OVERVIEW

The United States has witnessed significant changes in state cannabis laws, with 24 states legalizing recreational cannabis since 2012. Despite continued federal prohibition, these states have created unique marketplaces, each with distinct regulatory structures and competition dynamics between both legal and illegal markets. The episode explores how these new legal markets compete with illegal ones, emphasizing the role of regulatory frameworks in shaping market outcomes. Comparisons are made in the state markets of Washington and Oregon, with Washington being more regulated, leading to less competition and higher cannabis prices and Oregon being less regulated, leading to more competition and lower cannabis prices. The episode also examines consumer preferences. Legalization at the federal level would change the future dynamics of these markets and lead to more competition.

Key Microeconomics Links

- **Perfect Competition and market structures**: More competitive markets have higher output and lower prices, whereas less competitive markets have lower output and higher prices. Oregon's market was closer to perfect competition, whereas Washington's market is less competitive. Illegal markets in states that prohibit sales will likely result in a less competitive environment.
- **Consumer Preferences and MRS**: Consumers can choose between different types of products (legal versus illegal). Consumers do tend to substitute away from illegal markets, when the quality of legal markets are higher.
- **Substitutes**: These are goods that are used in place of each other. Cannabis is shown to be substitute goods across various state and illegal markets.
- **Supply and Demand**: The current regulatory structure restricts state growers to fit to supply and demand of the individual state, rather than have competition across states.
- **Role of Regulations**: The role of regulatory structures shape market outcomes and competition.

Preview Question

Does legalizing cannabis lead to more or less illegal cannabis? What is the impact on price?

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Discussion Questions

1. How do state-specific regulations influence the competitiveness of legal cannabis markets (use Washington and Oregon as examples)?
2. Discuss the challenges faced by legal markets in competing with illegal cannabis markets.
3. How does consumer preference for quality affect the relationship between legal and illegal cannabis markets? How is cannabis in different markets related (i.e. are they substitutes or complements)?
4. What role does market structure play in determining the prices of legal cannabis?
5. How might federal legalization change the current state of cannabis markets across the U.S.?
6. What are the potential consequences of increased competition in legal cannabis markets?
7. How can states balance the need for regulation with fostering market growth and innovation?
8. Consider the initial legalization of cannabis in a state where it was formerly illegal. How will demand change for in-state legal cannabis? How will demand change for out-of-state legal cannabis and in-state illegal cannabis?
9. What are some possible benefits of the legalization of cannabis? What are some negatives of the legalization of cannabis?
10. Besides the market price discrepancies across legal and illegal markets, what are some consequences of having differing state laws regarding cannabis sales and use?

Multiple Choice Questions

1. What is the expected outcome when a market becomes closer to perfect competition?
   A) Higher prices and lower output
   B) Lower prices and higher output
   C) Monopolistic control
   D) Limited consumer choices

   Answer: B) Lower prices and higher output

2. Which of the following is more representative of the Oregon state legal cannabis market?
   A) Few sellers dominate the market
   B) Products are differentiated
   C) Many sellers offer identical products
   D) Firms experience barriers to entry

Answer: C) Many sellers offer identical products

3. Which of the following is more representative of the Washington state legal cannabis market?
   A) One seller dominates the market
   B) Products are differentiated
   C) Many sellers offer identical products
   D) Firms experience barriers to entry

   Answer: D) Firms experience barriers to entry

4. What was one impact of the legalization of cannabis in Oregon on the Washington market?
   A) An overall decrease in Washington sales
   B) An overall increase in Washington sales
   C) More sellers in Washington
   D) Increased regulation in Washington

   Answer: A) An overall decrease in Washington sales

5. How did consumers respond when the quality of legal cannabis increased by 10%?
   A) Decreases in legal sales by 5%
   B) Decreases in illegal sales in 5%
   C) No change in the market
   D) Prices in all markets increase by 10%

   Answer: B) Decreases in illegal sales in 5%

6. What type of market characteristics are better for consumers in terms of product quality and lower prices?
   A) Increased competition
   B) Decreased competition
   C) Decreased choices in products
   D) Few sellers with little product differentiation

   Answer: A) Increased competition

7. What response did Oregon's producers have to the more competitive cannabis market?
   A) Higher prices
   B) More supply to illegal markets
   C) Less product variety
   D) Decreased consumer demand

   Answer: B) More supply to illegal markets

8. How will federal legalization change the market for cannabis products?
   A) Increased competition across states
   B) A monopoly will develop
   C) Decreased competition across states
   D) Consumers will face higher prices and lower quality overall

   Answer: A) Increased competition across states

9. According to the video, which factor besides price primarily influences consumers to switch from the illegal market to the legal market?
   A) The probability of getting in legal trouble
   B) Quality of cannabis
   C) Availability of other substitute goods
   D) Consumer income

   Answer: B) Quality of cannabis

10. Legalization in Oregon had the following impact on the overall state cannabis market?
    A) More sellers and increased supply for cannabis
    B) Fewer seller and decreased supply for cannabis
    C) No change in the number of sellers or supply for cannabis
    D) Lower quality products available in the market

    Answer: More sellers and increased supply for cannabis

True / False Questions

1. Perfect competition in the cannabis market leads to higher prices and less competition.
   Answer: False

2. Consumer preferences for quality influence the marginal rate of substitution between legal and illegal cannabis markets.
   Answer: True

3. The legalization of cannabis in Oregon led to more growers, supply increases, and lower prices compared to Washington.
   Answer: True

4. In a perfectly competitive market, prices tend to be higher due to increased competition.
   Answer: False

5. Due to consumers switching from legal to illegal markets readily, legal and illegal cannabis are complementary goods.
   Answer: False

6. Currently, legal cannabis markets in different states can have entirely different structures and regulations.
   Answer: True

7. As the quality of legal cannabis increases, the demand for illegal cannabis decreases.
   Answer: True

8. More competition in the cannabis market results in benefits to the consumer, such as lower prices and better quality products.
   Answer: True

9. Lower prices in Oregon's cannabis market resulted in firms entering the illegal markets in other states.
   Answer: True

10. The success of new cannabis markets is solely determined by the quality and price of the product.
    Answer: False

Application Questions

Table 1: Firms in Non-Competitive Cannabis Markets (Washington Example)

Demand Quantity (Q, in ounces)	Marginal Cost ($/Q)	Price ($/Q)	Total Revenue ($)	Marginal Revenue ($/Q)
50	$50	$450		
75	$75	$375		
100	$100	$300		
125	$125	$225		
150	$150	$150		
175	$175	$75		
200	$200	$0		

Table 1 Questions

1. Calculate the total revenue (TR) and marginal revenue (MR) for the quantities above and add these values to the table.

2. Plot the D, TR and MR curves.

3. What is the profit maximizing price and quantity for this firm? Identify this value and show it in your graph.

Answers

1. The values for total revenue and marginal revenue are provided in Table 2 below. Total revenue is calculated by price x quantity. Marginal revenue is the change in total revenue / the change in output.

   For example, the marginal revenue for a quantity of 75 is (28125-22500)/(75-50)=5625/25=225.

2. See Figure 1 below.

3. To identify the profit maximizing quantity the firm sets marginal revenue equal to marginal cost. In this example, MR = MC between output of around 75. Price will be set somewhere between $300 and $375. This is shown in Figure 1.

Table 2: Answers: Firms in the Non-Competitive Cannabis Markets (Washington Example)

Demand Quantity (Q, in ounces)	Marginal Cost ($/Q)	Price ($/Q)	Total Revenue ($)	Marginal Revenue ($/Q)
50	$50	$450	22500	---
75	$75	$375	28125	225
100	$100	$300	30000	75
125	$125	$225	28125	-75
150	$150	$150	22500	-225
175	$175	$75	13125	-375
200	$200	$0	0	-525

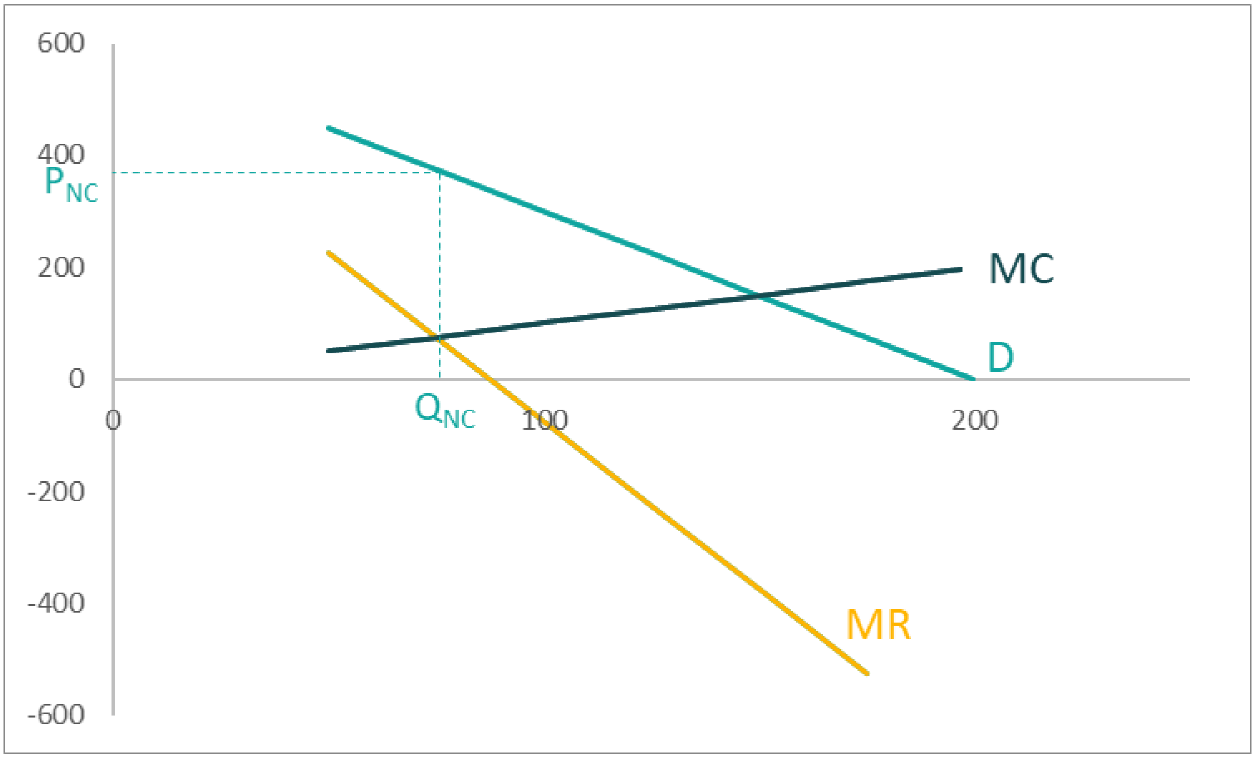


Figure 1: Non-Competitive Firm (Washington Example)

Table 3: Firms in Competitive Cannabis Markets (Oregon Example)

Demand Quantity (Q, in ounces)	Marginal Cost ($/Q)	Price ($/Q)	Total Revenue ($)	Marginal Revenue ($/Q)
50	$50	$150		
75	$75	$150		
100	$100	$150		
125	$125	$150		
150	$150	$150		
175	$175	$150		
200	$200	$150		

Table 3 Questions

1. Calculate the total revenue (TR) and marginal revenue (MR) for the quantities above and add these values to the table.

2. Plot the D, TR and MR curves.

3. What is the profit maximizing price and quantity for this firm? Identify this value and show it in your graph.

Answers

1. The values for total revenue and marginal revenue are provided in Table 4. Total revenue is calculated by price x quantity. Marginal revenue is the change in total revenue / the change in output.

   For example, the marginal revenue for a quantity of 75 is (11250-7500)/(75-50)=3750/25=150.

2. See Figure 2 below.

3. To identify the profit maximizing quantity the firm sets marginal revenue equal to marginal cost. In this example, MR = P = MC at a quantity of 150. Price is constant at $150. This is shown in Figure 2.

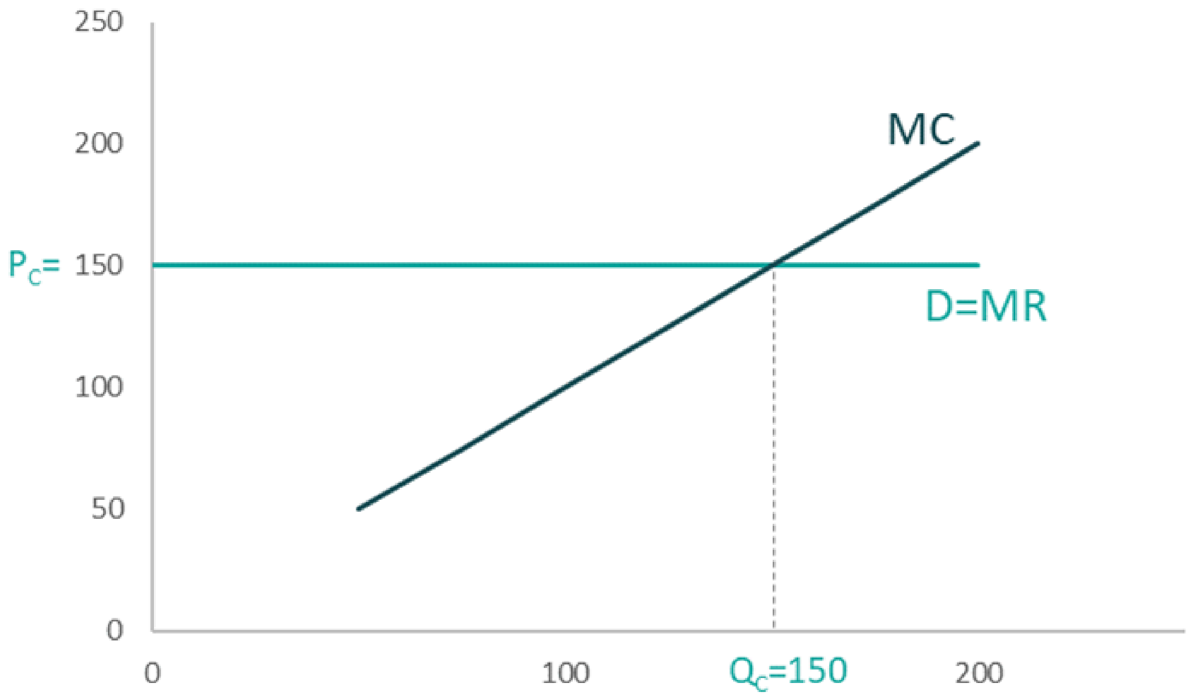
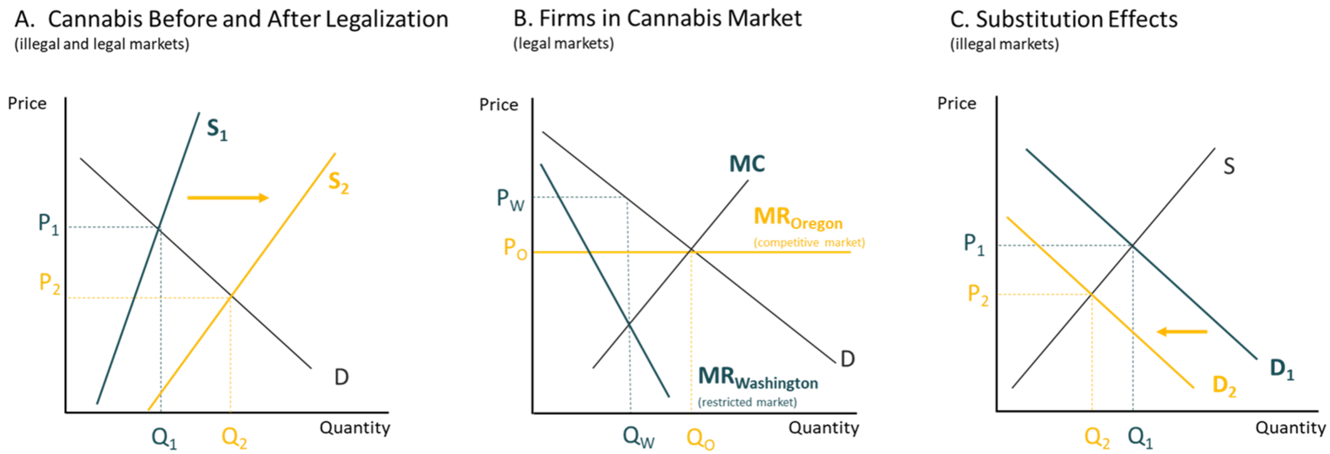


Figure 2: Firms in a Perfectly Competitive Market (Oregon Example)

Table 4: Answers for Firms in Competitive Cannabis Markets (Oregon Example)

Demand Quantity (Q, in ounces)	Marginal Cost ($/Q)	Price ($/Q)	Total Revenue ($)	Marginal Revenue ($/Q)
50	$50	$150	$7,500	$150
75	$75	$150	$11,250	$150
100	$100	$150	$15,000	$150
125	$125	$150	$18,750	$150
150	$150	$150	$22,500	$150
175	$175	$150	$26,250	$150
200	$200	$150	$30,000	$150

Episode in a Graph



UE Figure S1 Ep3: Comparison of Cannabis Market Outcomes under Different Regulatory Structures.

Description: Panel A illustrates how legalization (such as in the Oregon example) increases the supply (from S_1 to S_2) and the elasticity of supply (i.e. the curve gets flatter). This shift results in a lower equilibrium price and higher equilibrium quantity. Panel B contrasts Oregon's competitive market with Washington's restricted market: Oregon's flat marginal revenue (MR) curve leads to a lower price (P_O) and higher quantity (Q_O), while Washington's steeper and downward-sloping MR curve results in a higher price (P_W) and lower quantity (Q_W). Panel C illustrates the substitution effect that occurs between the legal and illegal markets. In this graph of the illegal market, the demand falls (consumers substitute legal cannabis for illegal cannabis) resulting in a decrease in the equilibrium price and quantity of illegal cannabis. As the video points out, all these changes occur in this complex system of markets simultaneously, making the outcomes an interesting focus of research.

Innovative Ways to Extend the Lessons

1. **Listen to our podcast!**
   - Listen to the episode podcast and have students reflect: What is lost or gained when research is translated into casual language? What did I hear that I missed in the video? What concepts does the video clarify that the podcast does not?
2. **Debate on Federal Legalization**
   - Host a classroom debate on the pros and cons of federal cannabis legalization, encouraging students to research and present evidence-based arguments.
3. **Consumer Preference Survey**
   - Conduct a survey on cannabis consumer preferences and analyze how these influence market dynamics and regulatory challenges.