

# E- RONA, MONEY AND TRUST AMONG TRANGERS

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## B O D VIEW

Goal: present concepts relevant for currency innovation, get a discussion started

Technological innovation enables alternatives to traditional currency instruments

starting point to assess implications: *understanding the role of money in a society*

I will discuss this by offering insights from complementary scientific methodologies:

- Theoretical: to formulate logical intuitions
- Empirical: to validate or refine theoretical intuitions

## O DM P FO THE NEXT 20 MINUTE

1. Why societies need money to function
2. Three theoretical sources of possible inefficiency
3. peek at insights from laboratory data

Literature & references: a variety of authors (e-mail me for a list)

HY SOCIETIES NEED MONEY TO FUNCTION

# THE USE OF MONEY IN SOCIETY

# THE NATURE OF MONEY

Money is a social convention

Theory: the most valuable trades in a society are **impersonal**

- Impersonal interactions prevent reciprocity, the basic ingredient of **trust**
- Lack of trust prevents mutually beneficial trades (=economic **cooperation**)
- Monetizing trade enables cooperation among strangers, generating value

**Take- away:** a monetary trade convention resolves underlying trust problems

## THREE THEORETICAL SOURCES OF POSSIBLE INEFFICIENCY

## #1—COORDINATION PROBLEM : MONEY I LIKE LANGUAGE

The more people speak a language, the more valuable that language is to them

o, instrument coordination needed to maximize value of currency system

- But achieving coordination may be difficult when many instruments compete
- Instrument fragmentation can be a source of inefficiency (network effects)
- Coordination especially problematic when incentives are mis-aligned

**Take-away:** coordination problems loom large in establishing a currency system



# COORDINATION FAILURE IN ELECTING PAYMENT INSTRUMENT

Players' interest are *perfectly aligned* here ...

|            | cash  | electronic |
|------------|-------|------------|
| cash       | 90;90 | 0;0        |
| electronic | 0;0   | 180;180    |

... but not here (redistribution of wealth)

|            | cash   | electronic |
|------------|--------|------------|
| cash       | 180;90 | 0;0        |
| electronic | 0;0    | 90;180     |

coordination "device" (a public institution?) is valuable in case 2

## #2—BUILDING/MINTING PUBLIC CONFIDENCE IN CURRENCY

currency's value reflects the level of public confidence in it

Theory: object becomes a currency if no-one can personally gain from refusing it

The idea: I accept a symbolic object if I trust that others will do the same, so

- acceptability depends on the **future** value of the instrument
- the future value depends on the trades the instrument **expected** to support
- a circular argument hinging on **beliefs** (self-fulfilling acceptability)

## CONFIDENCE IN CURRENCY    CONFIDENCE IN THE ISSUER

- *Historically*: confidence = quality of the coins issued
- *Nowadays*: confidence = quantity issued

The problem: issuer earns yield spread btwn assets acquired & liabilities issued

- **Micro**-economic opportunism: temptation to overissue currency instruments
- **Macro**-economic externality: currency value may become unstable or decline
- This will *eventually* reduce the issuer's payoff (an inter-temporal tradeoff)

**Takeaway**: Confidence easier to build if issuer known to have a long-run horizon



A PEE AT INSIGHTS FROM LABORATORY DATA

## CURRENCY SYSTEM IN THE LAB

No justification really needed here in Stockholm (Vernon Smith—Nobel Prize 2001)

But let me emphasize one particular advantage of this methodology:

- Can manipulate the lab setup to establish causality

Let's discuss three findings:

- Currency systems emerge spontaneously & promote trust among strangers
- Confidence in a currency reflects confidence in the issuer(s)
- society's economic development reflects the strength of its currency system

1—CURRENCY SYSTEMS EMERGE SPONTANEOUSLY  
& PROMOTE TRUST AMONG STRANGERS

## L BO TO Y ETUP

- (Macro)Economy= group with even participants (4 to 32), producers+consumers
- Horizon: participants expect many pairwise encounters (producer-consumer)
  - strangers: roles alternate, counterpart unknown, hidden past conduct
  - Trade motive: consumer values production a lot more than producer
  - Optimum: producers always make a gift (= 100 cooperation = max welfare)
- The problem: producer must trust that strangers will reciprocate her current gift

effects setup in “frictional” macro models (see Nobel prize 2010)



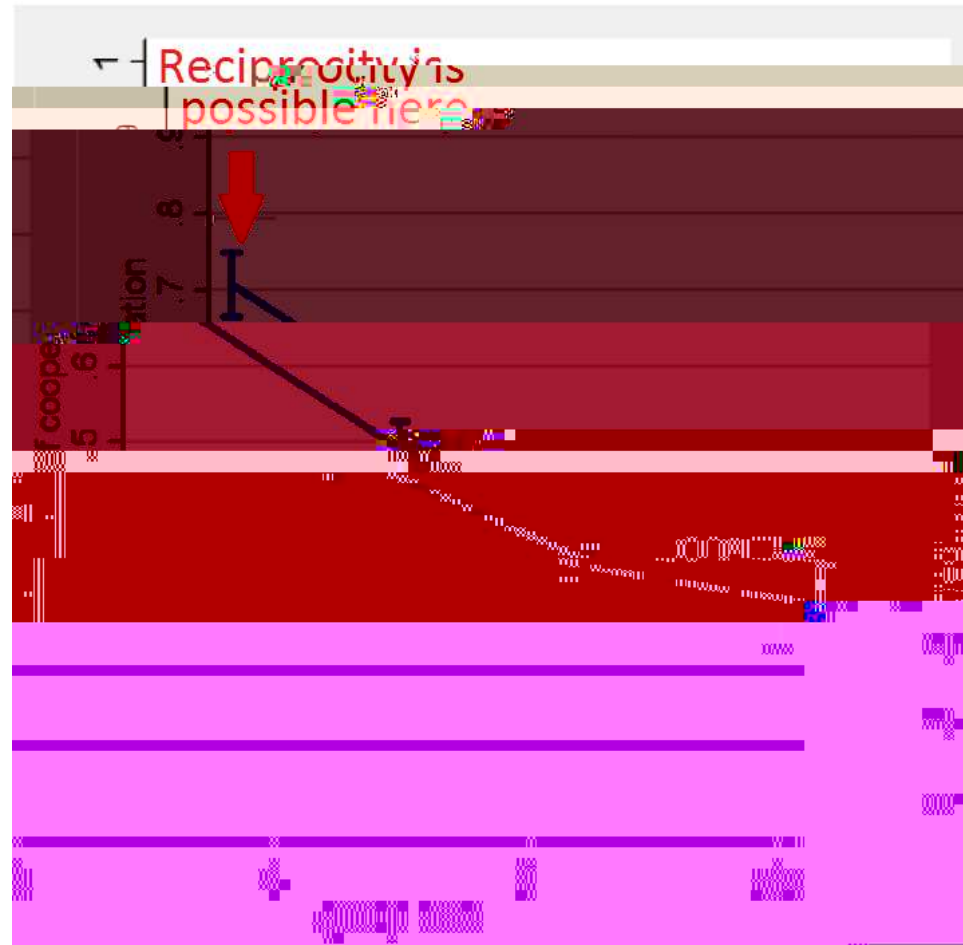
# THE PRODUCER'S INCENTIVE WHEN MEETING TARGET



Points cumulate, are exchanged for \$\$ at session end (cash payments)

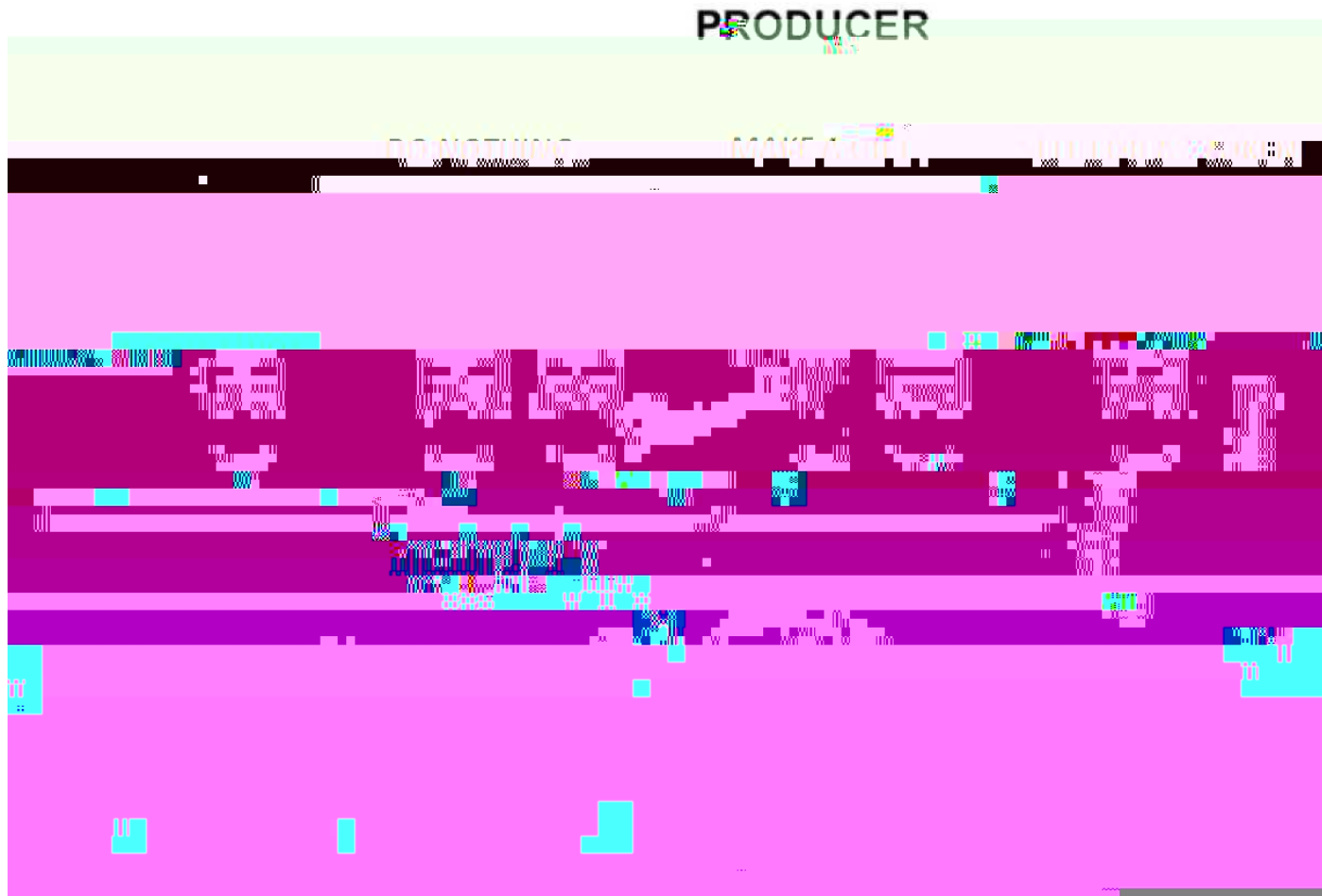
EFFICIENCY DECLINE

GROUP GET LGE



Takeaway: no trust in strangers ) no intertemporal trade ) macro inefficiency

O WE DDED TOKEN (=WO THLE DIGIT L OBJECT )



Fixed supply, no reference to outside currencies, no redemption, *quid-pro-quo*



2—CONFIDENCE IN A CURRENCY REFLECTS  
CONFIDENCE IN THE ISSUER(S)

## O F FULL CONFIDENCE IN THE I UE (FIXED SUPPLY)

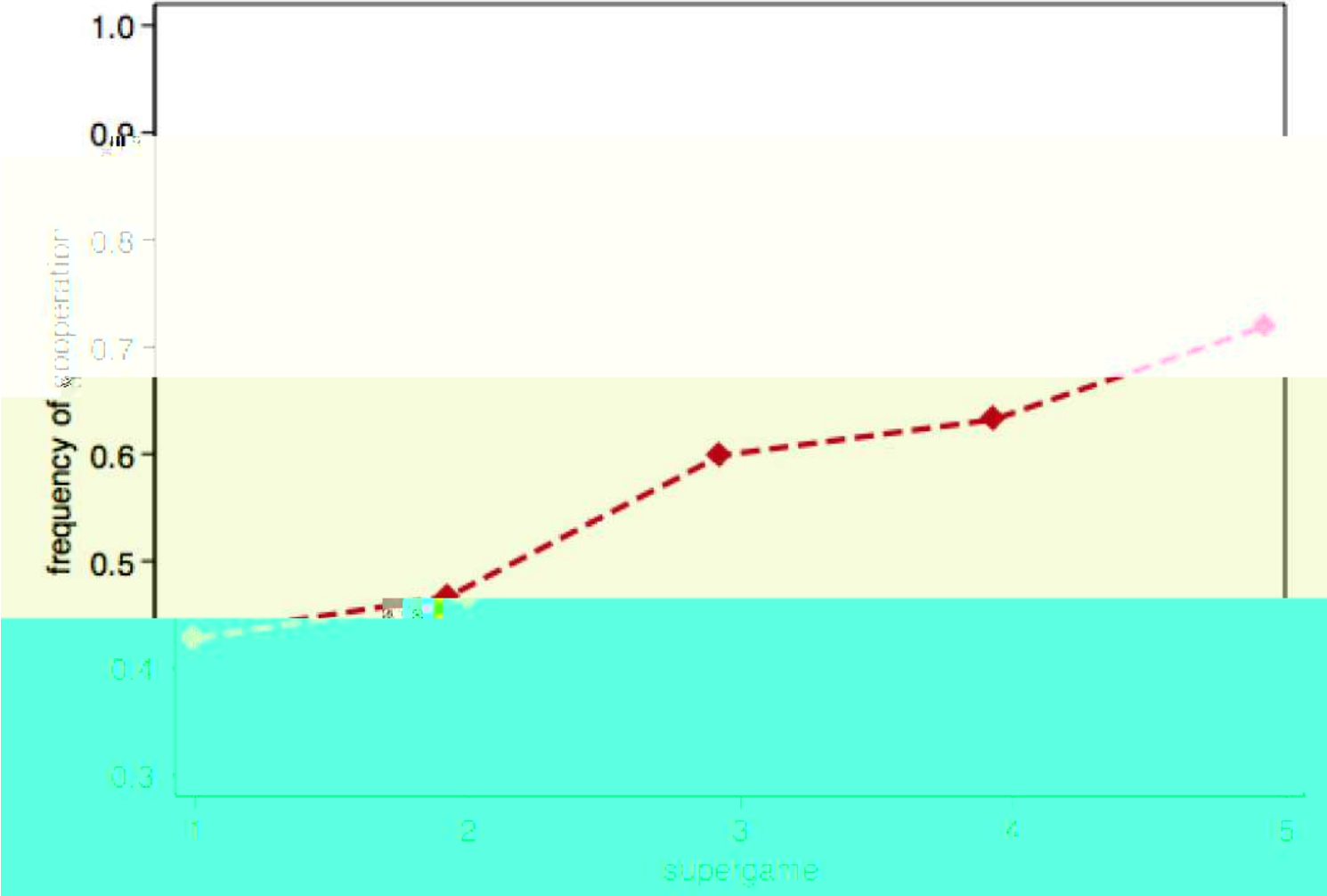
What would happen if private supply? Contrast two conditions

- Control: stable, exogenous supply of tokens
- Treatment: consumers can issue tokens, adding to existing supply

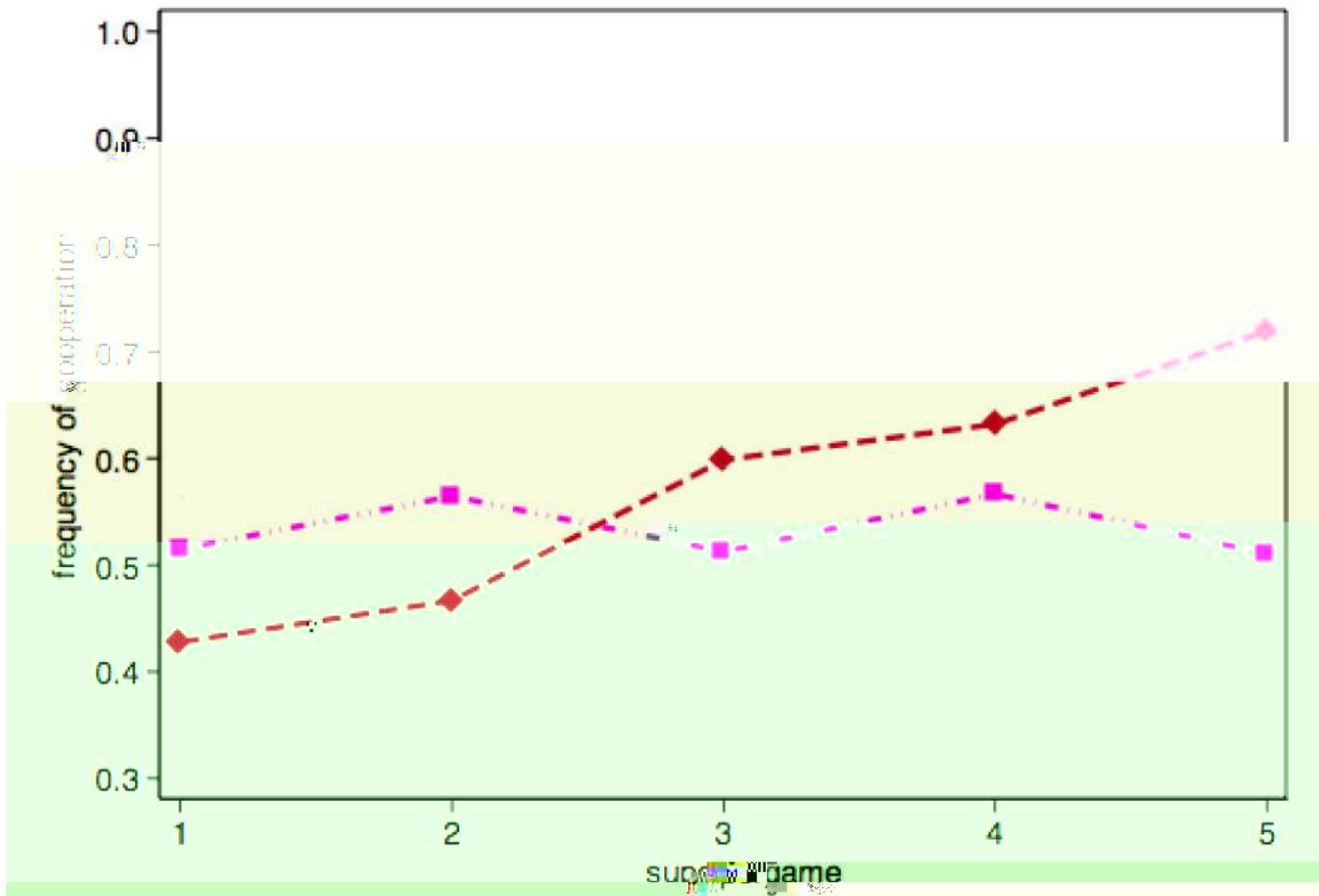
Theoretically, any supply increase is **socially suboptimal** should not occur

Track (if and) how a currency system develops over 5 consecutive “games”

FIXED SUPPLY: CULTIVATION & EFFICIENCY GROW



# P IV TE SUPPLY: CI CUL TION & EFFICIENCY L NGUI H





3—A SOCIETY'S ECONOMIC DEVELOPMENT REFLECTS  
THE STRENGTH OF ITS CURRENCY SYSTEM

## LET PEOPLE FREE TO IMPROVE THEIR "ECO SYSTEM"

- stay in small group: easy to build trust, but little to gain (autarky)
- Form a large group: hard to build trust, but 50% more to gain (trade)

gain, separately study this choice without and with tokens

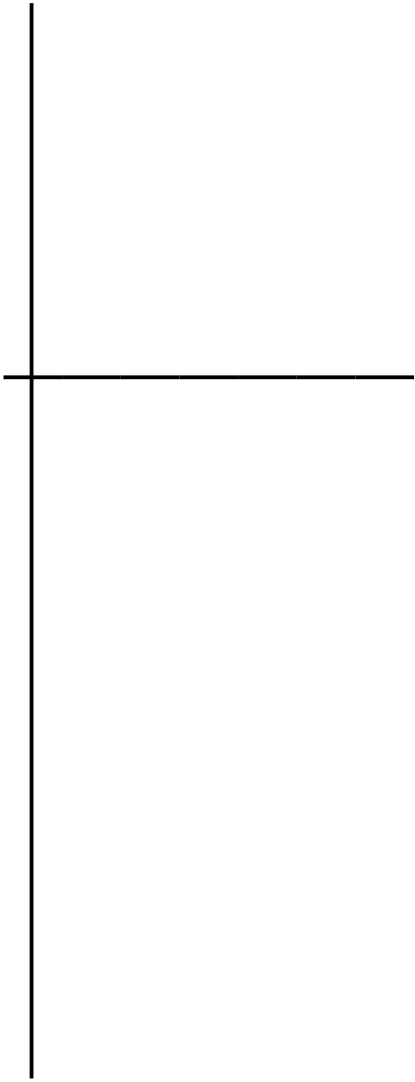
Theoretically in each case optimal to form large group, easy to reap full benefits

# NO TOKEN , NO ECONOMIC DEVELOPMENT

realized efficiency index (max=100)

|              | CONTROL | N  |
|--------------|---------|----|
| Partnerships | 57      | 13 |
| Large groups | 45      | 3  |





HAT HAVE WE LEARNED?

## LE ON 1

Money builds trust, helps strangers collaborate to achieve common prosperity

## LE ON 2

Money is a social convention, exposed to coordination and confidence problems



## LE ON 3

currency system is a public good, so inefficient private contributions possible