

The Beauty Contest

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Keynes remarked that the stock market is like a beauty contest. He had in mind contests that were popular in England at the time, where a newspaper would print 100 photographs, and people would write in and say which six faces they liked most. Everyone who picked the most popular face was automatically entered in a raffle, where they could win a prize.

Keynes wrote, "It is not a case of choosing those [faces] which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practise the fourth, fifth and higher degrees."

The “Miss Rheingold” campaign, run by the J. Walter Thompson Co. for Liebmann Breweries, Inc. for over 25 years, is the best-known American example of a Keynesian beauty contest.

At the height of its popularity, between 15 and 20 million votes were cast per year—a turnout second only to the Presidential elections.



Toni Clardy

Meet the six lovely candidates for Miss Rheingold 1957, chosen by a panel of famous judges that included Bob Cummings, Irene Dunne, Joan Fontaine, Ida Lupino, Ed Sullivan and William Perling and George Sinton.

Now you become the final judge. Your vote—and the votes of your friends—will help elect Miss Rheingold 1957.

Prize and fortune for the winner. The girl who wins the title wins a contract worth \$50,000, expense-paid trips to Hollywood and Europe, plus all the fun and fame of starring in next year's Rheingold advertising.

Time to fill those ballot boxes. You can help your favorite candidate. Just look for the Miss Rheingold Election Ballot Box at any Rheingold store or tavern. And cast your vote—today or any day through September 30.

Kathleen Wallace



Beverly Christensen

Which
will **You** elect
Miss Rheingold
1957?

Pick the girl who'll win
a contract worth \$50,000!
Vote at any Rheingold
store or tavern!

Margie McNally



Sherry Reed

Every vote counts. All ballots are checked and tabulated by an independent research organization that certifies the accuracy of the final tally. So join in the fun of choosing a new Miss Rheingold—cast your ballot along with the millions of people who've made this the second-largest election in America. And join those same millions in enjoying the best Miss Rheingold represents. It's always been as beer should taste. And your approval of Rheingold Extra Dry has made it the largest-selling beer in the East!



Member Breweries for more than 115 years
Since 1908, Liebmann Breweries, Inc., 400 Park Ave. E.

Diane Baker



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Moreover, if she believes that the other participants are rational as well, she will not pick a number above $100 \times 2/3 \times 2/3$; and if she believes that the others are rational and that they also believe that all are rational, she will not pick a number above $100 \times 2/3 \times 2/3 \times 2/3$ and so on, until all numbers are eliminated but zero.

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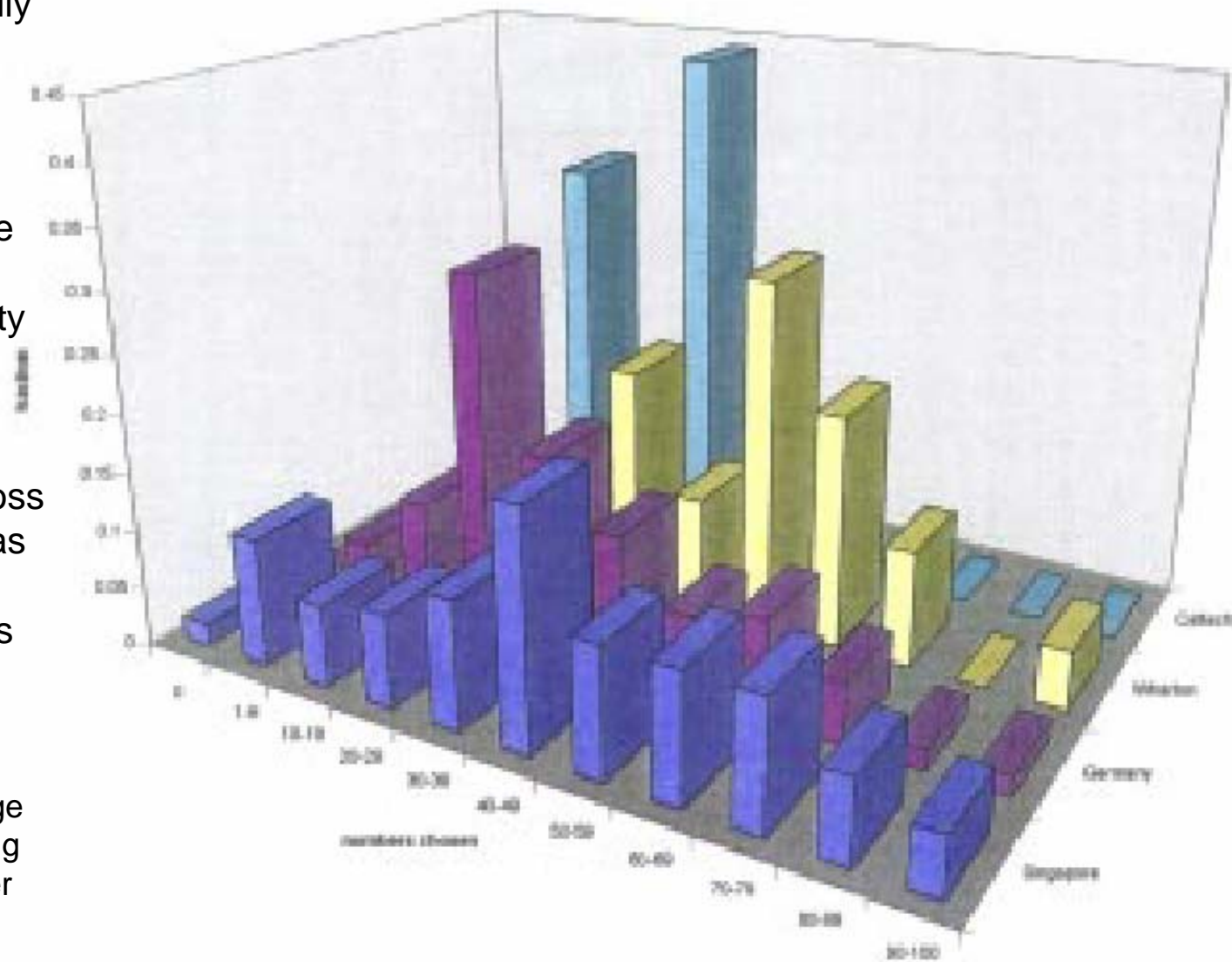
If you played this game repeatedly, your thoughts might run as follows. You might assume that the starting average would probably be 50, so you'd guess 33. But then you'd say, hmmm, if other people are as clever as I am, they will all pick 33, so I should pick 22. But if everyone else does that, too, I should pick two-thirds of 22. And if you carry this through infinitely many levels of reasoning to the logical end, you'll wind up picking zero.

Zero (or one in our game) is what game theory predicts for this situation. Game theory is the branch of social science that analyzes strategic interactions in mathematical terms. It was founded quite a long time ago, but it's had a slow fuse—only in the last 10 or 15 years has it come to the fore in reasoning about economics and political science.

So how do people actually behave? Do they pick zero? The data here are from experiments on undergrads from Singapore, Germany, the Wharton School of Business at the University of Pennsylvania, and Caltech.

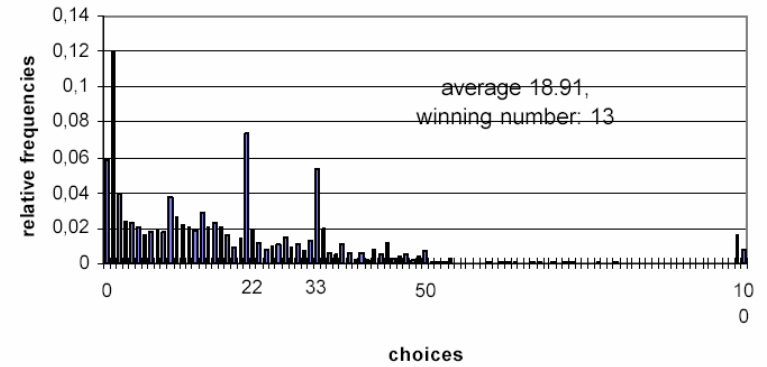
The average choice across all these experiments was around 40, so if you guessed about two-thirds of 40, or 27, you'd probably win.

If we use these data to gauge how many steps of reasoning people are doing about other people's reasoning, some number from one to three seems reasonable. It's clearly not the game-theory prediction of infinity, but it also clearly demonstrates the performance of at least one step of reasoning.

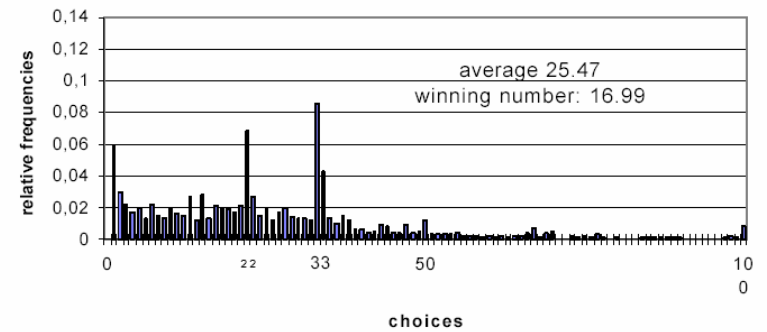


Three Newspaper studies

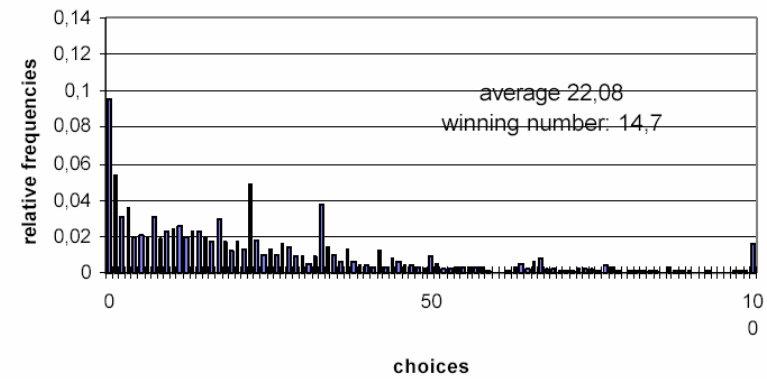
Ft-data (1468 subjects)



Expansion-data (3696 subjects)



Spektrum-data (2729 subjects)



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The most popular numbers in all three experiments are two-thirds of 50 (about 33), two thirds of this number (about 22) and the equilibria of the game (0 and 1 in FT, 1 in E and 0 in S).

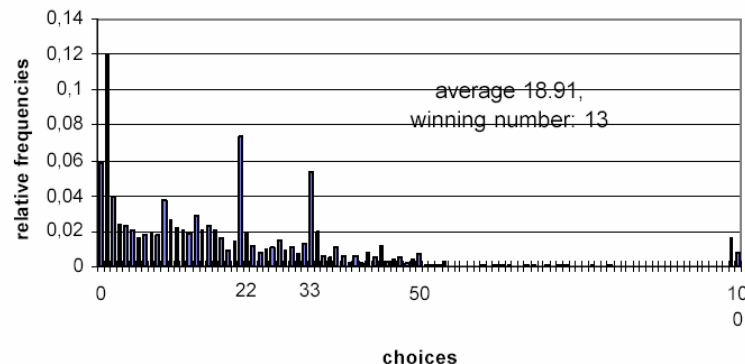
The steps of reasoning interpretation claims that in the Beauty-contest game people reason in steps. Step 0, which would be the preliminary step of any reasoning, translates into numbers that are arbitrarily distributed over the interval, resulting in an expected value of 50 (50.5 if numbers are from 1 to 100).

Level-1 reasoning is $(2/3) \cdot 50 = 33.333$.

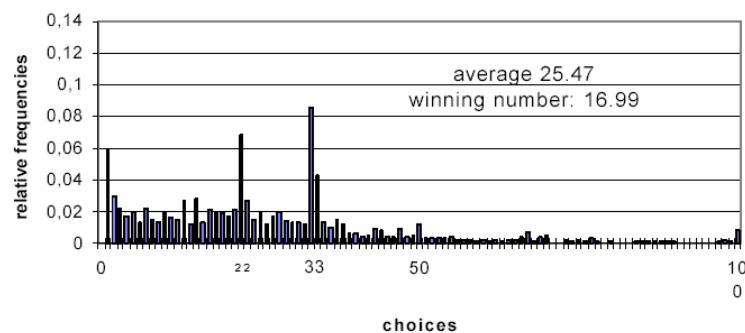
Level-2 reasoning is $(2/3) \cdot 33.333 = 22.22$.

Level 3 reasoning is $(2/3) \cdot 22.22 = 14.8$ and so on.

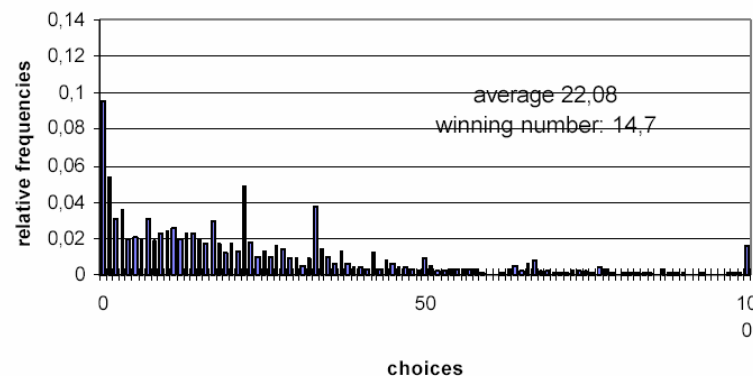
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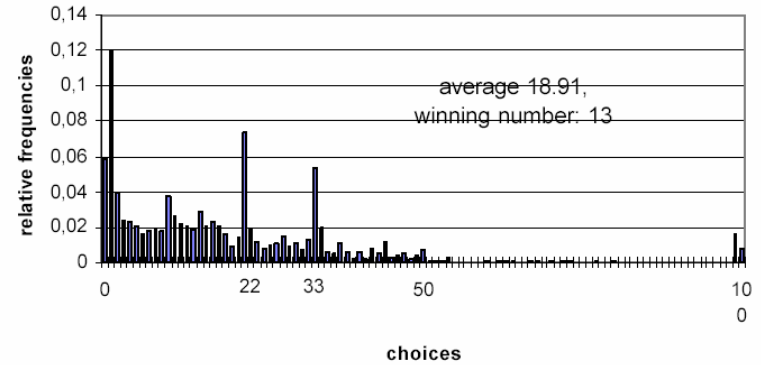
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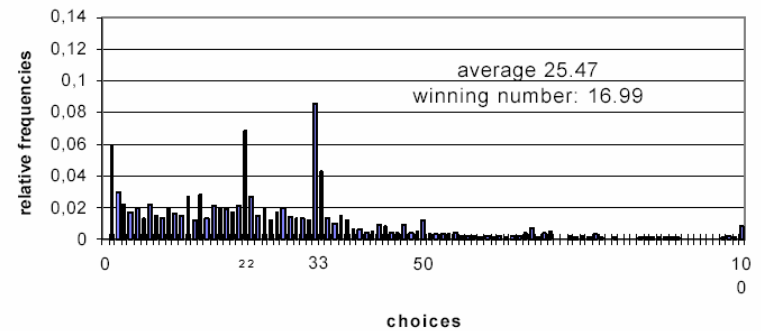
Level 3 reasoning is $(2/3) \cdot 22.22 = 14.8$ and so on.

The numbers obtained by the process of reasoning in steps coincide with the peaks observed in the experiments.

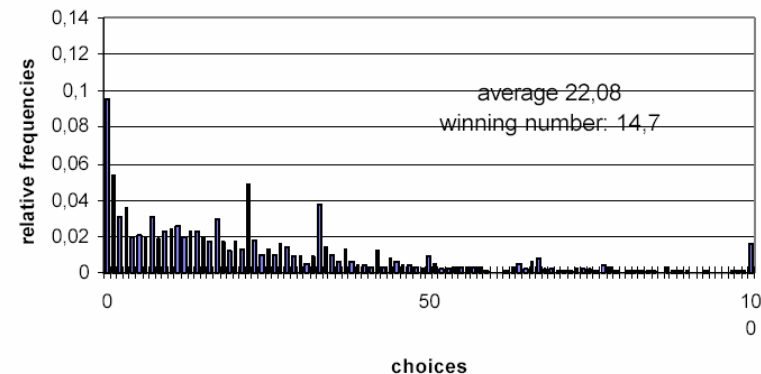
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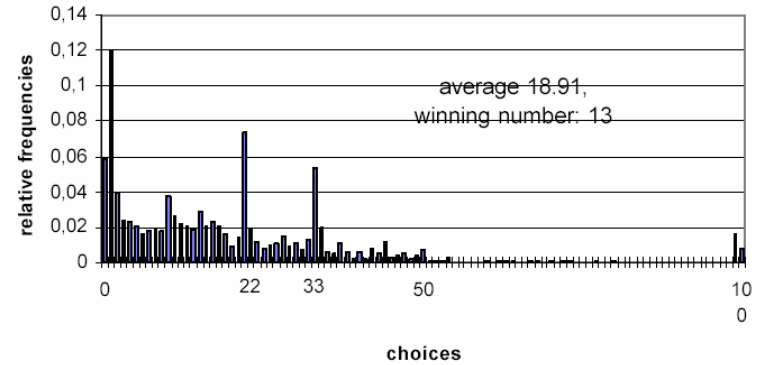
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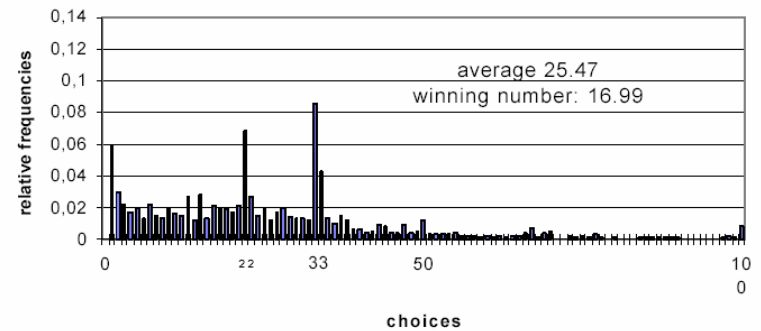
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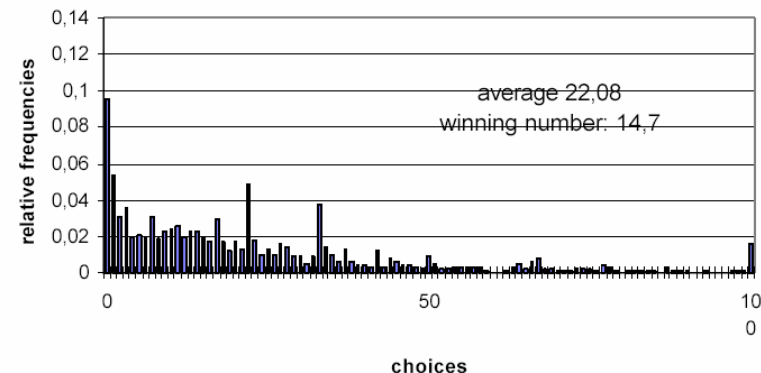
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The steps of iterated dominance interpretation claims that in the Beauty-contest game people reason in steps. Step 0, which would be the preliminary step of any reasoning, translates into numbers that are arbitrarily distributed over the interval, resulting in an expected value of 50 (50.5 if numbers are from 1 to 100).

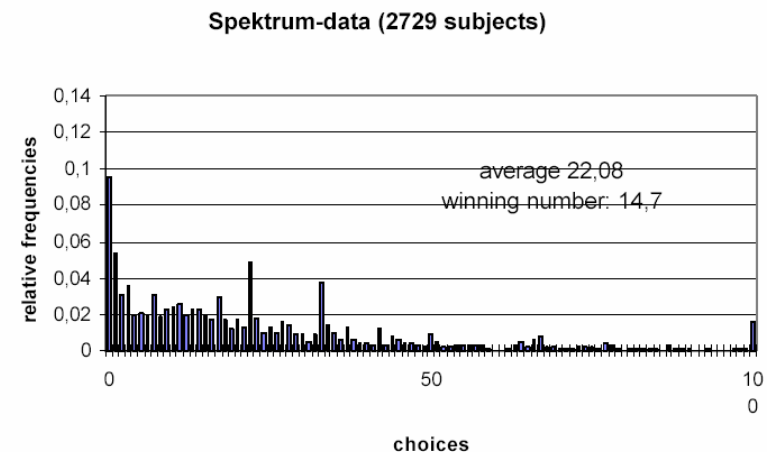
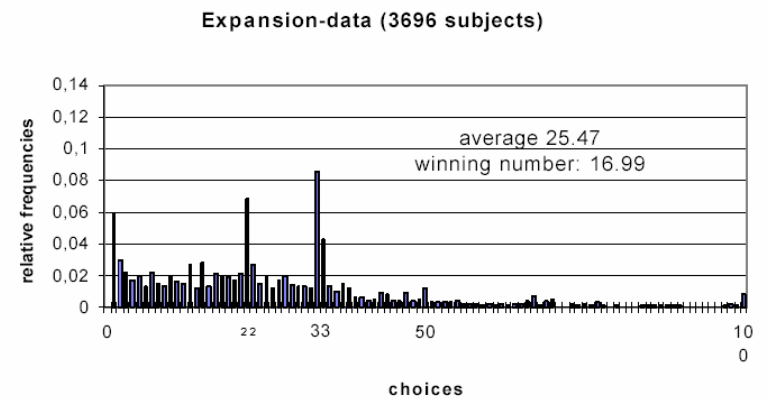
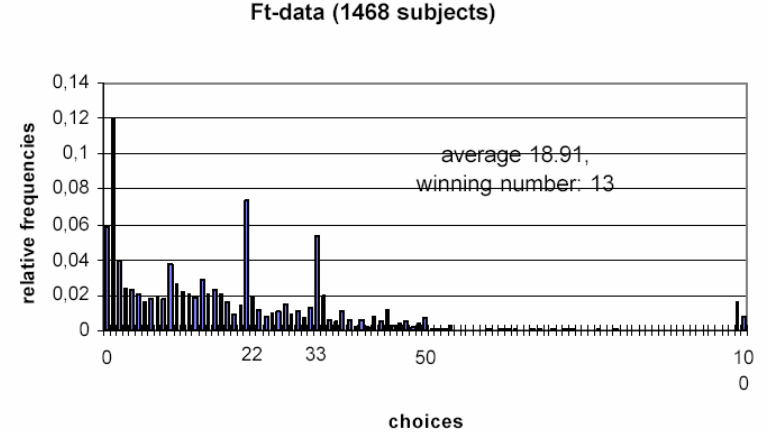
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Between the equilibrium choice and step 2 or 3 there are no other notable peaks and in respondents' Nagel et al 1999 could not find anybody who stopped at just 4 steps of reasoning.

But many who appreciate 1 is “correct” respond higher.



What about the the stock market?

The quote from Keynes describes a market in which investors care about what other investors will buy in the future. Here, you often pay more than a firm is worth, because you think that somebody else will pay even more later on.

This strategy is sometimes called the “greater-fool theory,” because even though you’re a fool to pay as much as you did, you’re betting that there’s a greater fool just down the road. And if you’re right, then of course you aren’t being foolish.

Sometimes prices rise because people expect them to rise:

Bubbles: Tulips; Internet start-ups, Need for Cognition and Heart FM