

# Capitation

## Health Economics Lecture 5



# Outline

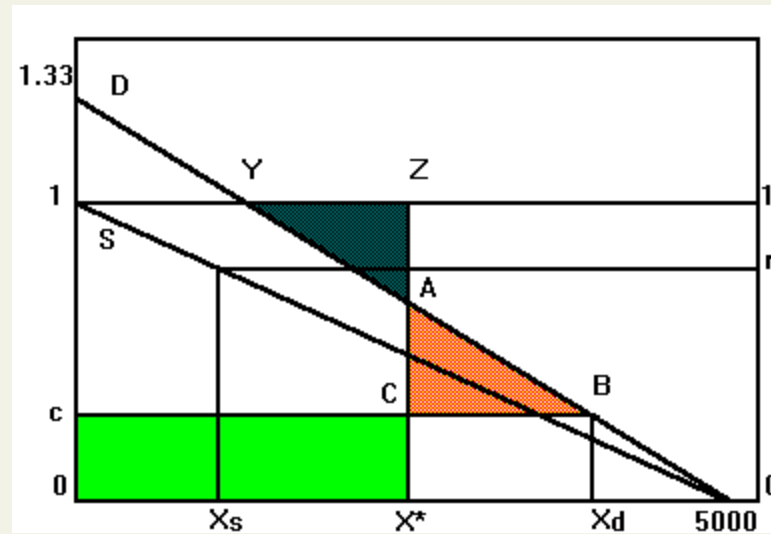
- Introduction to the McGuire graph
- Lessons about co-payments
- Lessons about prospectivity
- Numerical results



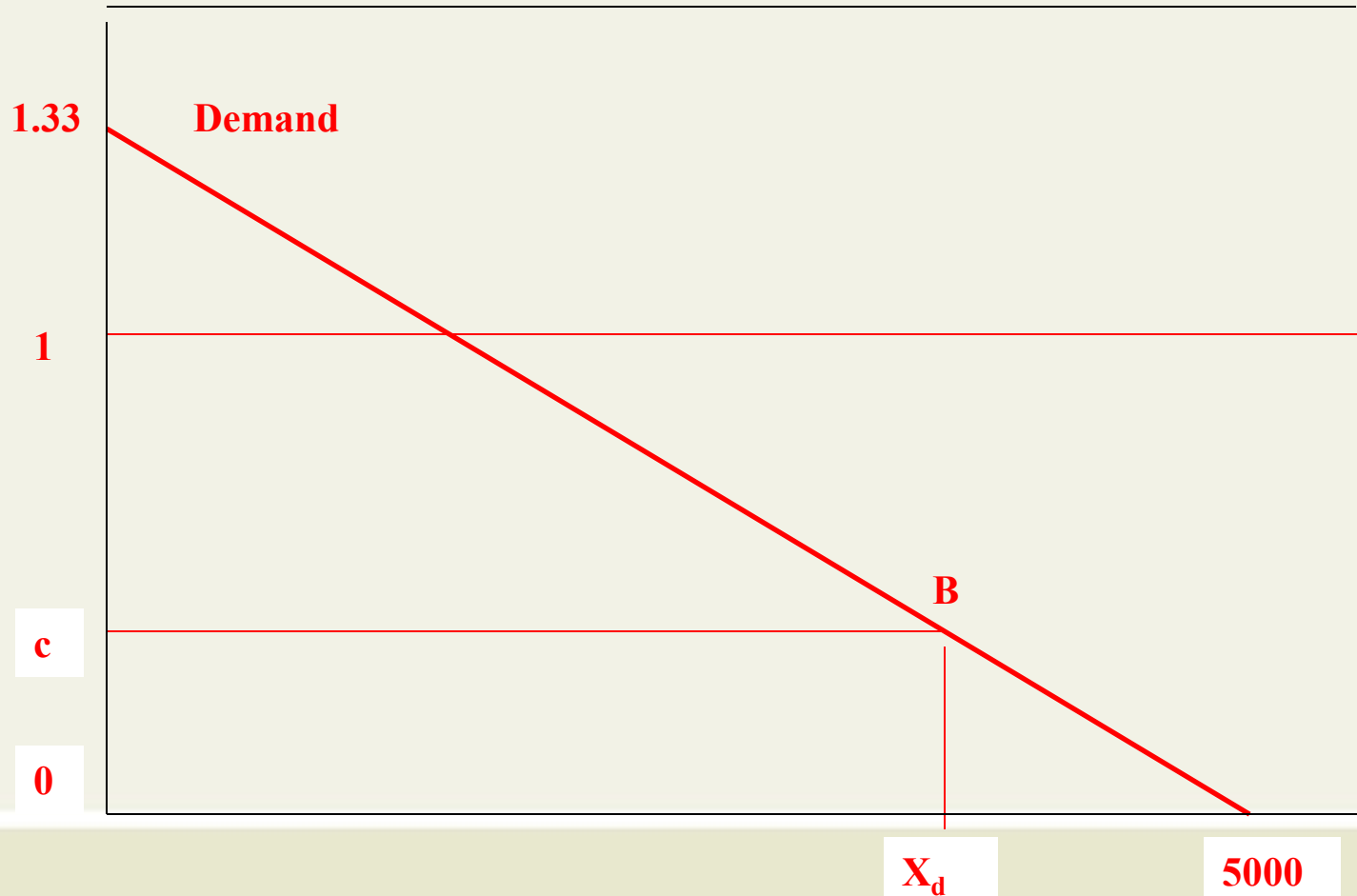
# Part 1: Intro to McGuire's Graph

# Preview of Basic Model

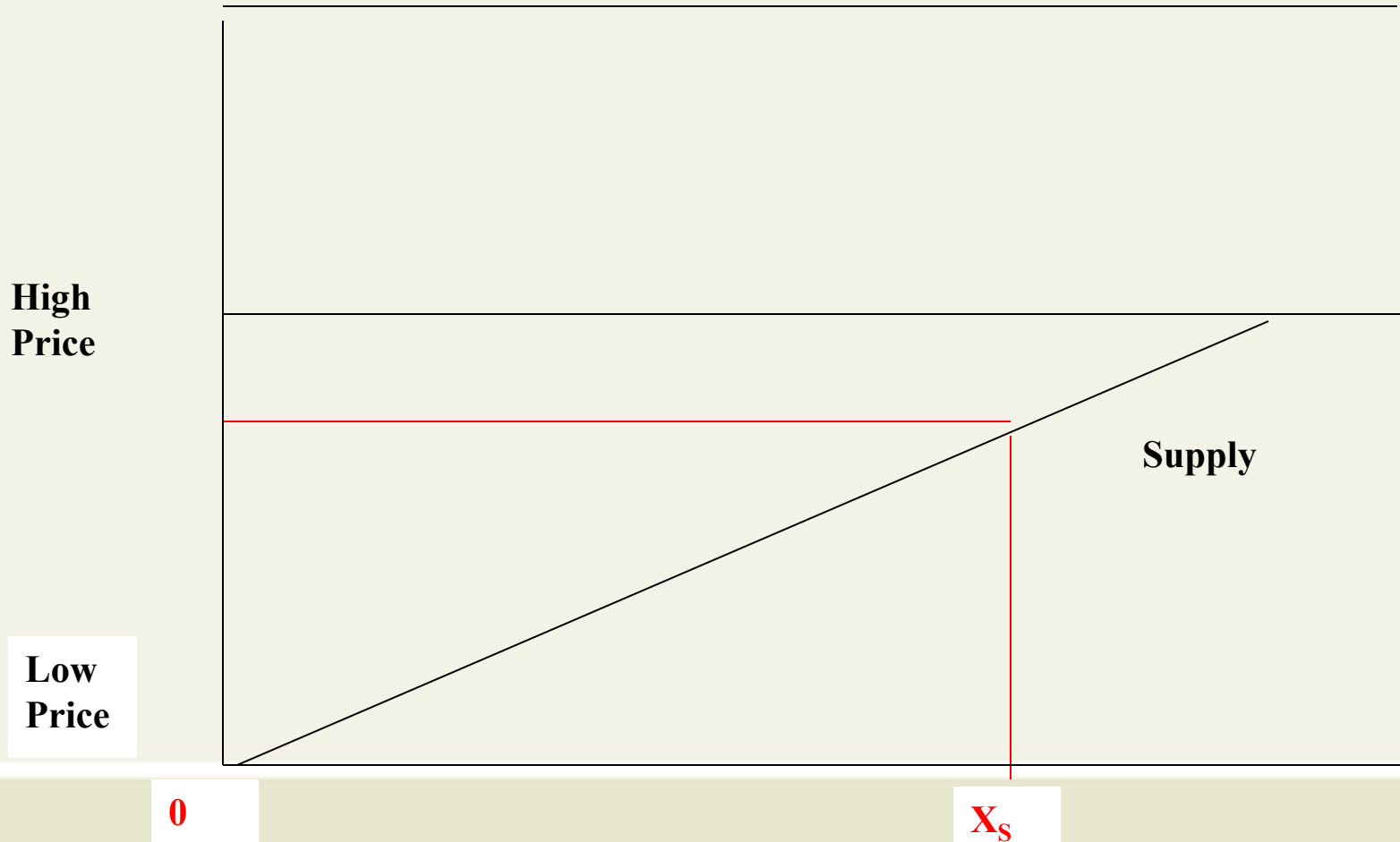
- Models of Capitation and Prospective Payments



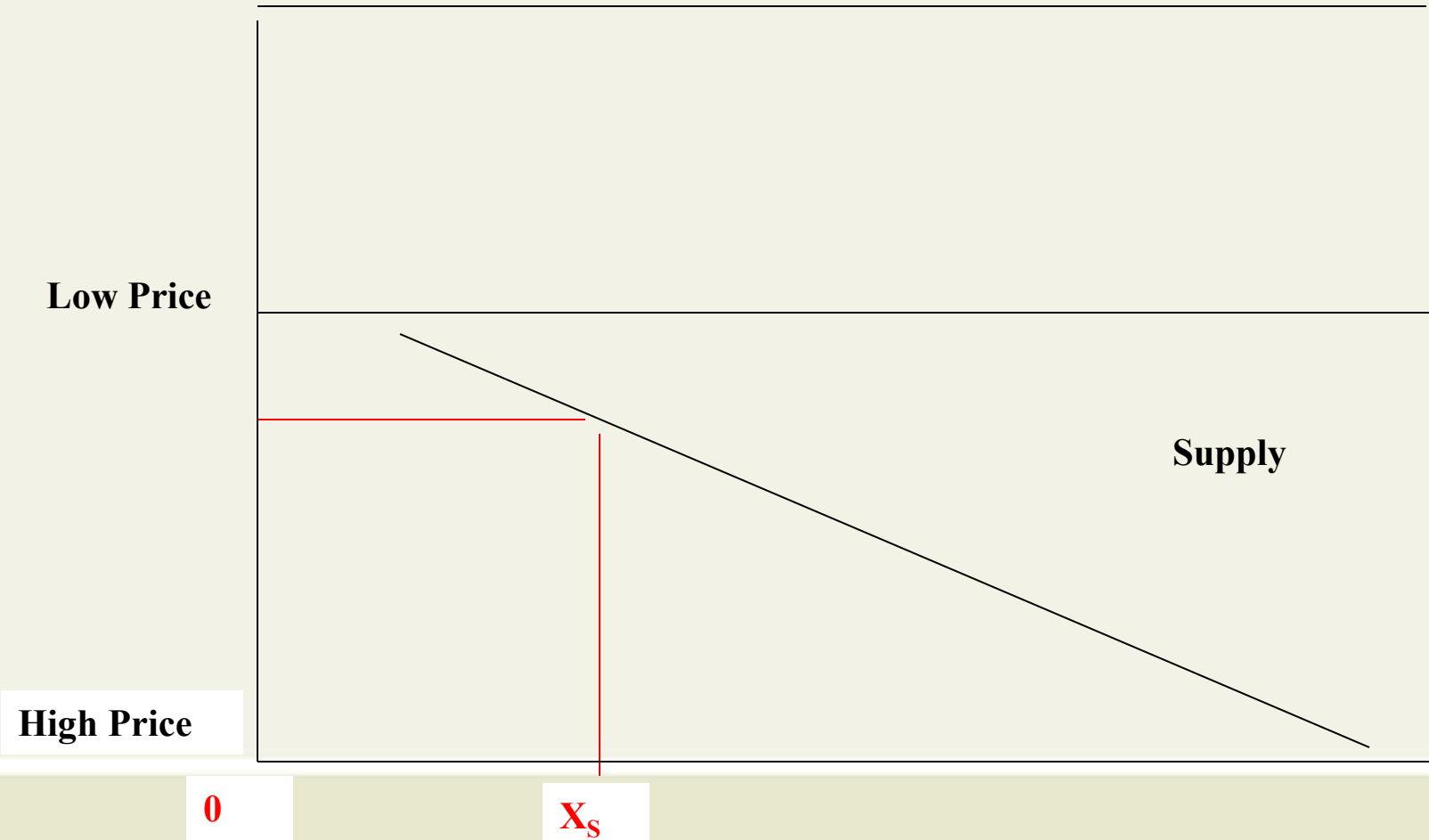
# McGuire's Demand



# Conventional Supply Curve

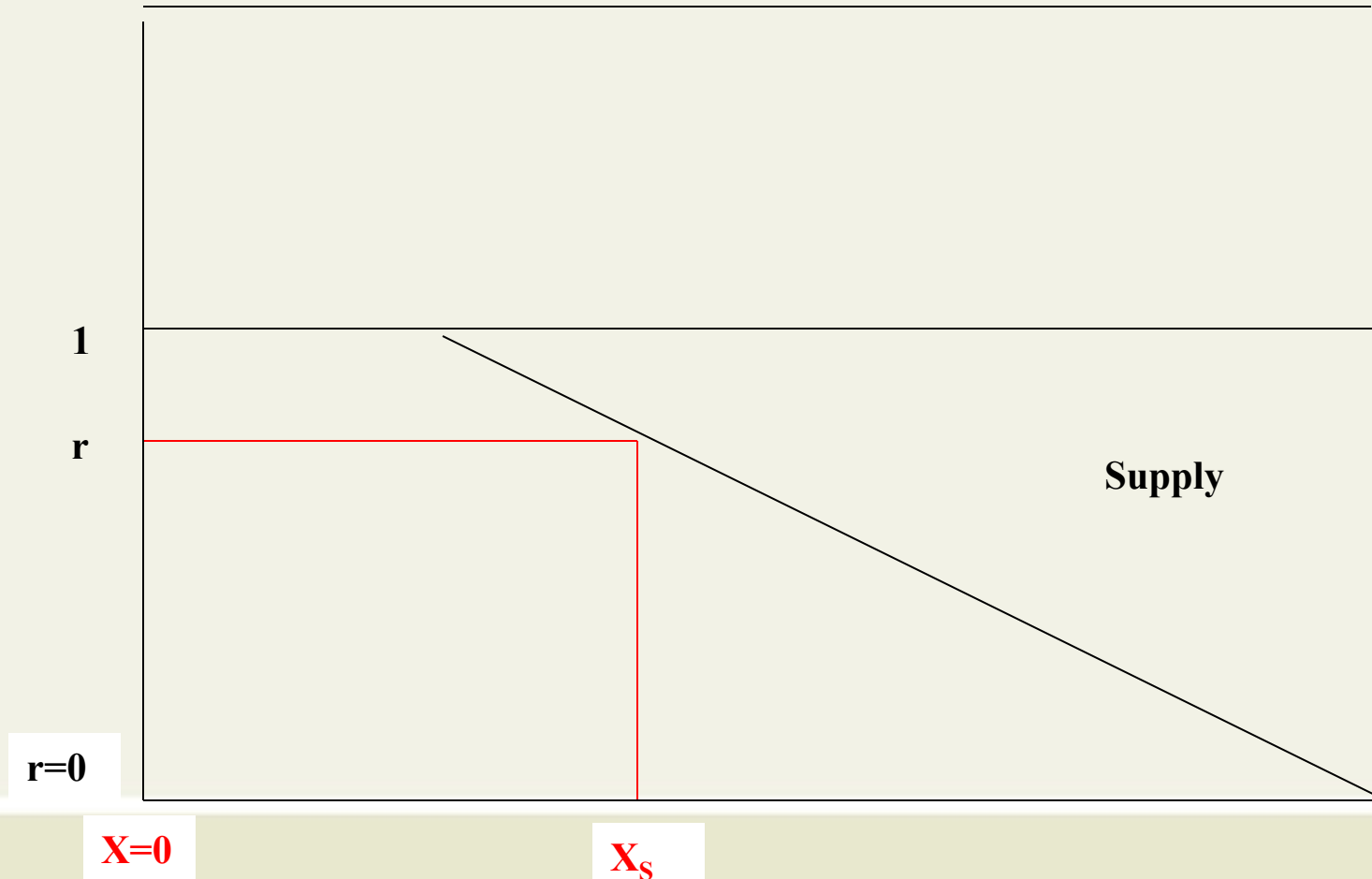


# Upside down supply curve



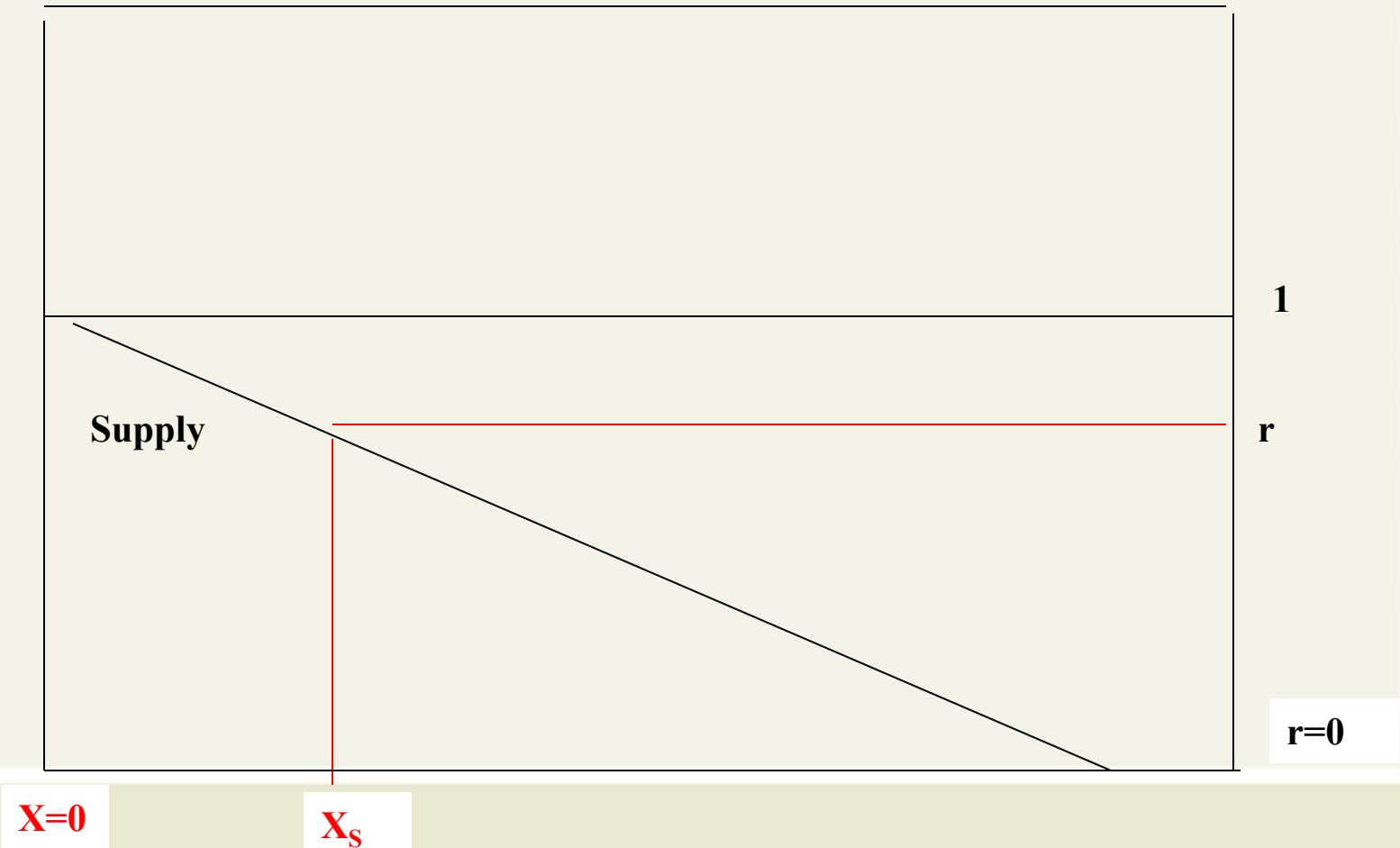
# Prospective payment flips supply curve

As  $r$  goes to 1 (100% prospective payment), the marginal revenue to supplier is lower. Supply curve is upside down.





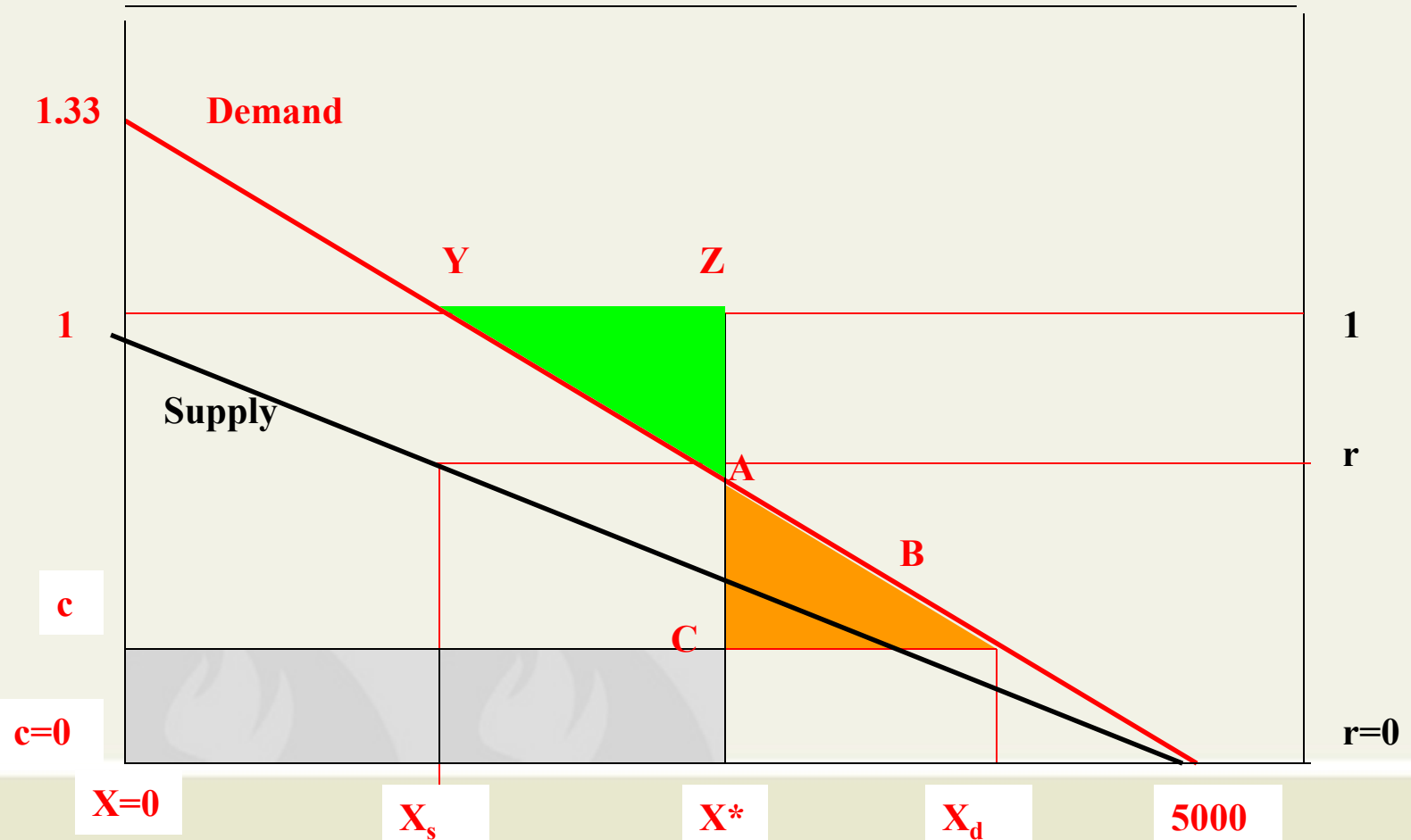
# McGuire's Supply Curve



# Notes on McGuire Model

- The horizontal axis is expenditures.
- The left vertical axis measures copayment on a scale from 0 to 1.
- Right vertical axis measures provider cost sharing on a scale from 0 to 1. If  $r=1$  the providers are 100% capitated, if  $r=0$ , the providers are 100% fee for service.
- $D$  is the demand curve of perfectly informed patients as a function of  $c$ .
- $S$  is the supply curve of perfectly informed providers as a function of  $r$ . Because of imperfect agency,  $\alpha = .75$ , the supply curve fails to perfectly overlap demand.
- $X_d$  is medical expenditure demand when  $c=0.2$ .
- $X_s$  is medical expenditures supply when  $r=0.8$ .
- $X^*$  is the equilibrium achieved after bargaining assuming equal bargaining power between provider and patients. With neither supply nor demand side controls ( $r=0, c=0$ ) equilibrium would be at the maximum=5000 units in the depicted simulation.
- $YZA$  is deadweight loss
- $ABC$  is lost consumer surplus
- $U(0X^*Cc)$  is “RiskCost” =disutility of having to pay cash when you are sick
- Objective: Set  $r$  and  $c$  to minimize  $YZA$  and  $U(0X^*Cc)$

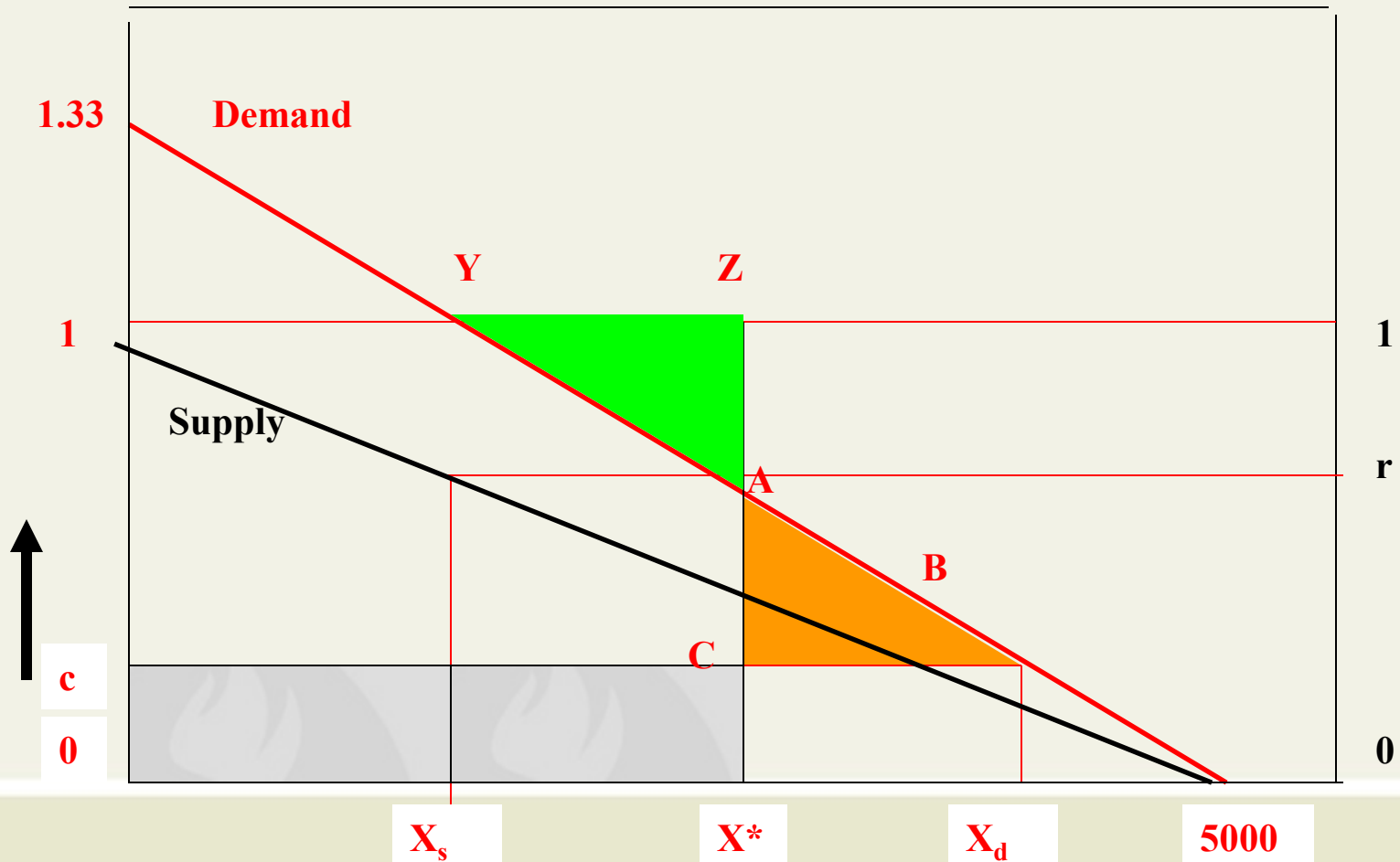
# McGuire's Equilibrium



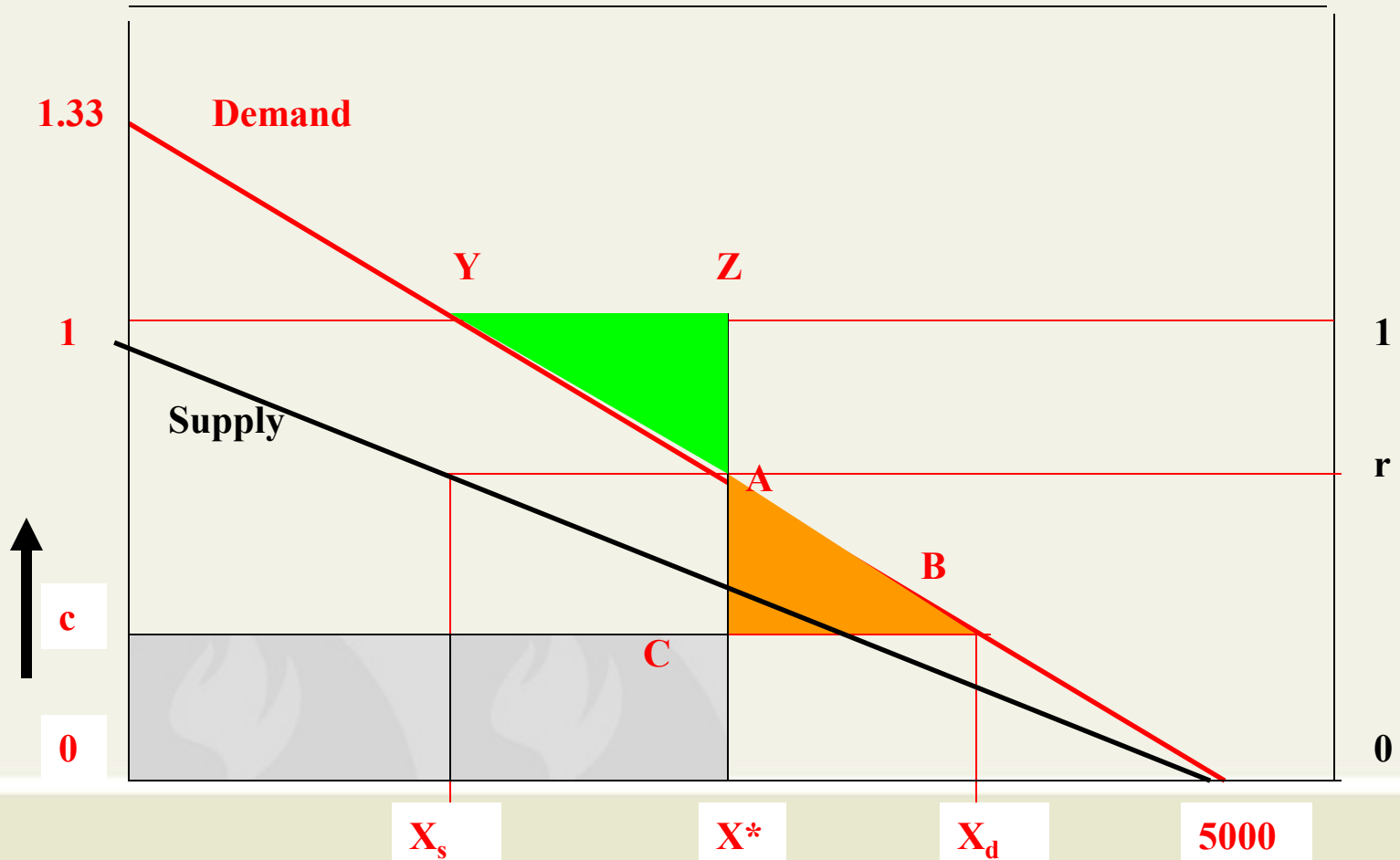


## **Part 2 Lessons about co-pays**

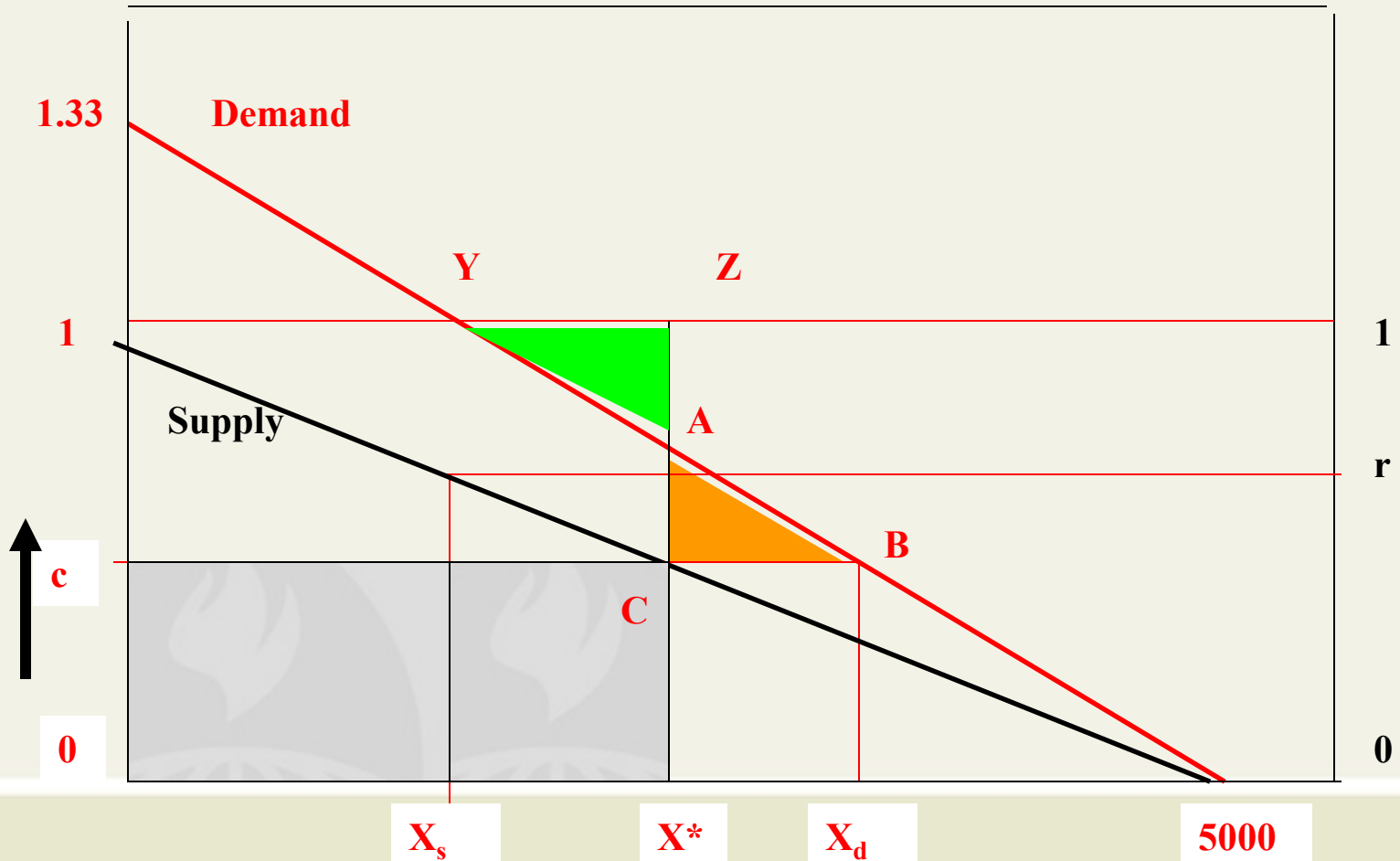
# Raising $c$



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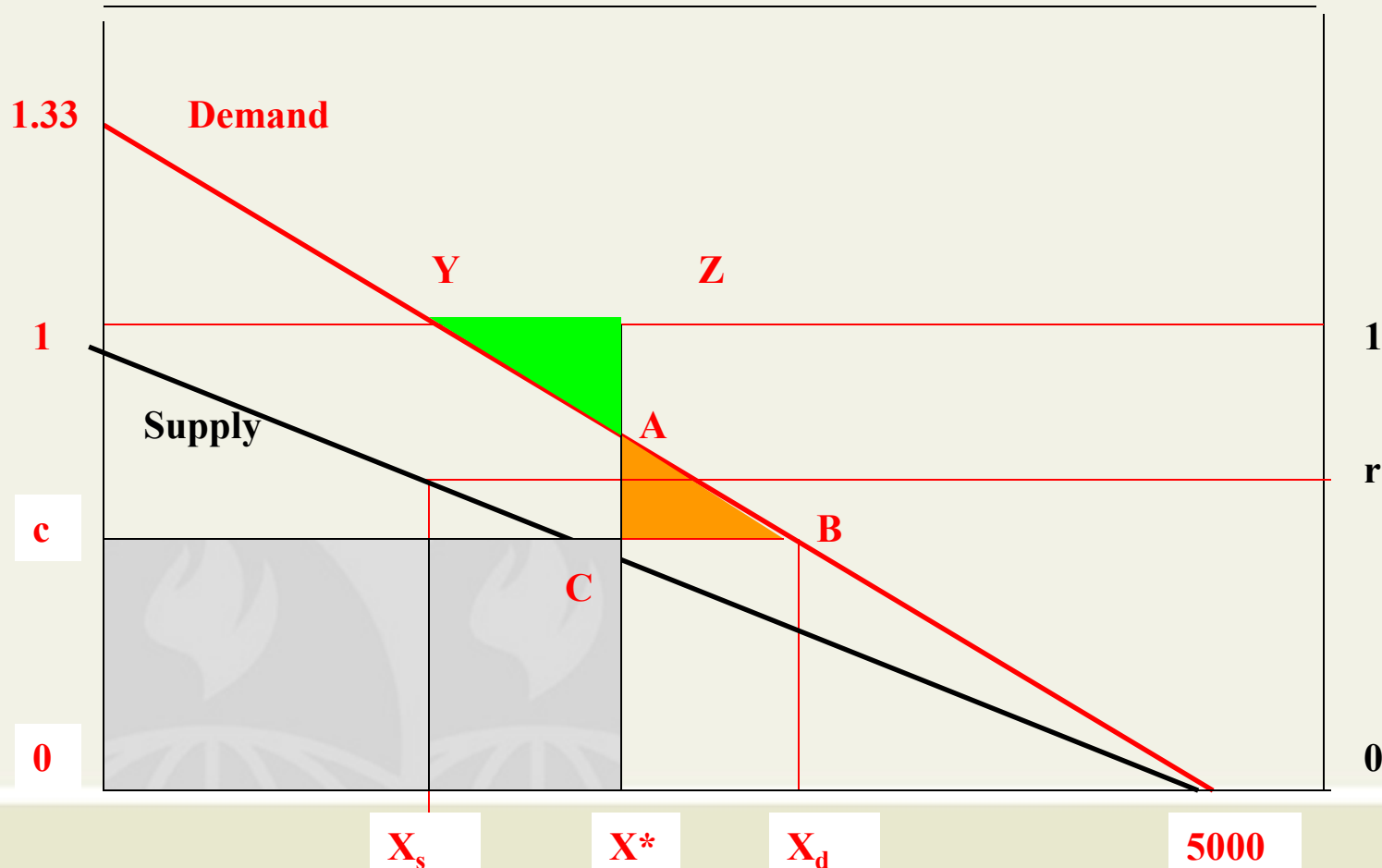


# Raising $c$



# Raising $c$ :

Raises "Risk Cost  $0cCX^*$ "  
Shrinks Lost Consumer Surplus  $ABC$





# Lesson

- Co pays make consumers “want” to reduce their spending
  - This lowers moral hazard
  - Lowers deadweight loss
  - Moves consumers closer to providers
    - Lower lost consumer surplus
- Co pays leave consumers exposed to spending when they are sick
  - Defeats the point of insurance



# Lessons about Prospectivity

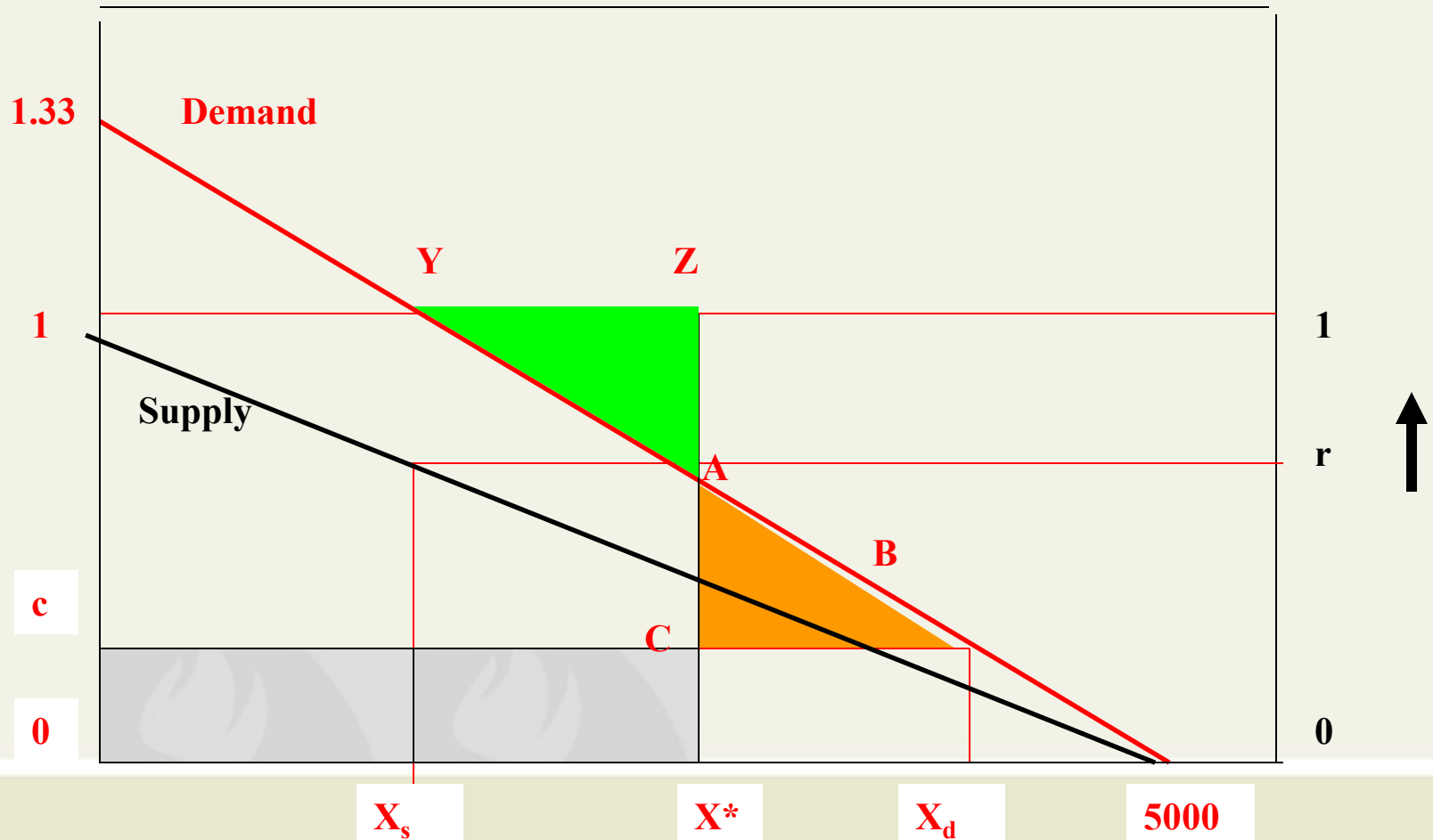
# Prospectivity = Capitation

- Capitation “being paid *per head*”
  - Provider accepts a sum of money per patient and is responsible for taking care of anything that might go wrong with the patient
    - Take money and patient never makes a single appointment
    - Take money and patient gets hit by a bus
  - Provider is at risk
  - Provider’s incentive to under provide services
- Fee for service
  - Provider’s incentive to over provide services

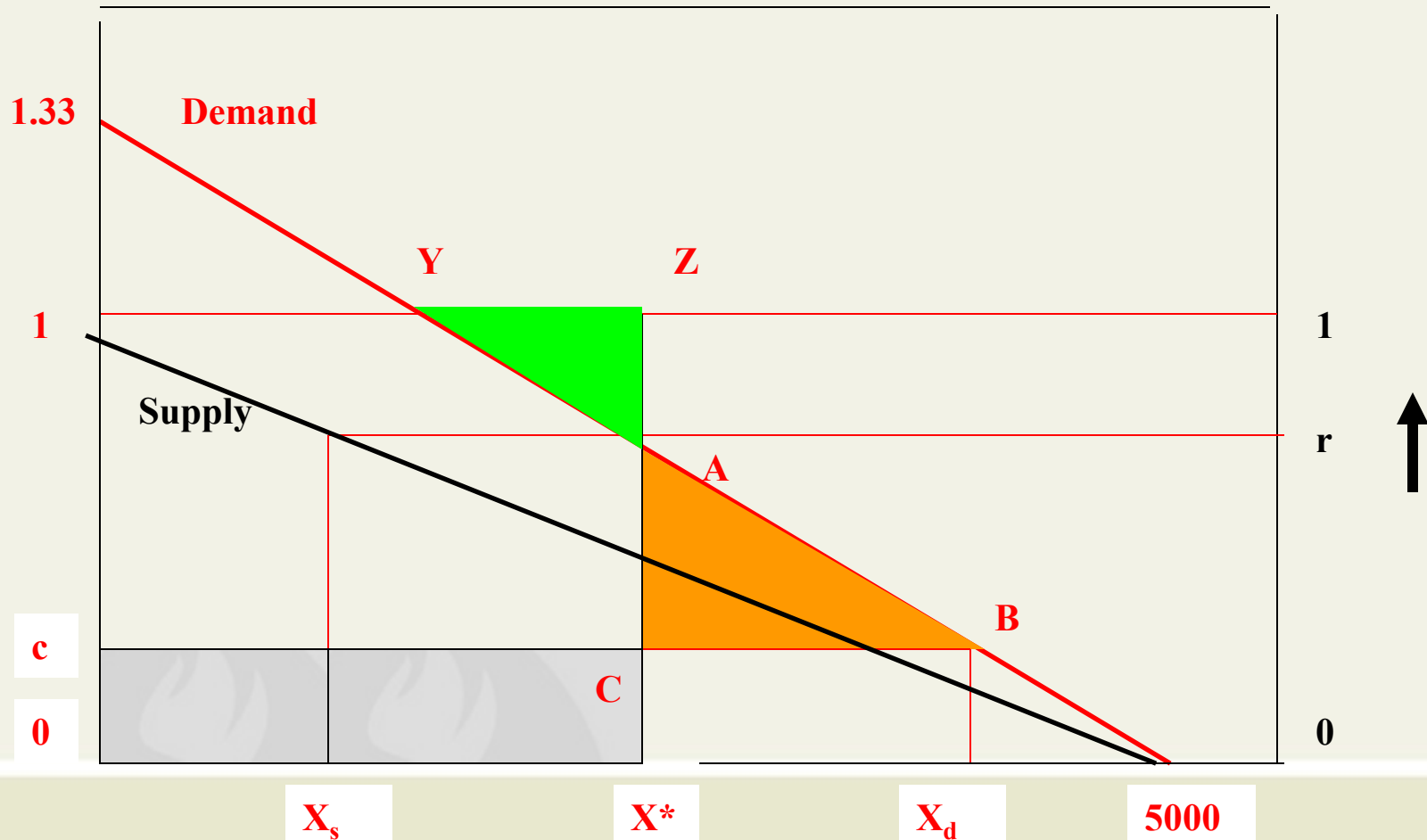
# Drawbacks of capitation

- Underprovision
  - Denial of services → adverse events
  - Courts still deciding if MCO's can commit negligence by denying payment
- Inefficient imposition of risk
  - Returns to scale in risk bearing because of law of large numbers-Best Scale > 10,000 people insured
  - We pay insurance companies to form large groups to pool risk
  - Capitation makes insurance companies into middlemen—herding patients into small inefficient risk pools
  - Very inefficient and unsound financial for a single physician to pool risk with a group of 500-1000 patients

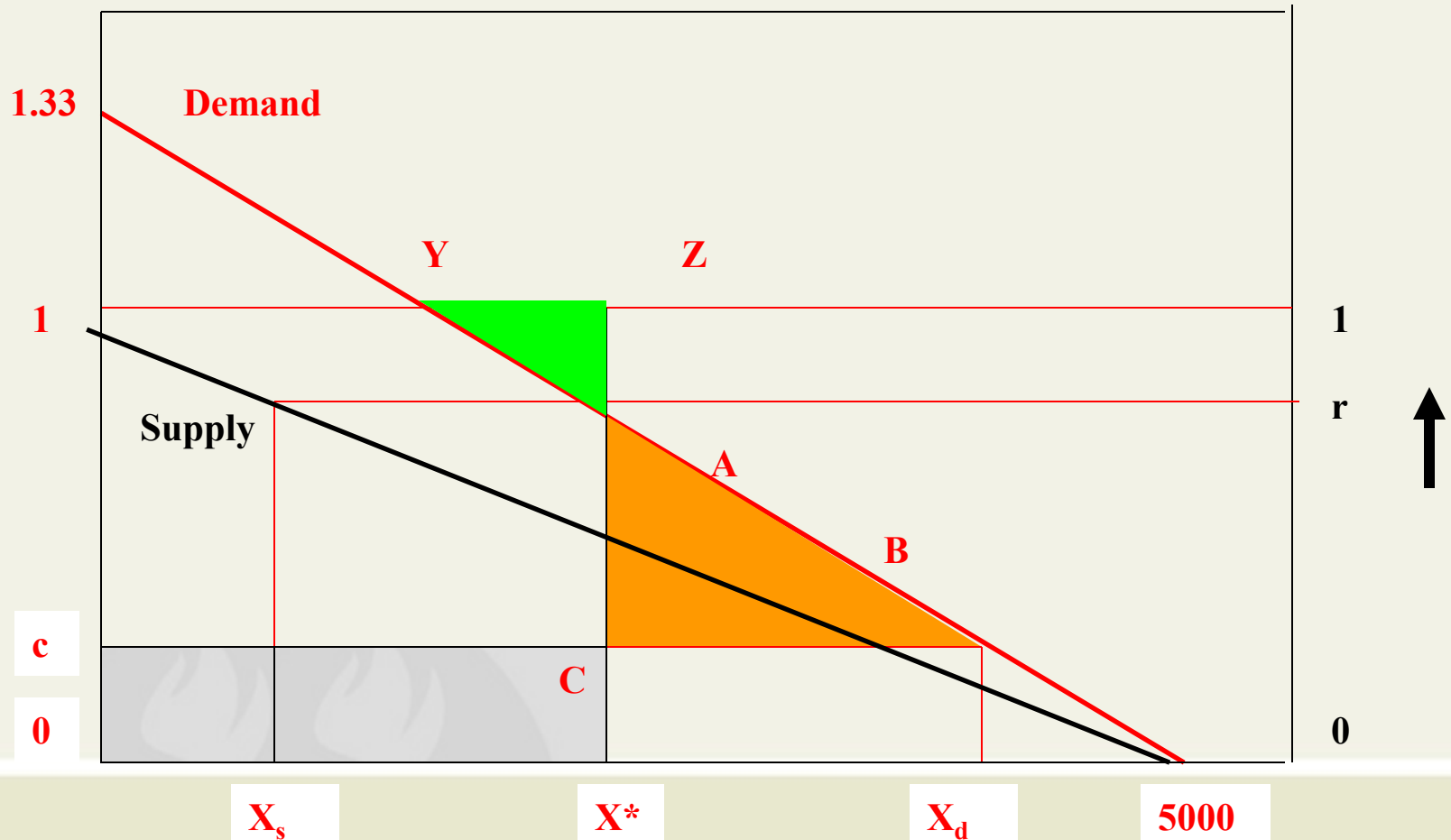
# Raising r



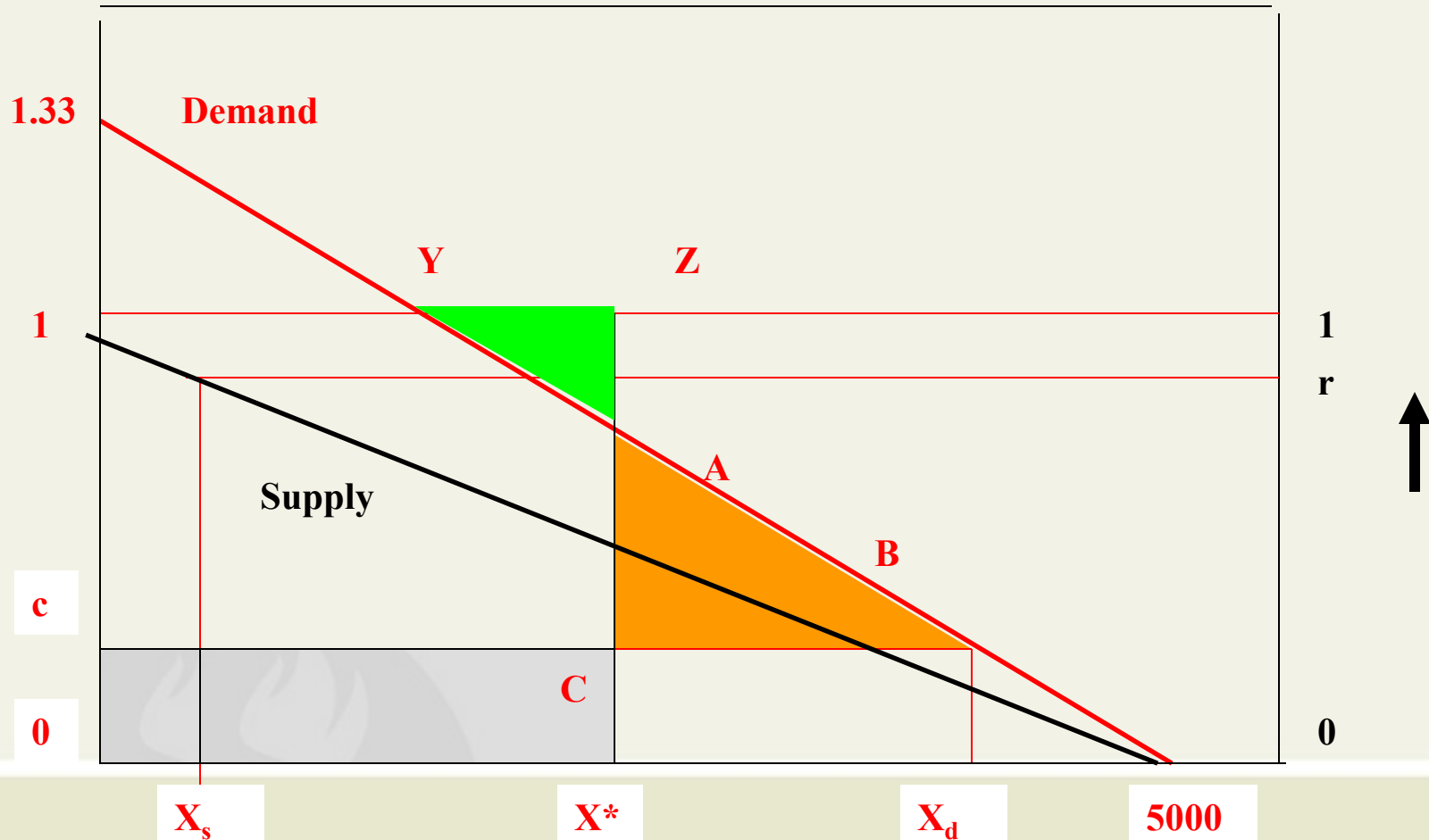
# Raising r



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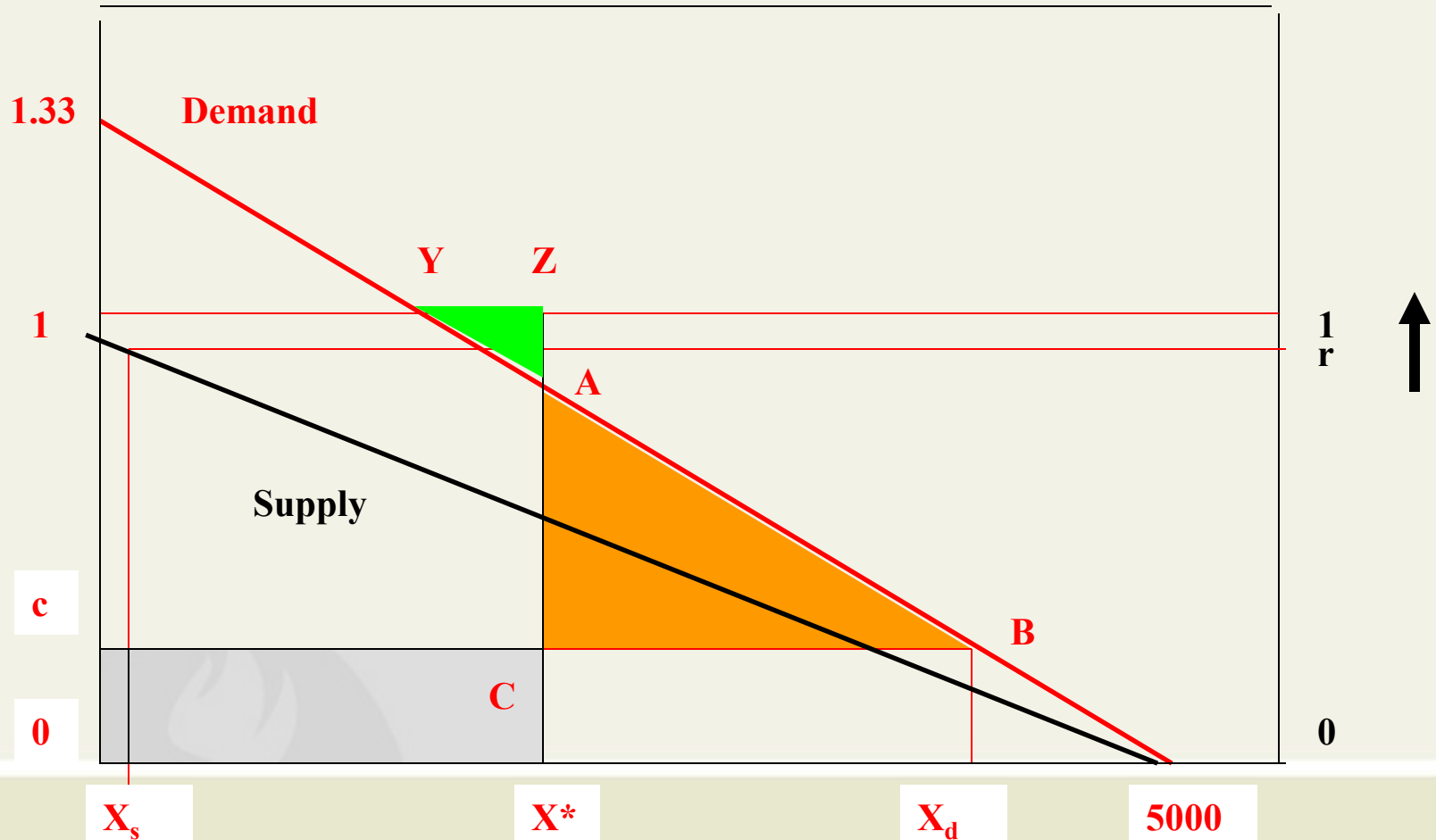
# Raising r





# Raising r:

Shrinks deadweight  $YZA$   
Raises Lost consumer surplus  $ABC$



# Lesson on Prospective Payment

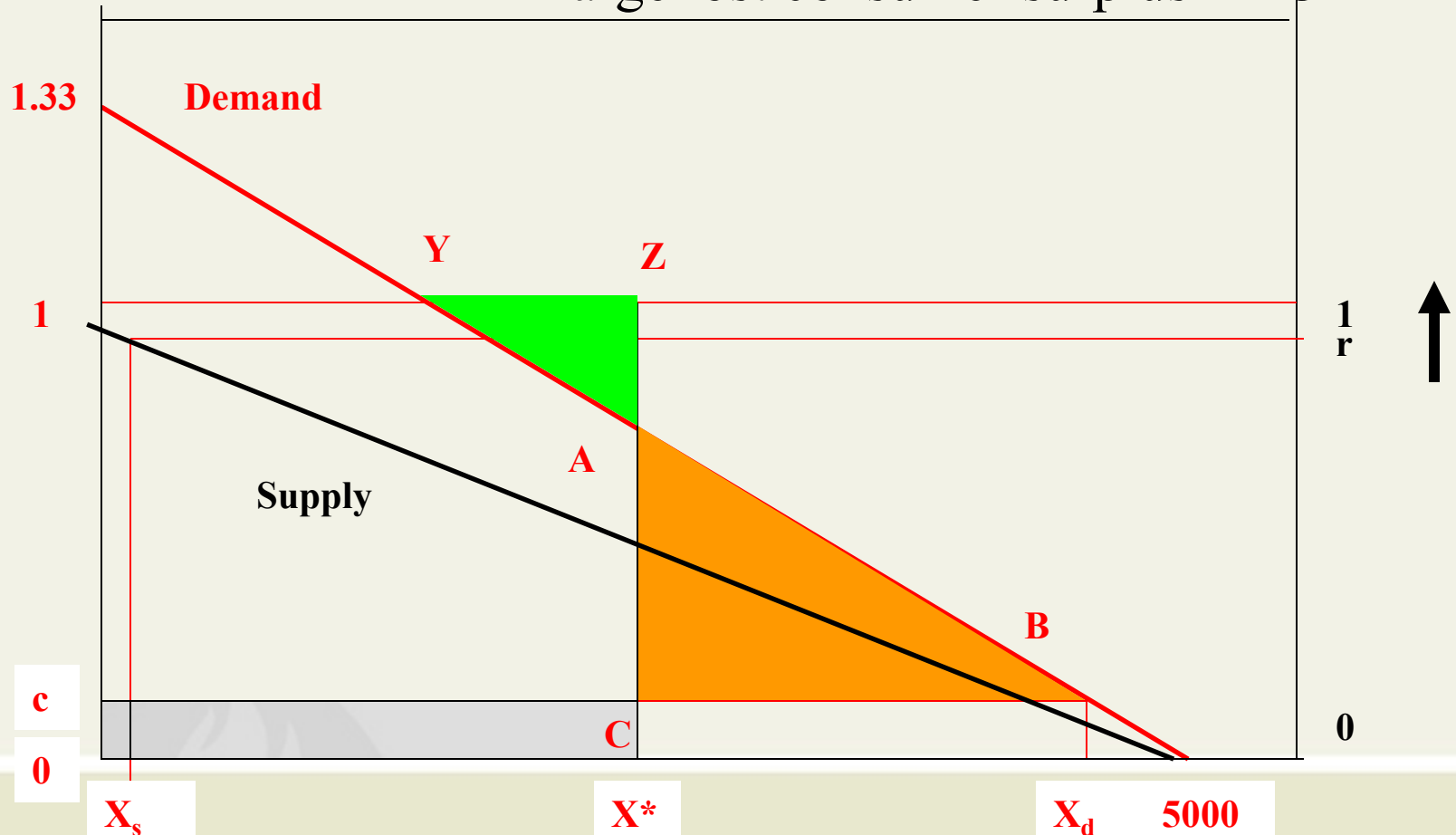
- Raising prospectivity
  - Makes gatekeepers lower the medical spending
  - Gatekeepers restrain deadweight loss
- Providers move away from consumers in their starting point in bargaining
  - This raises lost consumer surplus

# High $r$ and Low $c$

Small risk cost  $0cCX^*$

Small deadweight  $YZA$

Large lost consumer surplus  $ABC$



# High prospective No co payments

- Low risk cost
- Low deadweight loss
- High level of conflict between consumers and providers
  - Is conflict costly?
    - Yes if it provokes consumers to spend time and energy searching for a more lenient gatekeeper
    - No if the system denies consumers the ability to search
      - Consumer's surplus is not a basic human right
      - Nobody deserves to have their consumer surplus

## Part 4: Numerical examples

- Low co pay Low prospectivity → High Deadweight
- High co pay Low prospectivity → Low Deadweight  
High Risk Cost
- Low co pay High propectivity → Low Deadweight,  
Low Risk Cost  
High Conflict Cost

# Options With No Capitation

c	r	Xcr	Dead Weight	Risk Cost	McGuire's Total Cost	Triangle ABC	Patient Utility
0	0	5000	1875.0	0.00	1875.0	0.00	3333*
0.05	0	4906.2	1782.4	66.17	1848.5	1.17	3086.8
0.1	0	4812.5	1692.1	138.93*	1831.1	4.69	2847.4
0.15	0	4718.7	1604.3	217.23	1821.5	10.55	2614.9
0.2	0	4625	1518.7	300.04	1818.7	18.75	2389.5
0.25	0	4531.2	1435.5	386.38	1821.9	29.30	2171.2

\*Highest patient utility at no capitation, no co pay. Patient's get everything they want. Also highest social cost

# Options With No Capitation

c	r	Xcr	Dead Weight	Risk Cost	McGuire's Total Cost	Triangle ABC	Patient Utility
0	1	2500	208.33	0.00	208.33*	833.33	2500.0
0.05	1	2406.25	178.26	31.24	209.50	772.01	2316.0
0.1	1	2312.5	150.52	62.11	212.63	713.02	2139.0
0.15	1	2218.75	125.13	92.11	217.24	656.38	1969.1
0.2	1	2125	102.08	120.77	222.86	602.08	1806.2
0.25	1	2031.25	81.38	147.69	229.07	550.13	1650.3

\*Lowest Cost, Biggest size of Triangle ABC. And mediocre utility

# What have we learned

- Can control costs 2 ways:
  - Raise co-pays (Demand Side)
  - Raise prospectivity (Supply Side)

Raising Co pay	Raising Prospectivity
Lower Deadweight Loss	Lower Deadweight Loss
Higher Risk Cost (eroded protection from risk)	Higher Perception that provider's Incentives not aligned with yours (Not a cost if patients can't search for providers)

- Power and politics will drive oscillation between demand side and supply side cost control.