444 Lecture 5.1 - Cardinal Games

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Plan

Talk about why we might care about having cardinal payouts in games.

Reading

Bonanno, section 6.1

Games with Lotteries

Here is one thing we can do with cardinal utilities - include lotteries in the payoffs.

- We can treat the lottery ticket as having a value equal to the **expected value** of the lottery.

Games with Lotteries

Bonanno illustrates this with a game that involves an actual lottery - an auction where tied bids are resolved by a chance mechanism.

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- But philosophically, lots of things in life look like lottery ticket.
- How much is $1 million worth?
- It depends a bit on whether there is lots of inflation in the near future.
- It also depends on whether there is a revolution soon and millionaires are in danger.

Everything's a Gamble

The orthodox treatment of these questions, which I totally endorse, is that a quantity of money is just as much a gamble as a lottery ticket.

- It's a relatively safe gamble; there hasn't been hyperinflation or anti-capitialist revolution in America in a long time.
- But it's a gamble.
- So even games with monetary payouts are gambles - gambles on the future value of money.

Chicken 1

Here is a version of chicken using ordinal utility.

	swerve	drive
Swerve	3, 3	2, 4
Drive	4, 2	1, 1

Chicken 2

	swerve	drive
Swerve	1, 1	0, 2
Drive	2, 0	-5, -5

I guess you mostly swerve in this game, but you think about driving.

Chicken 3

	swerve	drive
Swerve	1, 1	0, 2
Drive	2, 0	-5000, -5000

Please swerve!

Chicken 3

	swerve	drive
Swerve	1, 1	0, 2
Drive	2, 0	-5000, -5000

Please swerve!

- But (Swerve, swerve) is not Nash. We'll come back to this.

Cardinal Utility Matters

- The last two games were alike in ordinal utility.
- But they were unlike in how you should play them.
- So more than ordinal utility matters for how you should play.

For Next Time

We will introduce an important means for solving games like Chicken - the mixed strategy.