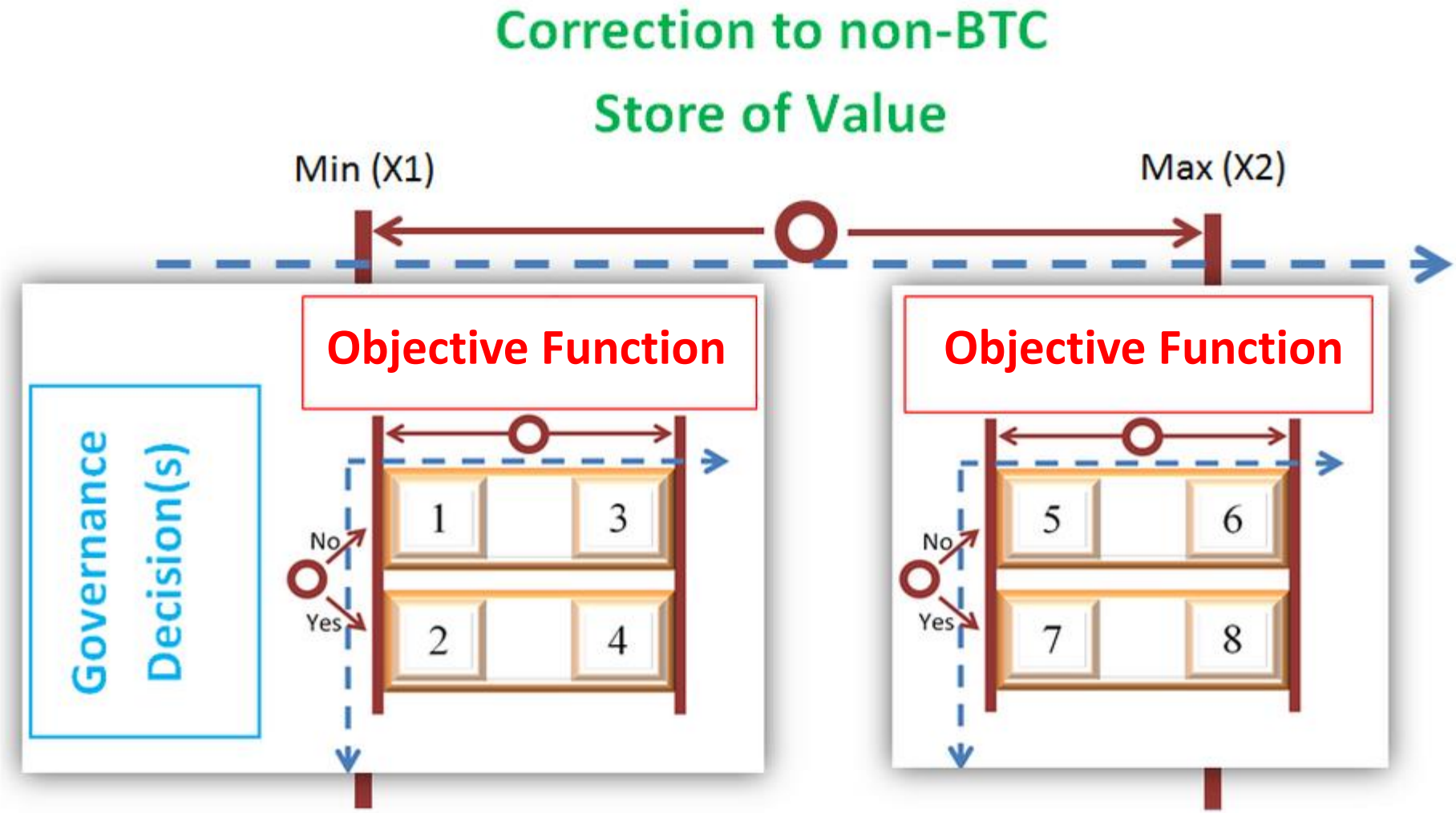
…what about **benefits**?

OF = The Price


Bitcoin Market Price
(Artist's Representation)


Secure – Will BTC become worthless?
Useful – Will BTC improve my life?
Growth – Is BTC different systems?
bottlenecks in the righ

“P2P Governance”



Users either indifferent to the **Dev-Decision**, or they’re not.
If not indifferent, have an incentive to trade.

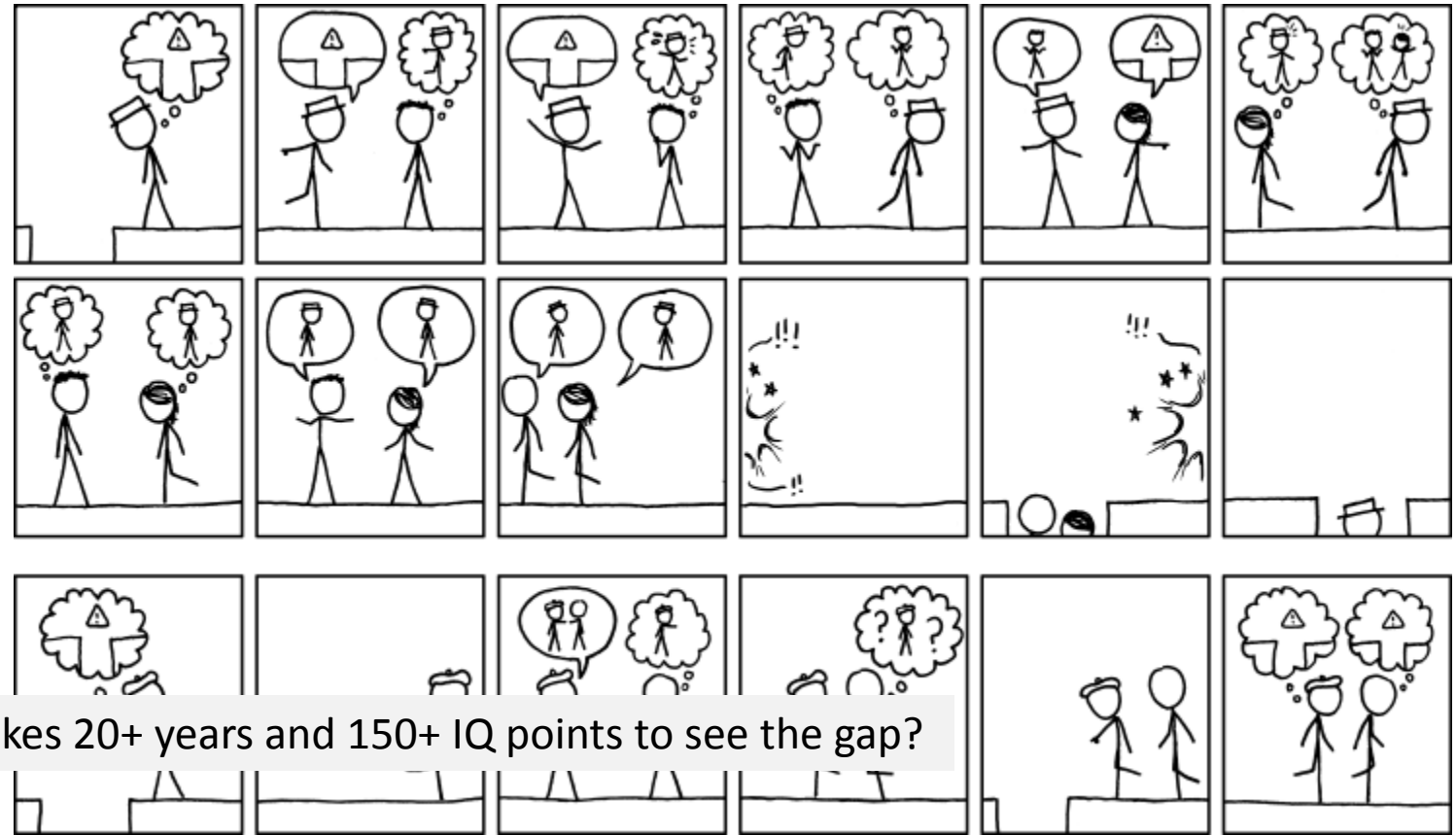
Manipulation

1. Key: what gov. is *least manipulate-able*?
2. Don't forget self-assessments.
    1. Plutocracy ("rule of the rich"): 1 dollar, 1 vote.
    2. Capitalism: 1 dollar *risked*, 1 vote.
3. Theoretical and empirical work.
    1. "Where the rich fool manipulates, the poor expert raises his head."
    2. Poker Sharks
    3. Iterative Cartel Betrayal

A Better Way (?)

1. Do research.
2. Carefully publish/write-up research.
3. Defend research against skeptics (who misunderstand it).
4. Edit / rewrite research to make it more persuasive.
5. Attempt to communicate research to public.
6. Defend against mis-interpretations of your point of view.
7. Spend all day responding to emails, walking people through (in a few minutes) jargon / multiple inferential steps (that you yourself learned over 10+ years in the field).
8. 12-year-olds on reddit call you names.
9. Spend all day responding to 12-year-olds. Meanwhile people accuse your work of being "too confusing" and go with politician/salesman type who is "more convincing".
10. Message does not get out. (No time to work on anything useful.)

1. …
2. Trade on that info.
3. (Optional) Partner with a rich person.
4. You get rich, your message gets out.



Where it takes 20+ years and 150+ IQ points to see the gap?

Thanks!

And remember: