

# Econ 311: Behavioral and Experimental Economics

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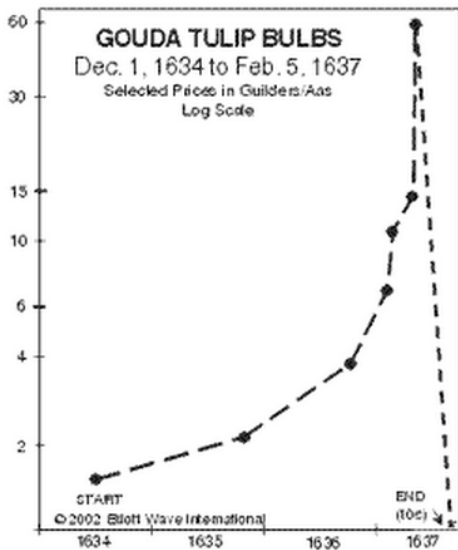
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# Markets

# Motivation: Market for Tulips

- ▶ You are a merchant in 17th century Holland
- ▶ Holland is well known for producing beautiful tulip flowers
- ▶ You are absolutely sure that tulips will be very popular next year, and sell for twice this year's price
- ▶ What should you do?
  - ▶ Buy up as many tulips as you can now to sell for sure profit next year
- ▶ What happens to the market price for tulips?
  - ▶ All the other merchants like you do the same, and this excitement causes the price to indeed shoot up
- ▶ What will happen to the price of tulips eventually?
  - ▶ Price will increase rapidly but eventually crash once people realize price has exceeded fundamental value

# Tulipmania



# Asset Price Bubbles

- ▶ Has this happened in modern financial markets?
  - ▶ Tech bubble of 1990s
  - ▶ Housing bubble of 2000s
- ▶ How can we differentiate bubbles and rational price changes?
  - ▶ Difficult to answer because we don't usually observe fundamental value of assets being traded
  - ▶ But in experiments, we can induce the underlying value and then see if prices follow that value
- ▶ What factors might limit price bubbles?
  - ▶ Experience of traders
  - ▶ Information

## A Slight Digression: Present Value

- ▶ Suppose there are two periods:
  - ▶ In period 1, you and a bunch of other people have the option buy an asset
  - ▶ In period 2, that asset pays you some amount of money  $V$
- ▶ There is an interest rate  $r$ , meaning if you have cash  $m$  today you can put it in the bank and get out  $m(1 + r)$  dollars tomorrow
- ▶ What price  $P$  makes sense as the market price for the asset?

# Present Value, cont

- ▶ Claim: price should be  $P = \frac{V}{1+r}$ 
  - ▶ Suppose  $P > \frac{V}{1+r}$ 
    - ▶ Instead of buying the asset, you all could just leave that  $P$  dollars of your cash in the bank, earning  $P(1+r) > V$
    - ▶ This lack of demand would drive down price
  - ▶ Suppose  $P < \frac{V}{1+r}$ 
    - ▶ At this price, everyone empties their bank accounts to buy as much of the asset as they can
    - ▶ This frenzied demand would drive up price
  - ▶ Thus  $P = \frac{V}{1+r}$  is the only stable price for the asset
  - ▶ This is called the *present value* of the asset

# Analyzing Our Market Exercise

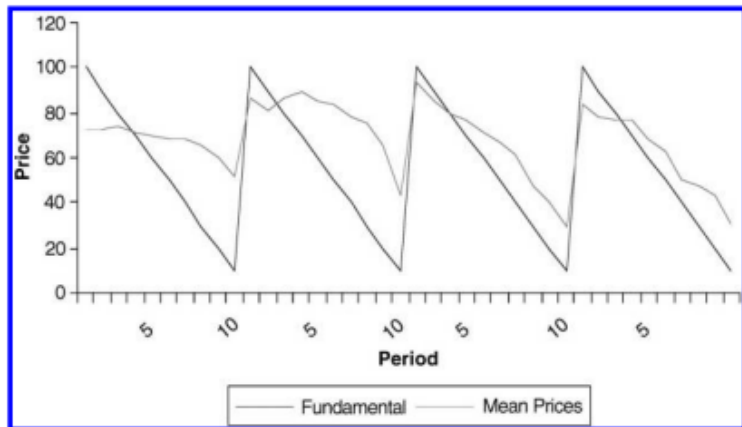
- ▶ Let's work backward from the last period
- ▶ Asset pays you \$7.00 in last period plus an expected dividend of \$0.70, so asset price should be \$7.70
- ▶ In second-to-last period:
  - ▶ Asset will be worth \$7.70 in one period, so present value is  $\frac{\$7.70}{1.1} = \$7.00$  today
  - ▶ However, also pays you \$0.70 in expected dividend this period, which is not discounted
  - ▶ Thus you should be willing to pay \$7.70 as well this period
- ▶ In fact, the price every period should be \$7.70
- ▶ What actually happened in our market?



# Does Experience Alleviate Bubbles?

- ▶ In Dufwenberg et al, “Bubbles and Experience: An Experiment”, authors run experiment similar to our classroom exercise
- ▶ Two important differences:
  - ▶ 4 consecutive markets of 10 rounds each
  - ▶ In each market, risk-neutral fundamental value of asset is *decreasing* rather than constant
    - ▶ Achieve this by having large dividend and low redemption value
- ▶ Main question: does the market price track the predicted price as traders become more experienced?

# Experience: Results



# Does Information Alleviate Bubbles?

- ▶ M. Sutter et al, “Bubbles and Information: An Experiment”
- ▶ Total of 6 traders in market
- ▶ Three conditions:
  1. Control: no traders have any info on future dividends
  2. Info: all traders know period next dividend amount
  3. Insider:
    - ▶ Two traders know dividend for next two periods
    - ▶ Two traders know dividend for next period
    - ▶ Two traders are uninformed

# Information

