

Collaborative Interdisciplinary Research and Development at Sardex

Paolo Dini

*R&D Consultant, Sardex S.p.A., Italy
Department of Media and Communications, London School of Economics and Political Science
School of Computer Science, University of Hertfordshire*

Laura Sartori

Department of Political and Social Sciences
Università di Bologna

Winter school on “Money as a Means of Community Belonging”
Università di Siena, 14 December 2018

Research

- **Analysis**: transaction data, index of virtuous behaviour (with the Brokers), dashboard
- **Qualitative sociological analysis**: interviews (see Laura Sartori's presentation)
- **Monetary theory**: structural and sociological properties of money
- **Economic theory**: Keynes, economic anthropology, and the interface to Capitalism
- **Political theory**: power, governance, 'Alter politics for the commons'
- **EU projects**: <https://interlaceproject.eu>, <https://heteropolitics.eu>
- **Academic collaborations** in all of the above threads
- **Students' queries on Sardex-based theses**, from Italy and beyond

Development

- **Platform**: New (blockchain) technologies and architectures
- **Circuit**: Communications and governance frameworks
- **Annual event**: planning, art direction, logistics
- **Strategy**: VC communications, principles, scalability, company structure
- **Collaborations** with Third Sector and Public Sector: economy of the commons
- **Internal communications and governance**: change management support

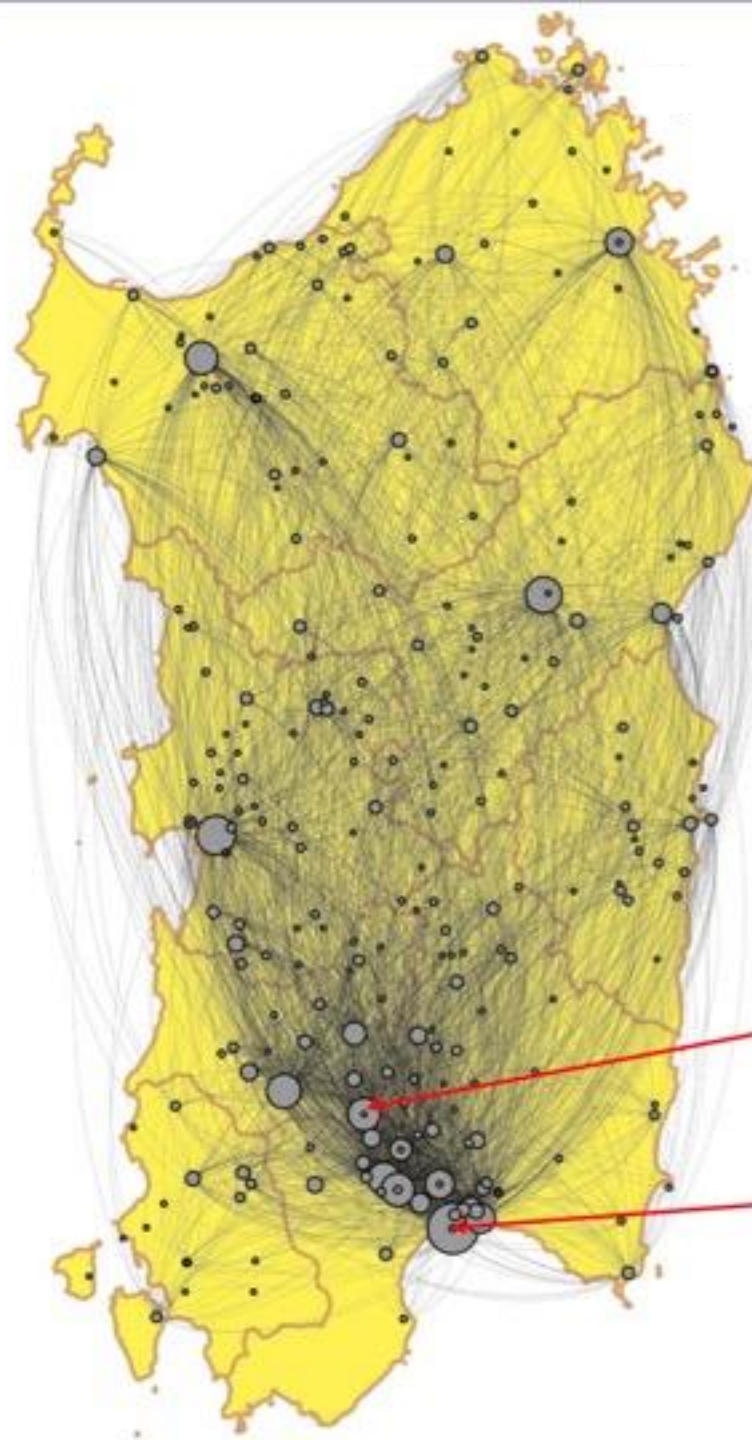
Background: Sardinia



- 8% of the area of Italy and 2.7% of the population (1.8m)
- GDP (30b) is 1.8% of Italy's: GDP/person in Sardinia is 2/3 of the Italian figure

Sardex Network

Transactions amongst different towns: The size of the nodes represents the aggregate volume of transactions in that location



Serramanna (headquarters)

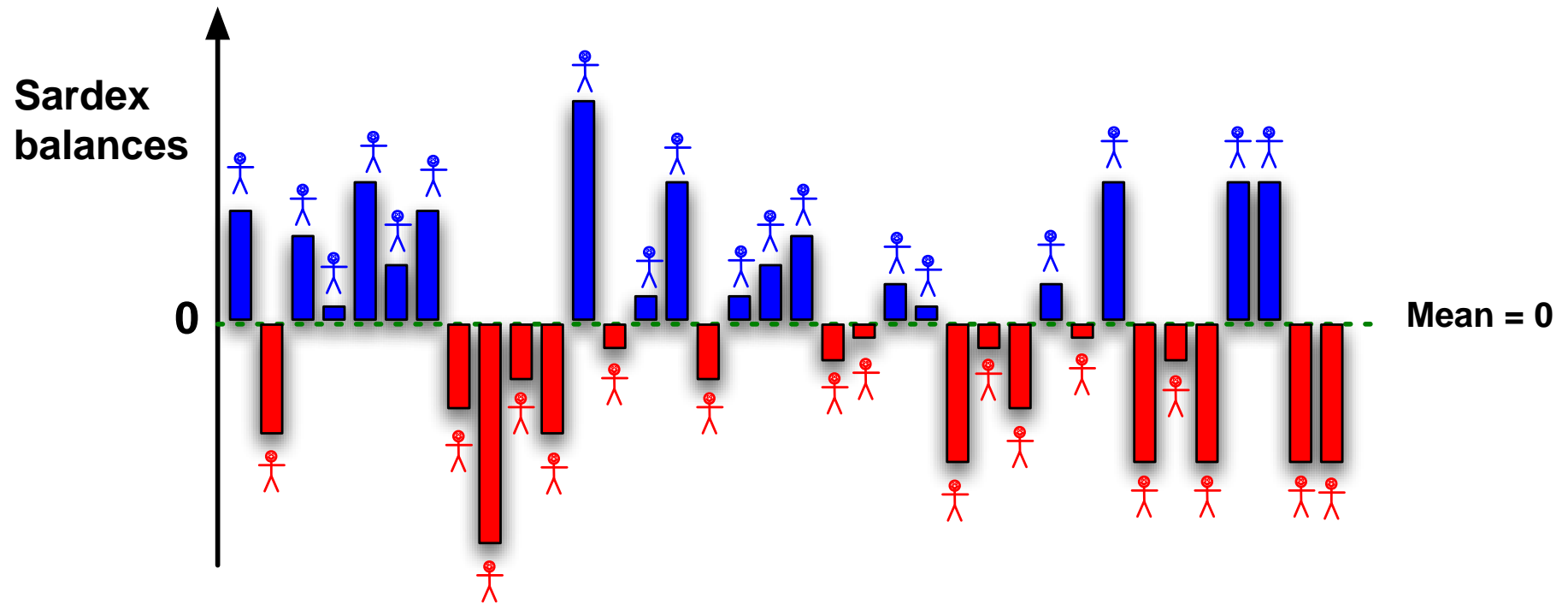
Cagliari

Iosifidis, G, Charette Y, Littera G, Tassiulas L, and Christakis N (2018). Network Analysis of the Sardex Community Currency, *Nature Human Behaviour*, <https://doi.org/10.1038/s41562-018-0450-0>

Sardex: Basics

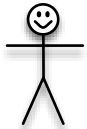
- Established in 2009, B2B, SMEs, electronic, can only be spent in Sardinia
- Created in response to the financial crisis
- 3800 company members, out of 110,000 registered VAT numbers in Sardinia (so 3.5%)
- Transaction volume about ~0.3% of island GDP:
 - 2017: 40m Euro
 - 2018: ~50m Euro

In Mutual Credit, Sum of All Balances = 0, Always

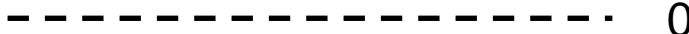


Sardex Distributes the Power to Create Money to Circuit Members

Buyer

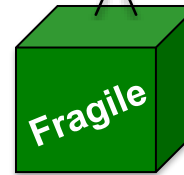


0



0

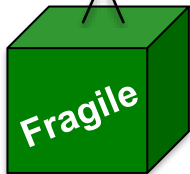
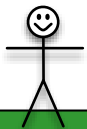
Seller



Before transaction

(crate of goods)

Buyer

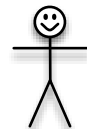


-100



+100

Seller



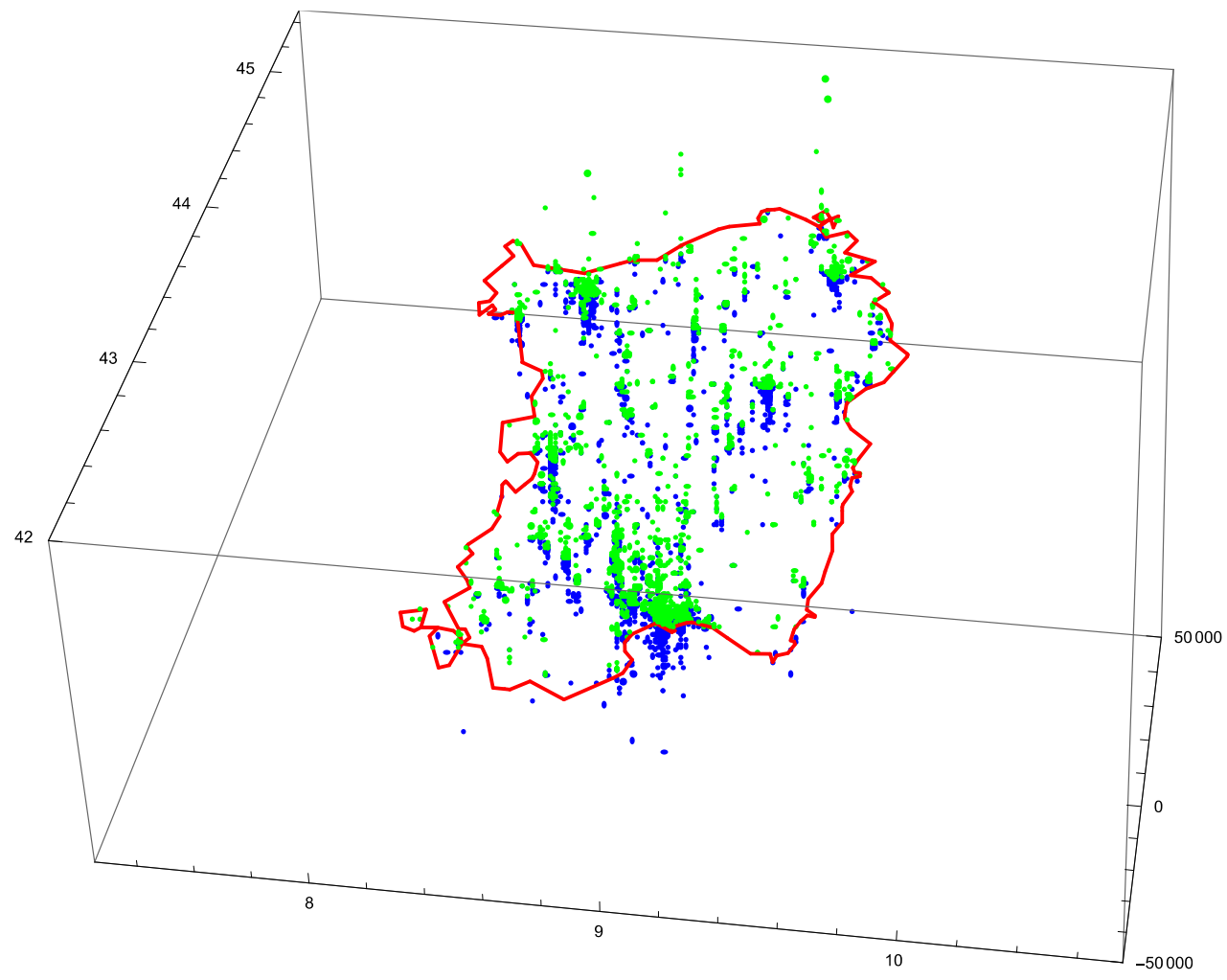
After transaction

Money has been created:

- money is not a “positive” amount
- money is a social relation of credit and debt

Between whom...??

Sardex's Positive (Green) and Negative (Blue) Balances



Sardex: Technical

- 1 Sardex = 1 Euro, **non-convertible** (same unit of account)
- Import substitution stimulates the local economy
- **0% interest** on all balances: poor store of value, *by design*
- Total tax transparency (Panopticon)
- Yearly membership fee dependent on turnover: min 300 E for non-profits, max 3000 E

Research: Money, Debt, Collateral and Backing

- (Before Bitcoin) All money is debt, although not all debt is money
- Therefore, *debt* is the more general concept
- A loan (monetary debt) can consist of:
 - money that already exists
 - money that is *created* at the time the loan is made
- When a loan is issued, it is secured with *collateral*
- When new money is created the collateral is called *backing*

Examples of (Credit) Money Creation and Its Backing

Money Creation Actor	New Money	Debt	Backing
Bank	Loan	Mortgage	Real estate (house)
Government or central bank	Payments to public sector suppliers, QE	Public debt	Future tax receipts
Consumer	VISA credit	VISA bill	Your creditworthiness
Buyer in mutual credit circuit	Positive credit balance (seller's account)	Negative credit balance (buyer's account)	Products & services to be sold in next 12 months
Mining protocol → Miner	Bitcoins	<i>Environmental (energy used)</i>	Proof of Work (CPU cycles)

Possible Landscape

		<i>Economic System</i>	
		Capitalist	Commons-Based
<i>Political System</i>	Libertarian/ Anarchic	Bitcoin Bitnation	Credit Commons
	State-Centred	Neoliberal nation-state	Mutual Credit Circuit as tax-paying non-capitalist market

(Source: Paolo Dini, LSE. This diagram is only meant as a conceptual aid, not a discrete taxonomy of mutually exclusive categories)

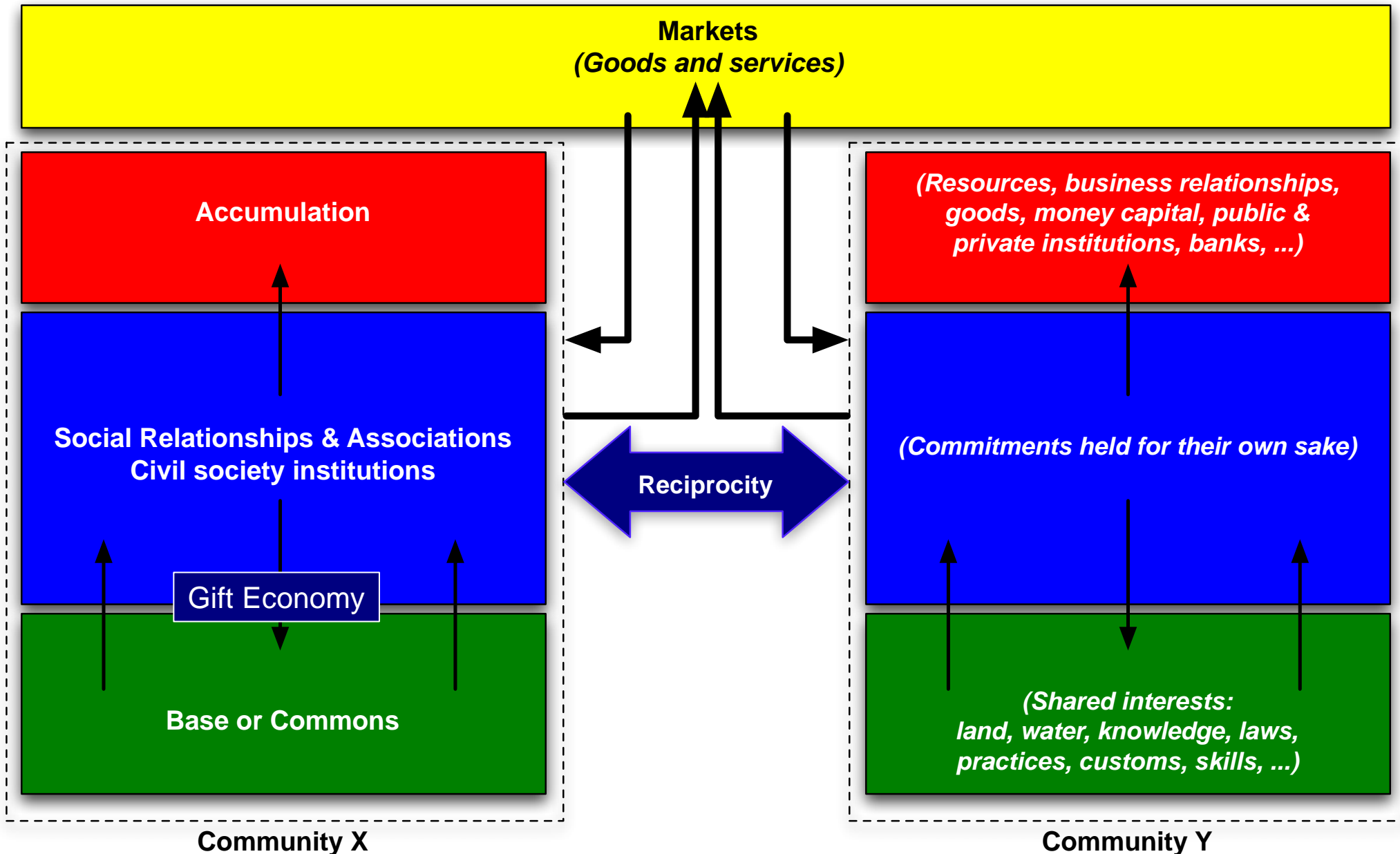
Sustainable Development

- Although not a new idea, Bitcoin has popularized that money can be *designed* to have different properties
- If money can be understood and designed to have properties that support different kinds of economic activities, can we design a type of money that is best suited for **sustainable development**?
- **Sustainable development**: A stable and constructive integration of market activity with democratic institutions

My claim: Sardex is a good currency for sustainable development

Economic Anthropology

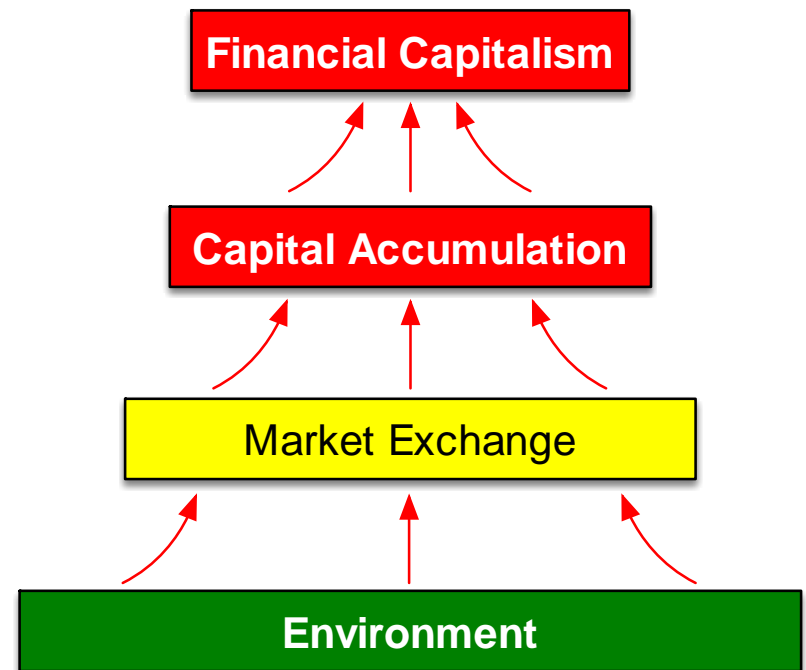
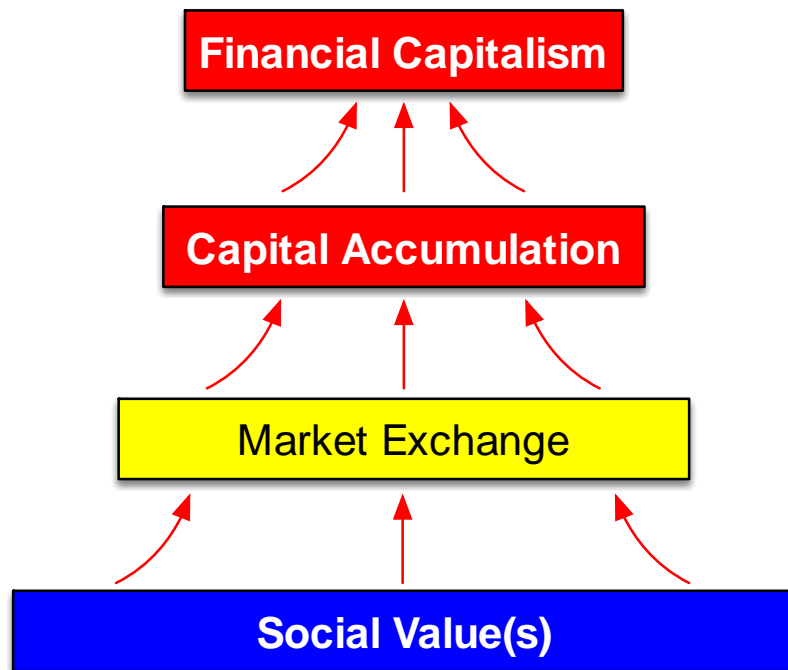
(Gudeman 2001)





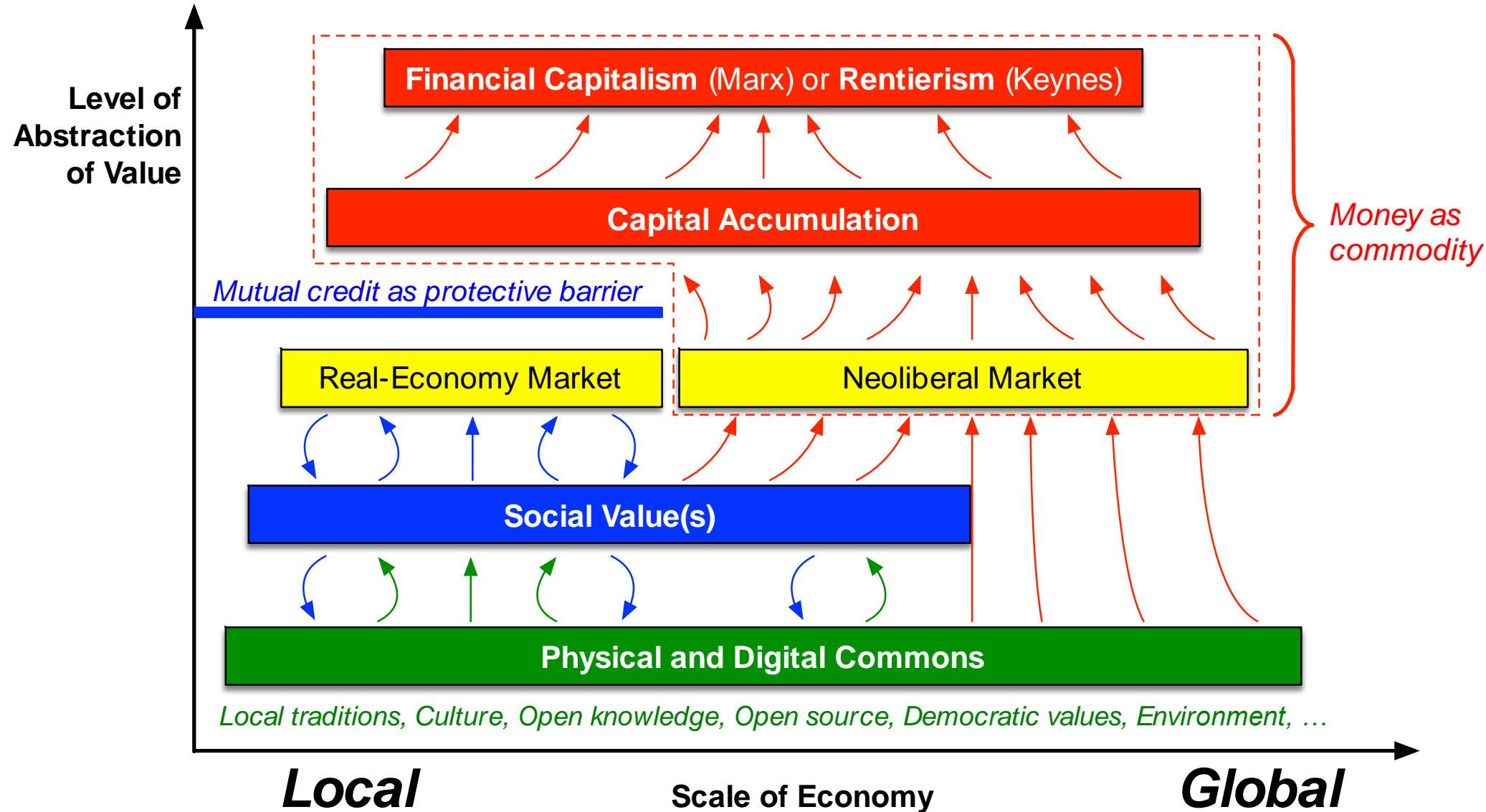
Sassari,
14/02/16

Commodification & Financialisation as the 'Big Vacuum Cleaner'



Architecture of Complementary Mutual Credit

(Mixing Gudeman, Braudel, Marx, Keynes, Douthwaite, Arrighi, and Steiner)

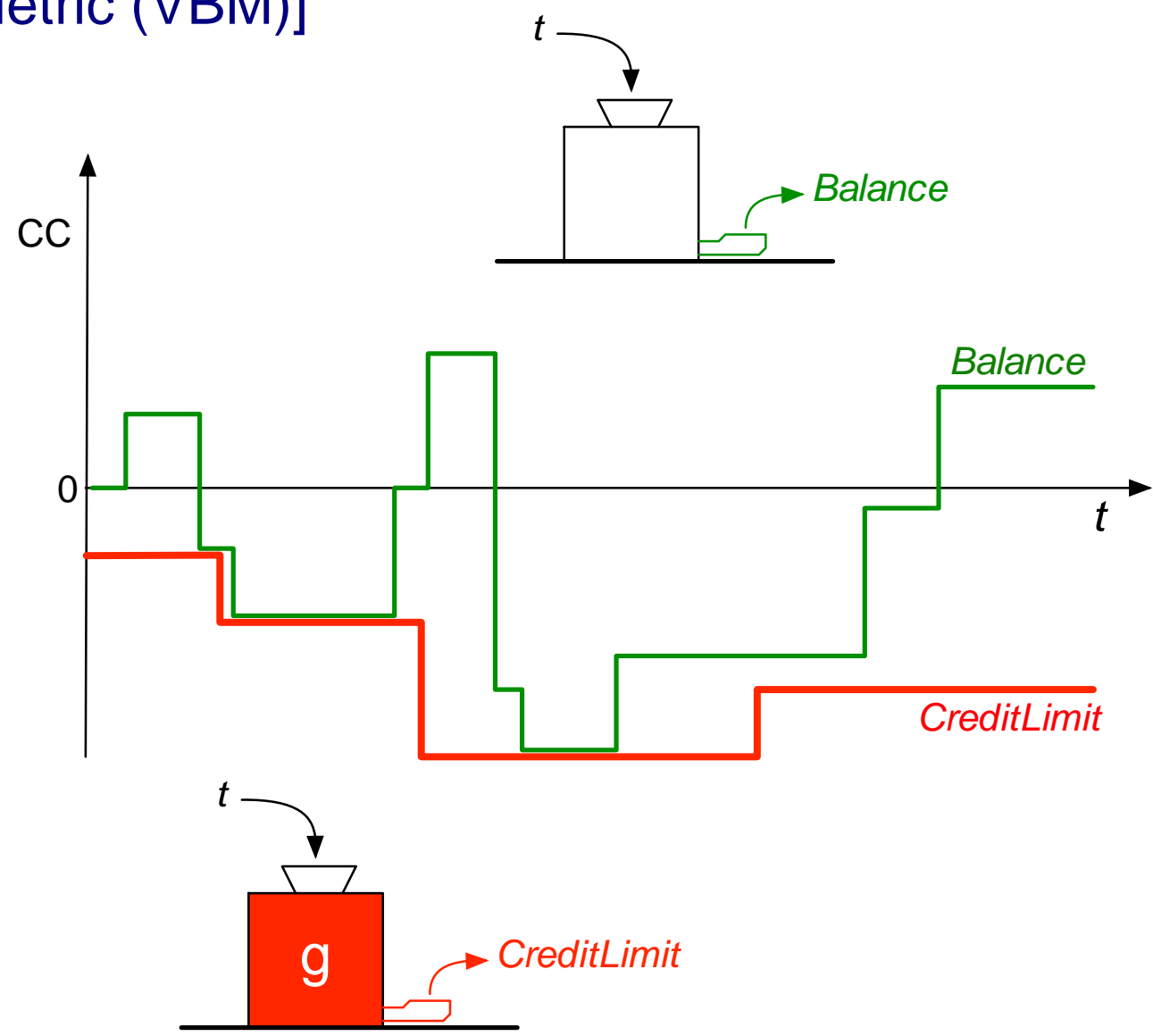


Research: Metrica di Comportamento Virtuoso (MCV)

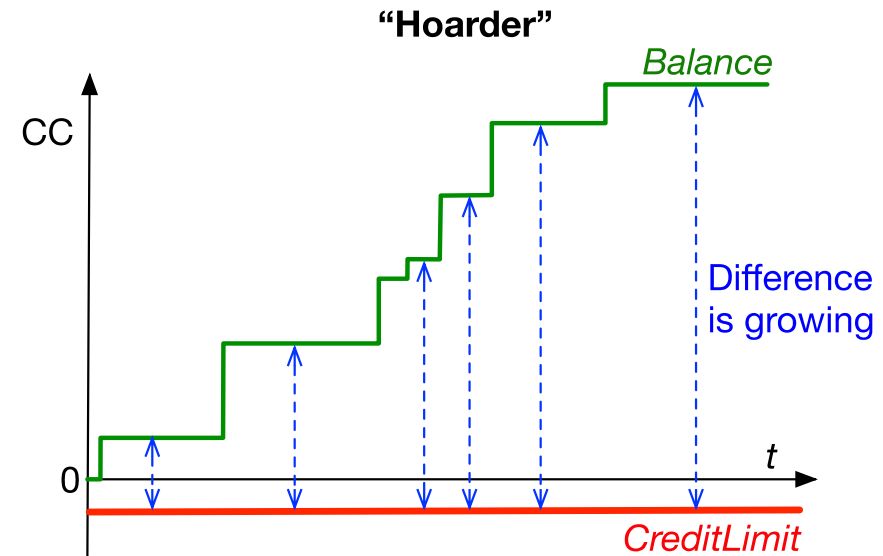
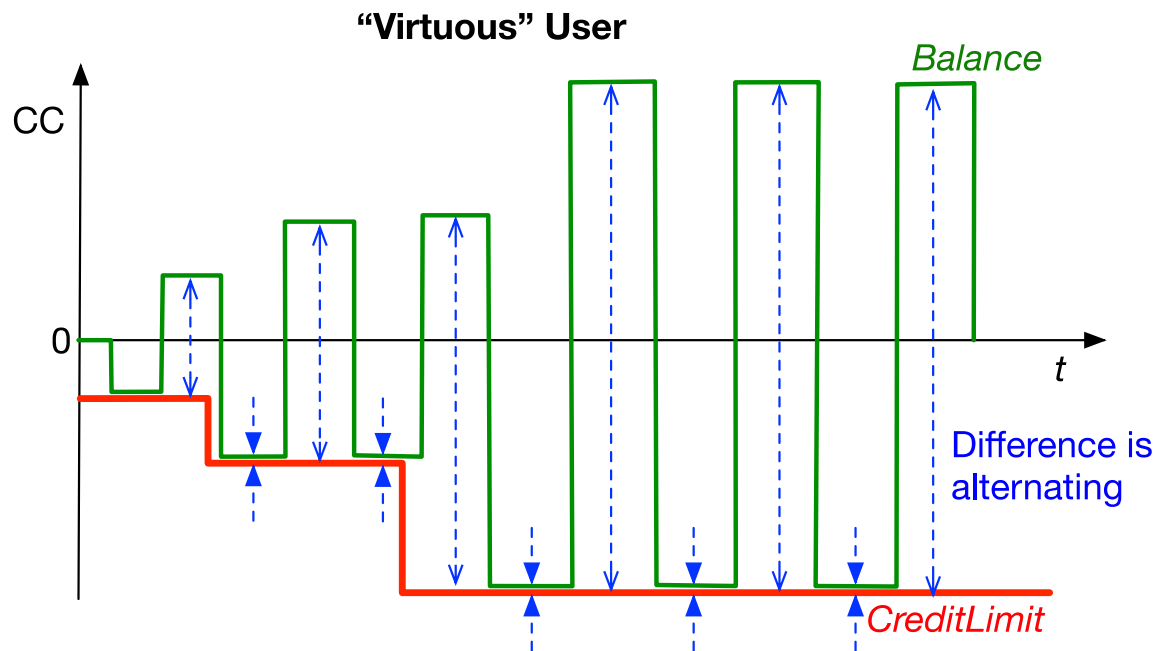
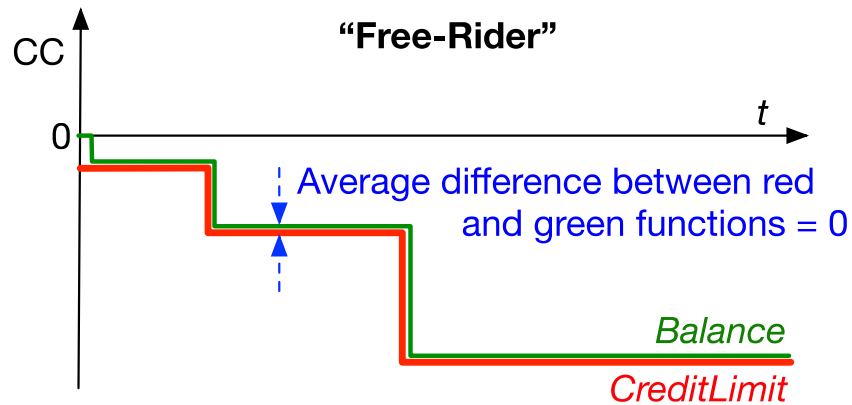
[Or: Virtuous Behaviour Metric (VBM)]

The time series of the credit limit and of the balance are functions of time:

Balance(t)
CreditLimit(t)

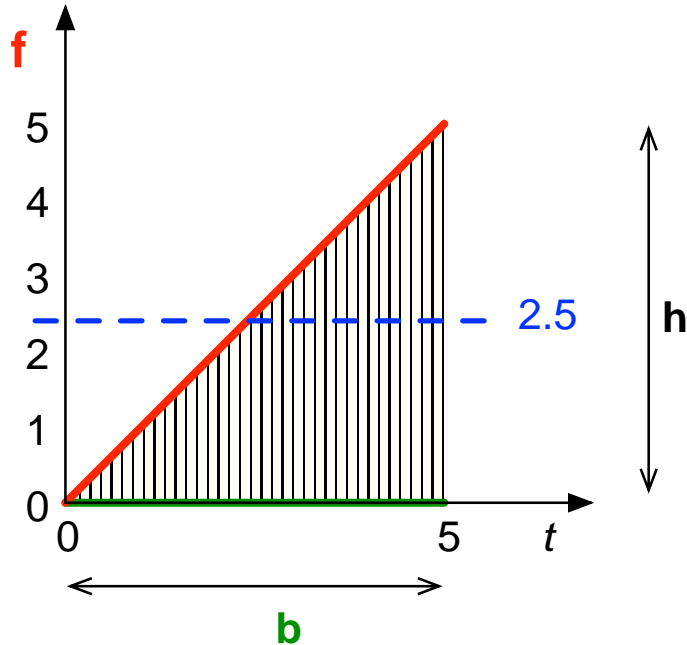


User Behaviour Stereotypes Expressed as *Difference* between Functions



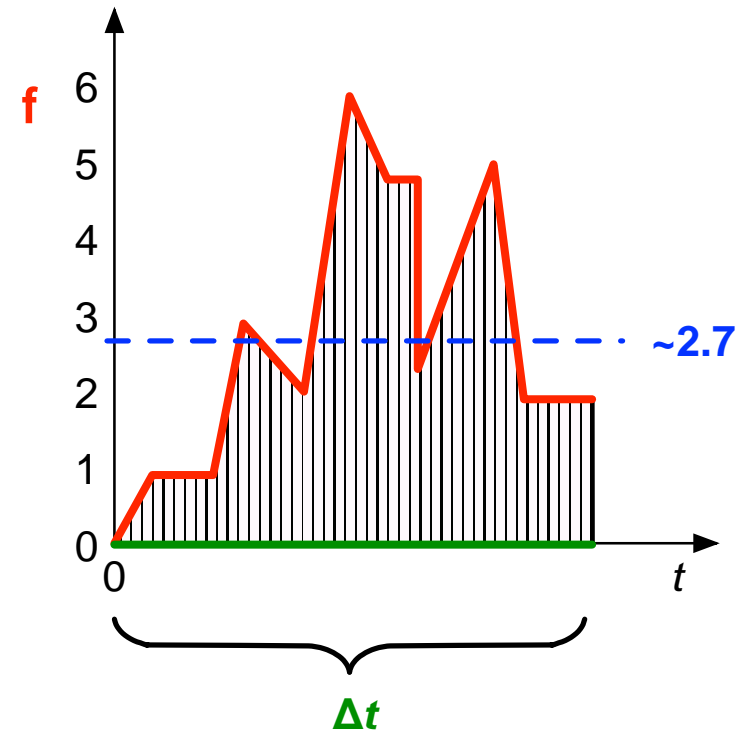
Trick: we characterise these kinds of stereotypical behaviour by the **average** of the difference

Average of a Function



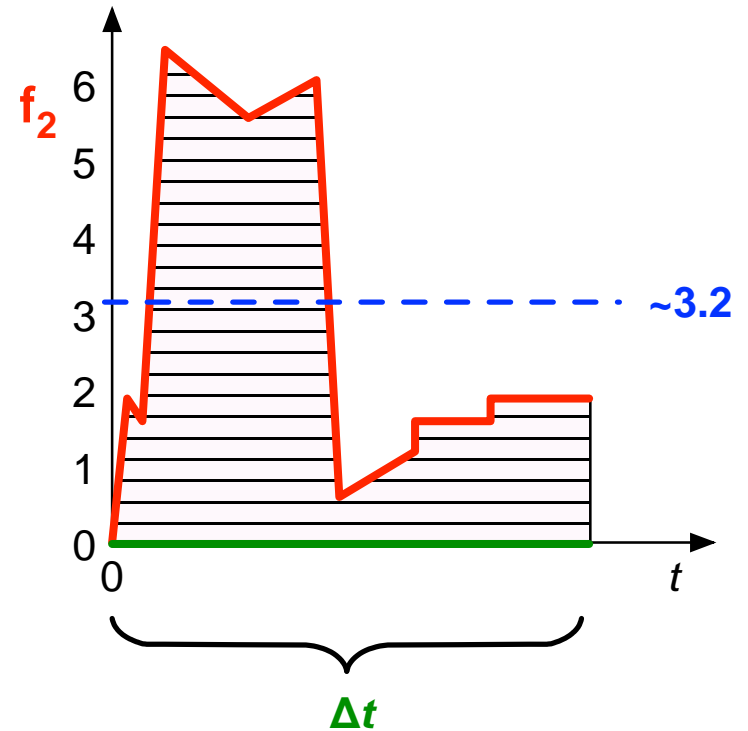
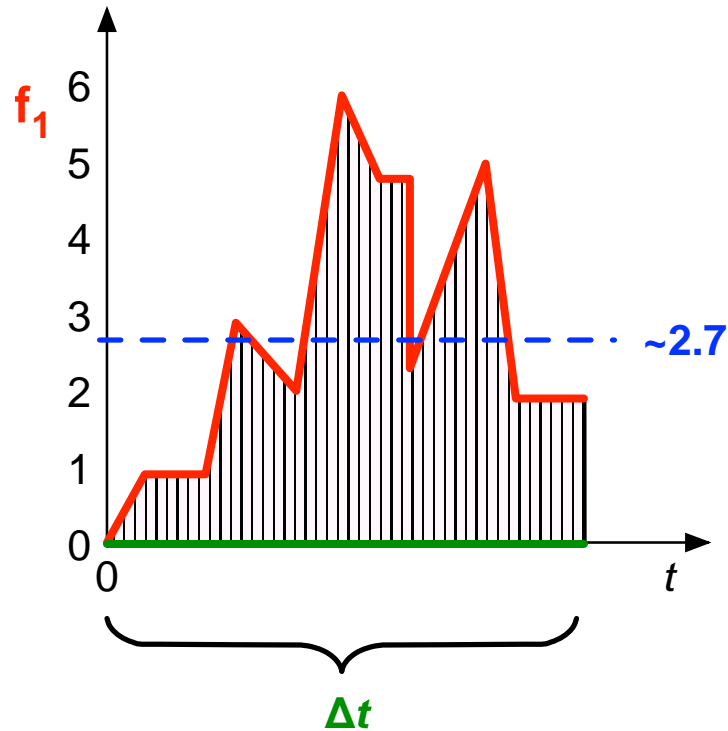
Average = $\frac{\text{Area subtended by the function}}{\text{Time duration}}$

$$= \frac{bh/2}{b} = \frac{5 \times 5 / 2}{5} = \frac{5}{2} = 2.5$$



Average = $\frac{\text{Area}}{\Delta t}$

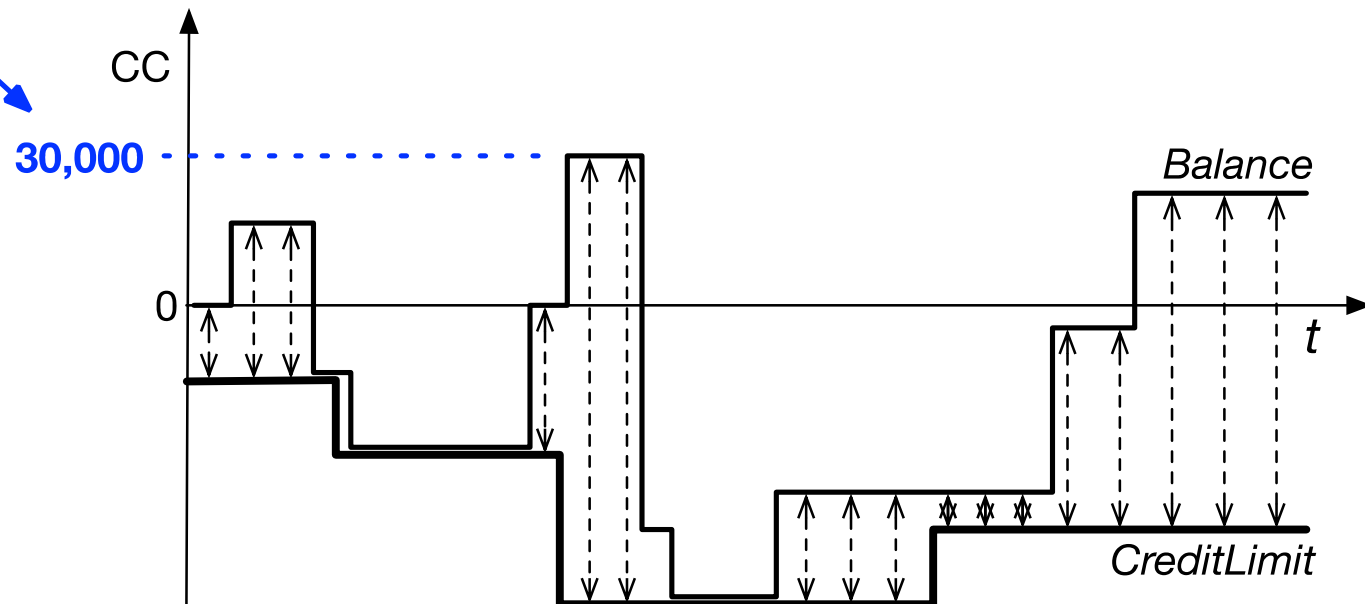
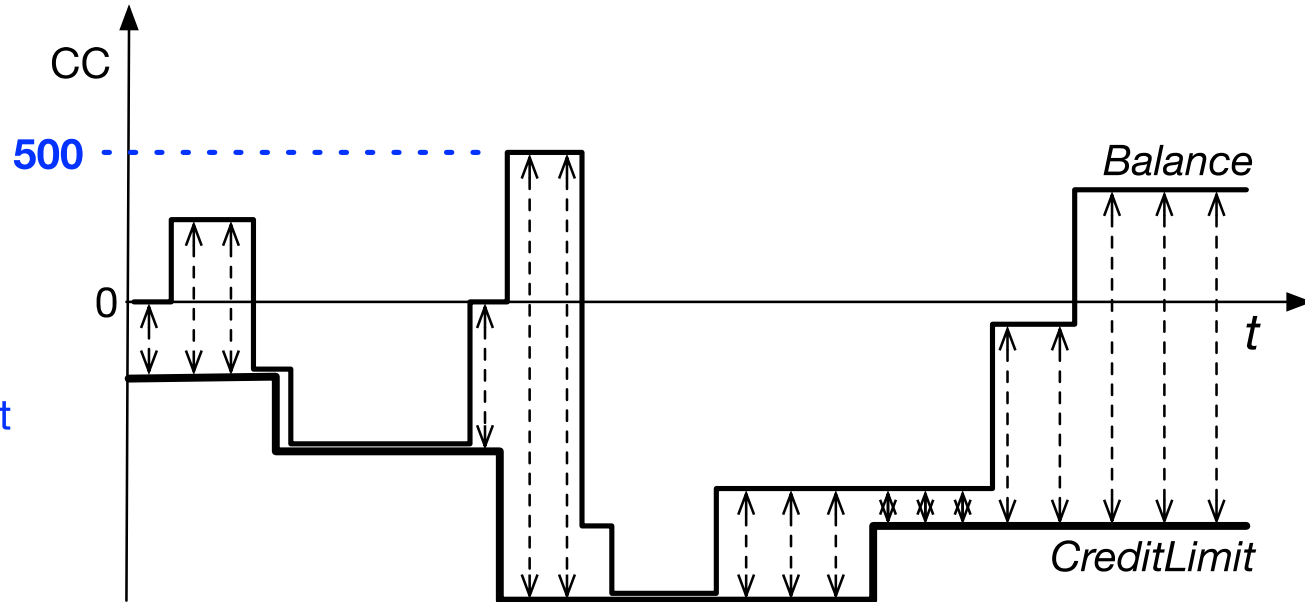
Ratio of Averages



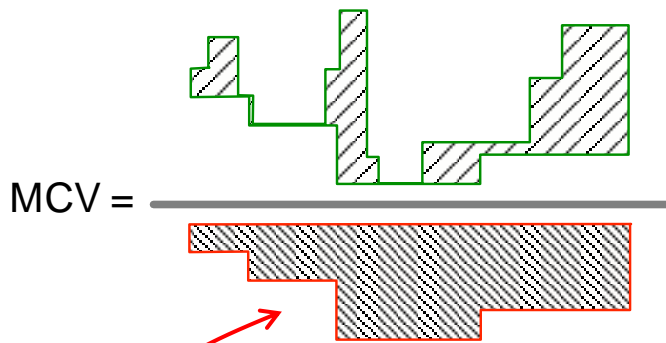
$$\frac{\text{Average}_1}{\text{Average}_2} = \frac{2.7}{3.2} = \frac{\frac{\text{Area}_1}{\Delta t}}{\frac{\text{Area}_2}{\Delta t}} = \frac{\text{Area}_1}{\text{Area}_2} \cdot \frac{\Delta t}{\Delta t} = \frac{\text{Area}_1}{\text{Area}_2}$$

Scale Invariance

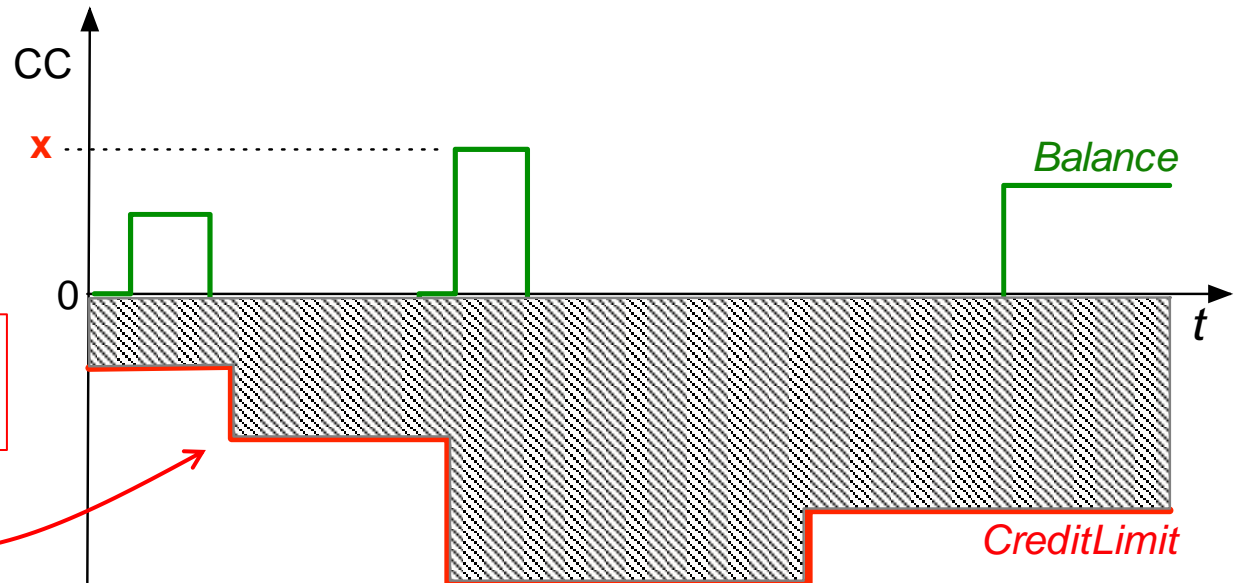
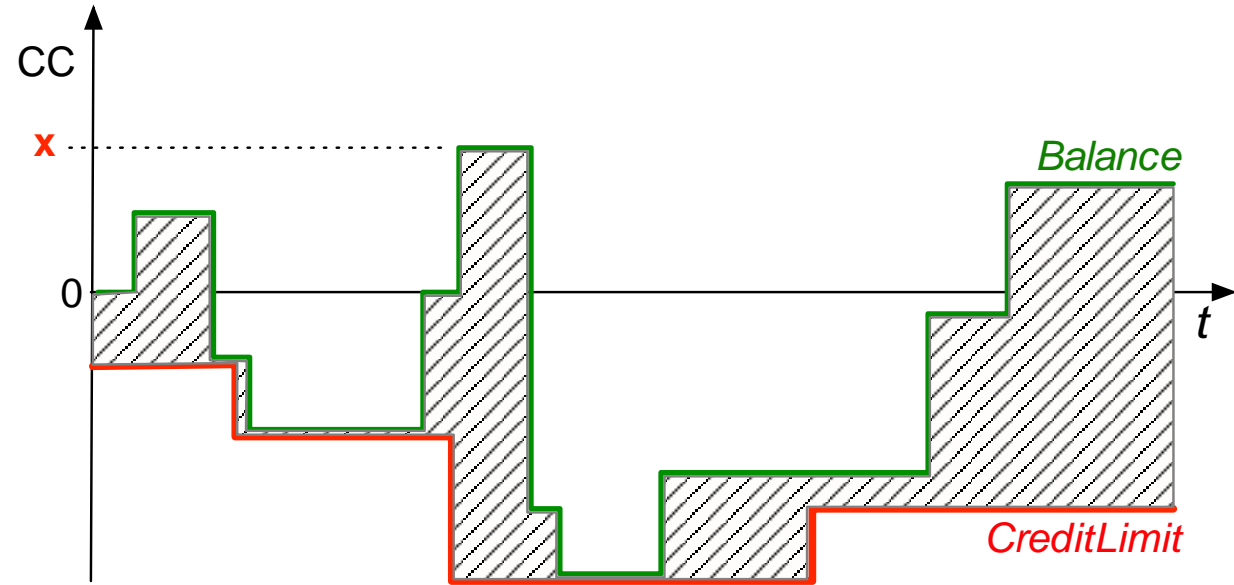
Balance time series with very different volumes but the same shape should yield the same value for MCV (at this initial coarse level of analysis)



Normalisation



Why are we using the CreditLimit's area, to normalise?

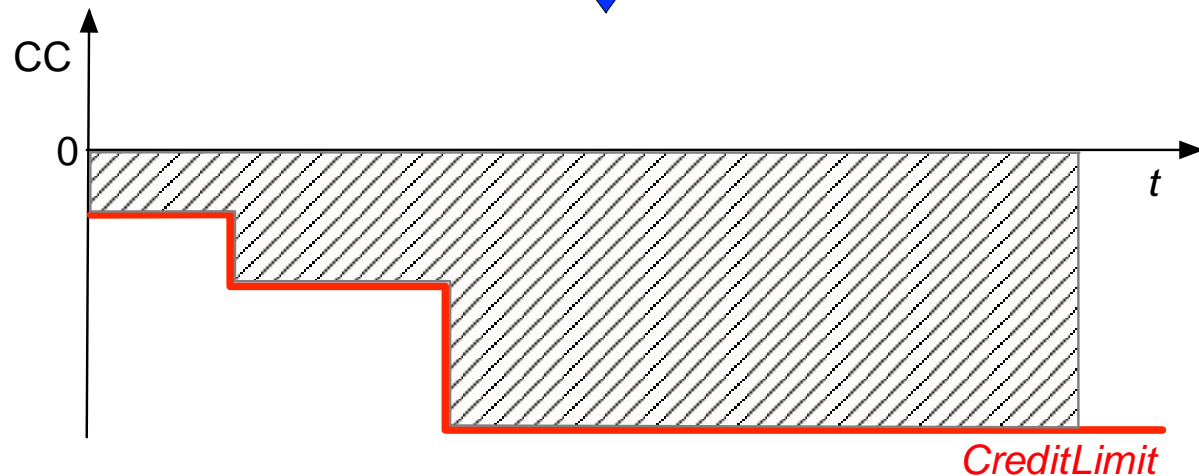
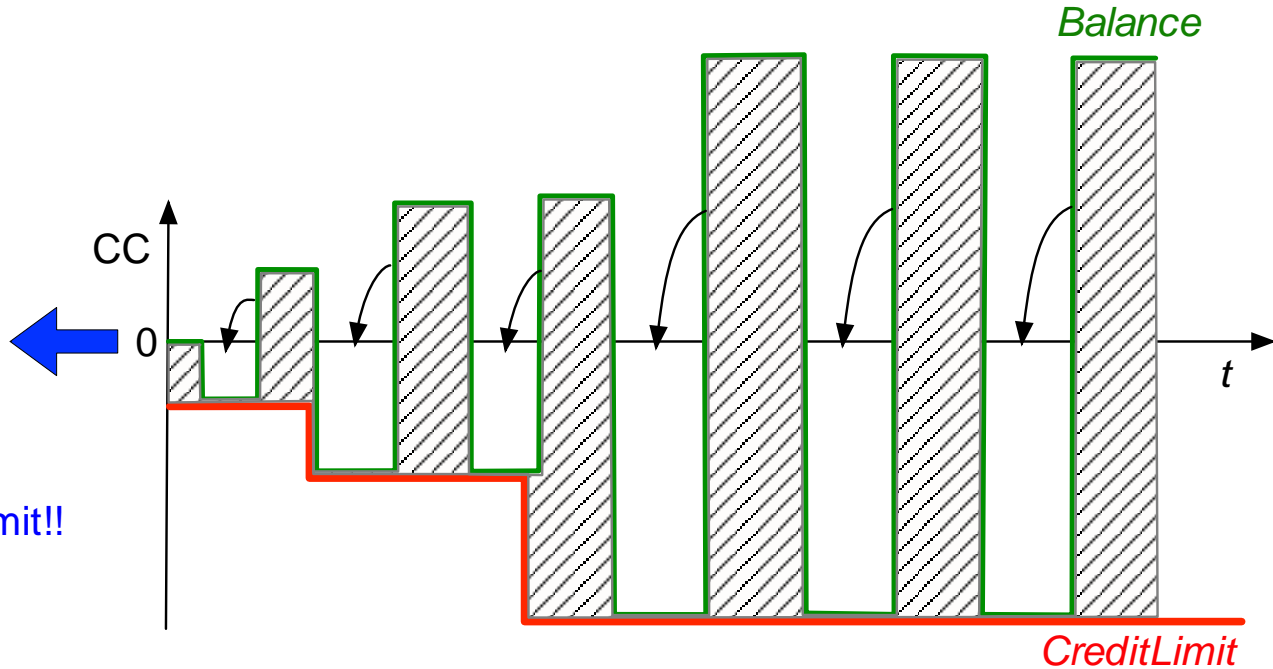


Because we want to use virtuous behaviour as norm...

...and the area between its red and green functions

IS EQUAL TO

the area subtended by the CreditLimit!!

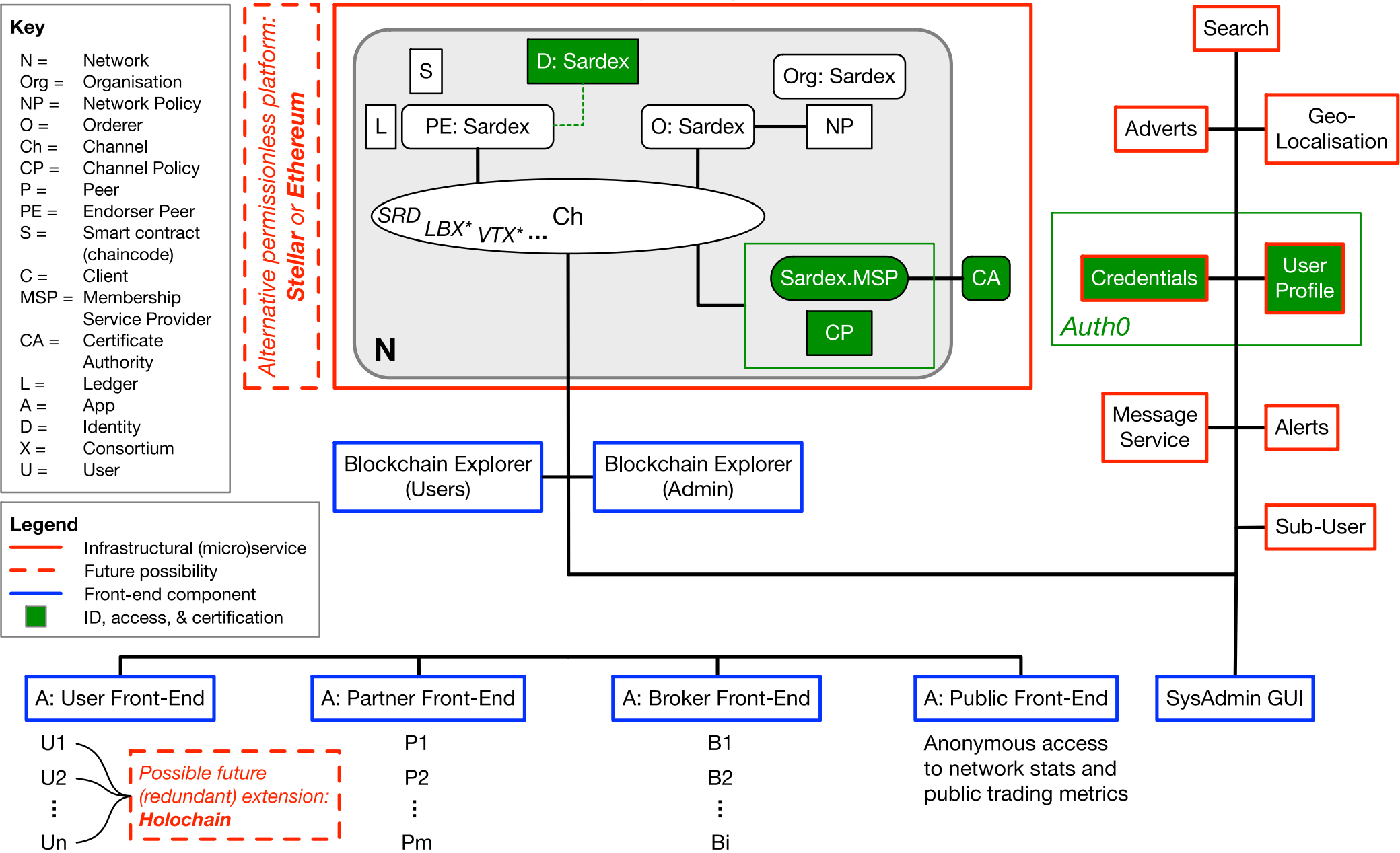


Histogram Based on ~3000 Users



Development: Sardex Blockchain Architecture (Draft)

Permissioned Hyperledger Transactional Platform



Laura's Presentation

Main objectives



Reconnect local economic actors

Re-activate local production and consumption

Create and value social relations and impact

Provide promotion through value added services

Provide complementary payment and credit instruments

Does money change values
or
Do values change money?



Is Sardex a
Zelizer Circuit?

What is the
role of trust?

1. Which Perspective is Most Appropriate?

Does money change value?

- Is money a social leveller, a neutral tool, that commodifies and objectifies everything?
 - Karl Marx, George Simmel

or

Do values change money?

- Does money embody or express social values?
 - Viviana Zelizer

Sardex has both: economic and social values, merged as a special blend

- This enabled its emergence, stabilization, and scale-up

2. What Role does Trust Play? 1/2

- Trust is essential but cannot be taken for granted:
 - Sardinia has a low tradition of reciprocal, generalized and institutional trust
- Sardex as a finite network:
 - Influences how firms behave in the presence of uncertainty
 - Fills the void or supplements the quota of existing social capital

2. What Role does Trust Play? 2/2

- Sardex, the firm, is the focus of trust:
 - Its role as MEDIATOR of economic and social ties clearly emerges through its daily (broker) operations
 - It facilitates economic and social transactions, because trust between the circuit members cannot be taken for granted

*At the beginning people are curious, they want see what opportunities there are. But then, when it's time to decide, they get cold feet. **They think of it as an opportunity to speculate and they are afraid of being tricked.** It's as if they doubted the good faith of other people. [If you are born in Serramanna] **instead of being a bridge of trust (...)** we think the opposite. Nobody is a prophet in his own country (Alessandra, retail)*

- *We don't know our customers since we are in contact only by email. But even so we have confidence in Sardex because it is the Sardex system that has put us in touch with this customer. **I can trust Sardex blindly.***

(Bruno, blacksmith)

Contrary to Bitcoin (where trust is tech-based, not personal or social or institution-based),

Sardex aims to make trust the building block of the system
(both Institutional and Generalized trust)

3. Is Sardex a Zelizer Circuit?

- 6 characteristics:
 - 1. has well-defined boundaries separating members from non-members;
 - 2. exerts control over exchanges across boundaries;
 - 3. personal interconnections permit the transfer of well-defined goods;
 - 4. transfers might involve the use of a specific medium;
 - 5. connections between participants are based upon shared meanings.
 - 6. mutual awareness of the participants

3. Is Sardex a Zelizer Circuit?

- 6 characteristics:
 - 1. has well-defined boundaries separating members from non-members;
 - 2. exerts control over exchanges across boundaries;
 - 3. personal interconnections permit the transfer of well-defined goods;
 - 4. transfers might involve the use of a specific medium;
 - 5. connections between participants are based upon shared meanings.
 - 6. mutual awareness of the participants

3 conditions are not met

- N. 3. Personal interconnections permit the transfer of well-defined goods

Is not met, unless we specify that personal interconnections permit the transfer of goods through a third party (Brokers, but also the search engine), as is indeed the case here.

- N. 5. “Connections between participants are based upon shared meanings” is partially met and in the process of being constructed
 - *I can use them as if they were euros. It's all a matter of entering into the **Sardex logic** (Melania, professional training courses teacher).*
 - *Some members understand perfectly that Sardex **was built to supply local needs not met by the national currency**, while reflecting a different take on economic exchange. It comes **from Sardinians willing to make something for their own land**, trying to incentivize new ways to trade locally (Vinicio, decorator).*

- N. 6. “Mutual awareness of the participants”: it is not trust, but a general understanding that it is possible to go “beyond the local”
 - *There is an exchange not just regarding the purchase but also about the ideas, ways of conducting business, advice. You can establish a relationship that is different from the one that you can have with a customer because the usual customer buys, chats and that's it. Instead with Sardex when you enter this big network, I'm not saying that it's as if you entered a big family, but you do have a different relationship.* (Alessandra, retail)

Circuits do exist as structures: Beyond market, hierarchy, or network

Sardex as a circuit is

- A proper market with a distinctive network of interpersonal relations that recognize and share locally meaningful symbols
- Re-embeds economic transactions (Polanyi, Granovetter)

Discussion Question 1

Is Sardex a Laboratory of multilevel Institutional governance? (1/2)

- Yes, it seems so, from two different perspectives:

Internal perspective:

- Empowerment: Members become aware of their role in shaping and constituting the socio-economic fabric of the network
- Responsibility: Together with awareness of greater control comes the awareness of greater responsibility for the health of the local economy
- Reflexivity: They realize that '*they are*' the local economy

Is Sardex a Laboratory of multilevel Institutional governance? (2/2)

External perspective:

- Mediation: It is a trusted and valuable third party at the local level
- State interface: It collaborates with the Sardinian regional government in an open and on-going experimentation
- Generator of Local Goods: instrument for local development
- Replicability: It is exporting its model at a larger level, scaling up to other Italian Regions

Scale-up Model with a Special Blend of Features

- Other Italian regions are experimenting and adapting the Sardex model with the goal to:
 - Reproduce the special blend
 - that keeps together
 - economic benefits and social values
 - in other different and larger – but still local – territories

Discussion Question 2

Is Sardex a new financial space?

- Financial innovation can be positive, not only detrimental to the 'real' economy
- Nowadays the investment function of finance is minor while the banking services (credit clearing in Sardex) predominate
- Sardex can represent financial innovation because it implies the creation of money (not only banking services)
- It requires trust: again, economic benefits meeting social values

Conclusions

- In the panorama of complementary currencies Sardex stands out because
 - 1. It is a B2B complementary currency
 - 2. It involves both economic and social values
 - 3. It facilitates and creates trust through its role of trustworthy mediator
 - 4. It resembles a Zelizer circuit
 - 5. It is growing in Sardinia and it is scaling up by being replicated in other regions of Italy
 - 6. It serves as a laboratory for multilevel institutional governance
 - 7. It serves as a new financial space (a stabilizing force, especially in times of crisis)



The Top Face of the Cube

