

Cognitive Capacity and Earnings Performance: Evidence from Double Auction Market Experiments

1. What is the question?

How the cognitive capacity can impact the difference in subject's market performance? How the working memory capacity effect on the market performance? What are the results when the authors do consider the two different kinds of behavior in the double-auction that the first time, traders tell the truth and the second time, the traders have adaptation of their behavior? What are the abilities that are factors from the working memory capacity will relate with these two treatments?

2. Why should we care about it?

From the well-known study of Vilfredo Pareto, the linking about social heterogeneity and economic inequality that is the reason we should care. This difference will be the factors that someone makes a decision in the real world.

The real world example: for someone who have the behavior on banking, investment on some asset, or doing the business and marketing. The reason of these behaviors is from the individual ability on economic performance. So the cognitive capacity are important on the economic factor, this is why we should care about it.

3. What is the authors answer?

The result show that the cognitive capacity can explain it, there exist the positive relation between the working memory capacity of the subject and the market performance significantly. And the cognitive capacity also is the reason of the gap of performance. The abilities that are factors of the working memory capacity that affect the first treatment (tell the truth) are the Sentence Span, Operation Span, and Memory Updating tasks. And they got the only one ability effect the second treatment (adaptive trader) that is Spatial Short-Term Memory task.

4. How did the authors get there?

They begin with the subject's seat in the morning for two hours to finish the double-auction experiment and they use the computer to determine their behaviors and the result. Then break with lunch boxes and return to do WMC test at 1 pm. After that they were asked to fill the questionnaire before they get the reward.

And for the working memory capacity (WMC), they focus on five different tasks. There are backward digit span (BD test), memory updating (MU test), operation span (OS test), sentence span (SS test), and spatial short-term memory (SSTM test).

Model and explanation

1. Performance Index = (The actual profit earned/The potential profit) × 100
2. Experiment 1: Trading with Simple Agents (the earning equation)

$$E_i = \alpha + \beta_1 WMC_i + \beta_2 Male_i + \beta_3 Buyer_i + \beta_4 EX1_i + \beta_5 EX2_i + \beta_6 EX3_i + \beta_7 Tool_i + \varepsilon_i$$

Variable	Definition
Male.	An indicator variable equal to 1 if subject i is male
Buyer	An indicator variable equal to 1 if subject i is a buyer.
EX1	An indicator variable equal to 1 if subject i has experiences in online auction markets (such as eBay or Yahoo auctions, etc.).
EX2	An indicator variable equal to 1 if subject i has experiences in financial markets (stock, futures, or exchange markets).
EX3	An indicator variable equal to 1 if subject i has any other experiences in auctions (such auctions of antiques or agricultural products).
Tool	An indicator variable equal to 1 if subject i expressed the need of paper and pencil during the auctions.