

COURSE INTRODUCTION & OVERVIEW OF HEALTH ECONOMICS

EE 474 Health Economics

Semester 2/2021

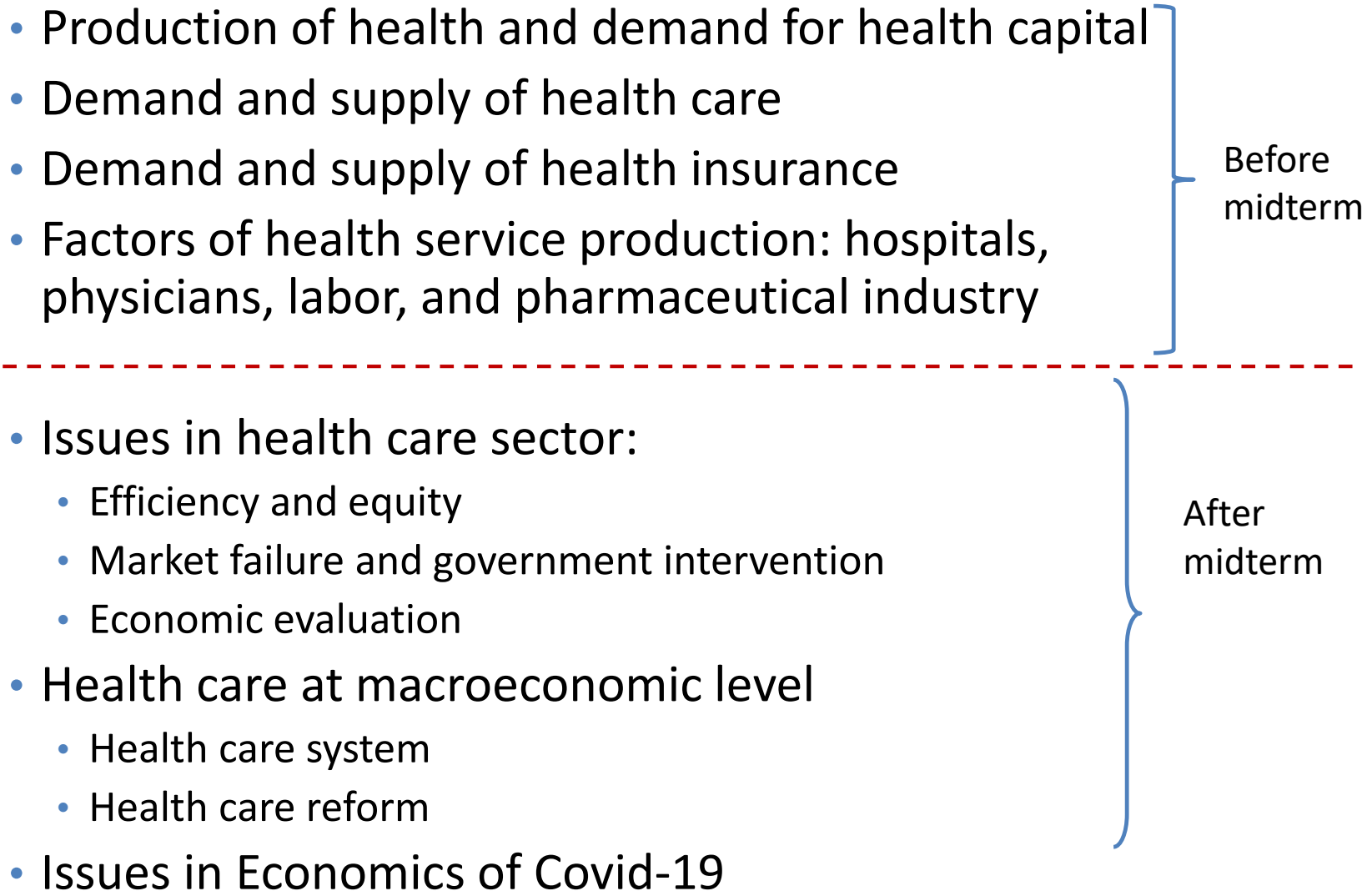
About the Instructor

- Name: Phatta Kirduang
- Fields of interest:
 - Health economics (particularly child health)
 - Development economics
 - Population studies
- Contact info: phatta@econ.tu.ac.th
- Office hours: By appointment

About the Students

- Name, nickname
- Year
- Your interests
- Why do you decide to take this course?

Course Contents

- Production of health and demand for health capital
 - Demand and supply of health care
 - Demand and supply of health insurance
 - Factors of health service production: hospitals, physicians, labor, and pharmaceutical industry
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- Issues in health care sector:
 - Efficiency and equity
 - Market failure and government intervention
 - Economic evaluation
 - Health care at macroeconomic level
 - Health care system
 - Health care reform
 - Issues in Economics of Covid-19
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- Before midterm
- After midterm

Course Organization

- Meet every Wednesday and Friday, 9:30 – 11 am
- Online Meeting Platform: <https://zoom.us/j/6167968064>
- Teaching Materials Platform:
<http://bemoodle.econ.tu.ac.th>; Enrollment key: 6438
- Lectures based style + class participation
 - Students are required to read assigned readings before class.

Evaluation

- Research project & presentation (15%) [Due May 7, 2022]
- Midterm exam (35%) [March 2, 2022, 9-11 am]
- Final exam (50%) [May 24, 2022, 9 am- noon]

Research Proposal Presentation

- This is individual work.
- You are asked to write a research proposal related to any topics discussed in class.
- The proposal consists of the statement of problem, research question, research objectives, related literature review, provide descriptive statistics, and proposed research methodology. You are not asked to conduct the research, but need to suggest practical and reasonable methods to conduct the research.
- More details will be given before midterm.

Readings

- Textbooks (on the reserve in Puey Library)
 - Folland, S., Goodman, A. C., and Stano, M. (2012). *The Economics of Health and Health Care*, Seventh Edition. Pearson.
 - Phelps, S. (2010). *Health Economics*, Fourth Edition. Pearson.
 - Santerre, R.E., and Neun, S. P. (2007). *Health Economics: Theories, Insights, and Industry Studies*, Fourth Edition. Thompson.

Topics for This Week's Lectures

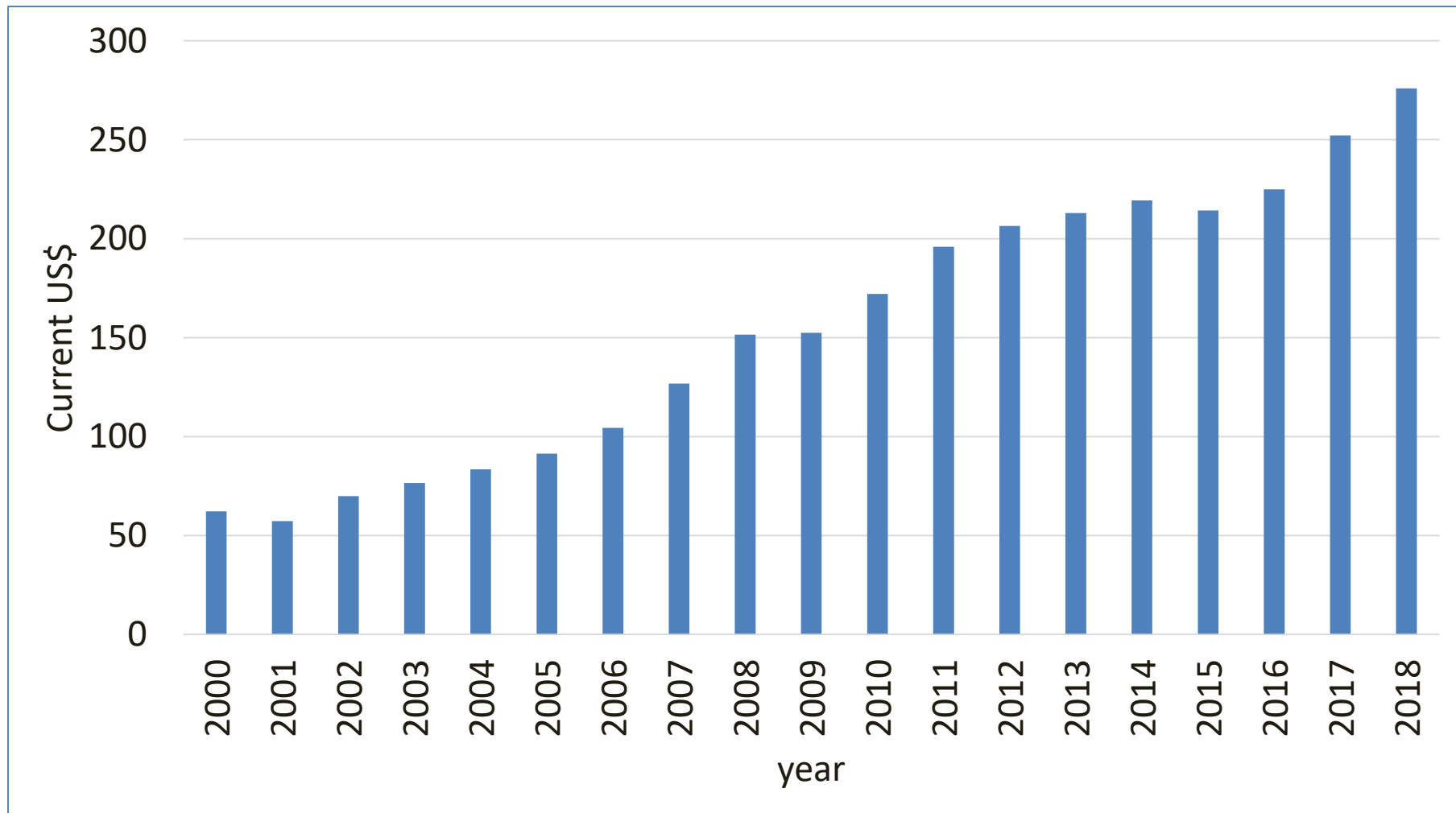
- Why health economics?
- What is health economics?
- What do we study in health economics?
- How economists view health and health care.

Why Health Economics?

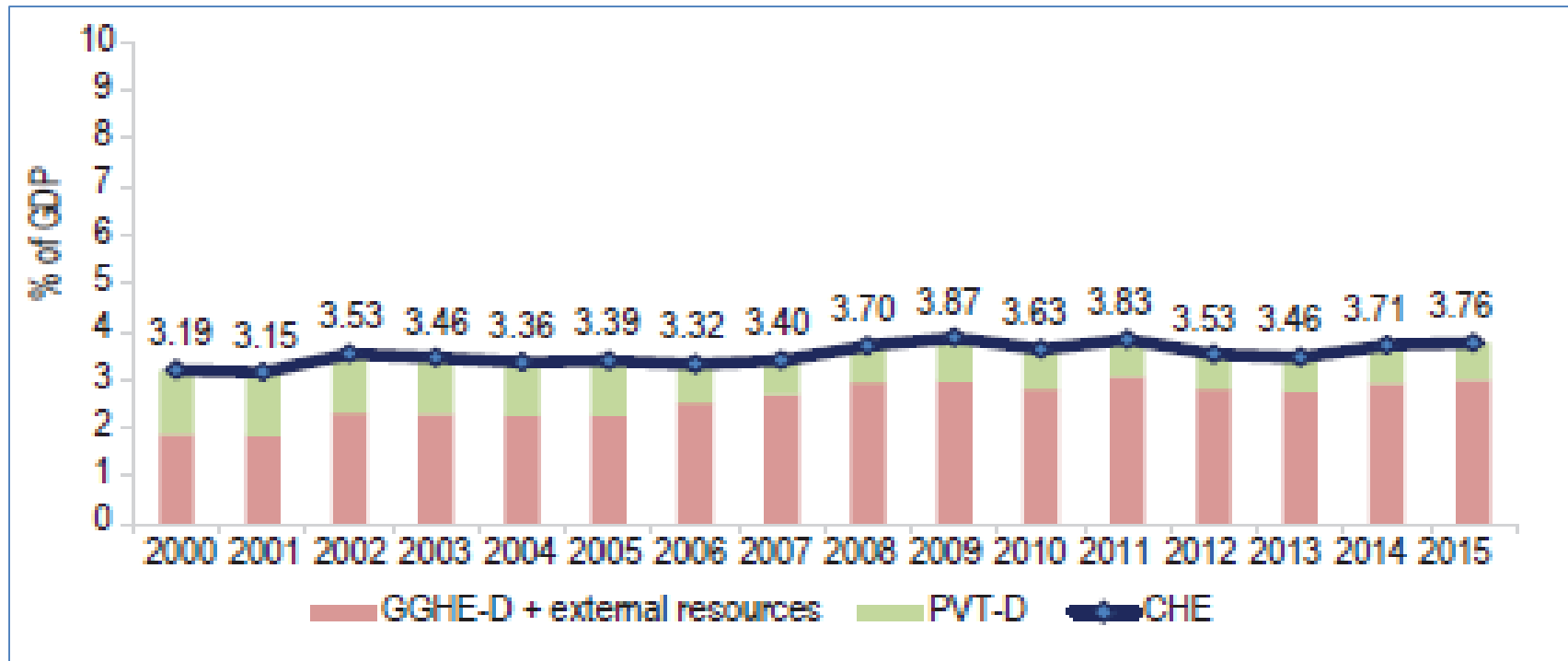
Some Current Health Care Issues

- Covid-19!!!
 - Morbidity
 - Vaccine – access, choice, timing
 - Check out this [economics of Covid-19 course](#) from the World Bank.
- PM 2.5
- Others:
 - Transfer of local hospitals (รพ.สต.) from MOPH to local administration units
 - Health workers shortage
 - Medical tourism.

Average Health Expenditure Per Head in Thailand



Health Expenditure as a Percent of GDP



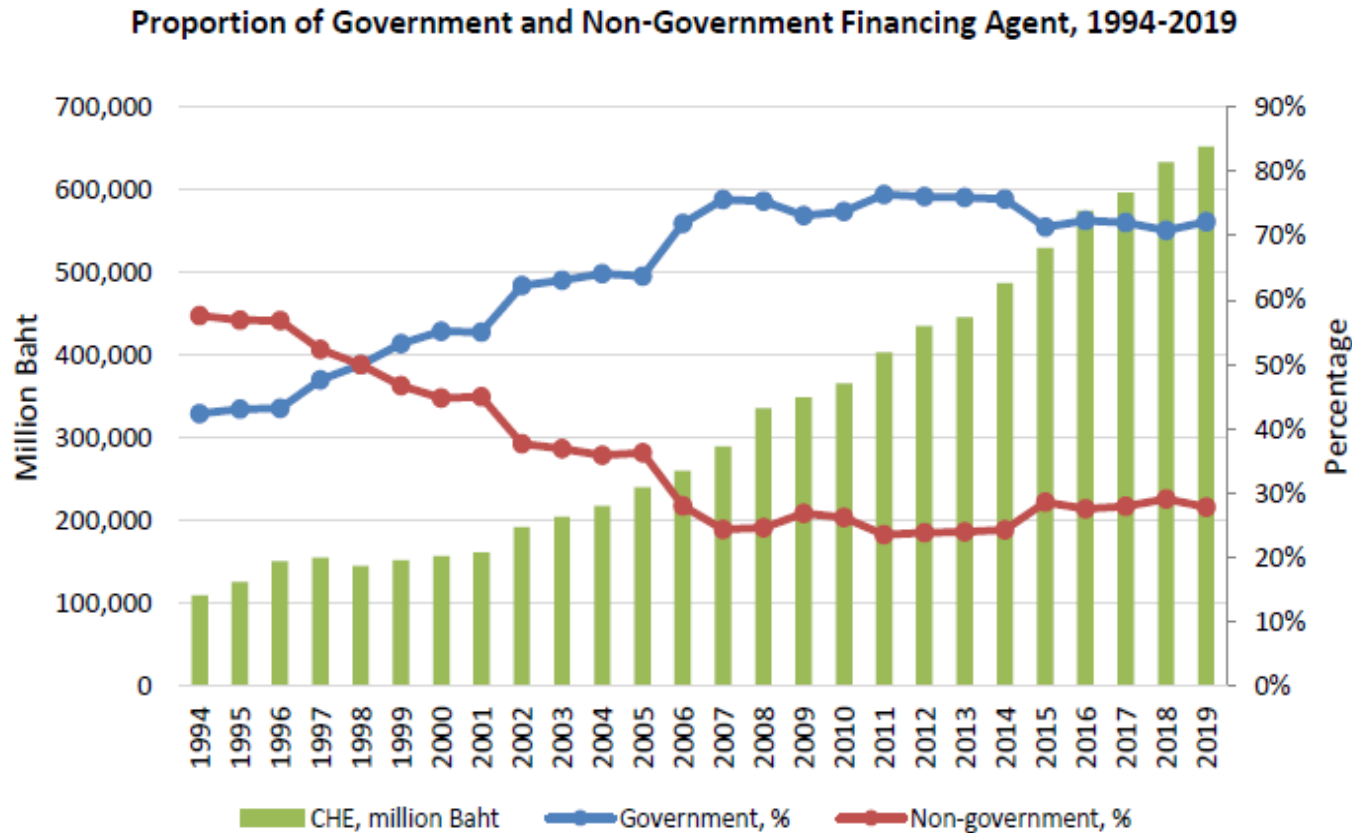
CHE: current expenditure on health; GDP: gross domestic product;

GGHE-D: domestic general government health expenditure;

PVT-D: domestic private health expenditure

*PVT-D refers to spending on health including voluntary health insurance schemes, enterprise financing schemes and household out-of-pocket payment

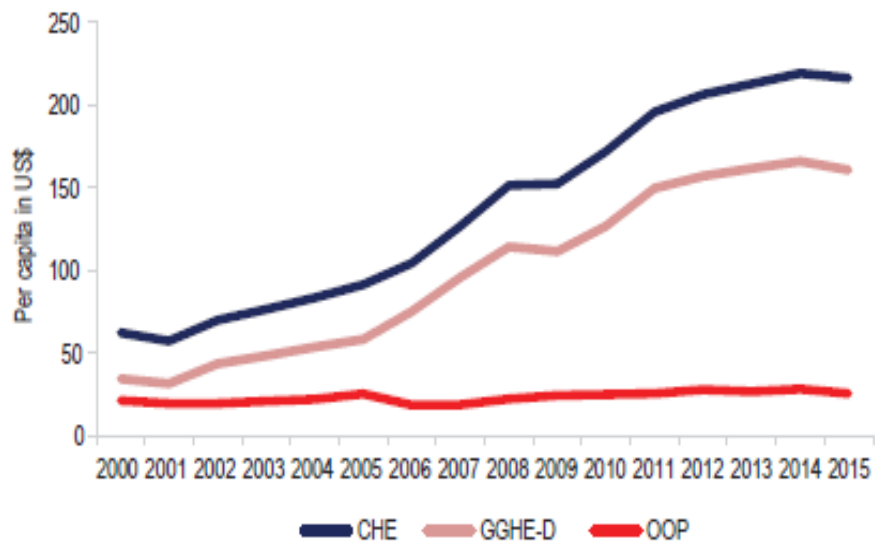
Health Care Financing 1994-2019



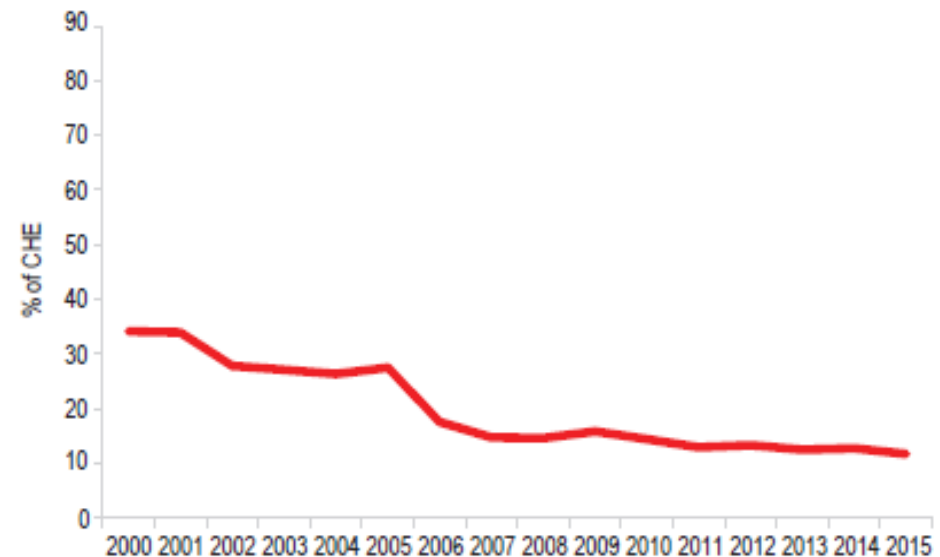
ที่มา: IHPP, บัญชีรายจ่ายสุขภาพแห่งชาติ พ.ศ. 2560-2562

Out-of-pocket Health Expenditure

Spending per person on health (\$),
by source

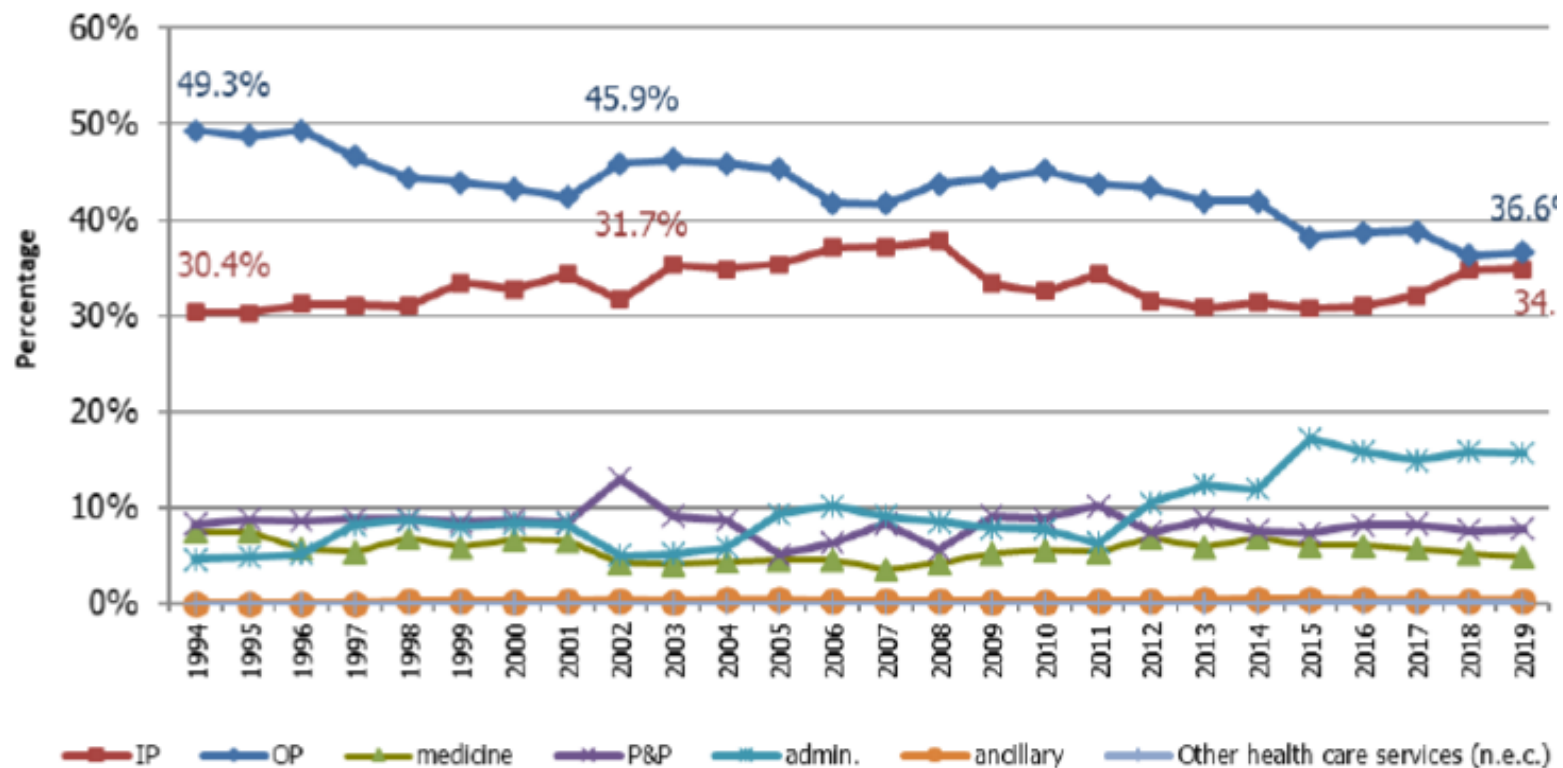


Share of OOP expenditure (%)

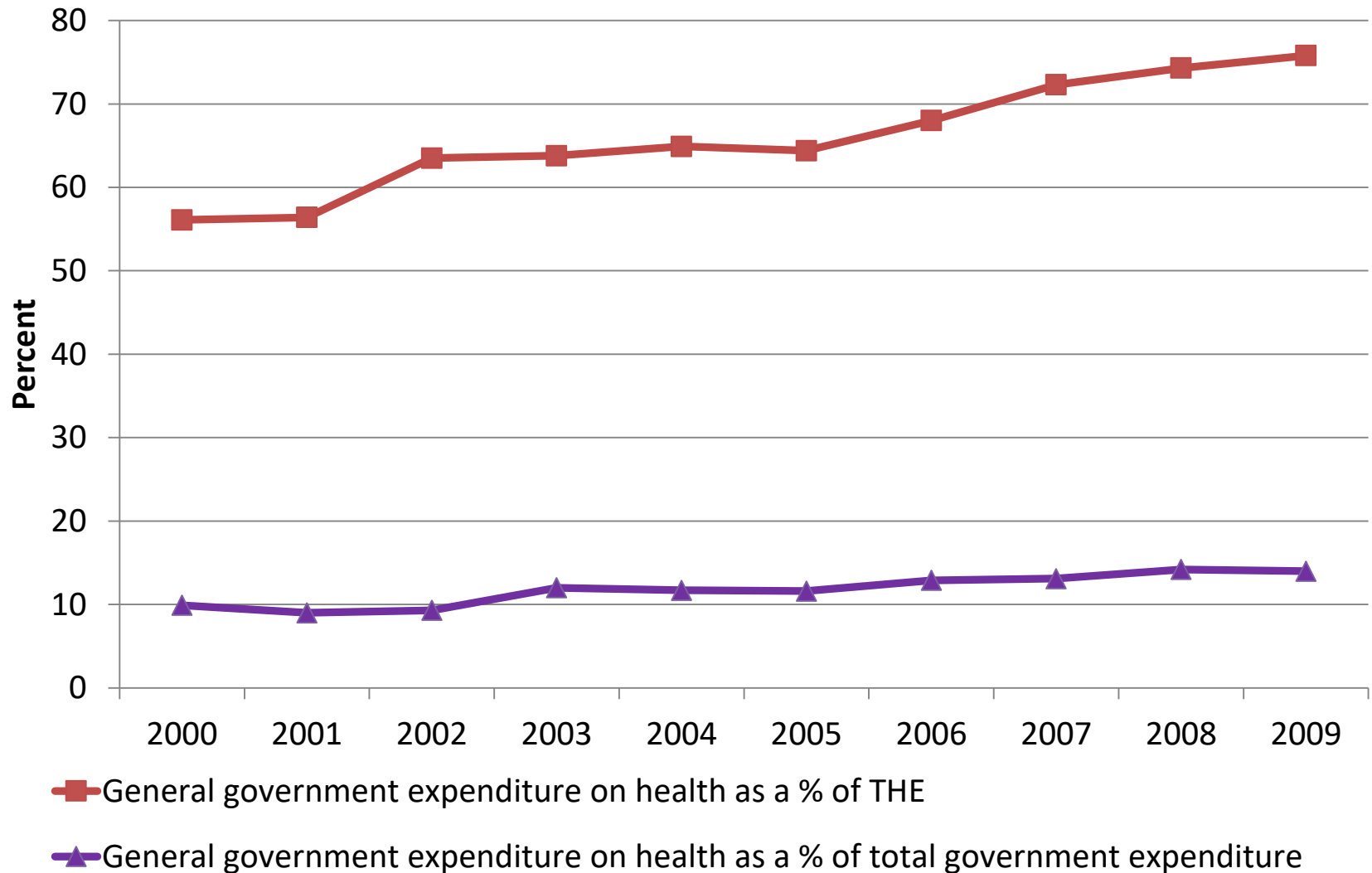


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Current Health Expenditure by Function, 1994-2019



Government Expenditure on Health



The Relevance of Health Economics

- Size and contribution of the health sector in the overall economy
 - Large proportion of the GDP
 - Important employment sector
 - Importance in personal spending
- National policy concerns
 - Large share of total government expenditure
 - Number of sick people and economic costs and loss in the long run
- The economics sides to other health issues
 - Health care treatment choice
 - Individual health seeking behavior
 - Government's role
 - Etc.

What is Health Economics?

*“**Health economics** ... studies the supply and demand of **health care resources** and the impact of the health care resources on a population.”*

The Mosby Medical Encyclopedia (1992, p.361)

Issues/Problems in Health Economics

- Examples:
 - How does infectious disease affect the economy?
 - How would climate change contribute to health problems, particularly pandemic outbreak?
 - How should we (individual/government) finance health care consumption?*
 - How does a certain national health policy affect the income distribution of the population?
- *Main Goal:*
 - To better understand the **economic aspects** of health care problems in order to provide corrective **health policies**

Health Economics Studies

Microeconomics

- Study the behavior of agents in the health economy
 - Demand and supply of health and health care
 - Price determination of health service production factors and health care resources
 - Demand and supply of health insurance

Macroeconomics

- Look at the overall health economy
 - National Health Accounts
 - Health care system
 - Health care financing

4 Basic Questions

1. What **combination** of **health care** and **other goods and services** should be produced in the economy?
 2. What **specific health care goods and services** should be produced in the health economy?
 3. What **specific health care resources** should we use to produce the chosen health care goods and services?
 4. **Who** should **receive the health care goods and services** that are produced?
- Allocative efficiency
- Production efficiency
- Pareto efficiency
-
- ```
graph LR; Q1[1. What combination of health care and other goods and services should be produced in the economy?]; Q2[2. What specific health care goods and services should be produced in the health economy?]; Q3[3. What specific health care resources should we use to produce the chosen health care goods and services?]; Q4[4. Who should receive the health care goods and services that are produced?]; AE[Allocative efficiency]; PE[Production efficiency]; PEF[Pareto efficiency]; Q1 --- AE; Q2 --- AE; Q3 --- PE; Q4 --- PEF;
```

# Efficiency

- **Allocative efficiency**
  - Producing a level of output where the cost of producing the last unit of output equals to its values (i.e.  $MC=MB$ ).
- **Production efficiency**
  - Achieved when a level of output is being produced where the cost per output is the lowest.
- **Pareto efficiency**
  - A condition in which *no one can be made better off without making someone else worse off*.

# How economists view health and health care

- How do we measure health?
- Is health care different from other goods and services?

# Health & Health Care

- Health

*“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”*

(Source: <https://apps.who.int/aboutwho/en/definition.html>)

- Health care service

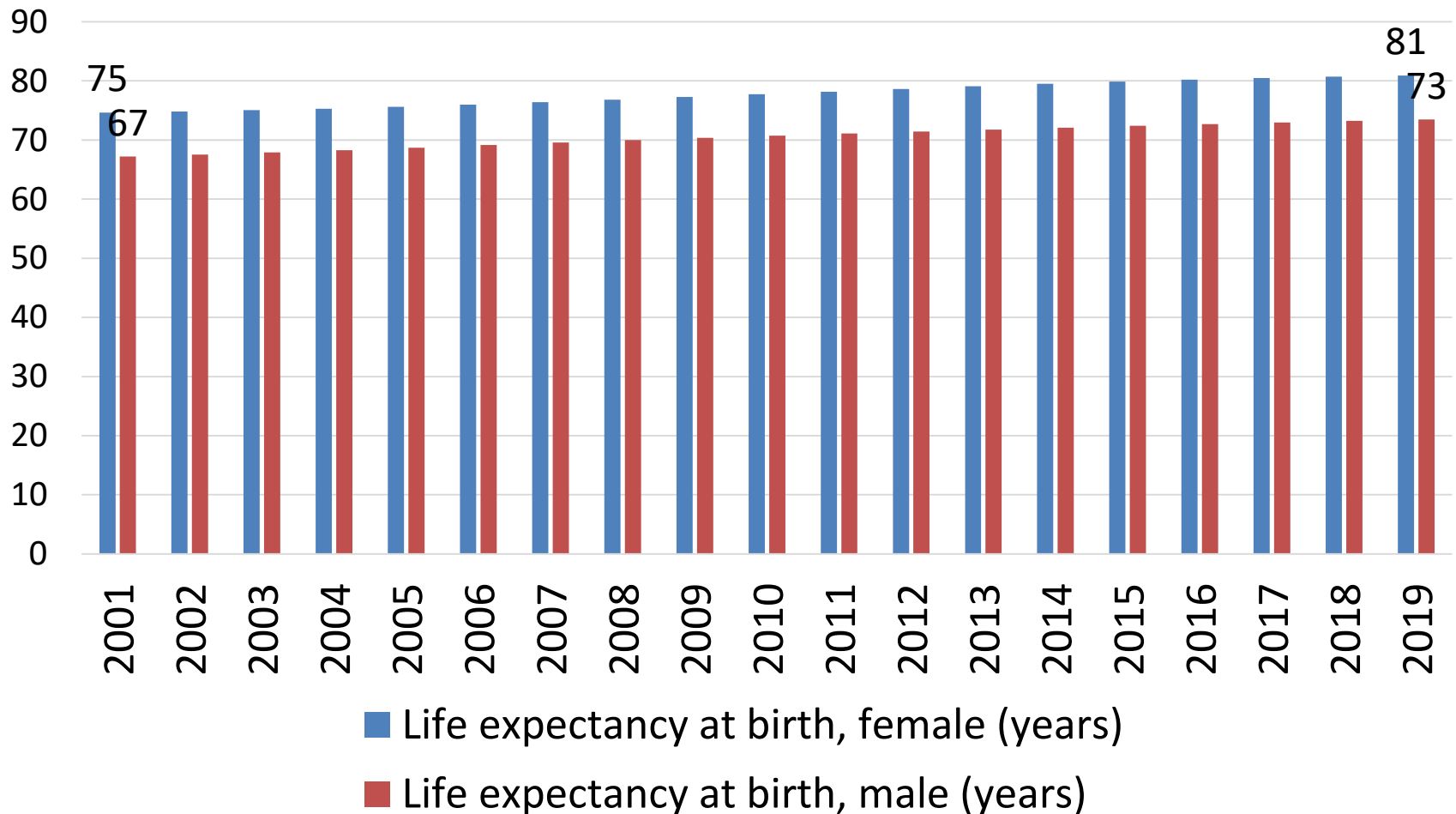
*“Health service is any service (i.e. not limited to medical or clinical services) aimed at contributing to improved health or to the diagnosis, treatment and rehabilitation of sick people”*

(Source: [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0014/102173/E69927.pdf](http://www.euro.who.int/__data/assets/pdf_file/0014/102173/E69927.pdf))

# How Do We Measure Health?

- Is health a *stock* or *flow* variable?
- Commonly used health outcomes (of population):
  - Life expectancy
  - Mortality rates
  - Morbidity
  - Pattern of diseases
  - Health-related quality of life:
    - **Quality-adjusted Life Year (QALY)**: a generic measure of disease burden, including both the quality and the quantity of life lived
    - **Disability-adjusted Life Year (DALY)**: the sum of the years of life lost to due to premature mortality (YLLs) and the years lived with a disability (YLDs) due to prevalent cases of the disease or health condition

## Example: Life Expectancy at Birth in Thailand (years)



Source: World Development Indicator, 2019

# Example: DALYs in THailand

| Top ten ranking in men |                                    | YLLs<br>(x 1000) | YLDs<br>(x 1000) | DALYs<br>(x 1000) | Top ten ranking in women |       | YLLs<br>(x 1000) | YLDs<br>(x 1000) | DALYs<br>(x 1000) |
|------------------------|------------------------------------|------------------|------------------|-------------------|--------------------------|-------|------------------|------------------|-------------------|
| 1.                     | HIV/AIDS                           | 634.2            | 17.7             | 651.9             | Stroke                   | 267.0 | 48.5             | 315.5            |                   |
| 2.                     | Traffic accidents                  | 548.6            | 42.7             | 591.3             | HIV/AIDS                 | 279.5 | 15.1             | 294.6            |                   |
| 3.                     | Stroke                             | 282.6            | 54.0             | 336.6             | Diabetes                 | 183.7 | 108.8            | 292.5            |                   |
| 4.                     | Alcohol dependence/<br>harmful use | 18.1             | 315.2            | 333.3             | Depression               | 0.0   | 191.5            | 191.5            |                   |
| 5.                     | Liver cancer                       | 277.3            | 3.1              | 280.4             | Ischaemic heart disease  | 129.6 | 10.7             | 140.3            |                   |
| 6.                     | Ischaemic heart disease            | 168.4            | 15.6             | 184.0             | Osteoarthritis           | 1.2   | 129.9            | 131.1            |                   |
| 7.                     | COPD                               | 124.8            | 58.6             | 183.4             | Traffic accidents        | 15.4  | 10.8             | 126.2            |                   |
| 8.                     | Diabetes                           | 101.6            | 79.3             | 180.9             | Liver cancer             | 123.9 | 1.7              | 125.6            |                   |
| 9.                     | Cirrhosis                          | 140.5            | 4.3              | 144.8             | Deafness                 | -     | 110.7            | 110.7            |                   |
| 10.                    | Depression                         | -                | 136.9            | 136.9             | Anaemia                  | 0.2   | 109.3            | 109.5            |                   |

YLL: years of life lost.

YLD: years lived with disability.

COPD: chronic obstructive pulmonary disease.

Source: Bundhamcharoen et al. (2011b).

# Is Health Care Different?

- *Unusual* economic features in health care markets:
  - Dominance of *uncertainty* at all levels of health care
  - Problems of information: *Asymmetric information*
  - Presence of *externalities*
  - Large extent of *government involvement*
  - Roles of *equity and need*

# Uncertainty

- **Arrow (1963): Uncertainty** is prevalent in health care markets , both on the demand side and on the supply side.
- **Demand side:**
  - Consumers are uncertain of the health status and need for health care
- **Supply side:**
  - Providers are uncertain whether a treatment will work.
  - If cured, uncertain whether it is the result of the treatment or something else.

# Uncertainty

- At *macro level*, there is uncertainty about who will become ill, and who will not.
- The existence of **uncertainty** and **risk** implies a role of **health insurance**.
  - Use of **expected utility (EU) model** in analyzing economic behavior
    - Eg.  $EU = p * U_{ill} + (1-p) * U_{healthy}$   
Where  $p$  = probability of being ill
- If markets for insurance fail, the government may need to intervene (Arrow, 1963).

# Asymmetric Information

- **Asymmetric information** between physicians and patients
  - Patients rely on doctors' skills and knowledge in providing diagnosis and treatment.
    - Same as the 'Lemons problem'
    - Doctors need to be qualified → **Licensure**
    - Need ethical codes
  - **Principal-Agent problem:**
    - Patients are principal, and doctors are agents.
    - "**Physician-induced demand**" (or supply-induced demand) hypothesis

# Asymmetric Information

- Asymmetric information in health insurance industry
  - *Moral hazard*
    - People take less care of their health after buying health insurance.
    - Insured persons use excessive health care services because of lower costs.
  - *Adverse selection*
    - Sick persons hide the information about their actual health status from insurance companies.
    - Insurance companies sell insurance only to healthy persons.  
→ “Cherry picking”
- Both moral hazard and adverse selection problems lead to **welfare loss** to the society.

# Externalities

- **Externalities** occur when :
  - a producer does not incur all the costs of the production
  - a consumer does not receive all the benefits of the consumption
- Externalities are commonly used in addressing environmental issues, such as pollution.
- Externalities are a form of *market failure*, and provided a justification for government intervention in health care market.

# Externalities

|             | Positive Externality                                                     | Negative Externalities                                                                |
|-------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Consumption | External economy of consumption<br>e.g. Immunization                     | External diseconomy of consumption<br>e.g. Antibiotic use,<br>alcohol consumption     |
| Production  | External economy of production<br>e.g. R&D from<br>teaching universities | External diseconomy of production<br>e.g. Dumping of hospital<br>waste into the river |

# Positive Externality: Immunization

- Immunization not only benefits the person who is immunized, but also benefits other people in the society.
  - The immunization prevents the disease from spreading around.
  - a.k.a. “**Herd Immunity**”
- The **external benefit** to the society is being paid for by the person who receives the immunization only.
  - $MSB > MPB$

# Positive Externality: Immunization

- The externality in immunizations suggests that **too little** of immunization, as determined by the market, **is being produced**.
- Government should intervene by reducing the price and increase quantity.
  - Subsidize immunization
- Other examples of positive externalities on consumption:
  - Education
  - Anything else?

# Negative Externality: Alcohol Consumption

- This is external *diseconomy* of consumption.
- The consumer benefits from alcohol consumption, but he/she could cause traffic accidents if driving when drunk.
- Drunk drivers creates *negative consumption benefits* to the society from their alcohol consumption.
  - The negative benefits are borne other people who do not receive benefits from alcohol consumption.
  - $MSB < MPB$

# Negative Externality: Alcohol Consumption

- The **negative externality** implies that **too much** of alcohol is being consumed.
- This provides another justification for government intervention to reduce the number of drunk drivers.
  - Increase the fine
  - Use other punishment method
- Other examples of negative externalities:
  - Antibiotic use
  - Street drug

# Government Involvement

- Problems of asymmetric information and externalities provide justification for government intervention.
  - Asymmetric information
    - Licensure
    - Food and drug control
  - Externalities
    - Subsidies to promote health
    - Taxes to control 'bads'

# Government Involvement

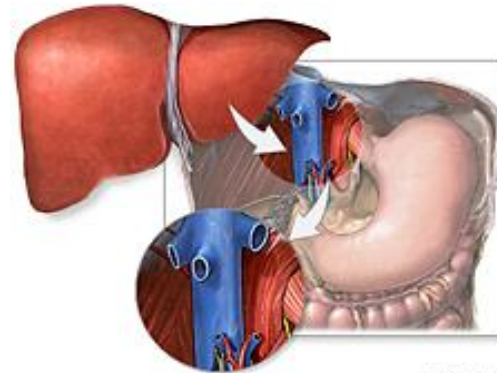
- In Thailand, the government plays a crucial role in the health care sector.
  - Government (through Ministry of Public Health) is the main health care provider.
    - The majority of hospitals in Thailand are public hospitals.
  - Government pays for almost 70% of total health expenditure. (refer to NHA in previous slide)
  - Government subsidizes education of health personnel.

# Equity and Need

- Affordability of a Porsche vs. liver transplant



Vs.



ADAM.

(pictures sources: inautonews.com and tulanehealthcare.com)

- Is health care different?
  - If not, then we can let the market decide whether we should buy a ₪ 5,000,000 Porsche or ₪ 5,000,000 liver transplant.
  - If different, then it can't be left to the market.

# Equity and Need

- One difference is the *very high value of the health care*, compared to the Porsche:
  - Liver transplant preserves life, whereas Porsche is considered as 'luxurious' goods.
  - This is the same as other necessities, such as food, clothing, etc.
- Another unique characteristics is that the *demand for health care is state dependent*:
  - Only when a person's liver fails that s/he needs a liver transplant.

# Equity and Need

- Problem: Not everyone can afford a liver transplant when needed.
  - You may have enough money to cover your basic needs, but this income might not be enough to cover the total cost of the transplant.
  - People can become instantly poor when ill.
- Who should get health care should not be determined by their **ability to pay**, but the **need** (which is sometimes hard to define).
- So, we cannot ignore “**equity**” when thinking about health care allocation.

# Equity and Need

- Efficiency vs. Equity
  - *Efficiency* is making the pie as big as possible.
  - *Equity* is how you divide up the pie to promote society's welfare.
- Problem: Economists don't have all the tools necessary to analyze equity
  - No social welfare function to explain who is worthy of more income or more health care.
  - In the end, we have to consider the norm or values in the society.