

COURSE INTRODUCTION & OVERVIEW OF HEALTH ECONOMICS

EE 474 Health Economics

Semester 1/2013

About the Instructor

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- Education:
 - B.A. (Economics), McGill University, Canada
 - M.A. (Economics), University of British Columbia, Canada
 - Ph.D. (Major – Applied Economics, Minor – Health Services Research & Policy Administration), University of Minnesota, USA
- Fields of interest:
 - Health economics (particularly public health insurance)
 - Development economics
 - Population studies
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Students' Background?

- Please introduce yourself:
 - Name & Nickname
 - Which year of the program are you at?
 - What makes you interested in health economics?
 - What do you expect from this class?
 - What's your future plan (particularly for 4th-year students)?
 - Others?

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
 - Issues in health care sector:
 - Efficiency and equity
 - Market failure and government intervention
 - Economic evaluation
 - Health care at macroeconomic level
 - Health care system and health financing
 - Health care reform
-
- Before
midterm
- After
midterm

Course Organization

- Meet every Wednesday and Friday, 3:30 -5 pm
- Lectures based style
 - Class participation are highly encouraged.
- Classroom *etiquette*:
 - No cellphone or other communicating devices please! – A 50 baht tax will be collected each time a cellphone rings.
 - No chitchat please! Raise your hands if you have questions or comments.
 - Dress code: no shorts, sandals, tank-tops, or other informal wear .

Evaluation

- Quizzes (20%)
- Midterm exam (30%) - October 4, 2013
- Final exam (50%) – December 16, 2013

Quizzes

- There are 10 quizzes in total.
- For each quiz, there are two questions: one is based on the materials from the previous lecture; another is based on the assigned readings for the current lecture.
- You will be given 15 minutes at the beginning of the class to complete the quiz. No quiz will be accepted after the first 15 minutes of the class.
- The best 9 (out of 10) quizzes will be counted toward your final quiz grade.

Readings

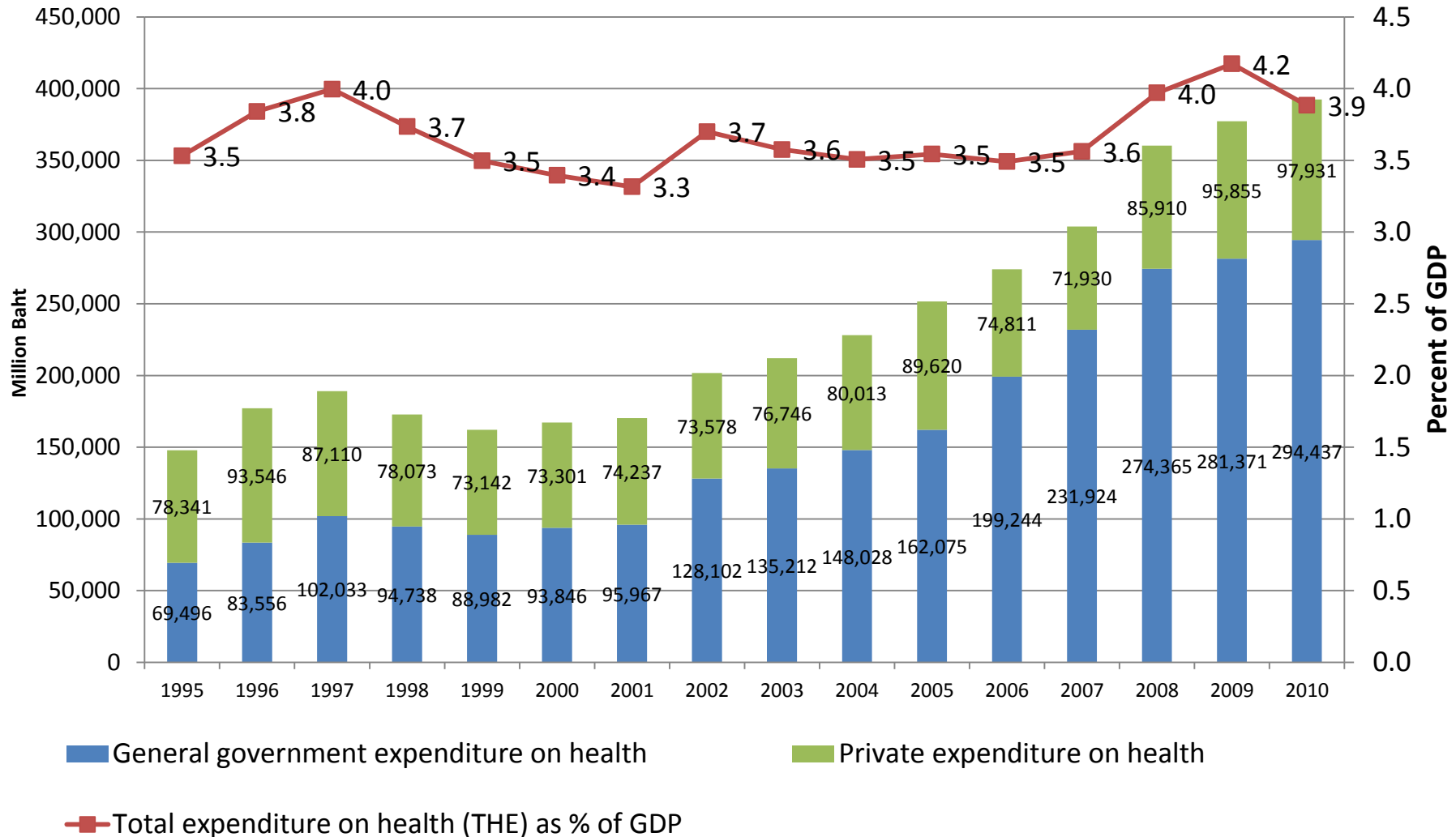
- Textbooks
 - Folland, S., Goodman, A. C., and Stano, M. (2012). *The Economics of Health and Health Care*, Seventh Edition. Pearson.
 - Phelps, S. (2010). *Health Economics*, Fourth Edition. Pearson.
 - Santerre, R.E., and Neun, S. P. (2007). *Health Economics: Theories, Insights, and Industry Studies*, Fourth Edition. Thompson.
- Other readings will be uploaded on B.E. Moodle.

Topics for This Week's Lectures

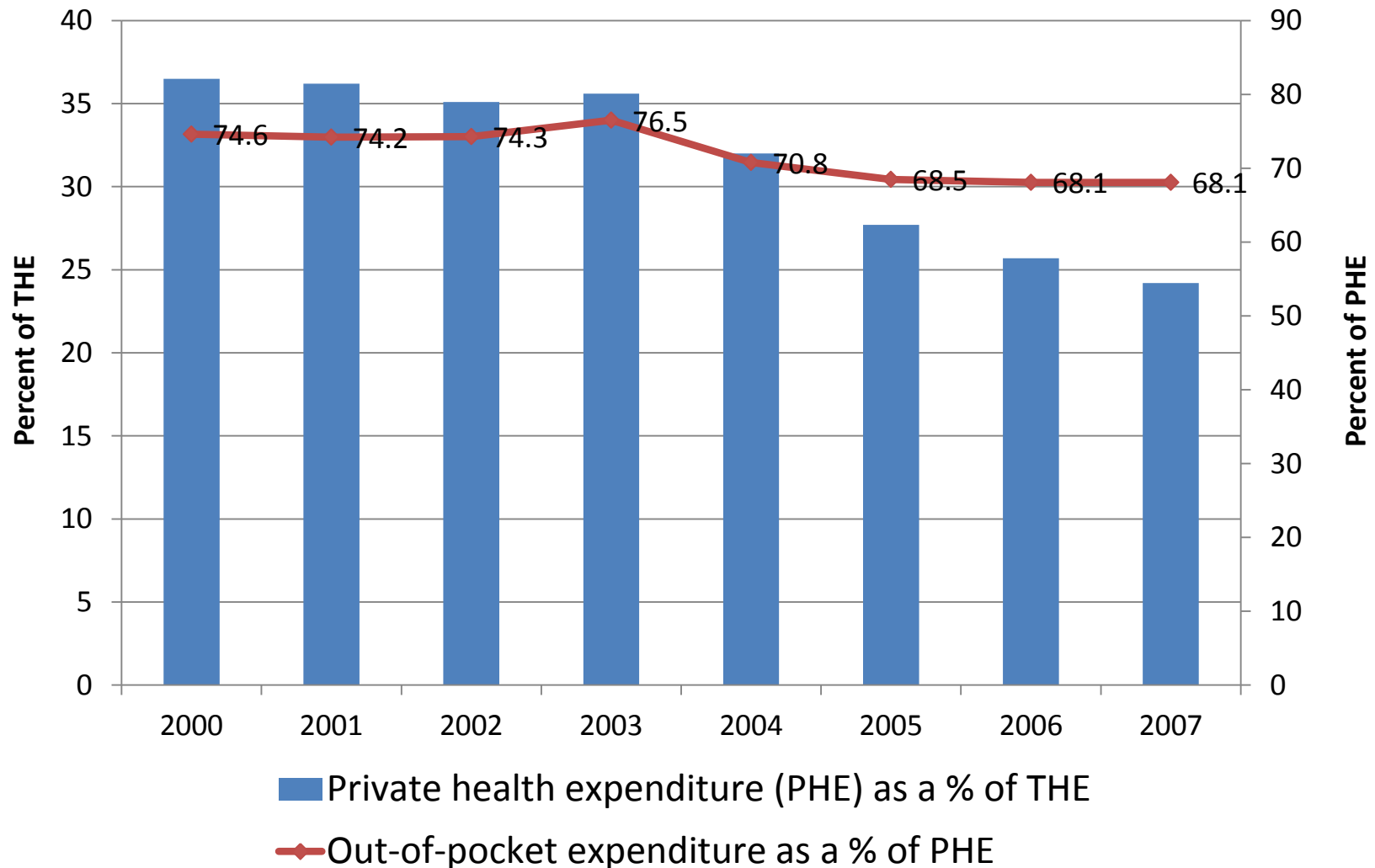
- Why health economics?
- What is health economics?
- What do we study in health economics?
- How economists view health and health care.

Why Health Economics?

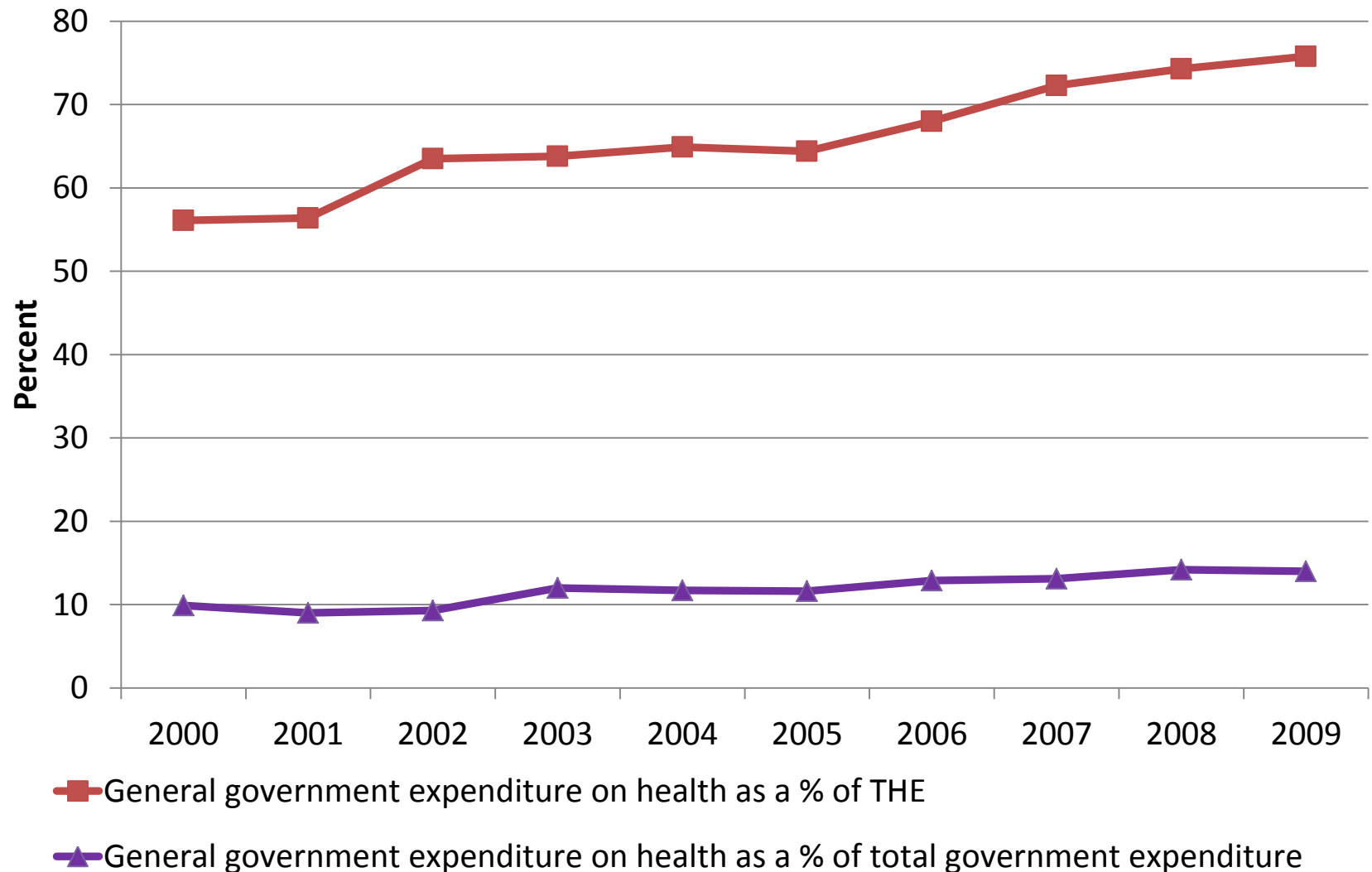
Thailand's National Health Accounts



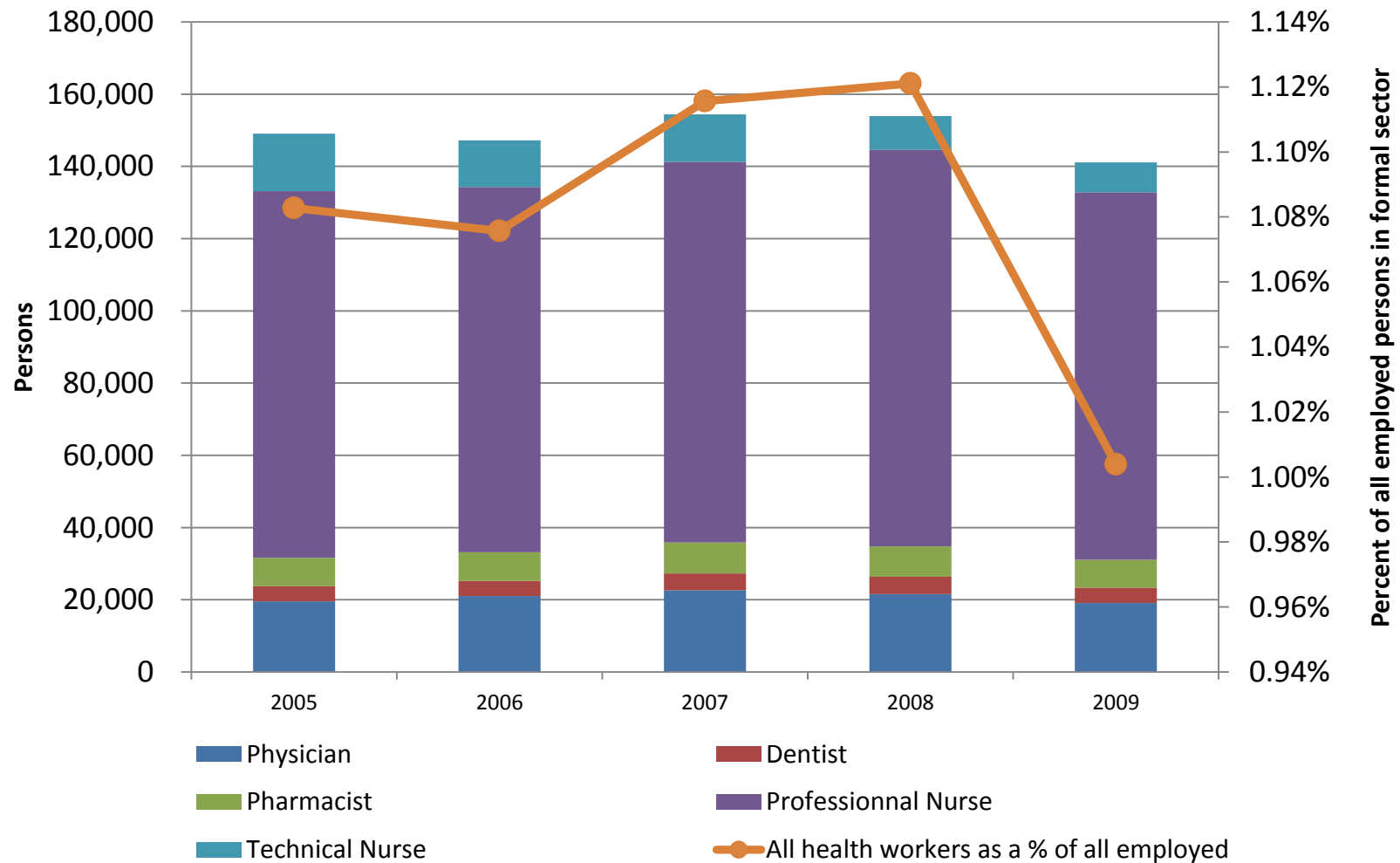
Private Health Expenditures



Government Expenditure on Health



Health Care Workers



Sources: - Office of the Permanent Secretary for Public Health, Ministry of Public Health
 - NESDB

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:
 - What contributes to high infant mortality rates in some countries?
 - What are the impacts of private hospital mergers?
 - How does a certain national health policy affect the income distribution of the population?
 - How should we (individual/government) finance health care consumption?
- *Main Goal:*
 - To better understand the **economic aspects** of health care problems in order to provide corrective **health policies**

Health Economics Studies

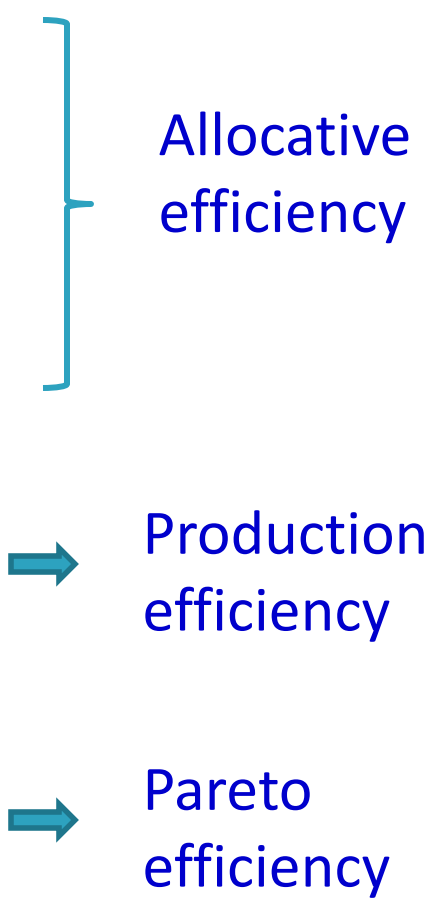
Microeconomics

- 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

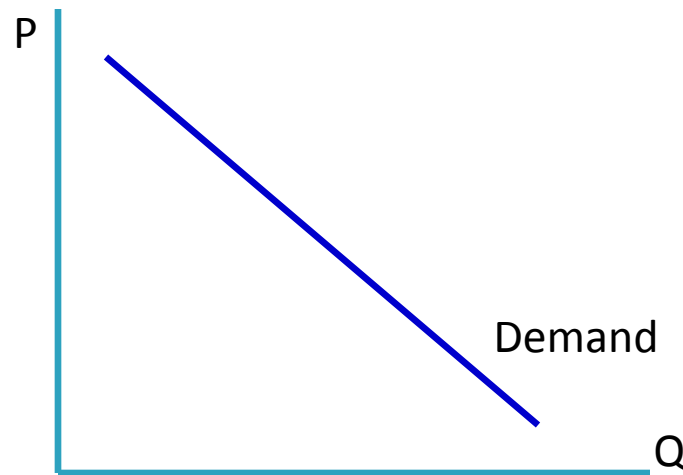
1. What **combination** of **health care** and **other goods and services** should be produced in the economy?
 2. What **specific health care goods and services** should be produced in the health economy?
 3. What **specific health care resources** should we use to produce the chosen health care goods and services?
 4. **Who** should **receive the health care goods and services** that are produced?
- Allocative efficiency
- Production efficiency
- Pareto efficiency
- 

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*.

Economic Analysis: Economic Models

- Simplify a complex problem in the real world
- Describe hypothesized relation between two or more variables
- Could be descriptive, graphical, or mathematical form
- Ex: $Q^d_{\text{cigarette}} = f(\text{Cigarette price})$



Economic Analysis: Empirical Tests

- Empirical testing of health economic theories
 - Use statistical techniques, *e.g. econometric analysis or multiple regression analysis*, to verify or quantify the magnitude of the relation among economic variables
- Ex: $Q^d_{\text{cigarette}} = a + b * \text{cigarette_price} + c * \text{income} + \dots$
 - Empirical studies are used to determine the *sign* and *magnitude* of the parameter b .
 - Implications on cigarette tax policies

2 Types of Analysis

- **Positive Analysis**

- What is? What was? What happened?
- Examples:
 - How much would a 10% increase in the price of cigarettes reduce the number of cigarettes consumed?
 - Does the universal health coverage policy reduce the income inequality in Thailand?

- **Normative Analysis**

- What should be? What ought to be? Which is better?
- Examples:
 - Should the government increase tax on cigarettes to prevent people from smoking?
 - Should Vietnam adopt a national health insurance program?

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)

How Do We Measure Health?

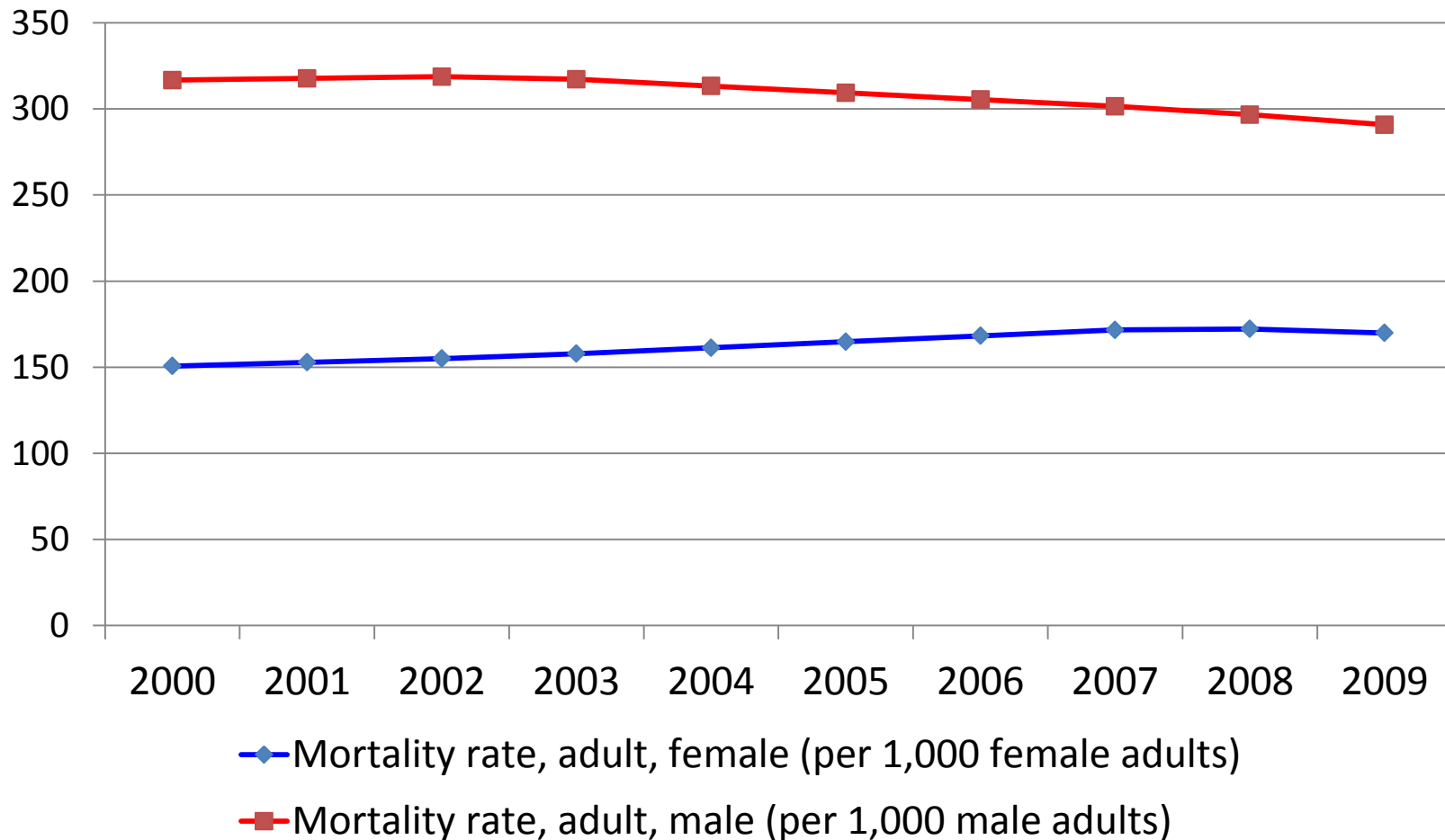
- Is health a *stock* or *flow* variable?
- Commonly used health outcomes (of population):
 - Life expectancy
 - Mortality rates
 - Morbidity
 - Pattern of diseases
 - Health-related quality of life:
 - Quality-adjusted Life Year (QALY)
 - Disability-adjusted Life Year (DALY)

Example: Life Expectancy at Birth in 2009 (years)

Country	Male	Female
Brunei Darussalam	76	77
Cambodia	57	65
Indonesia	66	71
Lao People's Democratic Republic	62	64
Malaysia	71	76
Myanmar	61	67
Philippines	67	73
Singapore	79	84
Thailand	66	74
Viet Nam	70	74

Source: http://apps.who.int/gho/indicatorregistry/App_Main/view_indicator.aspx?iid=65

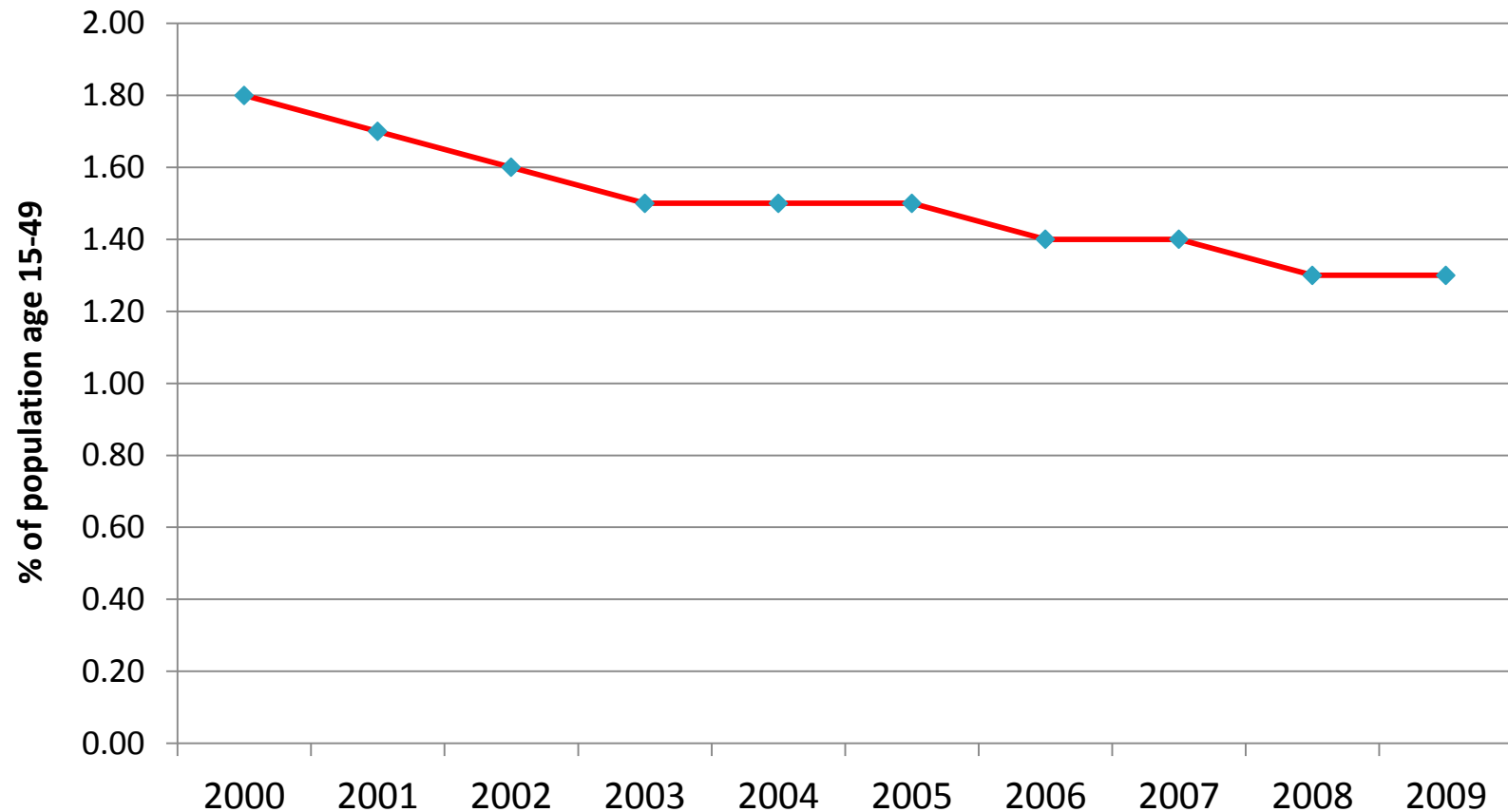
Example: Adult Mortality Rates in Thailand



Source: World Development Indicator, 2011

Example: HIV Prevalence in Thailand

(% population age 15-49)



Source: World Development Indicator, 2011

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*
 - 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 e.g. Immunization	External diseconomy of consumption e.g. Antibiotic use, alcohol consumption
Production	External economy of production e.g. R&D from teaching universities	External diseconomy of production e.g. Dumping of hospital 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.
 - $SMB < PMB$

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

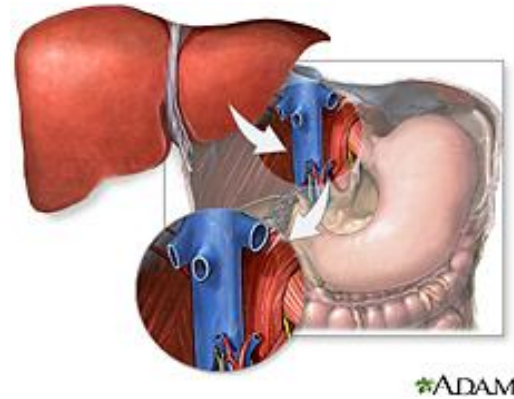
- In Thailand, the government plays a crucial role in the health care sector.
 - Government (through Ministry of Public Health) is the main health care provider.
 - The majority of hospitals in Thailand are public hospitals.
 - Government pays for almost 70% of total health expenditure. (refer to NHA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

Equity and Need

- Affordability of a MiniCooper vs. liver transplant



Vs.



- Is health care different?
 - If not, then we can let the market decide whether we should buy a ₪ 5,000,000 MiniCooper 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 MiniCooper :
 - Liver transplant preserves life, whereas MiniCooper 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.