

Regulation and Policy in the Telecommunications Industry TM 612-WS

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Lecture—01 Principles of Economics

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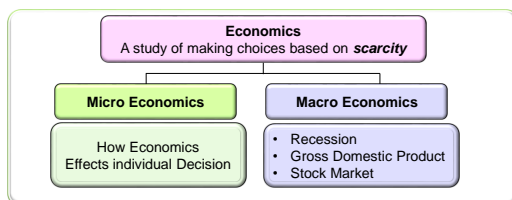
Contents

- **Economics**
- **Principles of Economics**
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 - Principles of Interaction with Others
 - Principles of Economic Works as a Whole
- **Influence of Government Policies on Economy**
- **Impact of Telecommunications on Economy**

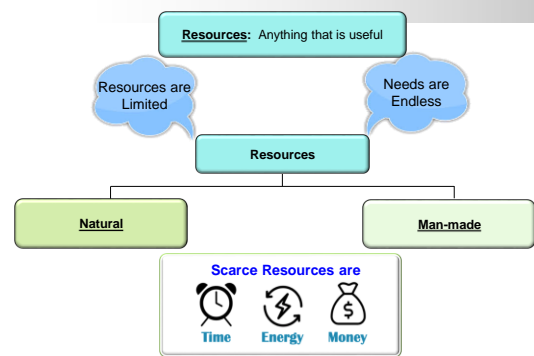
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Economics

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**Because Resources are Scarce
People need to make careful Choices**

e.g. **What to buy, What to save, and What to spend**
Firms decide **how much to produce, how many employees to hire**

People are called Market Players



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Principles of Economy

Principles of Decision Making

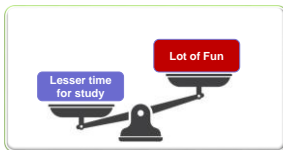
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Principle#1:

All decisions involve tradeoffs

• **Example:**

- Shall I go to a party the night before exam?



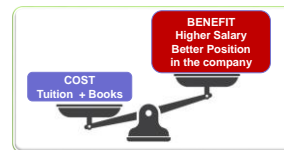
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Principle#2:

All decisions involve comparing cost and benefits

• **Example:**

- College is expensive (Cost), but education helps earn more (Benefit)



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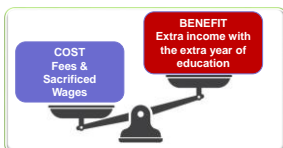
Principle#3:

People make decisions by evaluating **COSTS** and **BENEFITS** of marginal changes

Marginal = Proportionally very small addition or subtraction to the total

• **Example:**

- When a student considers whether to go to college for an additional year, he compares the **COST** to the **BENEFIT**:



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Principle #4:

People Respond to Incentives

• **Example:**

- When there were free calling minutes after 9PM, the people would wait till then



- **Incentive** = Something that induces a person to act in a certain way

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Principles of Economy

Principles of People Interaction with Others

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Principle#5:

Trade can make everyone better off

• Example:

- Buy goods more cheaply from abroad than could be produced at home



- **Trade** = Rather than being self sufficient, people specialize in one good and exchange it for other goods. Countries also benefit from trade & specialization

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Principle#6:

Markets are Usually Good Way to Organize Economic Activity

Market } = Group of buyers and sellers

Economic Activity } = Determining what goods to produce, how to produce, how much to produce

Economies of scale

Companies achieve economies of scale by increasing production and lowering costs. Thus costs are spread over a larger number of goods

Market Price • is determined by the interaction of buyers and sellers
• is determined by the good's value to buyers and the cost of producing it
• guides sellers and buyers to make decisions that impact economy

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Principle#7:

Government Policies can sometimes Improve Market Outcomes

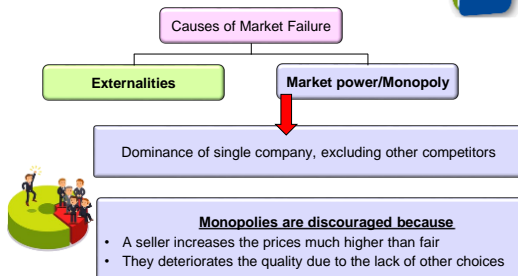
Government policies can be useful in case of market failure
(i.e. when market fails to allocate resources efficiently)

Examples of market failures include:

- Negative externalities
- Monopolies
- Inefficiencies in production
- Incomplete information, etc.

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Principle#7: (Contd.)



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Principle#7 (Contd.):

• Examples of Monopoly

- Technology Monopoly Via Patents
 - A company protects its new product by filing patents, and prevents competitors from offering the same product at different price points
 - E.g. certain cancer medicines
- Government Monopoly
 - Good/Service is provided by the government and law prohibits competition
 - E.g. Government backed student loan
 - Public utilities (gas, electric, water)
 - Local telephone service companies in early 1980
- Company's enforced Monopoly
 - Microsoft Windows (MS) Operating System (OS)
 - Some version is used on 80% of all computers in the world
 - Also, Microsoft required computer manufacturers to install Internet Explorer

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Principle#7 (Contd.):

- **Monopoly Leveraging**
 - Use of monopoly power in one market as leverage to obtain a competitive advantage in a second market
- **Example:**
 - FB owns and control users personal information
 - It can use this information to obtain advantage in advertising business



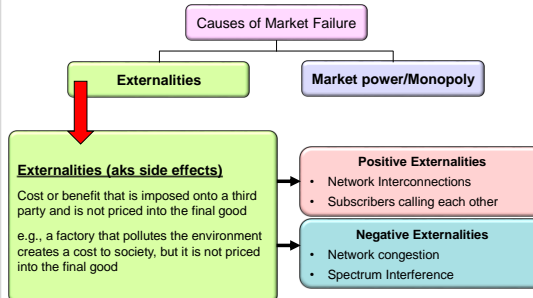
Antitrust laws are also related to:

- Monopoly leveraging
- Predatory pricing (lowering the prices to put rival firms out of business)
- Unfair competition and deceptive trade acts



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Principle#7 (Contd.):



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Principle#7 (Contd.):

- **Examples of Externalities**
 - Network Externalities — **Positive**
 - Bigger network more valuable, More calling options, Lower calling costs
 - Subscriber externality — **Positive**
 - More subscribers more revenue
 - Both called and calling party pay — **Positive** Externality
 - In US, mobile caller and called party used to pay—Now flat rate billing
 - Only Calling Party Billed — **Negative** Externality
 - As calling party makes fewer calls, though both calling/called party benefit
 - Congestion externality — **Negative** Externality
 - More callers, slower network
- **Solutions:**
 - Congestion pricing, Peak-load pricing

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Principles of Economy

Principles of Economic Work as a Whole

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Principle #8:

A country's standard of living depends on its ability to produce goods & services

- **Productivity:**
 - Is the amount of goods and services produced per unit of labor
 - Productivity depends on the equipment, skills, and available technology



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Principle #9:

Prices rise when the government prints too much money

- **Inflation**
 - Increases in the general level of prices
 - Depends how much money government prints
 - Causes the value of money to fall



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Principle #10:

Society faces a short-run tradeoff between inflation and unemployment

• Example

- If unemployment is low, the demand for labor is high, employers pay higher wages to attract employees, that increases inflation

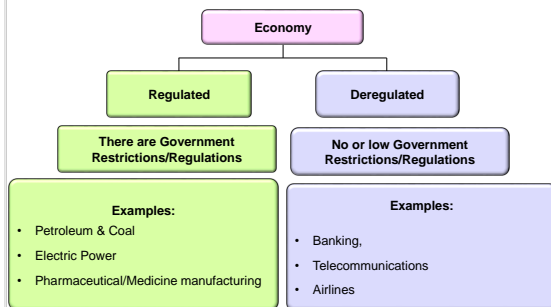


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Influence of Government Policies on Economy

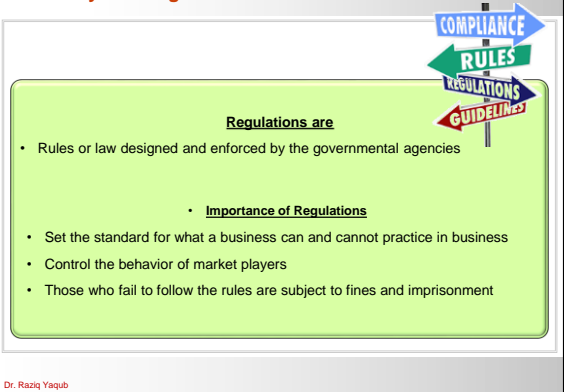
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Economy and Regulations



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Economy and Regulations



Regulations are

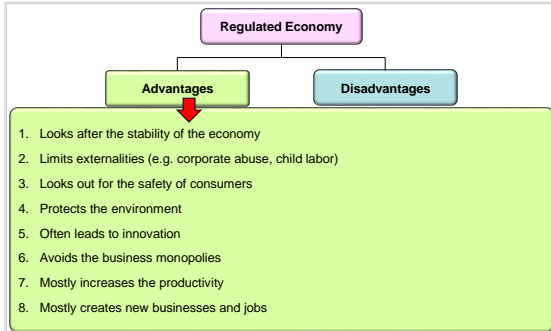
- Rules or law designed and enforced by the governmental agencies

• Importance of Regulations

- Set the standard for what a business can and cannot practice in business
- Control the behavior of market players
- Those who fail to follow the rules are subject to fines and imprisonment

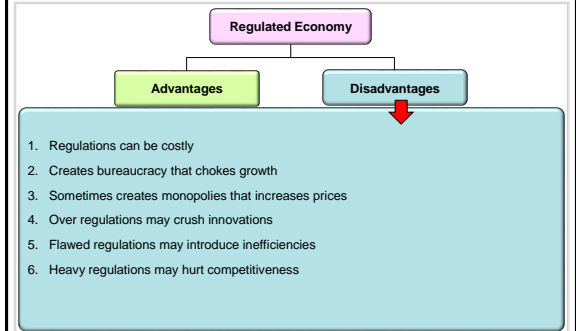
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Economy and Regulations



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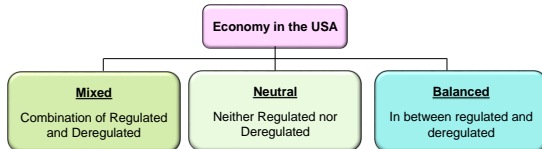
Economy and Regulations



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Economy and Regulations

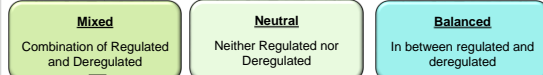
Since Regulations have advantages and disadvantages, the US economy is classified into three type



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Economy and Regulations

Economy in the USA



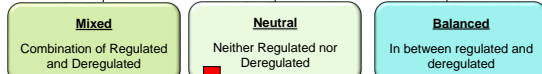
MIXED

- Provides features of both capitalism and socialism
- Provides economic freedom, and allows government intervention for the public good
- The government's role may also include financial policies

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Economy and Regulations

Economy in the USA



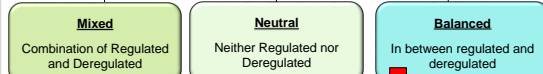
NEUTRAL

- Neither regulated nor deregulated, e.g.,
 - Prices of a gallon of milk 10 years back vs. today
 - Prices of Liquid Petroleum Gas 10 years back vs. now

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Economy and Regulations

Economy in the USA



BALANCED

- In between regulated and deregulated
- Government intervenes to protect individuals' rights
- Balanced Economy protects both the public & the business interest

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Government Policies Influencing Telecomm Market

1. Ensures the safety of consumers and general public
2. Avoids the business monopolies
3. Protects the environment
4. Limits externalities
5. Guide businesses towards stability of economy
6. Protects IP that leads to innovation, new business and jobs

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IP = Intellectual property

Impact of Telecommunication on Economy

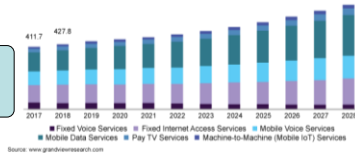
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Telecomm is the Blood Flow of Economy

• Telecommunication Market

- Has significant influence on the economic growth
- Supports several vital aspects of other businesses and thus economy
- Is the blood flow of the modern economy responsible for growth rate of GDP
- Has the revenue of \$1,657.7 billion in 2020
- Is expected to expand at a CAGR of 5.4% from 2021 to 2028

North America Telecom Services Market Size by Service Type 2017-2028



CAGR = Compound Annual Growth Rate

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Why Telecomm Market is the Blood Flow of Economy?

- Telecomm market was the Blood Flow of Economy in the past
- E.g., Product offering in past (in the late 19th century) were
 - Voice, Fax, and Telegraphs over wired infrastructure



- PRODUCT OFFERING now and in future:



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Why Telecomm Market is the Blood Flow of Economy? (Contd.)

• PRODUCT OFFERING now and in future:

- Audio, Video, and Text over wireless infrastructures
- Streaming Services, e.g. Netflix, Amazon Video, and Roku, etc.
- Access to super-fast Internet
- IoT in healthcare, manufacturing, & energy (50 billion devices by 2028)
- Machine-to-machine Communication
- V2V Communication



IoT



Gave birth to concept of Network Slicing

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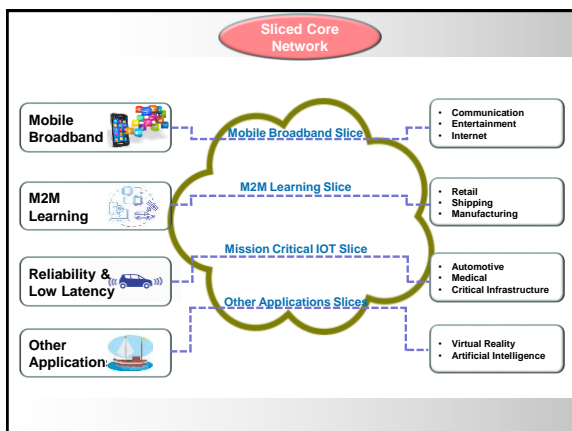
Network Slicing

Objective of 5G is NOT just providing huge data rates
But to enable different applications with different requirements (latency, priority, speed, etc.).
Network Slicing is to achieve this objective

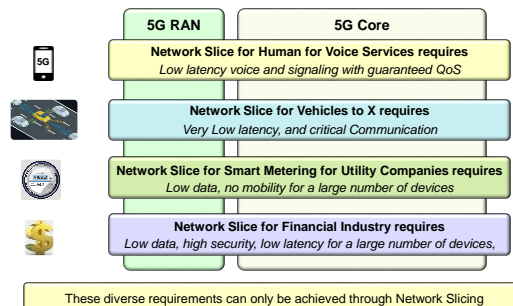
Network Slicing is
 A method of creating multiple unique logical and virtualized networks over the same physical infrastructure

Its benefit is that operator will be able to provide different 3rd parties the features they desire for their business

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Network Slicing in 5G



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Chapter Review Questions (CRQ)

Chapter-01



Q1

- Pick the most accurate statement

Economy

- A. Is a theory in which a country's trade is controlled by the state
- B. Explains the way people spend money, and the way people make money
- C. A system in which a country's trade is controlled by private owners
- D. All the statements are correct

Q2

- Pick the most accurate statement

Causes of market failure may be:

- A. Dominance of single company or externalities
- B. Pandemic situations such as Covid19
- C. Bad planning of the company's CEO
- D. Capitalism

Q3

- Pick the most accurate statement

- Advantage(s) of regulated economy include

- A. Looking out for the safety of consumers, and protecting the environment
- B. Encouraging the innovations and thus promoting new businesses
- C. Avoiding the business monopolies and promoting the antitrust environment
- D. All the statements are correct

Q4

- Pick the most accurate statement

- Government Policies Influencing Telecomm Market:

- A. Recommend the ways for how people must interact with peers
- B. Ensure that service providers provide high data rates, and low latency for all the applications
- C. Ensure the safety of general public and the protection of our environment
- D. Ensure that telecom service provider provide network virtualization

Q5

- Pick the most accurate statement

- IoT in different verticals, Machine-to-machine Communication, and V2V Communication will be enabled by Network Slicing. Network Slicing is:

- A. A method that avoids the business monopolies
- B. A method of creating multiple unique logical and virtualized networks over the same physical infrastructure
- C. Technique to achieve a balance between regulated and deregulated economy
- D. A Slice of Network Revenue for regulatory authorities

Answers to CRQ (Chapter Review Questions)



Q1

- **Pick the most accurate statement**

Economy

- A. Is a theory in which a country's trade is controlled by the state
- B. Explains the way people spend money, and the way people make money
- C. A system in which a country's trade is controlled by private owners
- D. All the statements are correct

B. Explains
the way people spend money, and the way people make money

Q2

- **Pick the most accurate statement**

Causes of market failure may be:

- A. Dominance of single company or externalities
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A. Dominance of single company or externalities

Q3

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- **Advantage(s) of regulated economy include**

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D. All the statements are correct

Q4

- **Pick the most accurate statement**

- **Government Policies Influencing Telecomm Market:**

- A. Recommend the ways for how people must interact with peers
- B. Ensure that service providers provide high data rates, and low latency for all the applications
- C. Ensure the safety of general public and the protection of our environment
- D. Ensure that telecom service provider provide network virtualization

C. Ensure the safety of general public and the protection of our environment

Q5

- **Pick the most accurate statement**

- **IoT in different verticals, Machine-to-machine Communication, and V2V Communication will be enabled by Network Slicing. Network Slicing is:**

- A. A method that avoids the business monopolies
- B. A method of creating multiple unique logical and virtualized networks over the same physical infrastructure
- C. Technique to achieve a balance between regulated and deregulated economy
- D. A Slice of Network Revenue for regulatory authorities

B. A method of creating multiple unique logical and virtualized networks over the same physical infrastructure

Home Assignment

Chapter-01

- **Q1.**
 - What is the market power (or monopoly)? Give an examples of
 - (i) Technology monopoly
 - (ii) Government monopoly, and
 - (iii) Company's enforced monopoly
- **Q2.**
 - Define externalities, negative externalities and positive externalities. Give examples
- **Q3.**
 - What are the advantages and disadvantages of regulated economy?
- **Q4.**
 - Telecomm market is the blood flow of economy as it supported variety of product offering in the past, as well as now. Name the current and past product offerings and explain the enabling technology called "Network Slicing"

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