

TEST 0 - Money

Question 1. Explain the three functions of a monetary unit and connect it to at least one fundamental property of money, which is relevant to this function. Explain your choice.

- Means of exchange
Money for exchange goods. Everything factor into money.
✓ buy: goods for money
✓ sell: money for goods
Connect to: Durability, Transferability, ...
- Unit of accounting
✓ uniform, comparable valuation of goods and services
✓ market transparency
✓ lower transaction cost
Connect to: Verifiability, Stability
- Value storage
✓ possibility to save
✓ prepare for larger investments
Connect to: Durability, Transferability

Question 2. Consider a community that trades 26 different goods by direct exchange. Explain the effect of a commonly accepted means of exchange (e.g., money) on the number of exchange pairs, both in quantitative terms and in practical terms.

$$C_n^2 = \frac{n!}{2!(n-2)!} = \frac{n(n-1)}{2} \quad (C_n^k = \frac{n!}{k!(n-k)!})$$

$$\frac{26 \cdot 25}{2} = 325 \text{ compares to } 26$$

Question 3. Compare the aggregated cost of competitive creation with the cost of monopolized creation. In the comparison assume the same cost/benefit scenario.

- Competitive creation
increasing the money supply lowers the market value of a unit
manufacturing a unit requires resources that become scarce
- Monopolized Creation
manufacturing cost way below market value

Question 4. Calculate the equilibrium of the money supply q under the assumption that the market value of a competitively created monetary unit is given by the function $MV(q) = \max(50 - 2q, 0)$ and the cost for manufacturing a unit is $MC(q) = 3q$

$$50 - 2q = 3q \rightarrow q = 10. \quad (30)$$

Question 5. Byzantine Generals [ID: 467680]

The Byzantine Generals problem is a well-known problem in the context of fault tolerance of decentralized systems. Find out about this problem (e.g., wikipedia or a textbook on distributed

systems) and discuss the impact of this problem on decentralized transaction processing of virtual monetary units.

https://en.wikipedia.org/wiki/Byzantine_fault

<https://dl.acm.org/doi/10.1145/357172.357176>

<https://academy.ivanontech.com/blog/byzantine-generals-problem-an-introduction>