

Fifth Lecture

Supply and Demand

Demand, Supply, Equilibrium

- Why?
- Dominant / influential
- Quantitative curse

Market

- Attributes: commodity, space, time
- Dimensions: quantity/price

Method

- Desire/wants
- Actual=desired
- Supply/Demand as basic tools

Demand

- What is Demand?
- Quantity Demanded vs. Demand
- Determinants
- Function/variables/coefficients
- Comparative statics and “ceteris paribus”
- Why is demand downward sloping?
- Bentham’s utilitarianism
- Emotionmetrics
- Neoclassicists: From offence to defense
- From principles to mathematics
- Jevon’s calculus of pleasure and pain
- Substitution and income effects
- An actual demand curve? Psychology and notional time
- Shifts in Demand

Supply

- What is Supply?
- Quantity Supplied vs. Supply
- Determinants
- Why does Supply slope upward?
- Static time scales: momentary, short, long
- Shifts in Supply

Equilibrium

- Excess demand, excess supply
- Equilibrium: desired vs. rest
- Laws of supply and demand
- Markets as allocation mechanisms
- Profit signals, or the “Will of God”

Theory and Praxis

- Anybody seen Demand? Supply?
- Equilibrium? What equilibrium?
- Stability?
- The “Despite” Word

Why equilibrium?

- Is equilibrium stable? Does it exist?
- What can static analysis tell us about a dynamic world?
- Can mathematics deal with novelty?

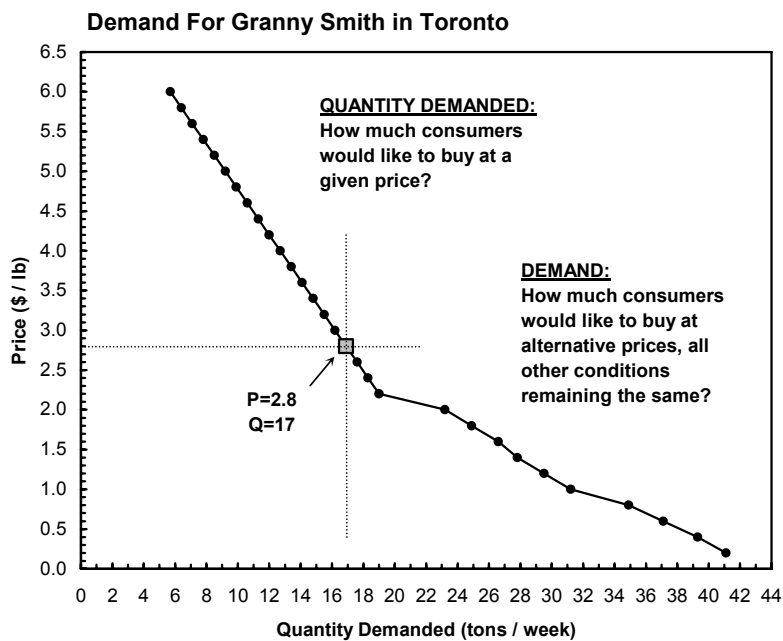
DEMAND

$$Q^d = F(P; Y, Y_{dis}, P_{sub}, P_{com}, \dots T)$$

$Q^d = F$ (price; average income, income distribution, price of substitutes, prices of complements ... tastes)

$$Q^d_{[\text{tons/week}]} = 500 / P_{[\$/\text{lb}]} + 0.1 \times Y_{[\text{mn}\$/\text{week}]} + 100 \times P_{\text{pears}}_{[\$/\text{lb}]}$$

$$Q^d = F(P; Y, Y_{dis}, P_{sub}, P_{com}, \dots T)$$



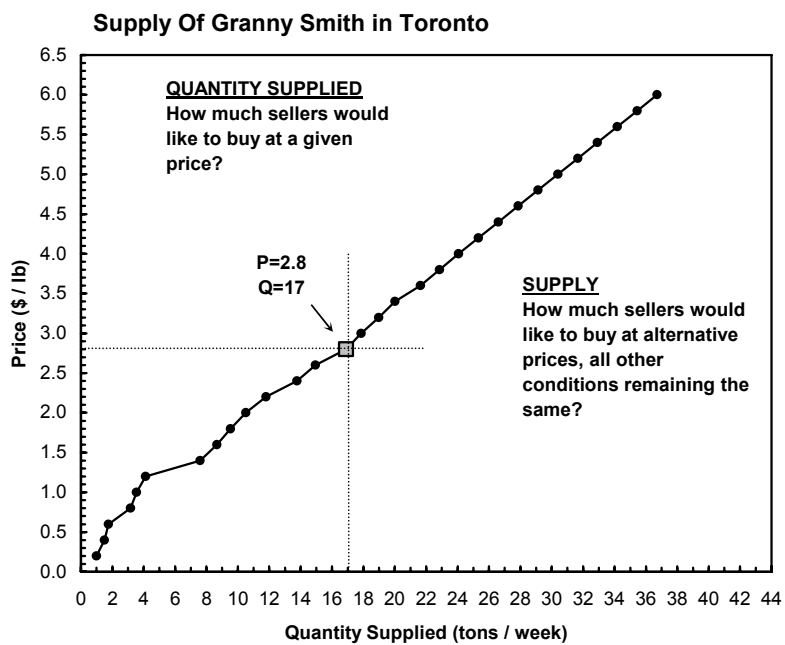
Horizontal Summation

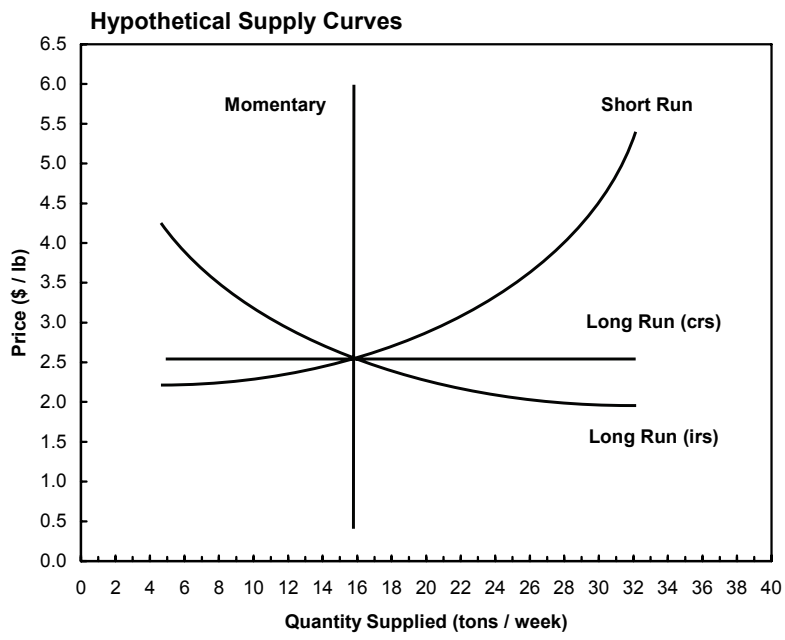
| P (\$/lb) | Q Demanded (lb/week) | | | | | Q Supplied (lb/week) | | | | |
|------------|----------------------|------------|------------|-------------|-------------|----------------------|------------|------------|------------|-------------|
| | A | B | C | D | Market | A | B | C | D | Market |
| 0.2 | 6.0 | 3.1 | 12.0 | 20.0 | 41.1 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 |
| 0.4 | 5.8 | 3.0 | 11.0 | 19.5 | 39.3 | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 |
| 0.6 | 5.6 | 2.5 | 10.0 | 19.0 | 37.1 | 0.0 | 0.0 | 0.0 | 1.8 | 1.8 |
| 0.8 | 5.4 | 2.0 | 9.0 | 18.5 | 34.9 | 1.0 | 0.0 | 0.0 | 2.2 | 3.2 |
| 1.0 | 5.2 | 0.0 | 8.0 | 18.0 | 31.2 | 1.0 | 0.0 | 0.0 | 2.5 | 3.5 |
| 1.2 | 5.0 | 0.0 | 7.0 | 17.5 | 29.5 | 1.2 | 0.0 | 0.0 | 2.9 | 4.1 |
| 1.4 | 4.8 | 0.0 | 6.0 | 17.0 | 27.8 | 1.3 | 3.0 | 0.0 | 3.3 | 7.6 |
| 1.6 | 4.6 | 0.0 | 5.5 | 16.5 | 26.6 | 1.5 | 3.5 | 0.0 | 3.7 | 8.7 |
| 1.8 | 4.4 | 0.0 | 4.5 | 16.0 | 24.9 | 1.5 | 4.0 | 0.0 | 4.0 | 9.5 |
| 2.0 | 4.2 | 0.0 | 3.5 | 15.5 | 23.2 | 1.6 | 4.5 | 0.0 | 4.4 | 10.5 |
| 2.2 | 4.0 | 0.0 | 0.0 | 15.0 | 19.0 | 2.0 | 5.0 | 0.0 | 4.8 | 11.8 |
| 2.4 | 3.8 | 0.0 | 0.0 | 14.5 | 18.3 | 2.1 | 5.5 | 1.0 | 5.2 | 13.8 |
| 2.6 | 3.6 | 0.0 | 0.0 | 14.0 | 17.6 | 2.2 | 6.0 | 1.2 | 5.5 | 14.9 |
| 2.8 | 3.4 | 0.0 | 0.0 | 13.5 | 16.9 | 3.0 | 6.5 | 1.3 | 6.1 | 16.9 |
| 3.0 | 3.2 | 0.0 | 0.0 | 13.0 | 16.2 | 3.1 | 7.0 | 1.5 | 6.3 | 17.9 |
| 3.2 | 3.0 | 0.0 | 0.0 | 12.5 | 15.5 | 3.2 | 7.5 | 1.6 | 6.7 | 19.0 |
| 3.4 | 2.8 | 0.0 | 0.0 | 12.0 | 14.8 | 3.2 | 8.0 | 1.8 | 7.0 | 20.0 |
| 3.6 | 2.6 | 0.0 | 0.0 | 11.5 | 14.1 | 3.8 | 8.5 | 1.9 | 7.4 | 21.6 |
| 3.8 | 2.4 | 0.0 | 0.0 | 11.0 | 13.4 | 4.0 | 9.0 | 2.1 | 7.8 | 22.9 |
| 4.0 | 2.2 | 0.0 | 0.0 | 10.5 | 12.7 | 4.2 | 9.5 | 2.2 | 8.2 | 24.1 |
| 4.2 | 2.0 | 0.0 | 0.0 | 10.0 | 12.0 | 4.4 | 10.0 | 2.4 | 8.5 | 25.3 |
| 4.4 | 1.8 | 0.0 | 0.0 | 9.5 | 11.3 | 4.7 | 10.5 | 2.5 | 8.9 | 26.6 |
| 4.6 | 1.6 | 0.0 | 0.0 | 9.0 | 10.6 | 4.9 | 11.0 | 2.7 | 9.3 | 27.9 |
| 4.8 | 1.4 | 0.0 | 0.0 | 8.5 | 9.9 | 5.1 | 11.5 | 2.8 | 9.7 | 29.1 |
| 5.0 | 1.2 | 0.0 | 0.0 | 8.0 | 9.2 | 5.4 | 12.0 | 3.0 | 10.0 | 30.4 |
| 5.2 | 1.0 | 0.0 | 0.0 | 7.5 | 8.5 | 5.6 | 12.5 | 3.1 | 10.4 | 31.7 |
| 5.4 | 0.8 | 0.0 | 0.0 | 7.0 | 7.8 | 5.9 | 13.0 | 3.3 | 10.8 | 32.9 |
| 5.6 | 0.6 | 0.0 | 0.0 | 6.5 | 7.1 | 6.1 | 13.5 | 3.4 | 11.2 | 34.2 |
| 5.8 | 0.4 | 0.0 | 0.0 | 6.0 | 6.4 | 6.3 | 14.0 | 3.6 | 11.5 | 35.4 |
| 6.0 | 0.2 | 0.0 | 0.0 | 5.5 | 5.7 | 6.6 | 14.5 | 3.7 | 11.9 | 36.7 |

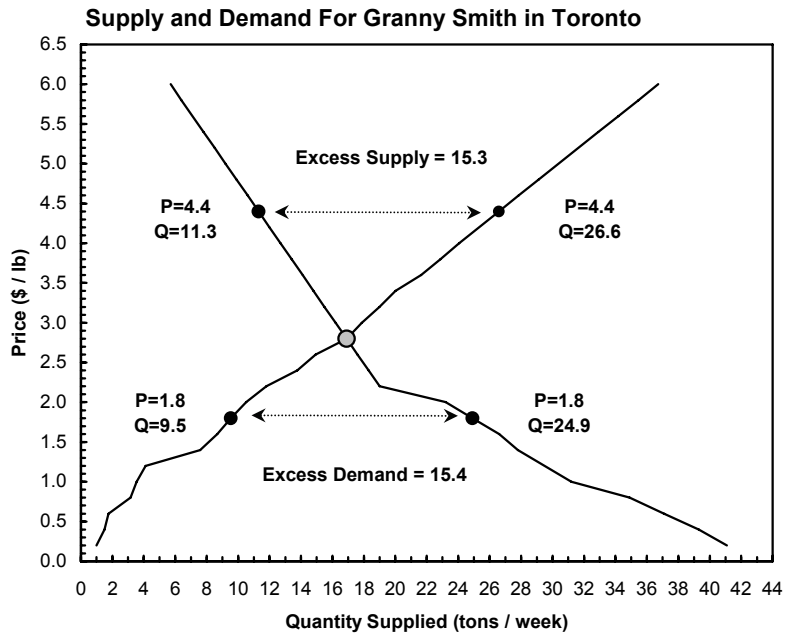
SUPPLY

$$Q^s = F(P; P_{input}, P_{sub}, N, Tech)$$

$Q^s = F$ (price; price of inputs, prices of alternative crops, number of producers, technology).

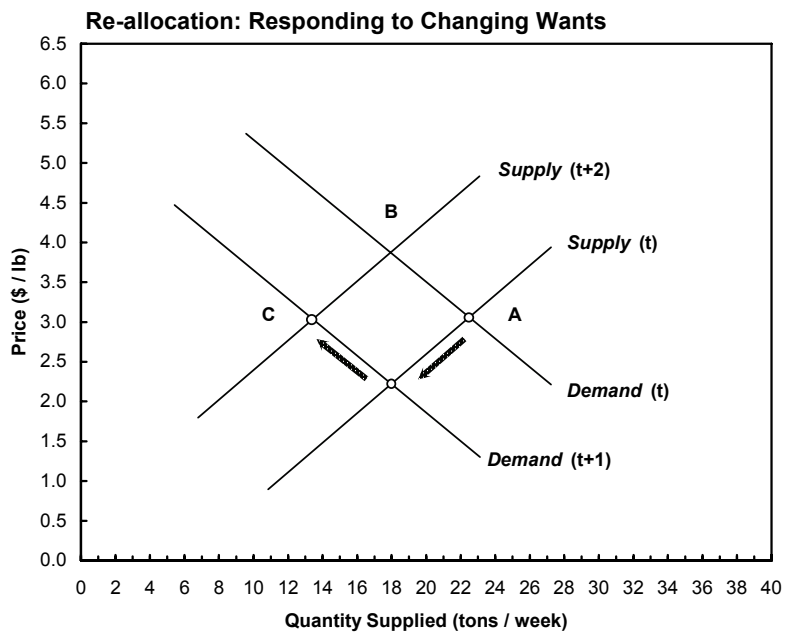
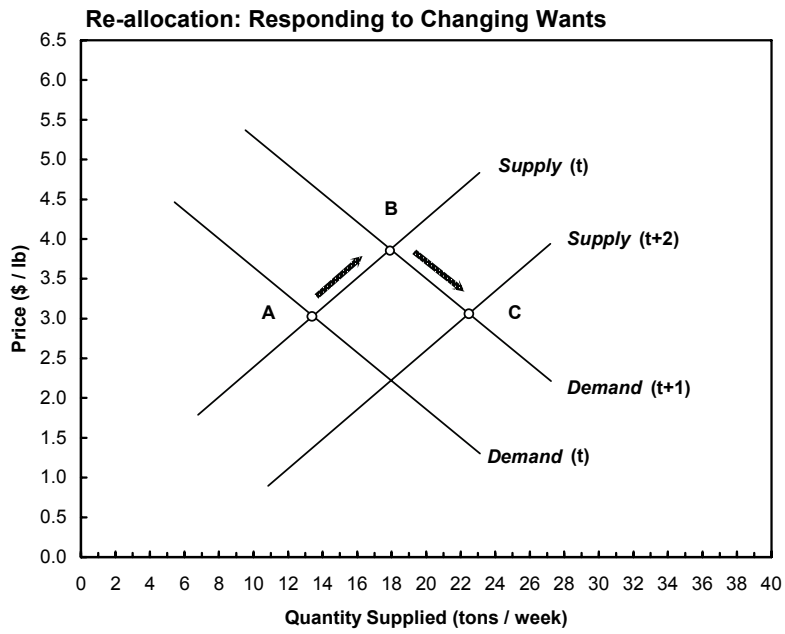


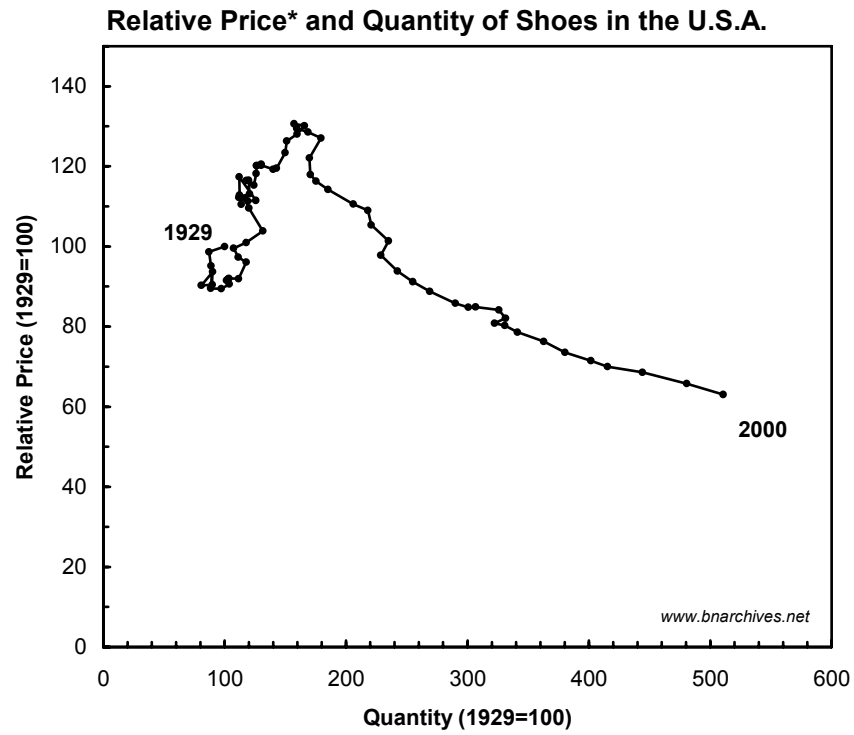




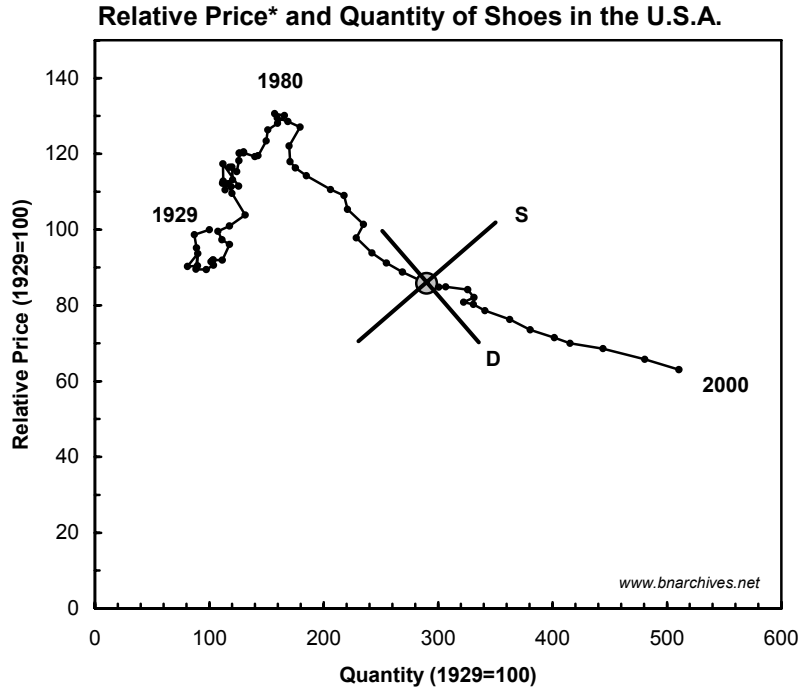
Law of supply and demand

| Shift | Reason (example) | Price | Quantity |
|-----------------|----------------------|-------|----------|
| <i>Demand ↗</i> | Consumer taste | ↑ | ↑ |
| <i>Demand ↘</i> | Price of substitutes | ↓ | ↓ |
| <i>Supply ↘</i> | New technique | ↓ | ↑ |
| <i>Supply ↗</i> | Price of input | ↑ | ↓ |

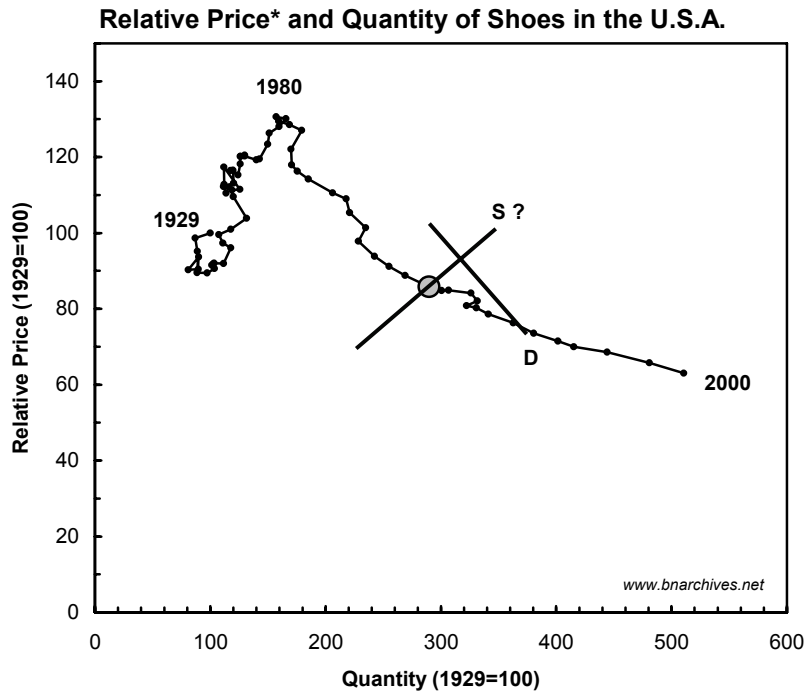




* 'Relative Price' is computed by dividing the price index for shoes by the price index for personal consumption expenditure. Quantity refers to a chain type index.
SOURCE: U.S. Bureau of Economic Analysis, NIPA table 7.20.



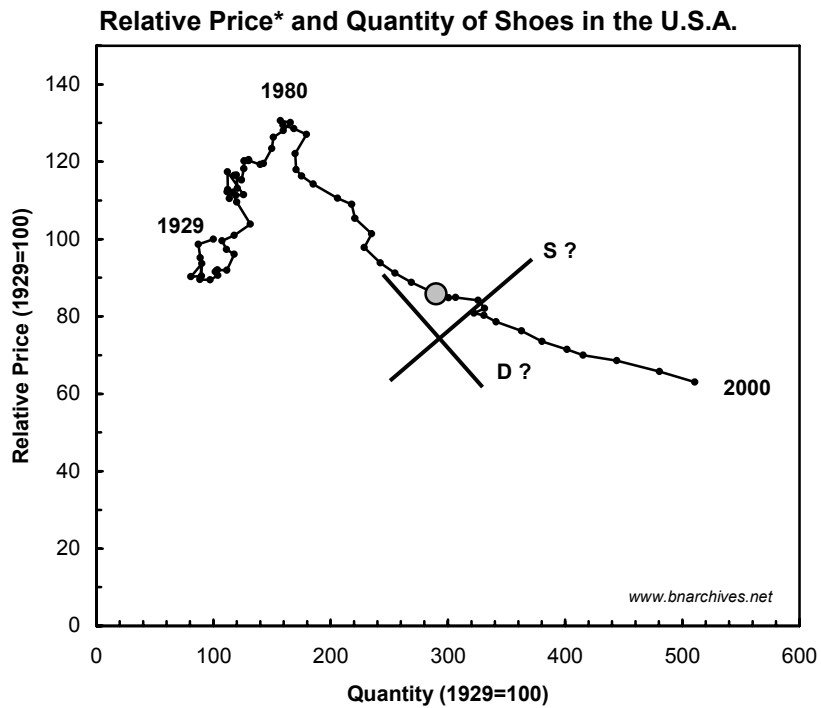
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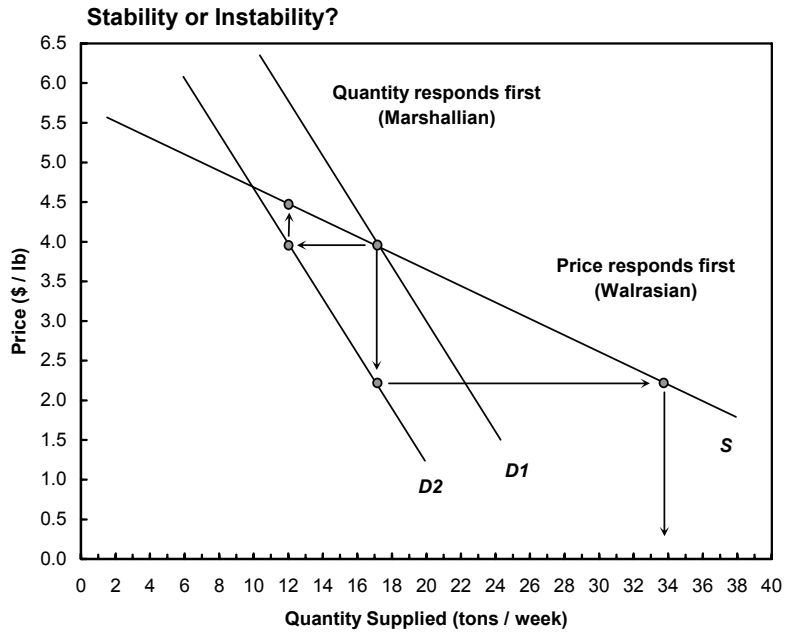
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“Because” and “Despite” in the Oil Market

- **“Oil prices rise as OPEC output cut nears”**
Robert DiNardo, John Kingston, Anita Nugraha, Margaret McQuaile. *Platt's Oilgram News*. New York: Mar 5, 2004. Vol. 82, Iss. 43; p. 1

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EIU Viewswire New York: Mar 31, 2004. p. n/a
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- **“Oil prices slide in anticipation of rise in output”**  
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- **“Oil prices soar despite rise in output”**  
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- **“Oil prices fall on rising US stockpile”**
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- **“Crude markets unphased by OPEC; oil prices rise despite stock build”**
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- **“OPEC agreement means oil prices likely to increase”**  
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- **“Oil prices fall despite OPEC agreement”**  
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- **“Oil prices soar on OPEC pact to cut output”**
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- **“Oil price falls despite cut in output”**
Solman, Paul. *Financial Times* London (UK): Jun 13, 1998. p. 12
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- **“Oil prices fall again in response to Bush’s hope for Mideast accord and signs of ample supplies”**  
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- **“Oil price rises despite ample supply”**  
*Calgary Herald* Calgary, Alta.: Dec 8, 1995. p. C13  
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- **“Oil prices rise amid reports Iraq jets attacked operations at Iran terminal”**
By Michael Siconolfi. *Wall Street Journal* New York, N.Y.: Aug 13, 1986. p. 1

- **“World oil prices fall despite Iran-Iraq war”**
Chronicle - Herald Halifax, N.S.: Jul 7, 1984. p. 13