FINAL

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Q1:
(c)
The optimal choice remain the same, the endowment point are different. This is because according the price ratio and original endowment, the agent have the same resource to allocate.
(d)
x0 decreases with increasing β The agent consumes less today to save for the future.
x1 increases with increasing β: The agent consumes more in the future due to increased saving

Q2:
In ipynb document

Q3:
(b)
The asset is too expensive (overpriced).
Sell 1 unit of asset 3 at $4 and buy the portfolio replication (2 unit of p 0, 2 units of p 1, 3 units of p 2) for $0.48
Arbitrage profit per unit: 3.52
(c)
Jake does not fully hedge his risk; consumption varies across states.

Q4:
(c)
It is perfectly hedged since the market is clearing.
(d)
When θB goes up,xB goes up at the same time. The ratio p1/p2 goes down. Higher θB means higher risk averse, traders expect more average allocation of assets in different situation, then push up the price in situation2, and allocation more on situation2.
Traders have different levels of risk aversion: different θ.
Traders have different subjective probability: different pi
According to the data, traders expectations would have more impact on the market.
(e)
Charlie's participation make the market more optimistic than before, so the p2 goes down, Aaron would allocate more on situation2. Since p1 are higher, Bryan is richer.

Q5:
(a)
When simulation times n goes to positive infinity, the ratio would converge to the real probability.
(c)
The total profit goes up and the profit per person converge to a certain level.
(d)
Scenario A: since these people have same risk averse level in part c, w and c are the same, the profit per person was half
Scenario B: since these people are much more risk averse, w goes down and c goes up, while the profit per person goes up.
Scenario C: same as part c.
(e)
When sb>=0.5, the price would be high
When sb<=0.25, the price would be low
Profit is a close to index function of sb.

(f)
w=950, c=250
In this case, firms could not make any money but make loss compare to part b and c.
Therefore, this policy increase consumer welfare but do harm to the profit of firms.