Aging Population
Thinking and Innovation

Nepal Team 1

Members:

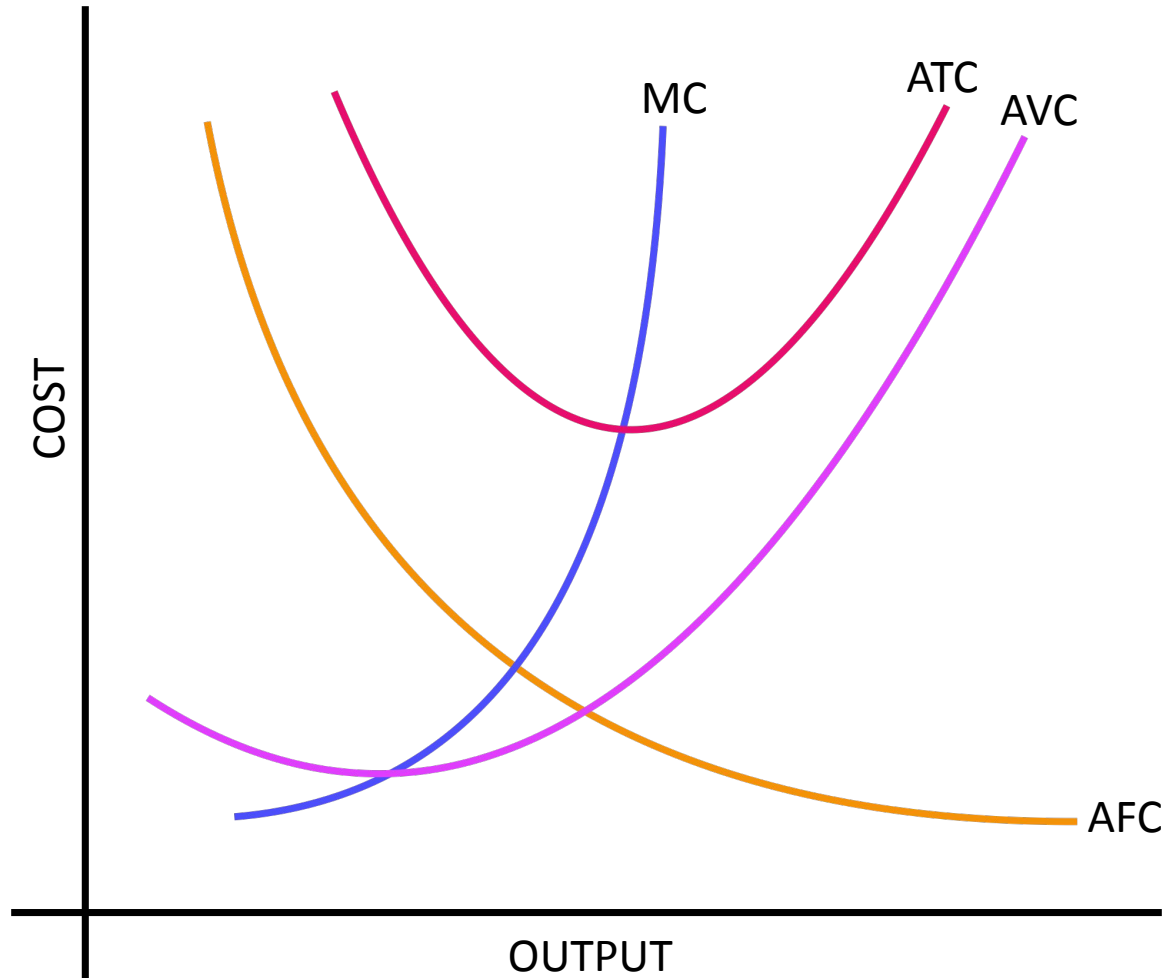Ziya Pokhrel   Sagar Bhattarai   Royal Katuwal

Prajwal Bikram Thapa   Chaitanya Raj Shah   Aarjanmani Kandel
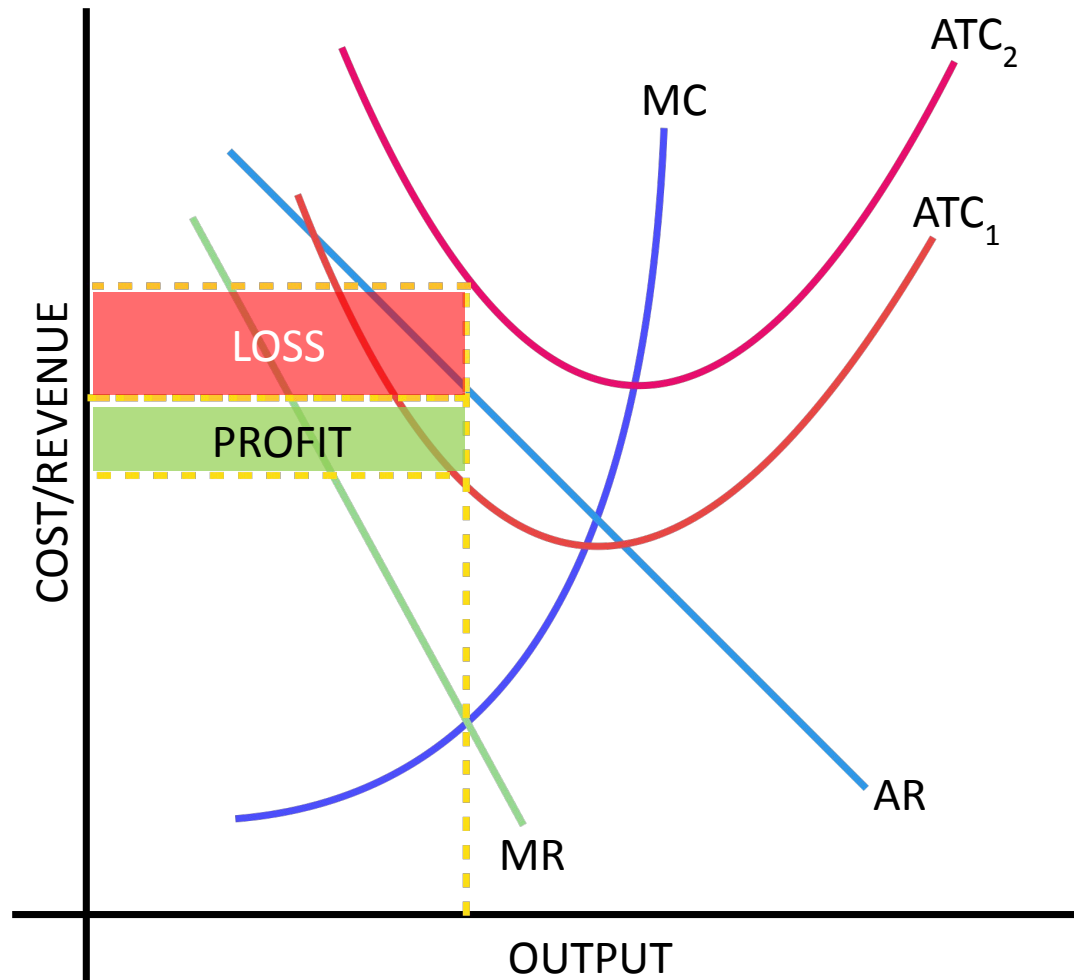
Q1: MC, ATC, AFC, AVC. What decisions should Company W make in short and long term?
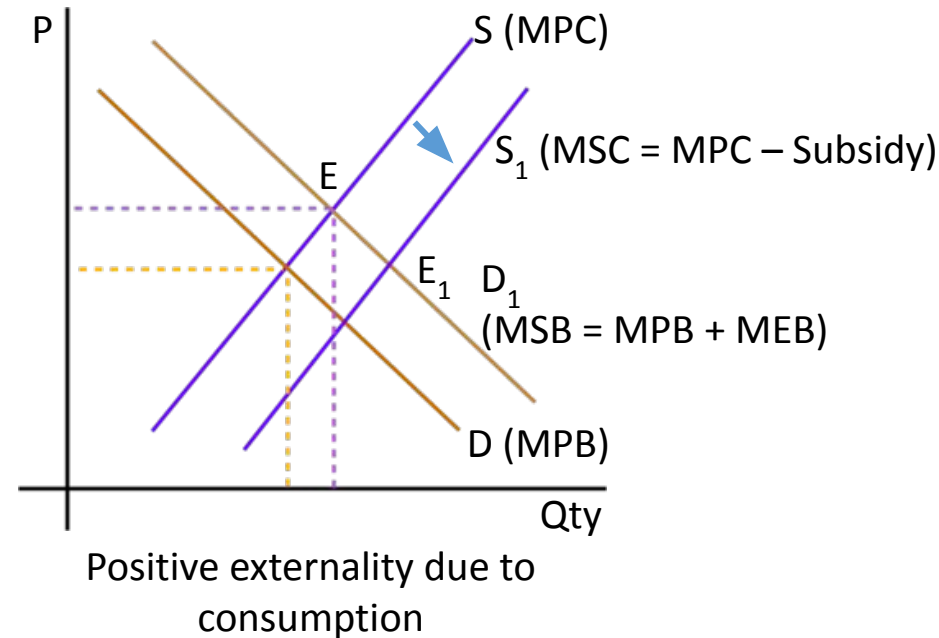

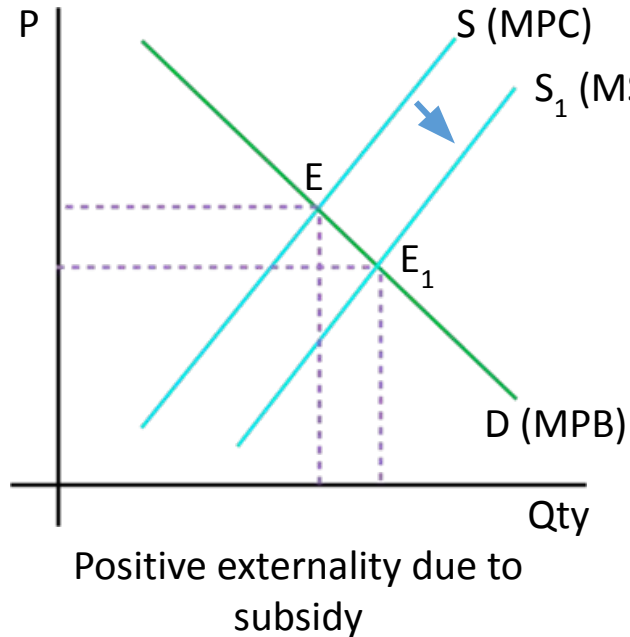- Short-run decisions

  - Production at: MR equals MC

  - Promotion and Advertisement

  - Specialization

- Long-run decisions

  - Service Differentiation

  - Research and Development

  - Equity Finance

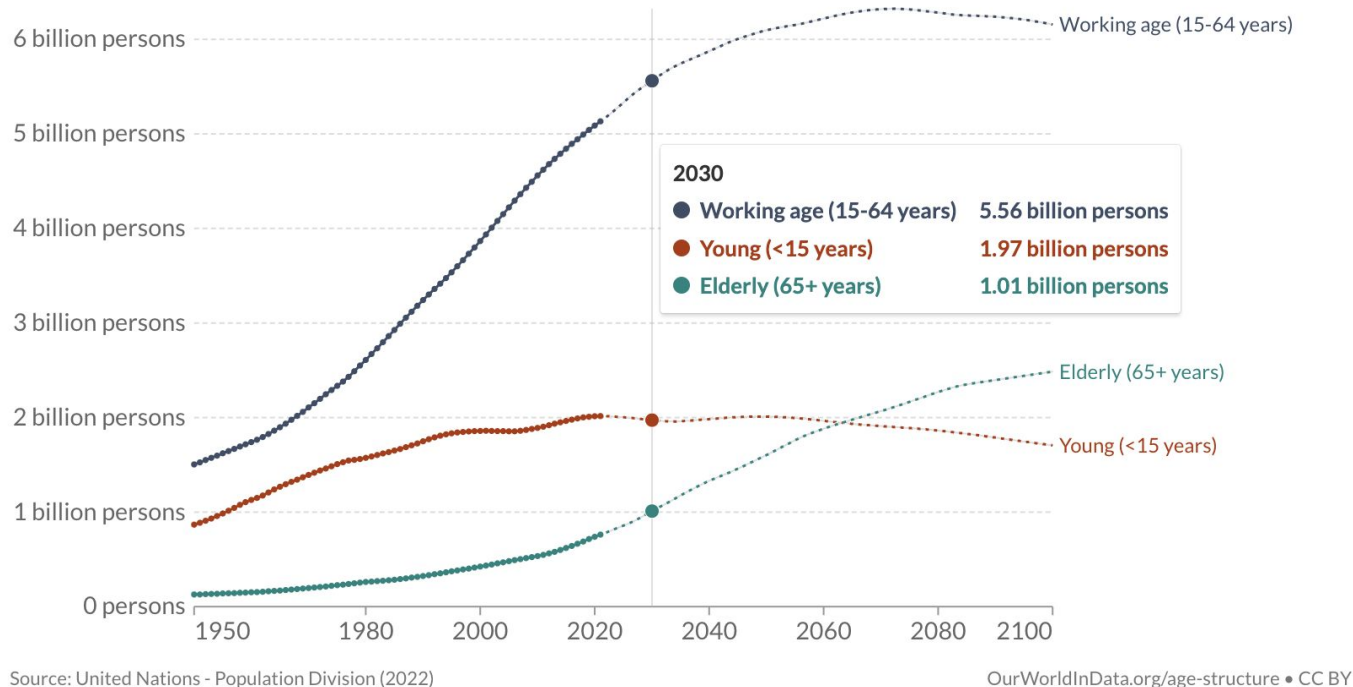# Q2: Market Structure? Losses, profits, and long-run profits. Why will the firm stay?
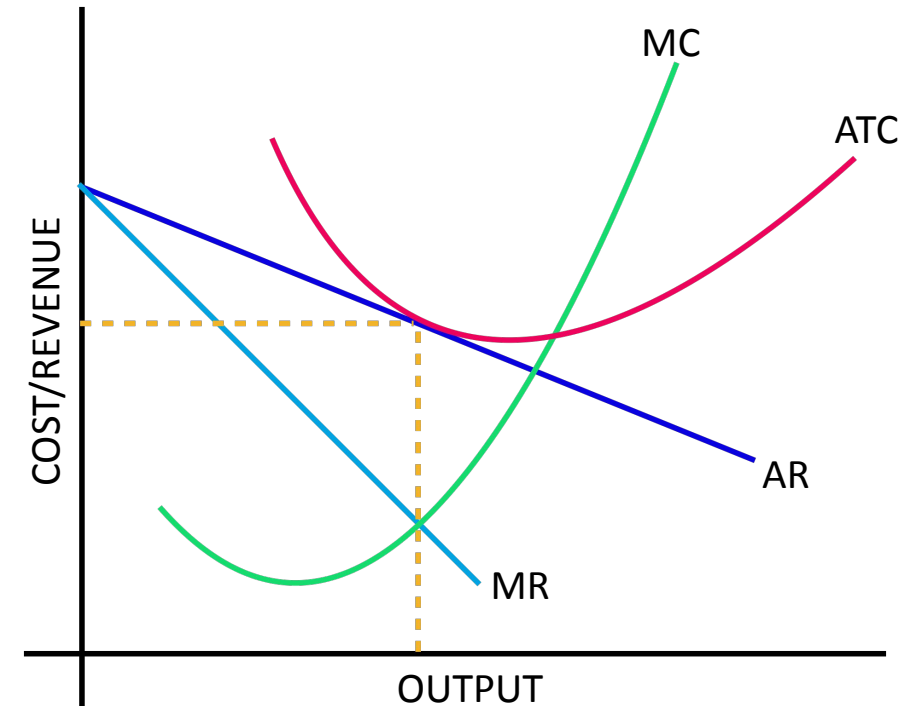
- A monopolistic market structure

- Breakeven condition: AR equals AC

- Still enjoys accounting profit

Q3: Nursing homes, type of good? Characteristics? Externality, its consequence, and it's solution

P

S (MPC)

S$_1$ (MSC = MPC − Subsidy)

E

E$_1$

D (MPB)

Qty

Positive externality due to subsidy

P

S (MPC)

S$_1$ (MSC = MPC − Subsidy)

E

E$_1$ D$_1$

(MSB = MPB + MEB)

D (MPB)

Qty

Positive externality due to consumption

- Private Good

  - Excludablility and Rivalry

- Results in positive externality

  - MSB > MPB

- Underallocation of merit goods

- Measures to solve the externality:

  - Nudging

  - Provision of Subsidy

  - Provision of Information

WORLD ECONOMICS CUP

Problem: Increase in elderly population is likely to overburden healthcare system with increase in the consumption of healthcare resources in long-term

6 billion persons

5 billion persons

4 billion persons

3 billion persons

2 billion persons

1 billion persons

0 persons

1950   1980   2000   2020   2040   2060   2080   2100

Working age (15-64 years)

Elderly (65+ years)

Young (<15 years)

2030

● Working age (15-64 years)   **5.56 billion persons**
● Young (<15 years)   **1.97 billion persons**
● Elderly (65+ years)   **1.01 billion persons**

Source: United Nations - Population Division (2022)

OurWorldInData.org/age-structure • CC BY

- Theory of demographic transition is applicable
- Developed countries tend to have a lower fertility
- Mortality rates are low, birth control is easily accessible
- Children considered as economic drain
- Women have children late in life
- Workforce expected to fall by 8 million by 2030
- Increase in dependency ratio
- Younger population need to be overworked, giving them less time and making having children more and more unattractive
- Leads to decline of young and working people in contrast to increasing old; creating creates a viscous cycle

# Solution 1: Voluntary awareness of good health practices

- Redesigning daily routine incorporating more physical activity and necessary supplements

- Developing a positive social well being

- Being focused on Healthy Aging

- Reducing the consumption of synthetic chemicals

- Consuming a balanced diet

- Keeping the mind active by engaging in social activities and learning new skills

# Economic Theory: Theory of Consumer Choice
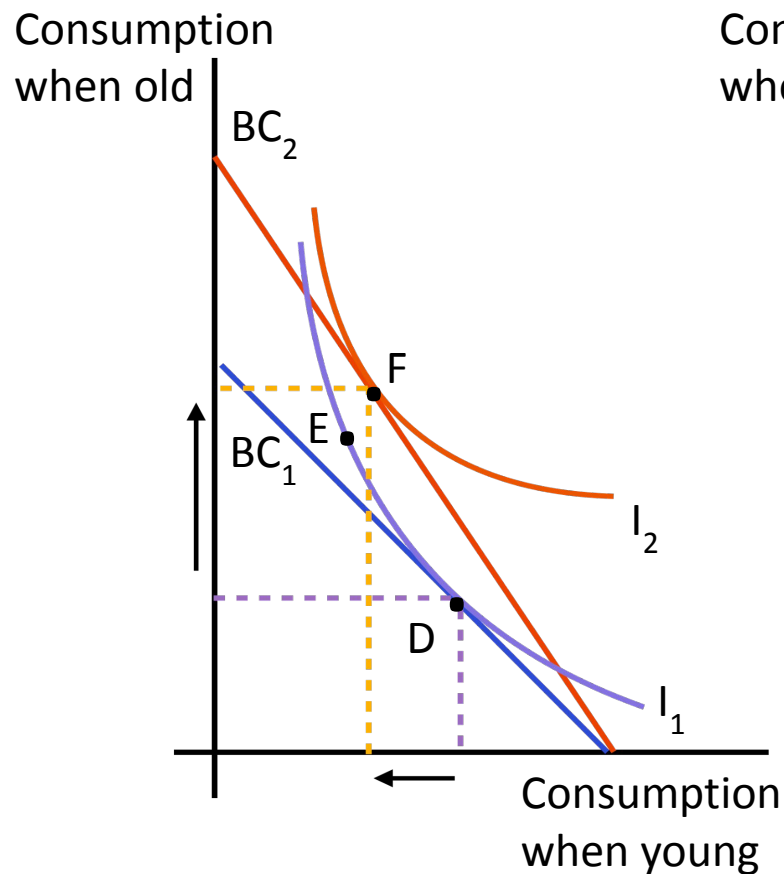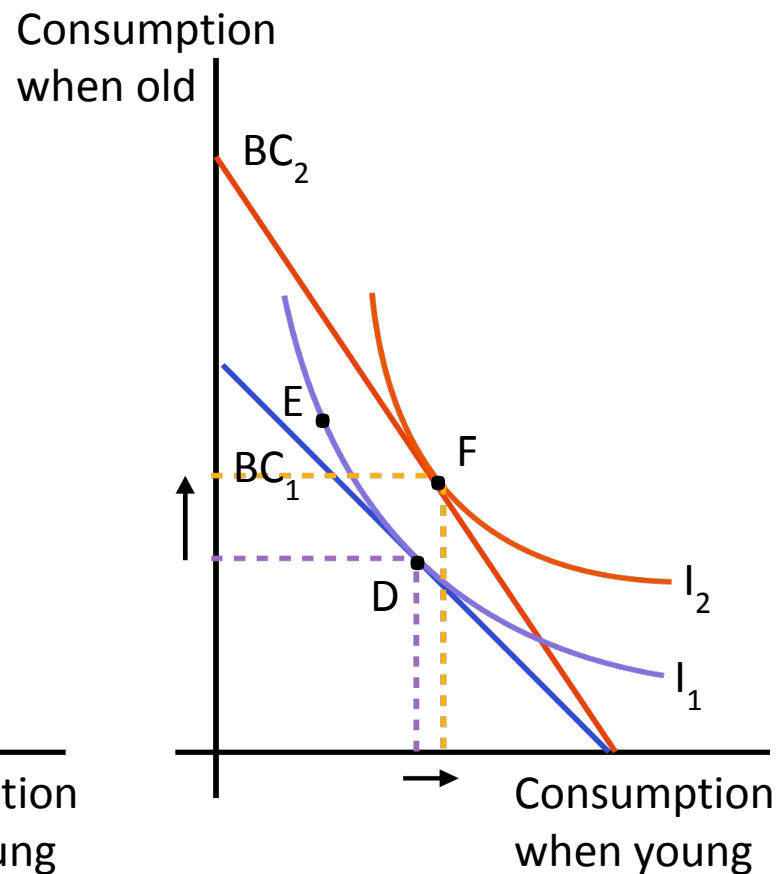
D: initial optimum   F: final optimum

- Employers provide employer matching contributions.

- Contributing a certain amount of income to such retirement plans will lead to greater income to consume when old.

- More access to health services when old.

- Can be explained based on:

  - Substitution effect
    D to E
  - Income effect
    E to F

Economic Theory: Aggregate Demand
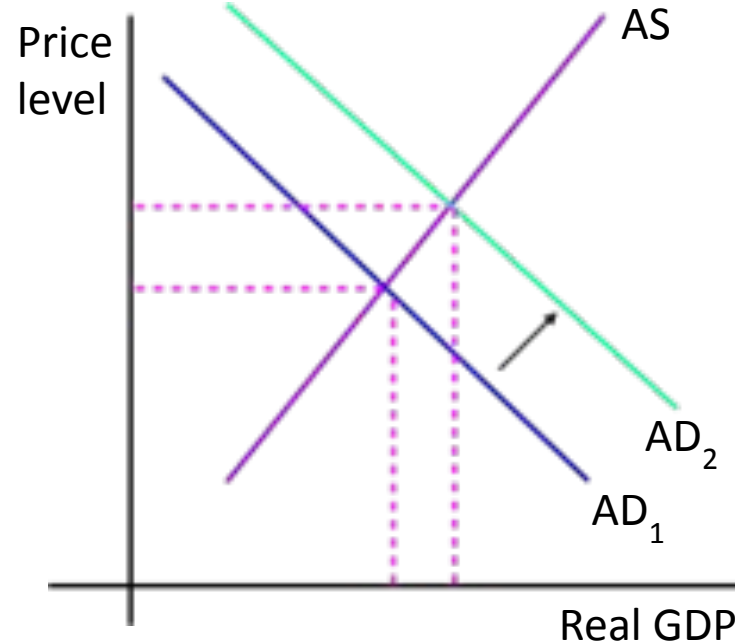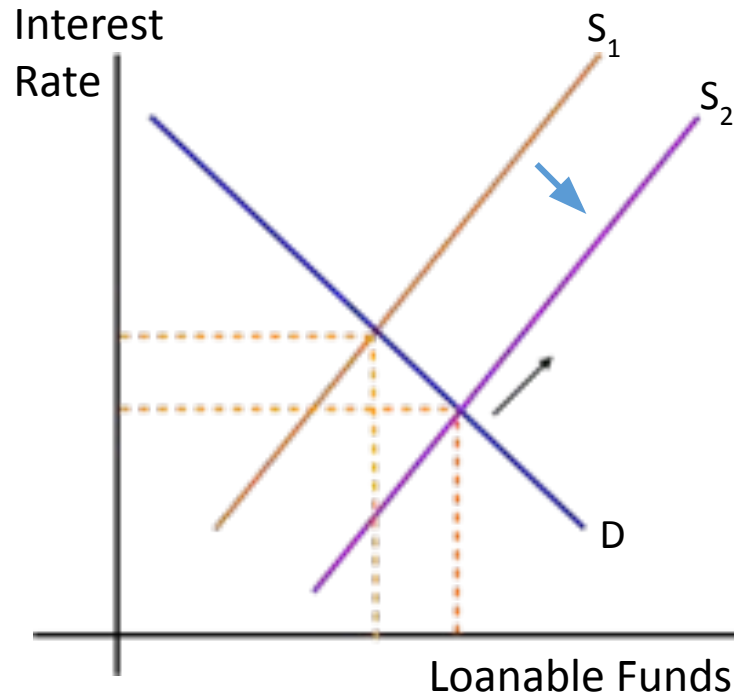
- At macro level, this will increase the supply of loanable funds in the loanable funds market which will cause interest rates to fall down and hence as a result increases investment.

- The Increase in investment will increase the aggregatedemand at any given price level (right shift in AD curve) increasing the output.

Solution 2: Company should invest in new technologies that aids productivity

- **Introduction of Internet of Medical Things (IoMT)**

Collection of medical devices and applications communicating with health care information technology system via online computer networks.

The overall IoMT market is expected to grow from $41 billion in 2017 to $158 billion by 2022 (Deloitte survey).

The scope includes In-home IoMT, On-Body IoMT, Community IoMT and In-Hospital IoMT.

Government can subsidize such new innovations and create **incentive** for the producers.

# Solution 2: Telehealth services as an alternative

- **Telehealth services as an alternative**

Connecting with your health care provider online is a great way to get the health care you need from the comfort and safety of your own home.

The global telehealth market size was valued at **USD 83.5 billion** in 2022 and is projected to expand at a compound annual growth rate (CAGR) of 24.0% from 2023 to 2030.

- **Frictionless financial transaction ecosystem**

Spend less on less on administrative spending and more on delivery of care. Here companies can build a frictionless financial transaction ecosystem that cuts administrative costs of health care
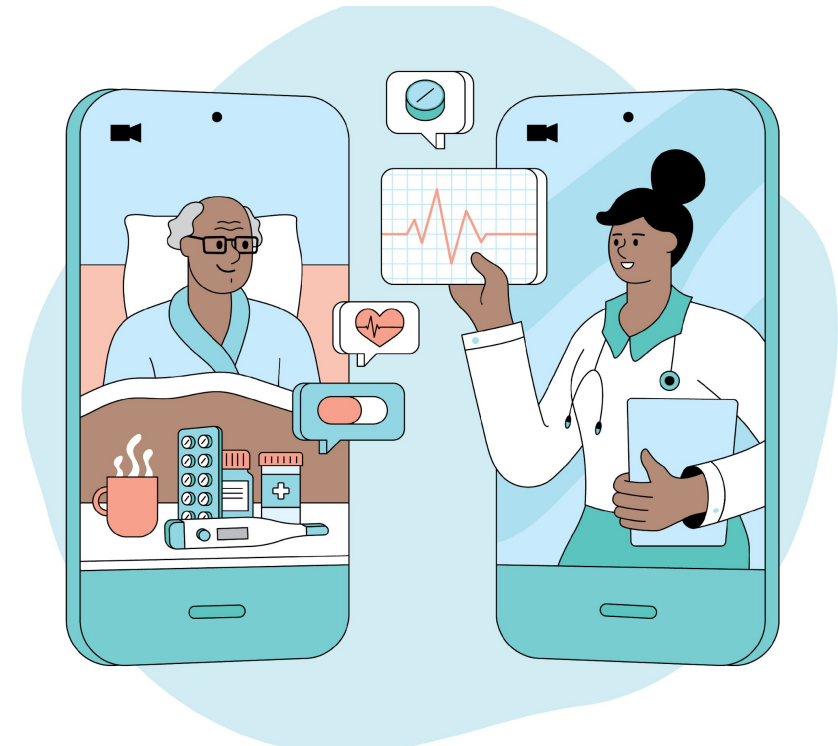
Economic Theory: PPC Shift

X

Outward shift in PPC

Y
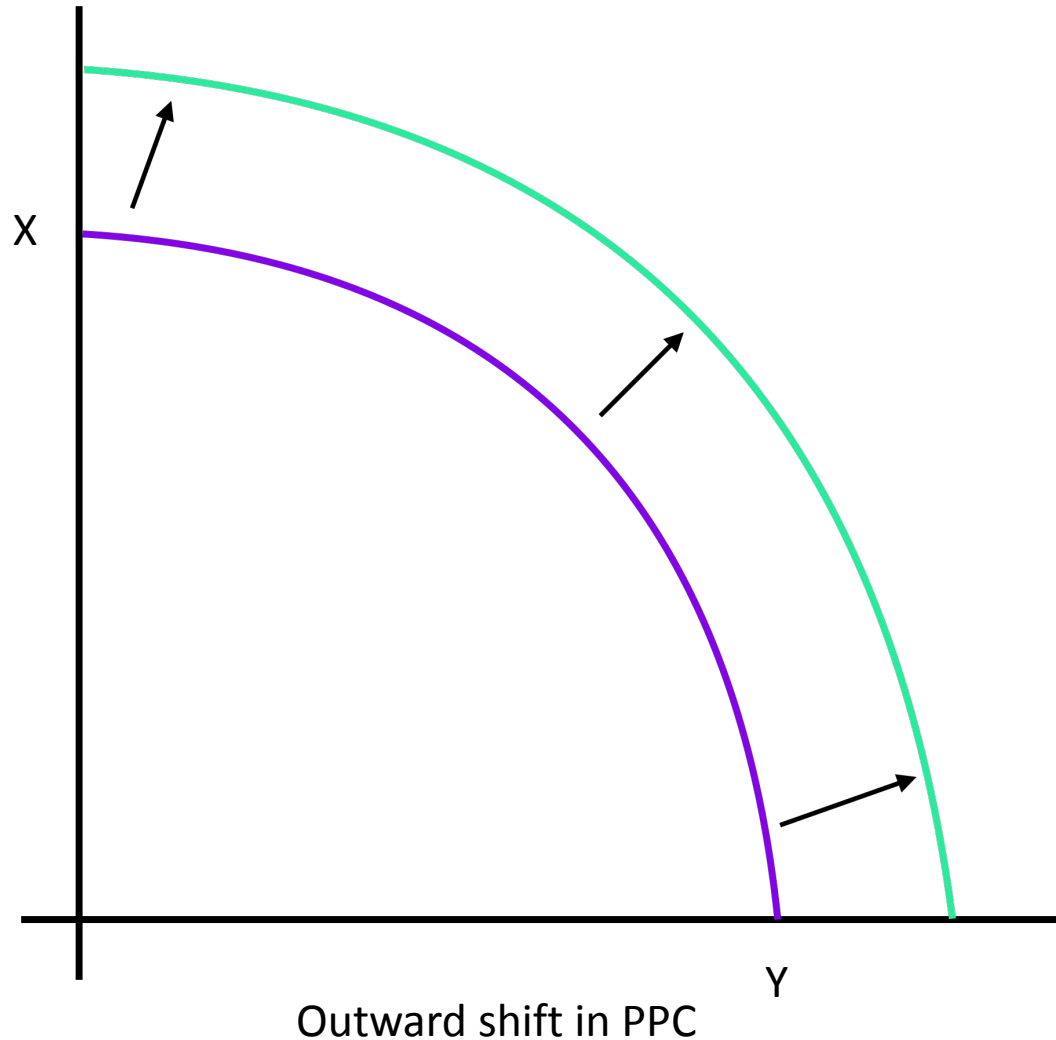
- Technological investment boosts the productivity of healthcare delivery systems.

- New technologies installed the delivery systems are now more efficient and requires less human capital.

Solution 3: Tax negative externalities that expose elderly population to disease and use the proceeds to fund and strengthen health care

Price

S_1 (MSC = MPC + tax)

S (MPC)

E_1

E

D (MPB)

Qty

Negative externality due to production
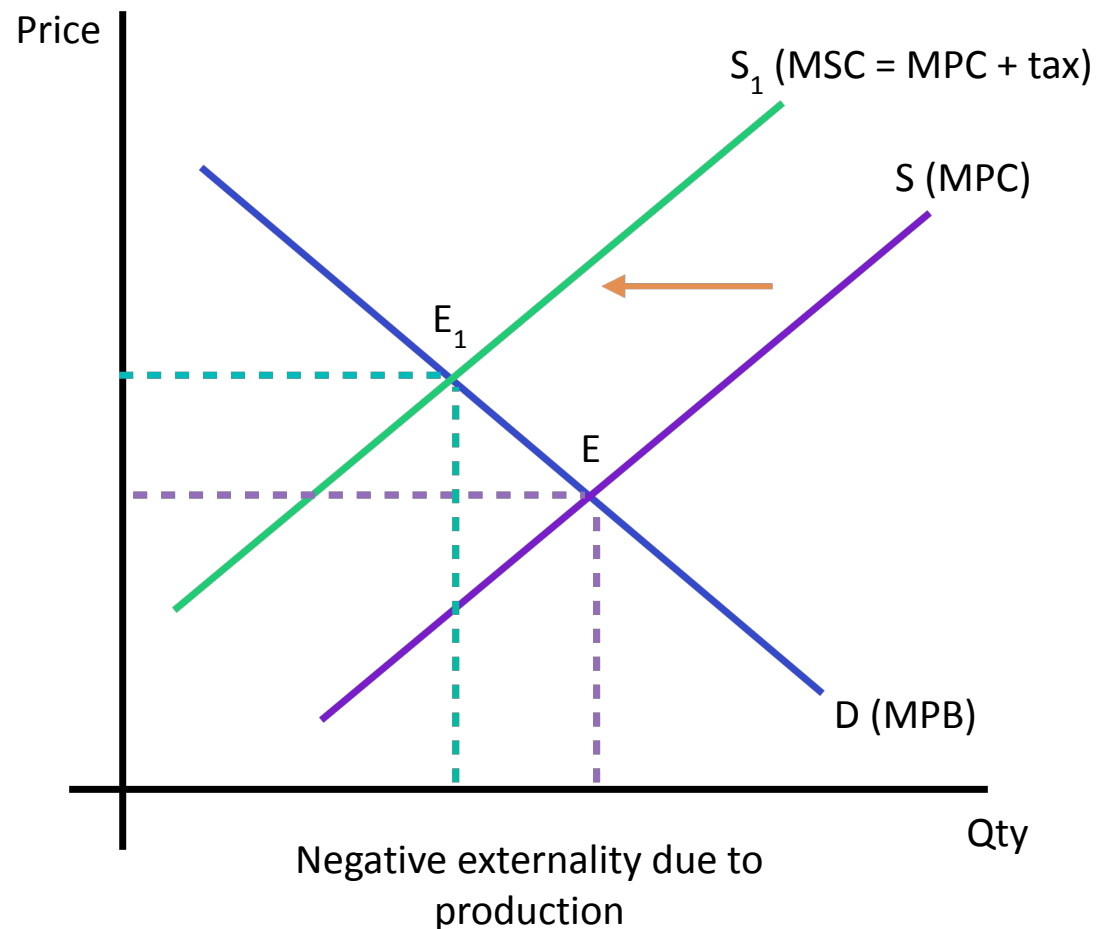
- Negative externality exists when the services have additional cost to the third party.

- Air pollution can aggravate heart disease and stroke, lung diseases such as chronic obstructive pulmonary disease and asthma, and diabetes.

- Industry that produces pollution that expose risk of diseases to the elderly population should be taxed. (Internalizing the externality)

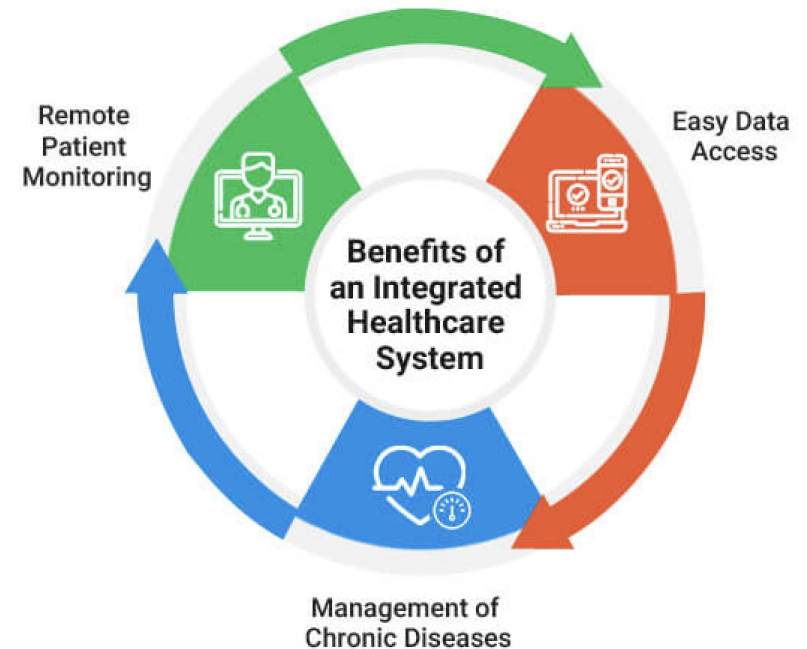- The tax collected can be utilized by Government to fund and strengthen health care

WORLD ECONOMICS CUP

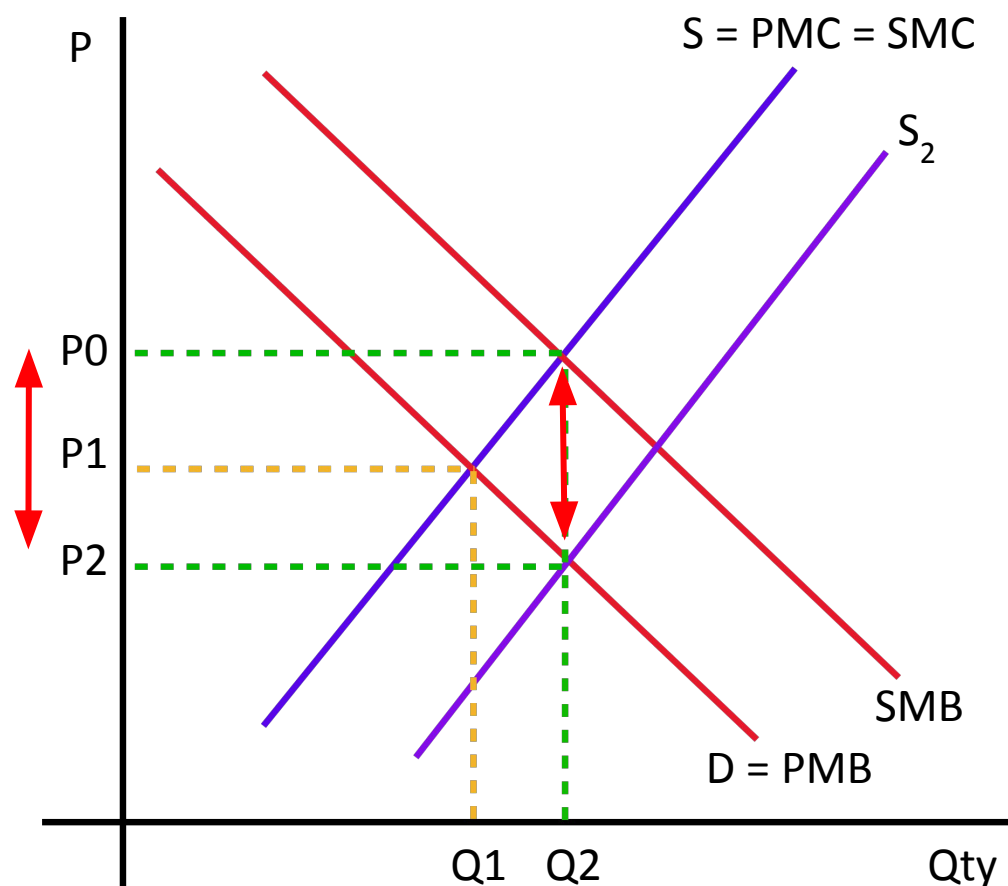# Solution 3: Changing Traditional System to Integrated Health care

- Integrated approach focused on building and maintaining older people's physical and mental capacity.

- Assessment of the older person's goals and their capacity and their physical and social environments.

- This assessment enables health and social care professionals together with the older person and their caregivers to develop a care plan.

It leads to:

- Your physical and mental health needs being addressed,

- Better collaboration between your health providers, and

- Less stress navigating the complicated health care system.

Remote Patient Monitoring

Easy Data Access

Benefits of an Integrated Healthcare System

Management of Chronic Diseases

Economy Theory: Externality

- A positive externality exists if a good or service has benefit to the third party

- Medical Education creates a positive externality:

  - Increases health awareness of individual

  - Sanitation and Awareness increases in society

- Subsidy = P0-P2

- The supply curve shifts to S2 and price falls from P1 to P2

- People will consume more; Quantity increases from Q1 to Q2

- The output (Q2) is social efficient: because here Social marginal cost (SMC) = Social marginal benefit (SMB)

Conclusion:

- **Solution 1:** When individuals (employees) participate in employee matching contribution, it reduces government pressure to fund public health care services to aging population

  Economic Theory: Theory of Consumer Choice

- **Solution 2**: Company should invest in new technologies that aids productivity

  Economic Theory: Production Possibility Curve

- **Solution 3**: Tax negative externalities that expose elderly population to disease and use the proceeds to fund and strengthen health care

  Economic Theory: Internalizing the externality

Limitations of suggested solutions:

- The protocols and security standards for these types of integrations change constantly which causes problem of compatibility.

- Standarization is hard to achieve in Integrated health care system with differences in system and format for storing data.

References:

https://www.oecd.org/economy/growth/46508800.pdf

https://www.oecd-ilibrary.org/docserver/health_glance-2015-39-en.pdf?expires=1668303679&id=id&accname=guest&checksum=C6AB91EEFE1060B1A2632236F0A6711D

https://ourworldindata.org/grapher/dependency-age-groups-to-2100