EE441 Economics of Public Expenditure

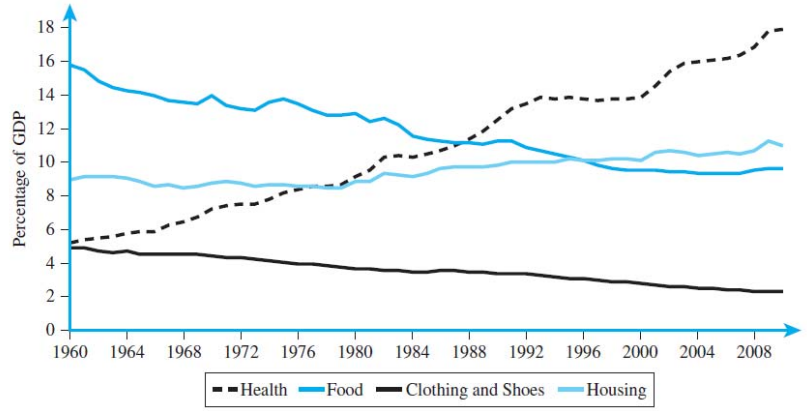
9. The Health Care Market

Euamporn Phijaisanit
Faculty of Economics
Thammasat University
1/2017

Outline of Topic 9

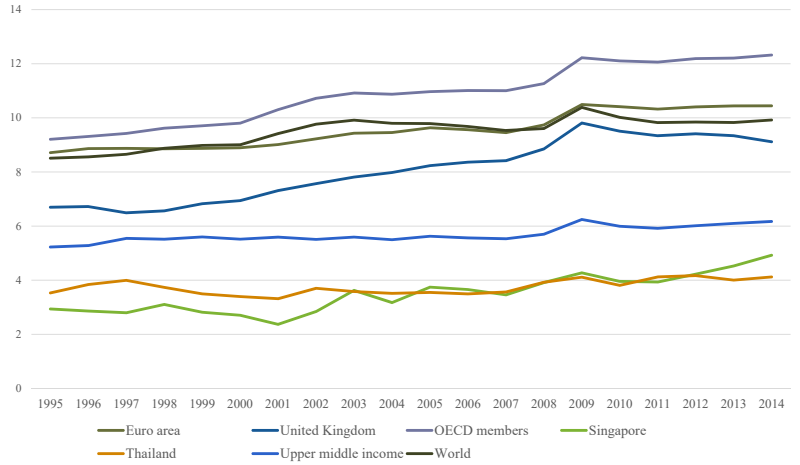
1. What's special about Health Care?
   a. The role of insurance
   b. The role of risk pooling
   c. Adverse selection in the health insurance market
   d. Insurance and moral hazard
   e. Other information problems in the health care market
   f. Externalities of health care
2. Do we want efficient provision of health care?
   a. Paternalism
   b. The problem of the uninsured
   c. High health care costs

U.S. Expenditures of Selected Goods and Services as Share of GDP (1960-2010)



Source: Centers for Medicare & Medicaid Services, National Health Expenditure Data, and National Income and Product Accounts

Health Expenditure, Total (%GDP)



Source: World Health Organization Global Health Expenditure database

Social Insurance

- Social insurance - government programs that provide insurance to protect against adverse events
- Examples
  - Medicaid
  - Medicare
  - Social Security
  - Unemployment Compensation

How Health Insurance Works

- Insurance premium: money paid to an insurance company in exchange for compensation if an adverse event occurs
- People are willing to pay for insurance because of:

  1) Expected Value (EV) =

  (probability of outcome 1)*(Payout in outcome 1) + (probability of outcome 2)*(Payout in outcome 2) +… + (probability of outcome n)*(Payout in outcome n)

  2) Risk smoothing: paying money in order to guarantee a certain level of consumption should an adverse event occur

Example of Expected Value Computation

Draw cards from deck of cards

Draw heart and receive $12

Draw spade, diamond or club and lose $4

Probability of drawing heart = 13/52 = ¼

Probability of drawing spade, diamond or club = 39/52 = ¾

EV = (1/4)($12) + (3/4)(-$4) = $0

Why Buy Insurance?

Insurance Options	Income	Probability of Staying Healthy	Probability of Getting Sick	Lost Income if She Gets Sick	(A) Income if She Stays Healthy	(B) Income if She Gets Sick	(C) Expected Value
Option 1: No Insurance	$50,000	9 in 10	1 in 10	$30,000	$50,000	$20,000	$47,000
Option 2: Full Insurance ($3,000 premium to cover $30,000 in losses	$50,000	9 in 10	1 in 10	$30,000	$47,000	$47,000	$47,000

Although both yield same EV, Option 2 is preferred due to risk-smoothing.

Actuarially fair insurance premium

- An insurance premium for a given time period set equal to the expected payout for the same time period. (In practice, the insurance company needs to charge above the actuarially fair premium in order to cover any overhead costs.)
- In this case EV of loss = (9/10)*($0)+(1/10)*($30,000) = $3,000.

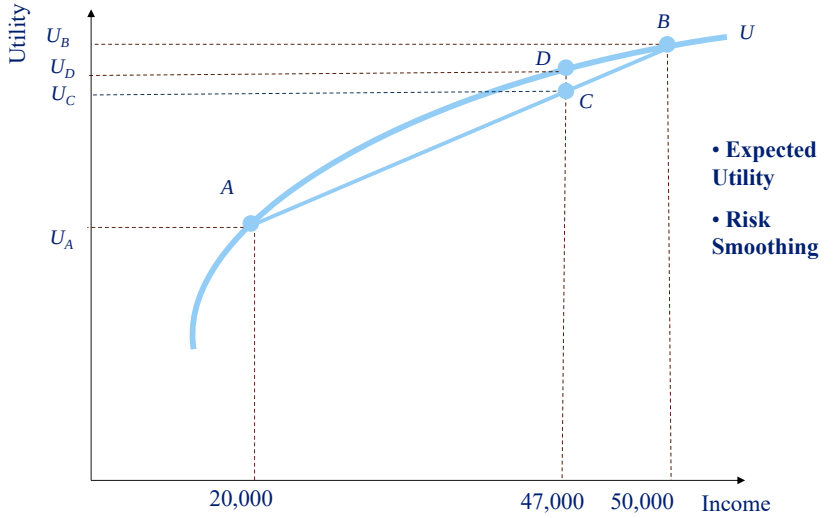
"For someone your age, the yearly premium on a $5,000 policy is $8,000." © Mike Baldwin.
Reprinted with permission from www.CartoonStock.com.

When risk of the adverse event increases, so does the premium that the company has to charge in order to break even…

Why people buy insurance

- *Expected utility*- the average utility over all possible uncertain outcomes, calculated by weighting the utility for each outcome by its probability of occurring.
- *Risk smoothing*- taking action to obtain a certain level of consumption should an adverse event occur.

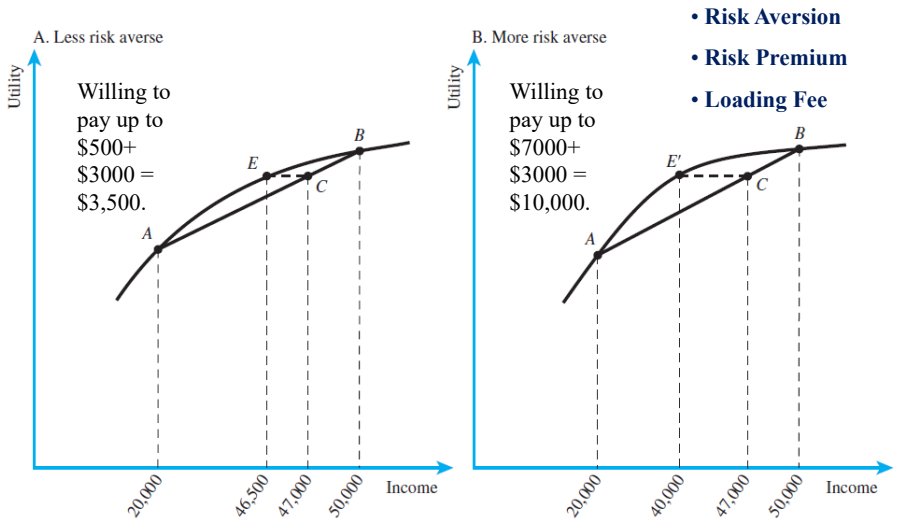
Why People Buy Insurance



Do People Buy Insurance with Loading Fees?

- **Actuarially Fair Insurance Policy:** Insurance premium = expected payout
- **Risk Aversion**: a preference for paying more – a **risk premium** - in order to guarantee compensation if an adverse event occurs
- **Loading fee**: the difference between an insurance premium charged by a company and the actuarially fair premium
- Current average loading ratio for private insurance companies=1.20

Do People Buy Insurance with Loading Fees? Actuarially Fair Insurance Policy: Insurance premium = expected payout



Risk aversion

- *Risk aver*sion- A preference for paying more than the actuarially fair premium in order to guarantee compensation if an adverse event occurs.
- *Risk premium*- The amount above the actuarially fair premium that a risk-averse person is willing to pay to guarantee compensation if an adverse event occurs.
- *Loading fee*- The difference between the premium an insurance company charges and the actuarially fair premium level.

The Role of Risk Pooling

- Insurance in a small population
- Insurance in a large population
- Law of large numbers

Why might Government Intervention be needed in the Health Insurance Market?

- Asymmetric information
  - Situation in which one party engaged in an economic transaction has better information than the other party
    - An individual knows her own illness risk, but insurer does not
- Results in Adverse Selection
  - The phenomenon under which the uninformed side of a deal gets exactly the wrong people trading with it
    - In charging everyone the same premium, high risk individuals have a higher probability of buying while low-risk individuals do not
      - DEATH SPIRAL

Table 9.2 How Asymmetric Information Can Cause Failure in the Insurance Market

Insurance Buyer	(A) Probability of Getting Sick	(B) Lost Income if Sick	(C) Expected Lost Income	(D) Expected Benefit Minus Premium (Differential Premiums)	(E) Expected Benefit Minus Premium (Premium = $3,000)	(F) Expected Benefit Minus Premium (Premium = $4,500)
Emily	1 in 5 (high risk)	$30,000	$6,000	$0	$ 3,000	$ 1,500
Jacob	1 in 5 (high risk)	30,000	6,000	0	3,000	1,500
Emma	1 in 5 (high risk)	30,000	6,000	0	3,000	1,500
Michael	1 in 5 (high risk)	30,000	6,000	0	3,000	1,500
Madison	1 in 5 (high risk)	30,000	6,000	0	3,000	1,500
Joshua	1 in 10 (low risk)	30,000	3,000	0	0	−1,500
Olivia	1 in 10 (low risk)	30,000	3,000	0	0	−1,500
Matthew	1 in 10 (low risk)	30,000	3,000	0	0	−1,500
Hannah	1 in 10 (low risk)	30,000	3,000	0	0	−1,500
Ethan	1 in 10 (low risk)	30,000	3,000	0	0	−1,500
Insurer's net profits				0	−15,000	0

If the insurance company knew which people were high risk and which were low risk, it could charge the actuarially fair premium to each and just come out even (column D). However, if it can't distinguish the high-risk from the low-risk people, a uniform premium of $3,000 leads to losses for the company (column E). Charging a uniform premium equal to the average actuarially fair premium of the two groups enables the company to cover costs (column F), but the low-risk people have an incentive to drop out of the insurance pool, and the insurer ends up losing money.

Does Adverse Selection Justify Government Intervention?

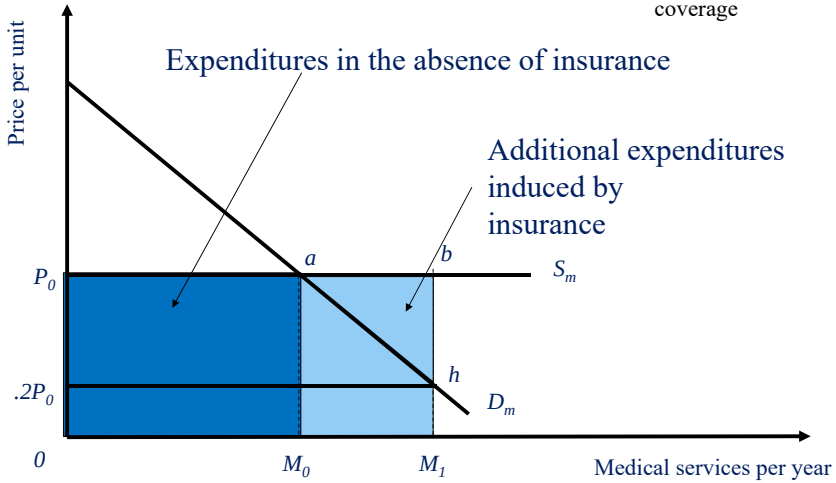
- If risk-averse individuals are more likely to buy insurance, and they are healthier, this advantageous selection can counteract adverse selection
- *Experience rating*- The practice of charging different insurance premiums based on the existing risk of the insurance buyers.
- Experience rating and equity
  - Those who are genetically inclined toward sickness would have to pay significantly more for insurance, and perhaps even be priced out of the market.
- *Community rating*- The practice of charging uniform insurance premiums for people in different risk categories within a community, thus resulting in low-risk people subsidizing high-risk people.

Insurance and Moral Hazard

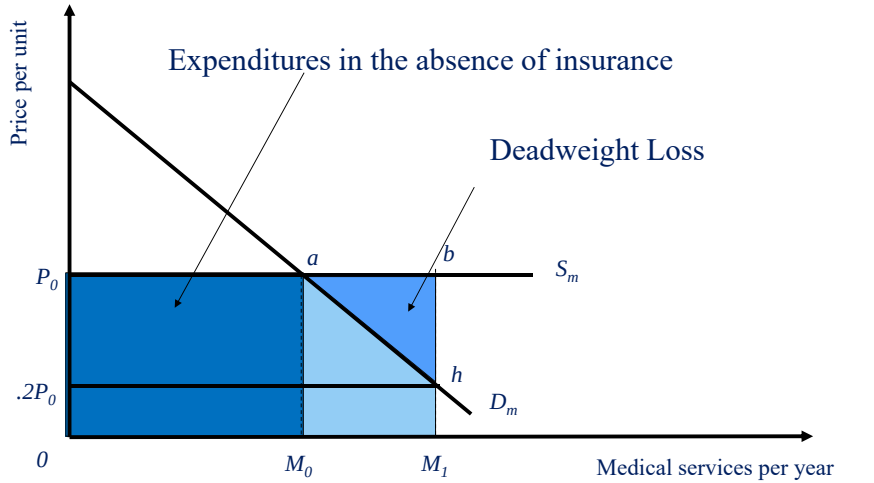
- **Moral hazard**: when obtaining insurance against an adverse outcome leads to an increase in the likelihood of the outcome
- Strategies for reducing moral hazard
  - **Deductible**: out-of-pocket payment of health costs before the insurance company pays
  - **Co-payment**: a fixed amount paid by the insured for a medical service
  - **Co-insurance**: a percentage of the cost of a medical service that the insured must pay

Moral Hazard

Overconsumption of medical services due to insurance coverage



Deadweight Loss



Additional Considerations

- *Flat-of-the-curve medicine*- The notion that a certain point, the additional health gains of greater spending on health care are relatively limited.
- The elasticity of demand for medical services
  - The response of health care spending to changes in its price is an empirical question.
    - People follow doctor's order regardless of price (relatively more inelastic) vs medical procedures can be discretionary (relatively more elastic)
- Does moral hazard justify government intervention in health insurance market?
  - All third party payment systems generate moral hazard

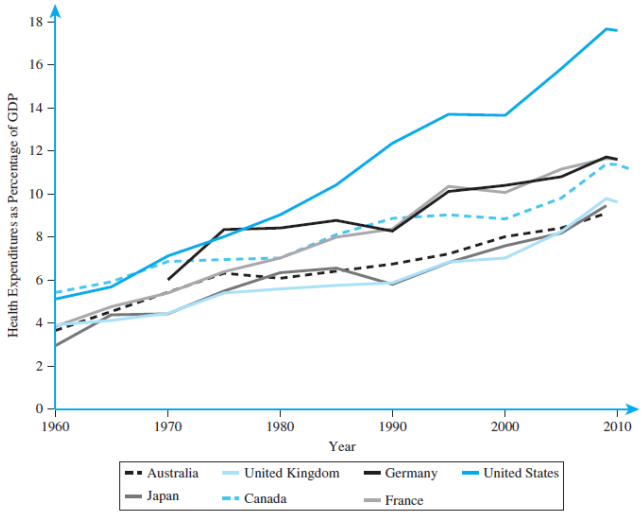
Other Market Failures in the Health Care Market that might Justify Government Intervention

- Information problems by patients
  - Lack of information by consumers is a rationale for many government regulations.
  - It can be hard to think of another market in which consumers rely so heavily on the advice of the person who is selling them the service.
- Externalities of Health Care
  - Negative (eg., overuse of antibiotics)
  - Positive (eg., getting flu vaccines)

Do We Want Efficient Provision of Health Care? Equity Considerations

- Paternalism
  - Health care decisions are too complicated to be left in people's own hands
- The Problem of the Uninsured: Is health insurance too expensive?
  - Who are the uninsured?
  - Does health insurance improve health?

High Health Care Costs



Source: Organization for Economic Cooperation and Development [2012a].

Causes of Health Care Cost Inflation

- The Graying of America (and elsewhere)
- Income Growth
- Improvements in Quality (and technology)
- Commodity Egalitarianism- The idea that some commodities ought to be made available to everybody.
  - Eg., Universal healthcare in Thailan.

Summary

- The U.S. spends a large percent of its GDP on health – 17.9% in 2010 (Thailand approximately 4%). Government-provided health insurance has been an increasing percentage of the U.S. federal budget (Thailand, too.)
  - Reasons for growth include aging of population, growth in income, third-party payments, and technological changes
- Individuals buy health insurance in order to guarantee a certain level of consumption- Risk smoothing.
- Pooling individuals into one insurance program can lower risk and thus premiums. However, if adverse selection occurs, premiums can rise and/or the insurer loses money
- Justifications for government intervention in the health insurance market include adverse selection, moral hazard, commodity egalitarianism, and health care externalities