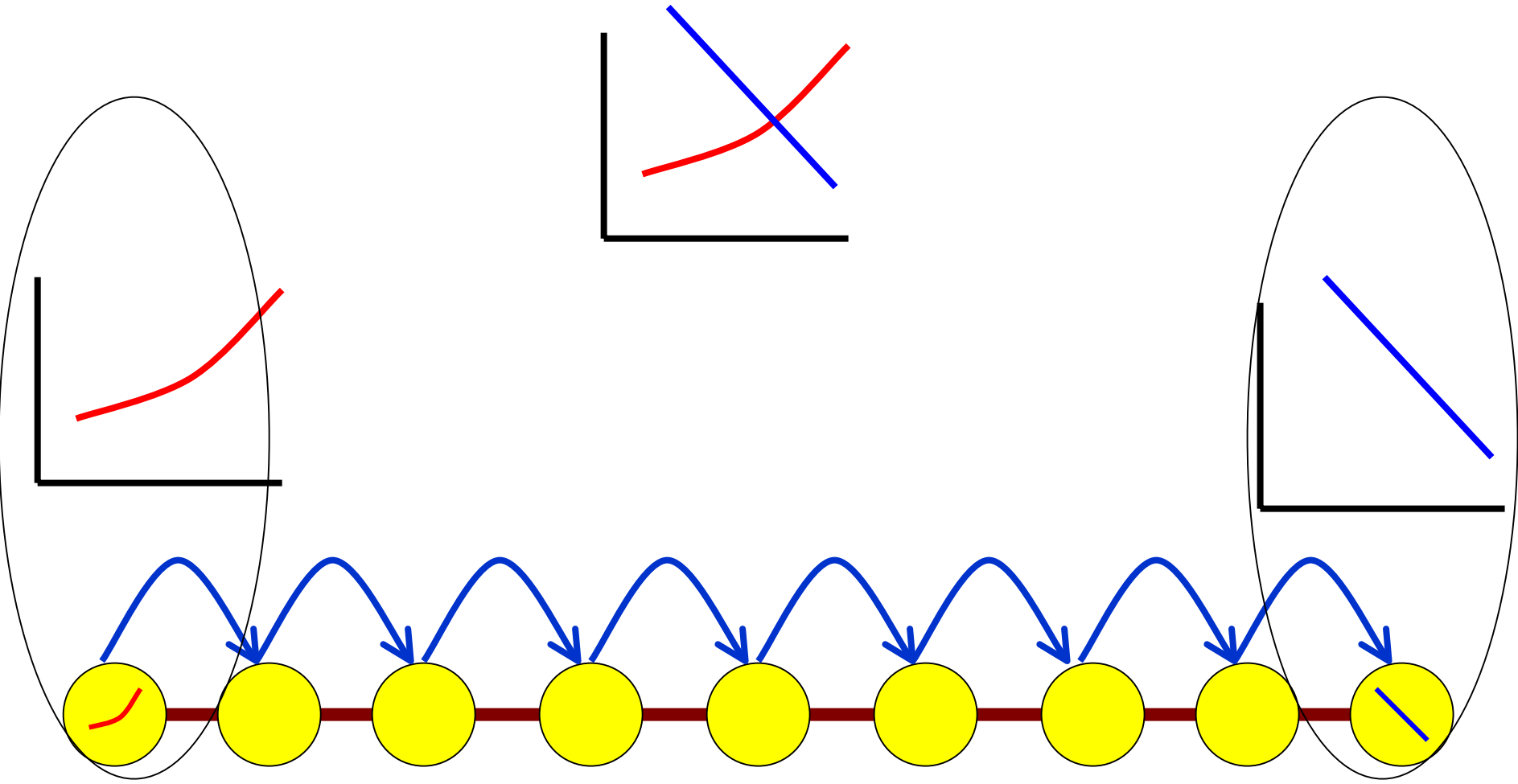


NETWORKS OF MARKETS

Charles R. Plott

Jackie Yeung

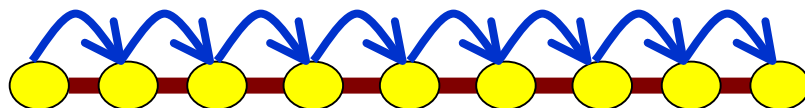
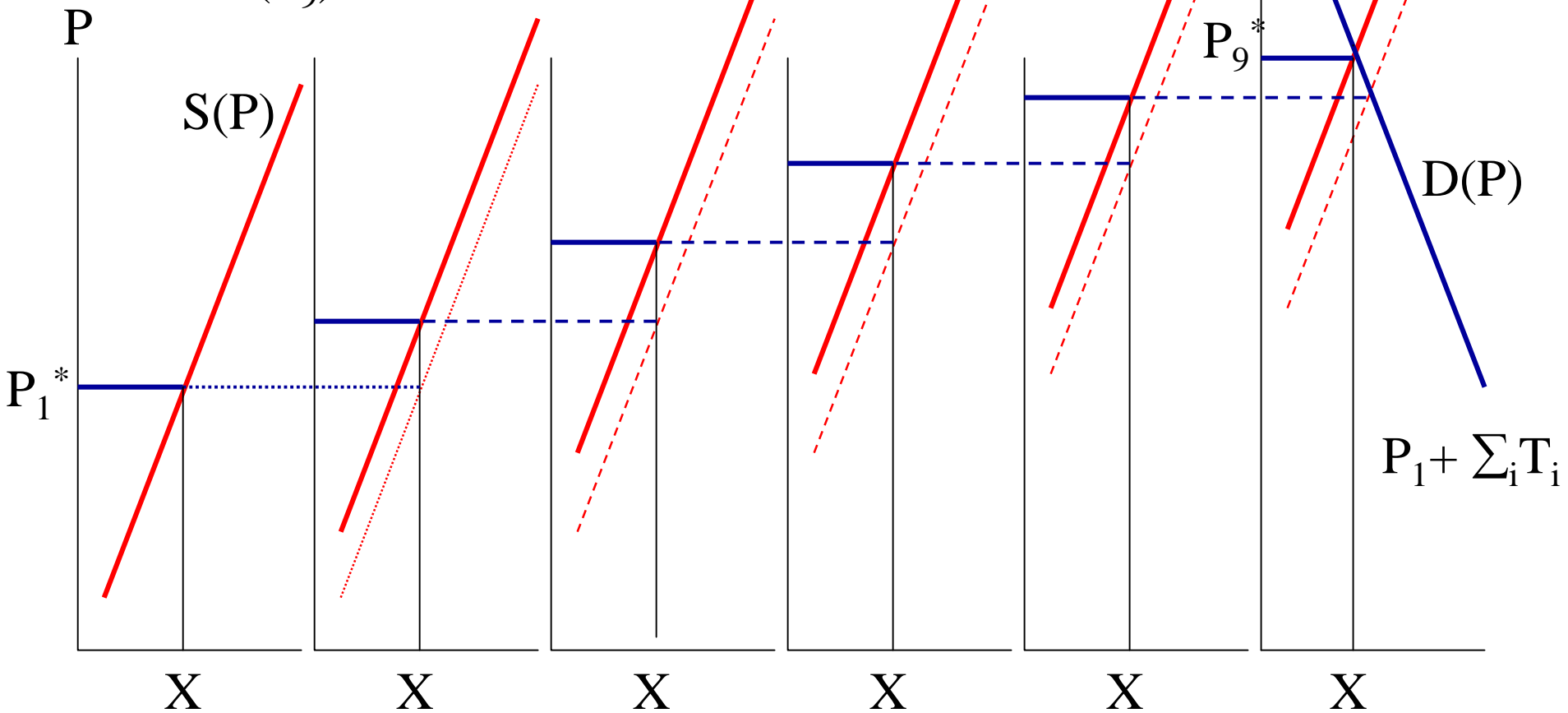
A NETWORK OF MARKETS



$$X = S(P_1)$$

$$P_i + T_i = P_{i+1}$$

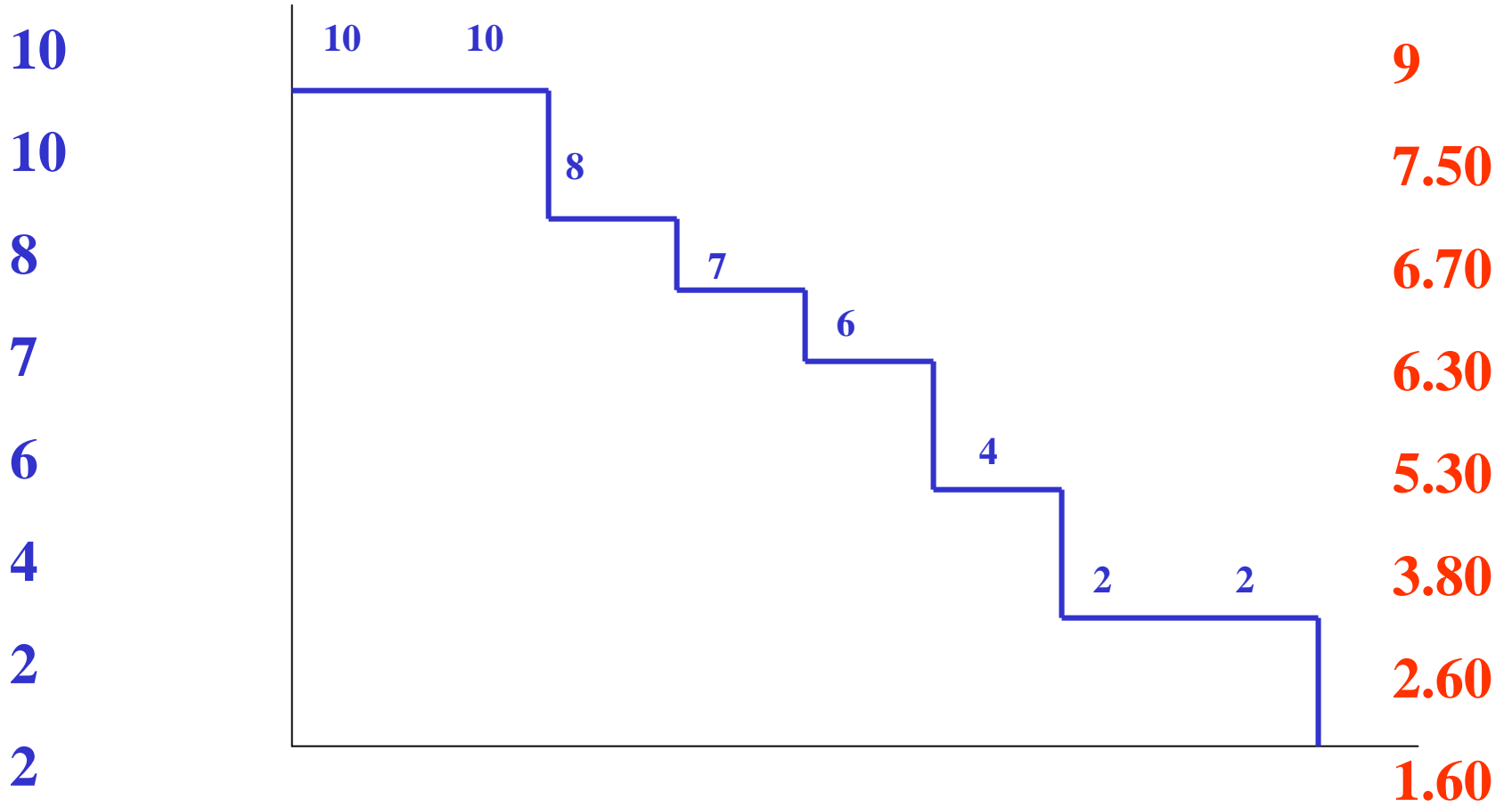
$$D(P_9) = X$$

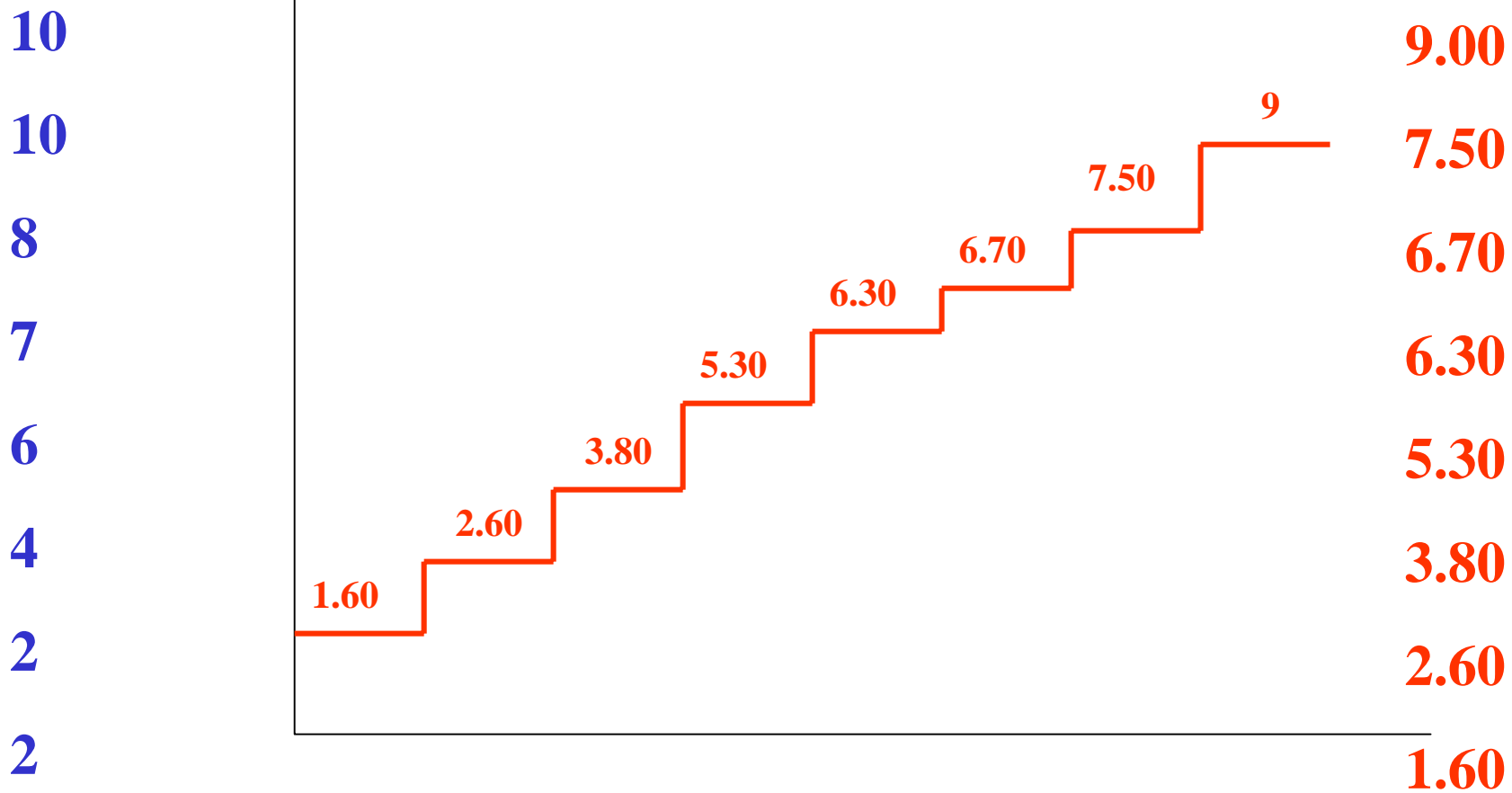


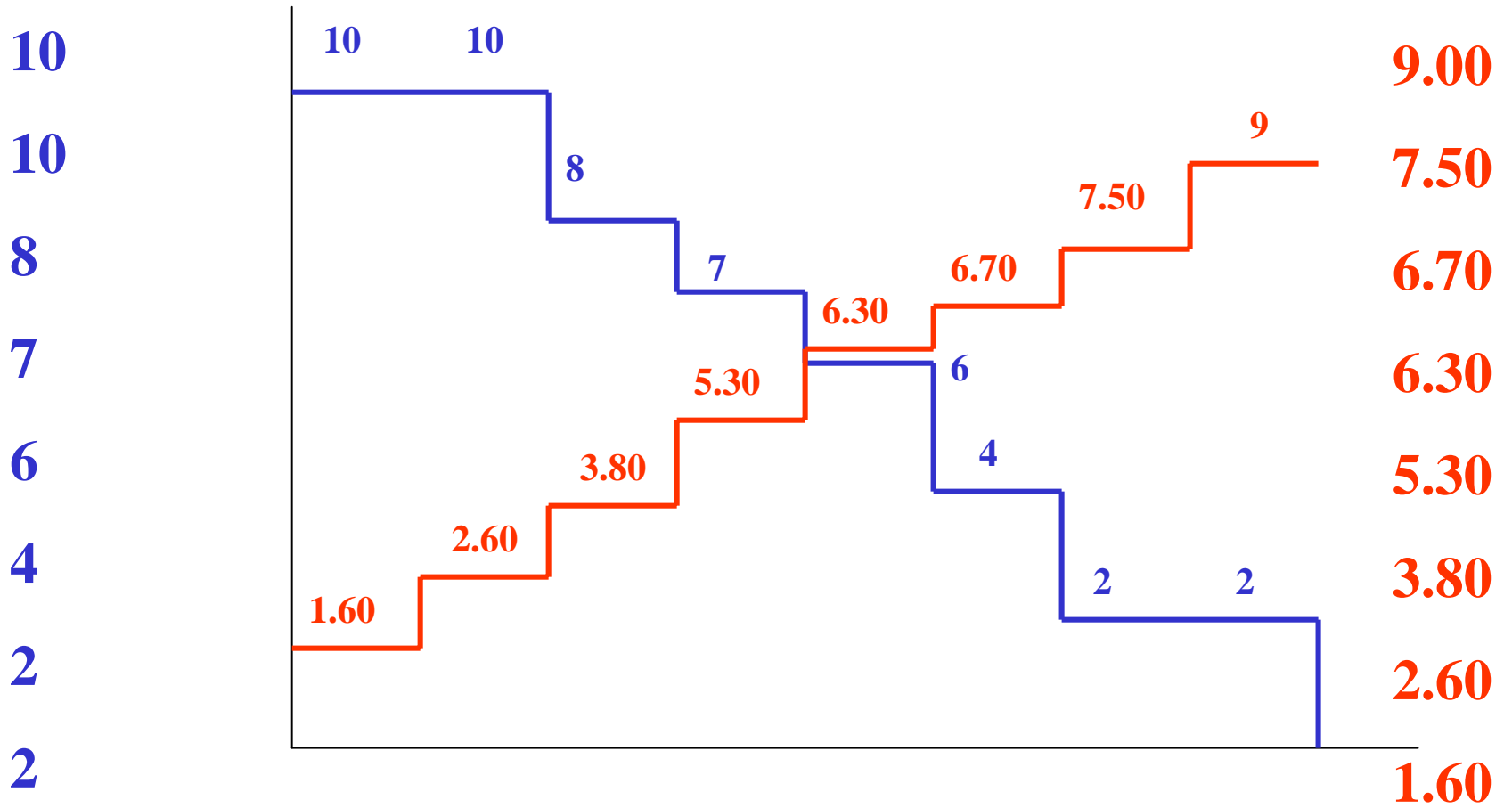
- **CAN MARKETS FIND THE ZEROS?**
- **IS STABILITY A PROBLEM? WHAT ARE THE DYNAMICS?**
- **HOW WOULD WE KNOW?**
- **HOW DOES THE COORDINATION TAKE PLACE?**

THE CREATION OF A SIMPLE LABORATORY
MARKET AND HOW THE LAW OF SUPPLY AND
DEMAND WORKS (A PRICE DISCOVERY
PROCESS)

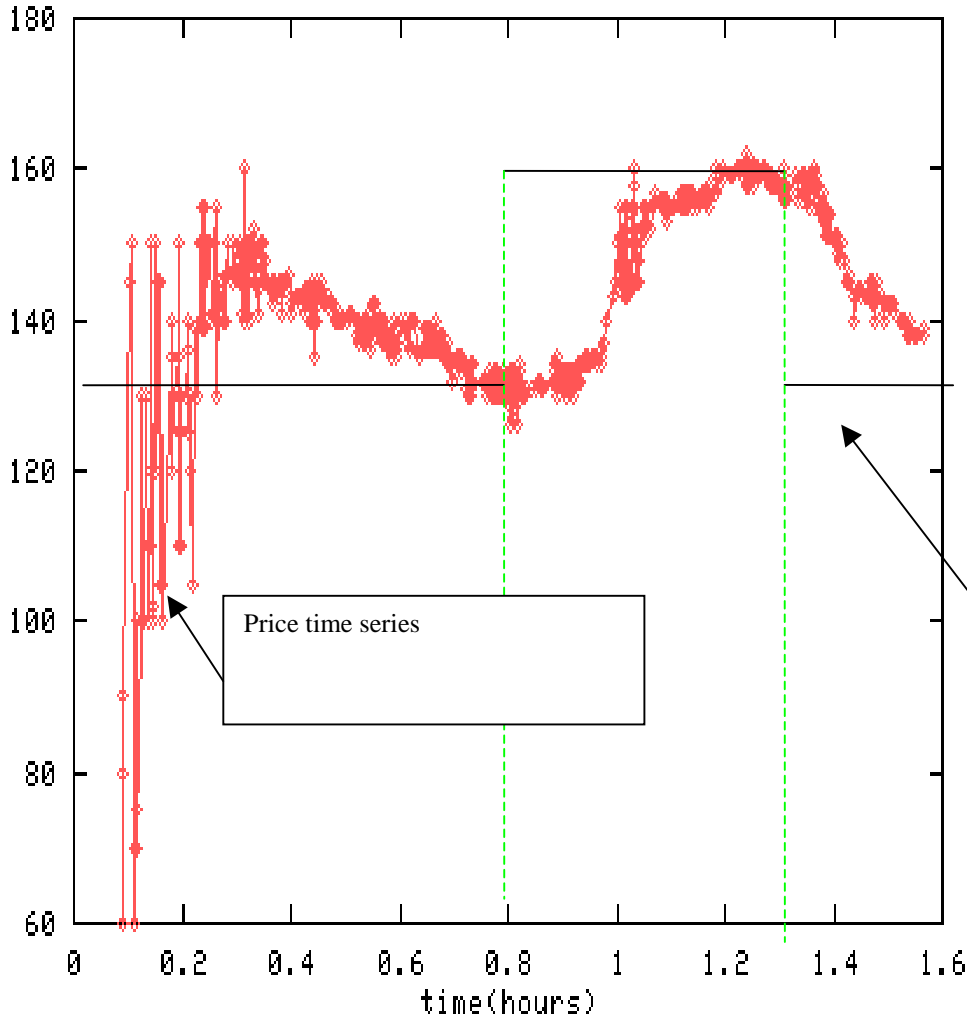
| | |
|-----------|-------------|
| 10 | 9.00 |
| 10 | 7.50 |
| 8 | 6.70 |
| 7 | 6.30 |
| 6 | 5.30 |
| 4 | 3.80 |
| 2 | 2.60 |
| 2 | 1.60 |







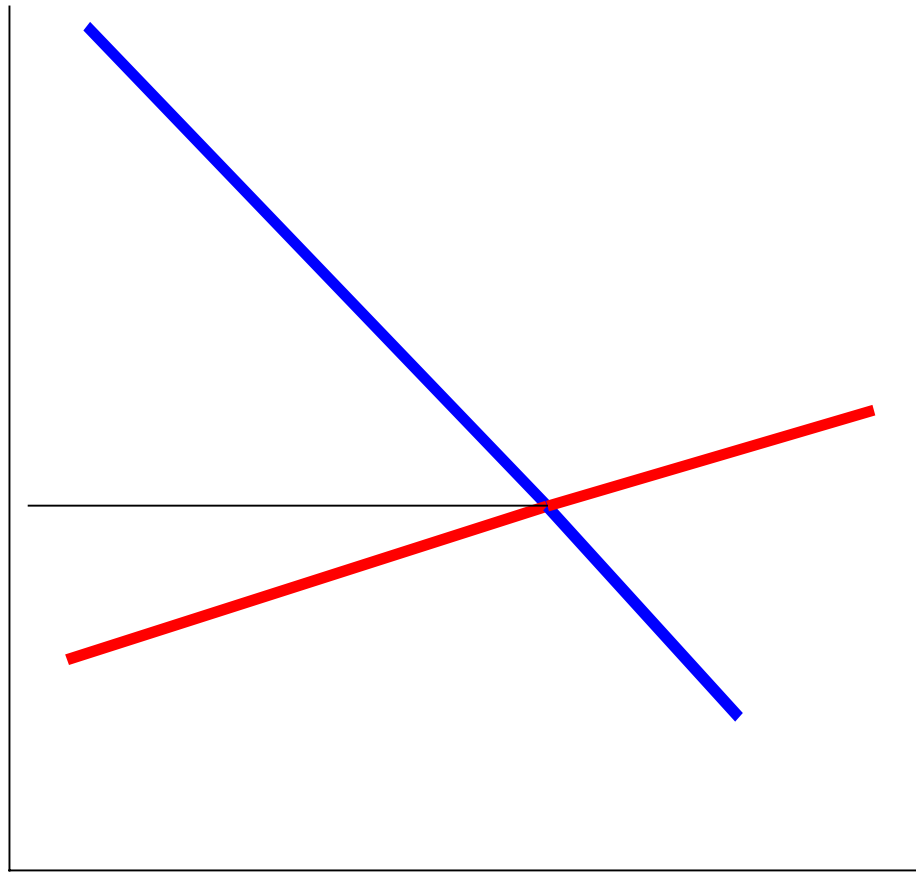
Example of data from an experimental market.



Price time series

equilibrium prices predicted by model (solid lines)

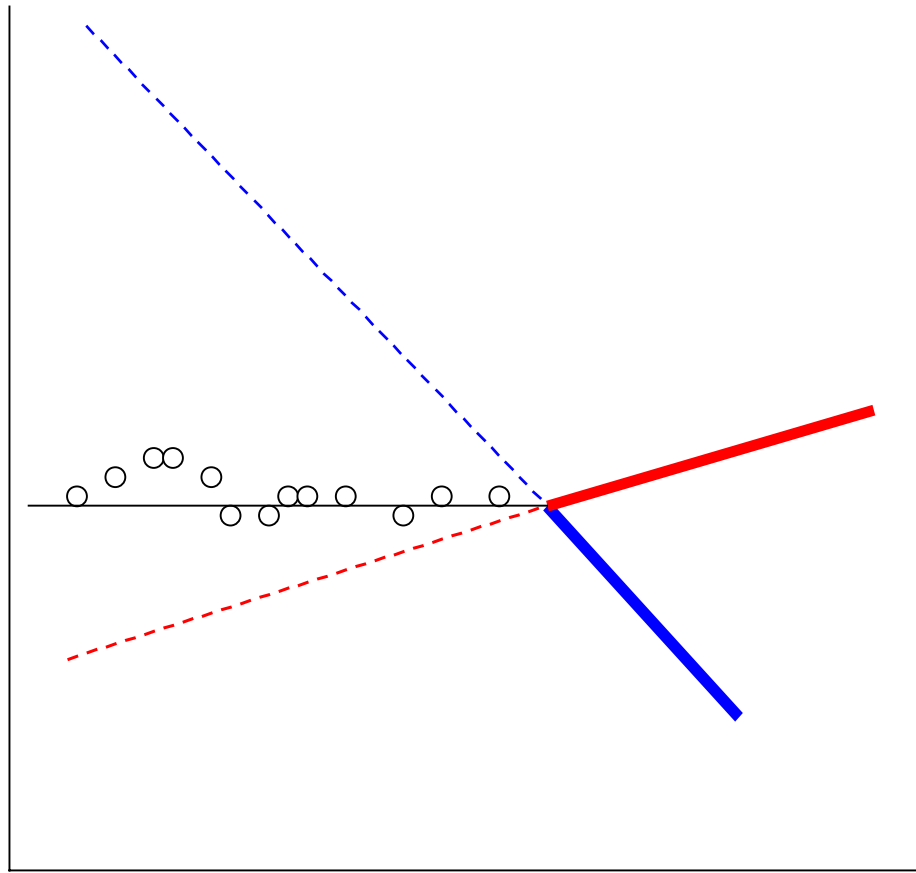
PRICE PER
UNIT



UNITS

THEORY
LAW OF SUPPLY AND DEMAND
EQUILIBRIUM PRICE

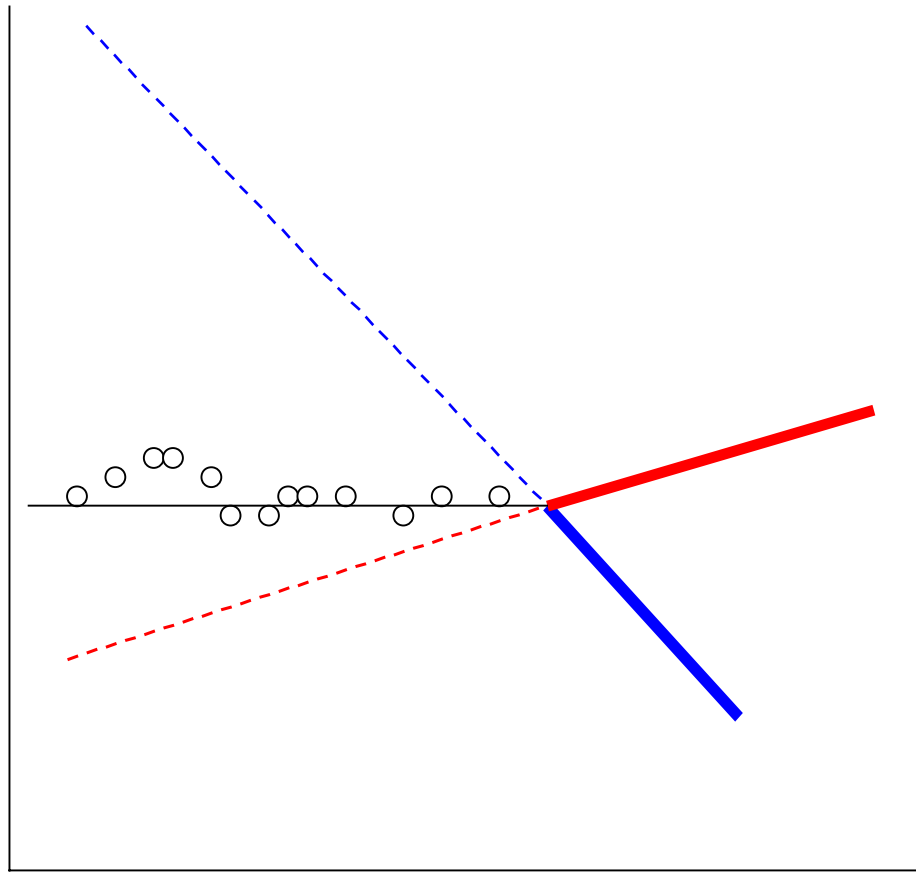
PRICE PER
UNIT



UNITS

THEORY
LAW OF SUPPLY AND DEMAND
EQUILIBRIUM PRICE

PRICE PER
UNIT

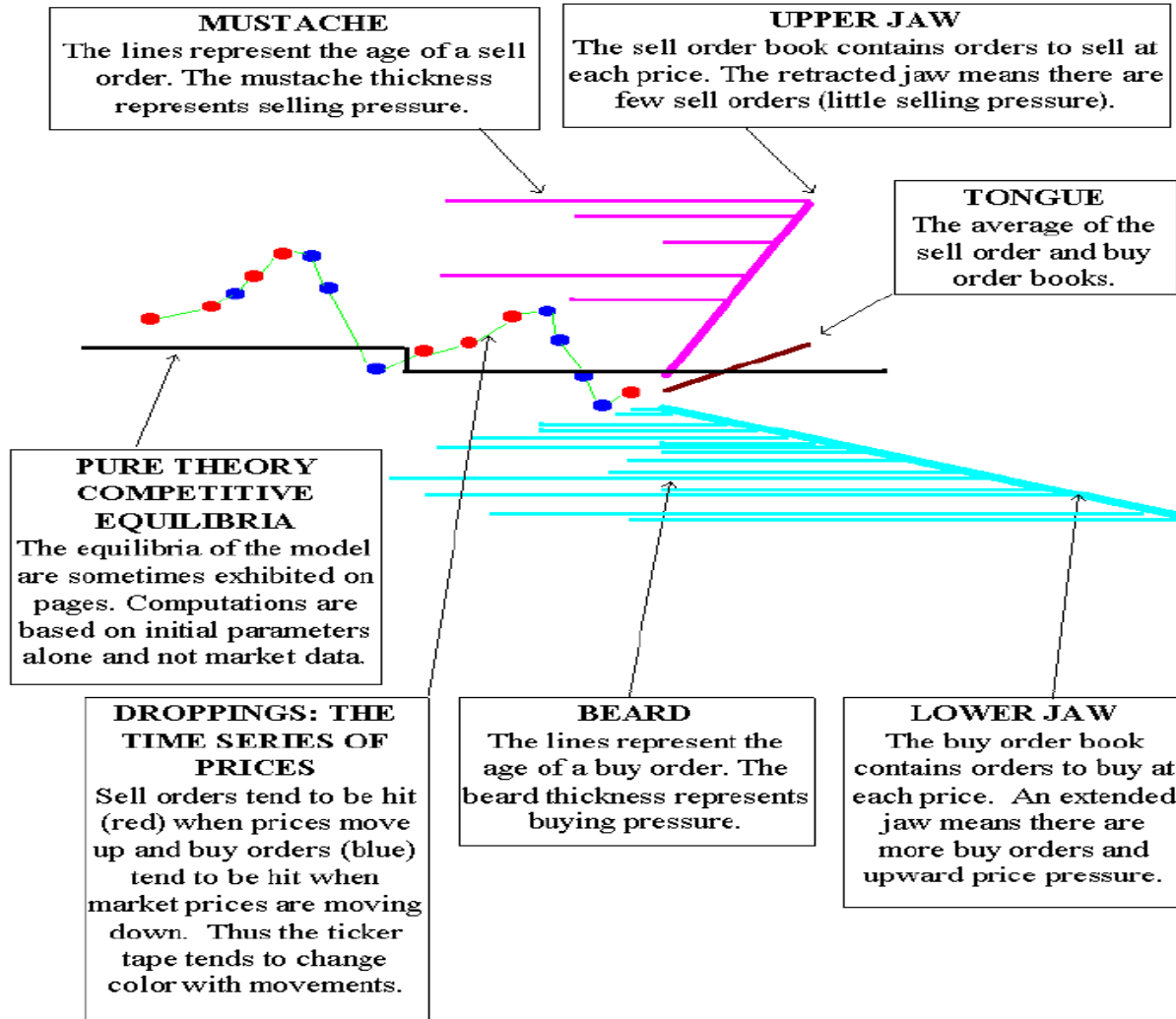


UNITS

THEORY
LAW OF SUPPLY AND DEMAND
EQUILIBRIUM PRICE

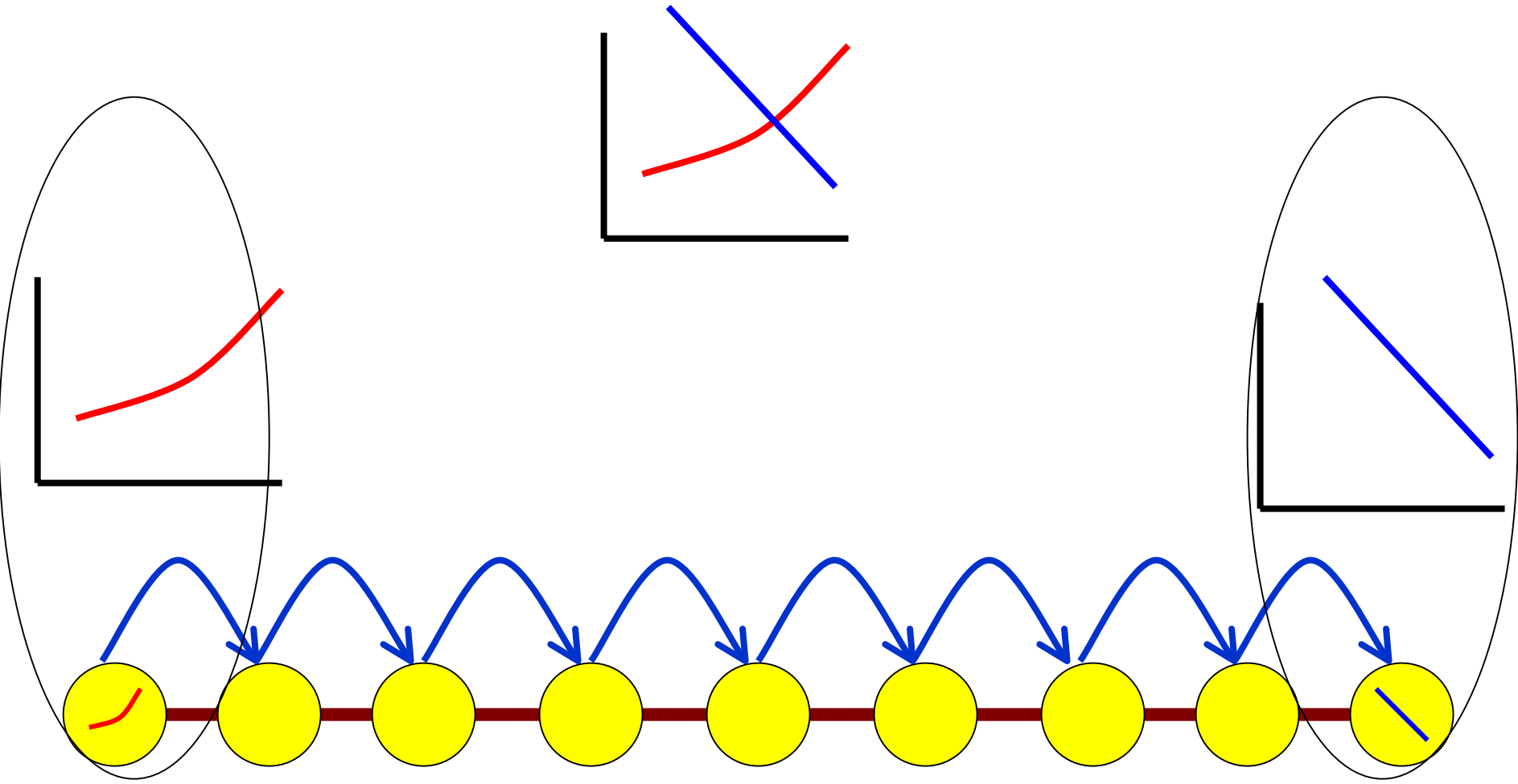
MARKET JAWS

DOES THE SHAPE OF THE MOUTH TELL YOU WHICH WAY THE CREATURE WILL EAT?



MULTIPLE MARKETS IN A NETWORK OF MARKETS:
A TRANSPORTATION (OR SUPPLY CHAIN)
INTERPRETATION

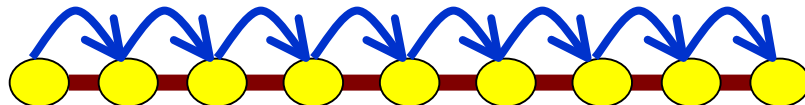
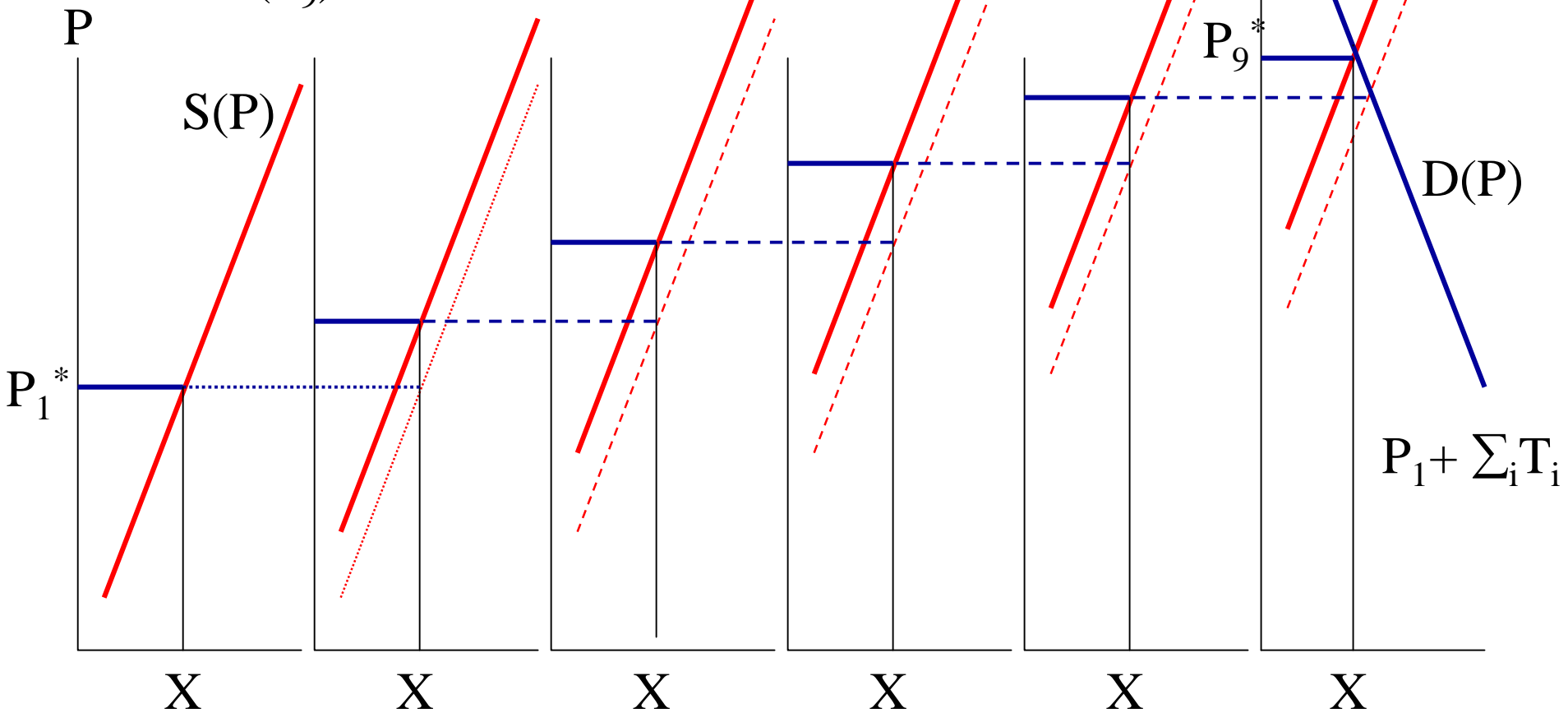
A MORE COMPLEX CASE.



$$X = S(P_1)$$

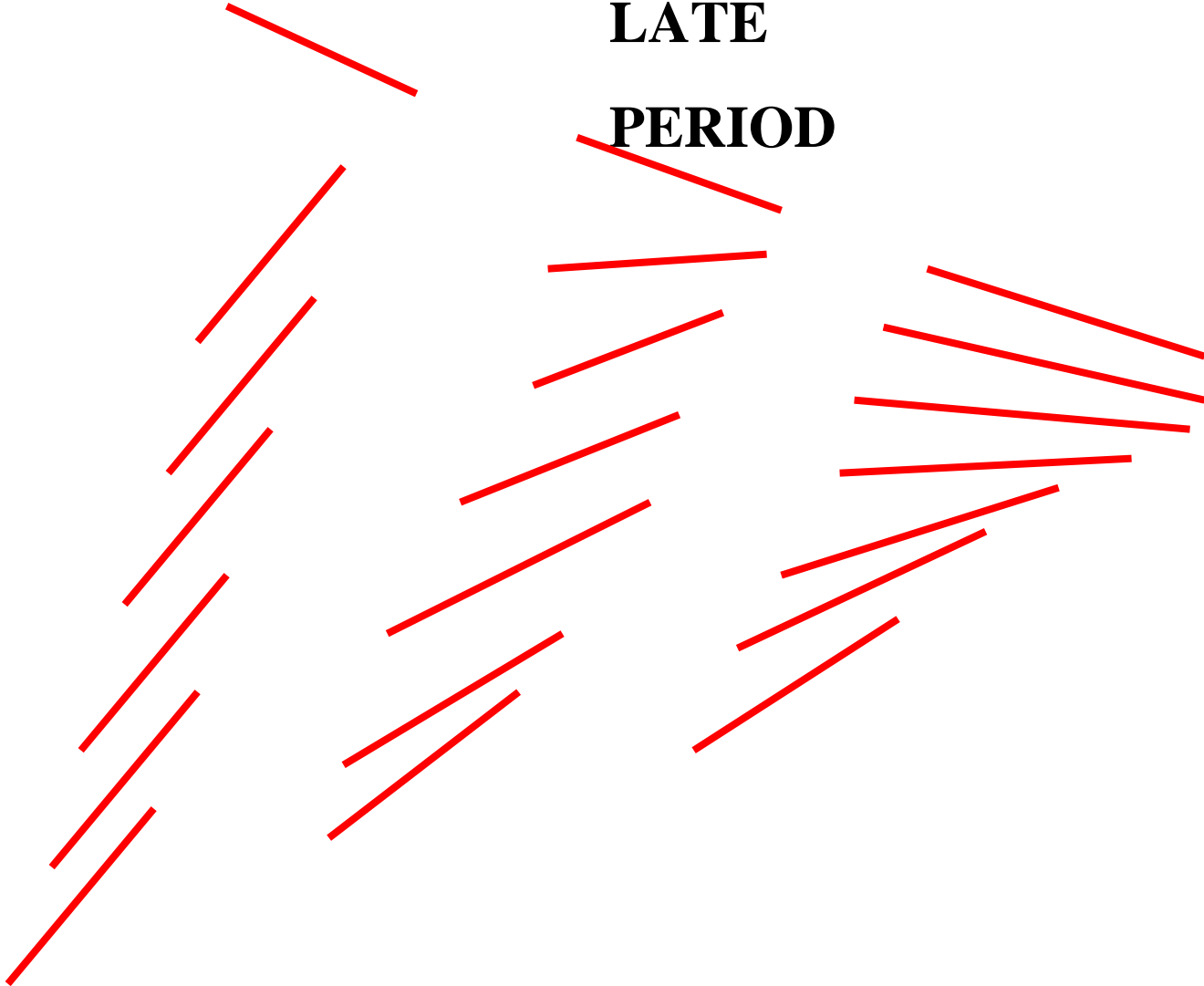
$$P_i + T_i = P_{i+1}$$

$$D(P_9) = X$$

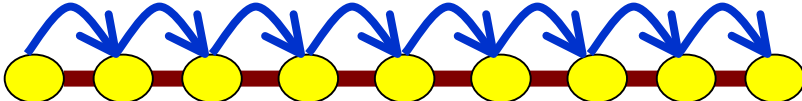


**EARLY
PERIOD**

**LATE
PERIOD**



EVOLUTION OF PRICES WITHIN A PERIOD

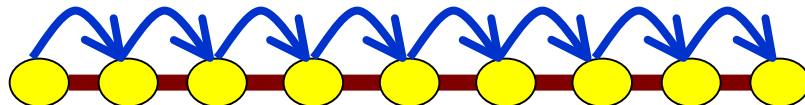
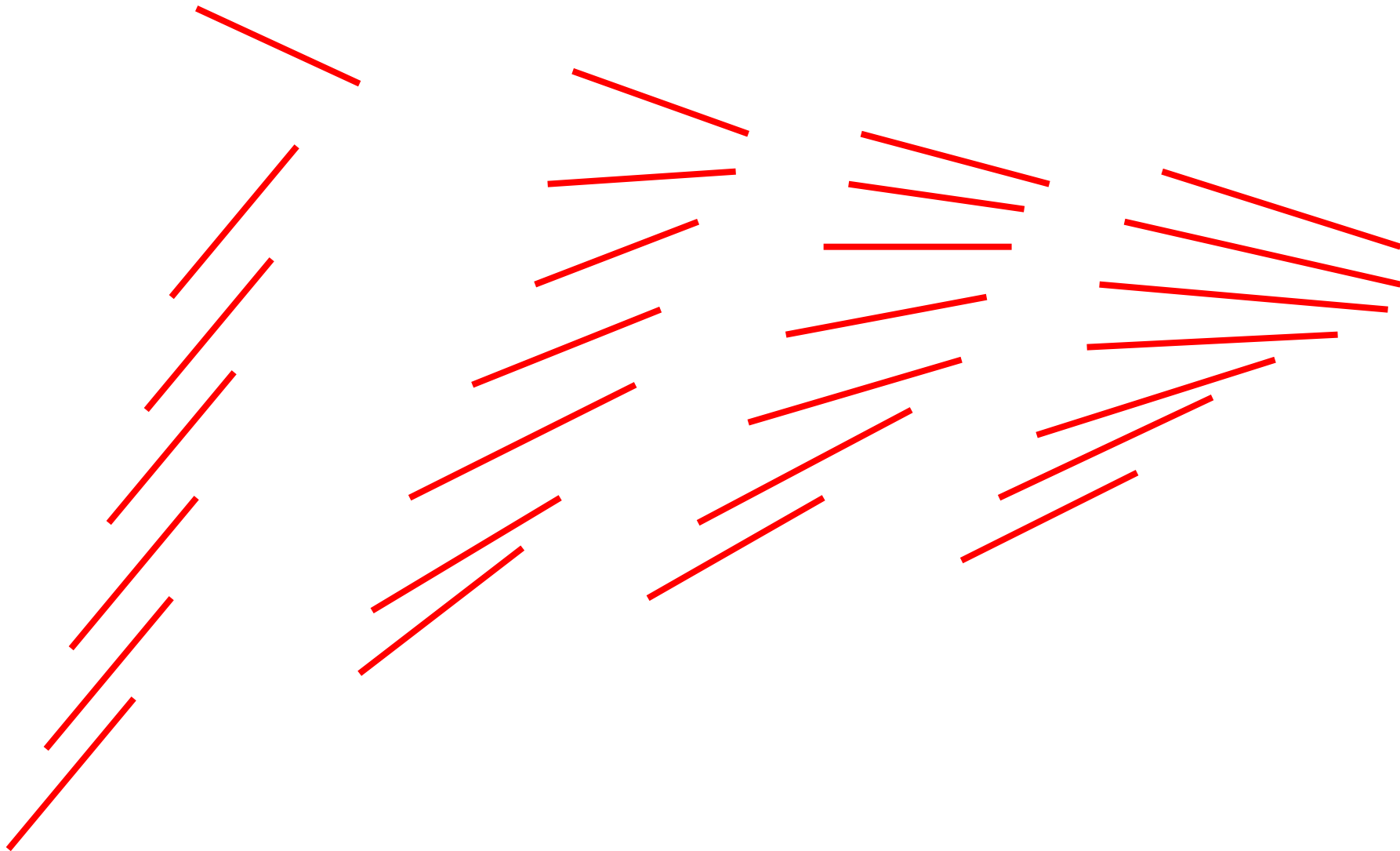


1st day

2nd day

3rd day

4th day



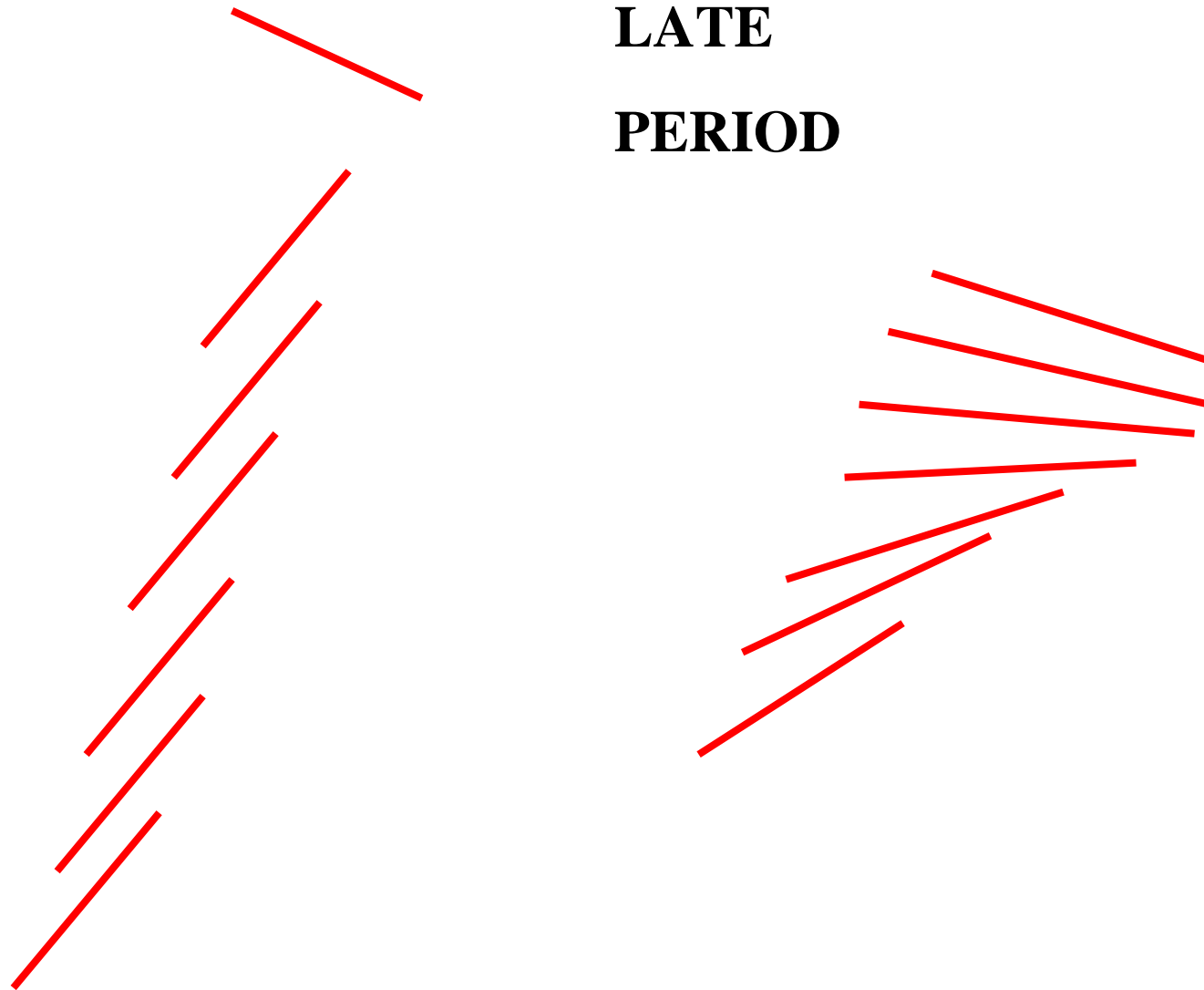
**EARLY
PERIOD**

**LATE
PERIOD**

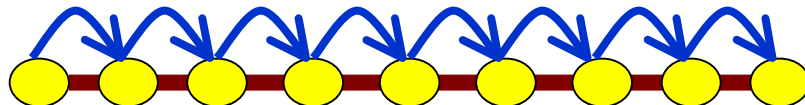
prices



time

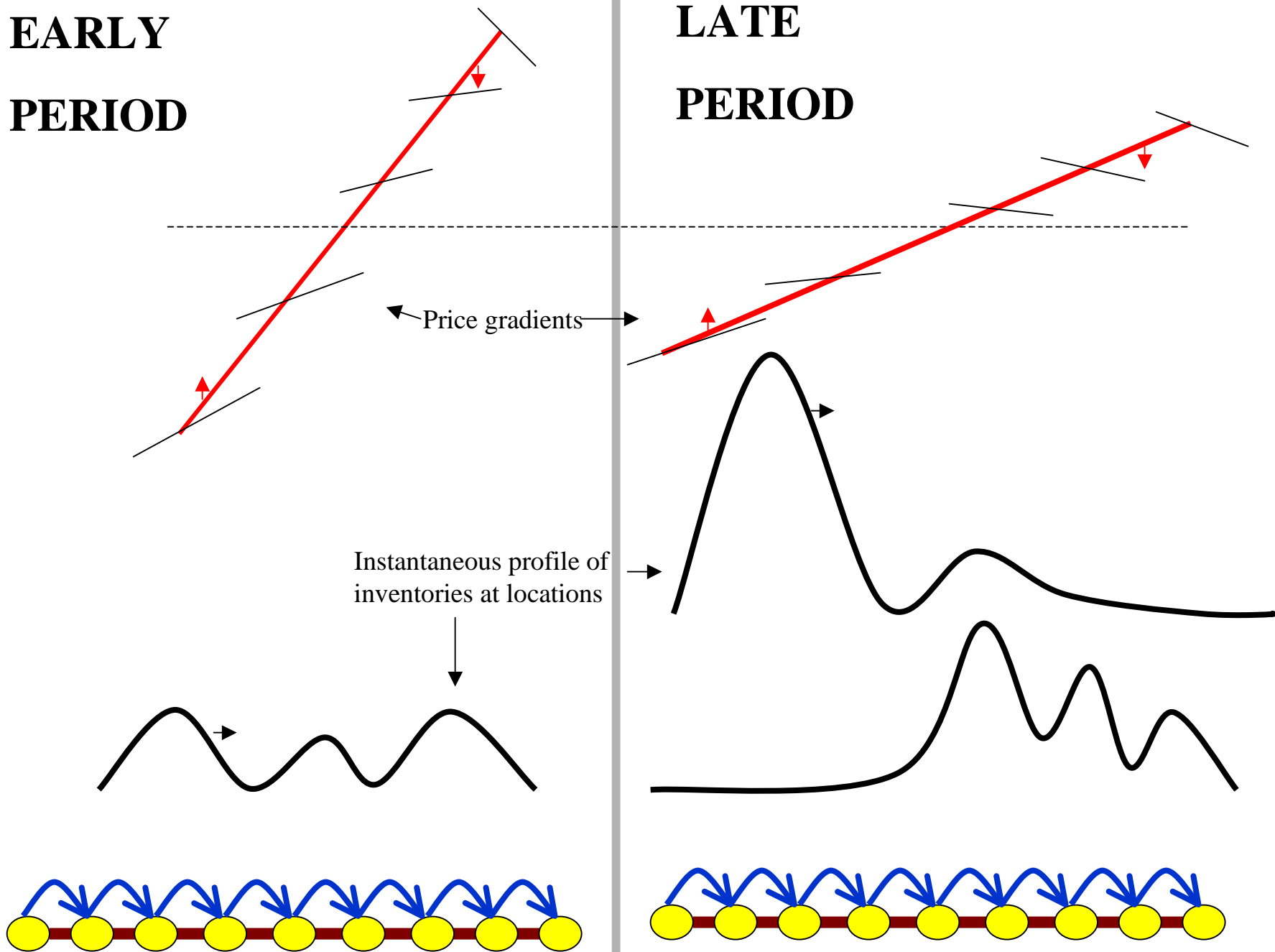


EVOLUTION OF PRICES WITHIN A PERIOD



EARLY PERIOD

LATE PERIOD



- **CAN MARKETS FIND THE ZEROS? *YES***
- **IS INSTABILITY A PROBLEM? *NO***
- **WHAT IS THE NATURE OF THE EQUILIBRATION PROCESS? PRICES FOLLOW A DYNAMIC IN WHICH (i) MARKUP AT THE SOURCE AND MARKDOWN AT THE SINK EVOLVE TOWARD CONSTANT PRICES EQUAL TO THE COMPETITIVE EQUILIBRIUM; (ii) TRANSPORTATION COST EVOLVES TOWARD ZERO; (iii) VOLUMES EVOLVE FROM SCATTERED MOVEMENT TO COORDINATED MOVEMENT AT THE SAME TIME IN EACH LOCATION.**