Undergraduate Public Finance: Social Insurance

Germain Gauthier

Bocconi University

Whereabouts in the Course

Part I – Introduction

Part II – Externalities and Public Goods

Part III – Social Insurance and Redistribution

Part IV – Taxation

Our Roadmap

Part III – Social Insurance and Redistribution

- General Framework of Social Insurance

- Social Security (Pensions)

- Unemployment and Disability Insurance

- Health Insurance

- Income Distribution and Welfare Programs

Three Topics for Today

1. What is insurance, and why do individuals value it?

2. Why have social insurance?

   ⇒ Asymmetric information and adverse selection

3. The problem with insurance

   ⇒ Moral hazard

The Italian Constitution

FUNDAMENTAL PRINCIPLES

Art. 3 All citizens have equal social dignity and are equal before the law, without distinction of sex, race, language, religion, political opinion, personal and social conditions.

Title II - ETHICAL AND SOCIAL RIGHTS AND DUTIES

Art. 32 The Republic safeguards health as a fundamental right of the individual and as a collective interest, and guarantees free medical care to the indigent.

Title III - ECONOMIC RIGHTS AND DUTIES

Art. 38 Every citizen unable to work and without the necessary means of subsistence has a right to welfare support.

Some Definitions

Insurance is the payment of a premium to get payment in case of an adverse event (e.g., auto insurance)

Social insurance programs: Government-provided insurance against adverse events funded by taxation:
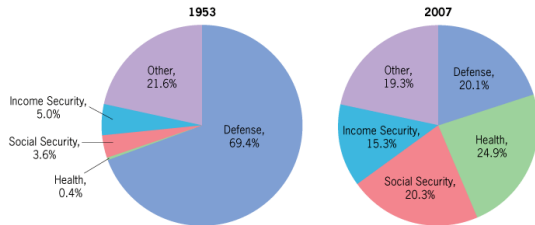
(a) health insurance

(b) retirement and disability insurance

(c) unemployment insurance

Means-tested Programs: Eligibility depends on the level of one's current income or assets (for most programs, eligibility is not means-tested).

The growth in government over the 20th century is mostly due to the growth of social insurance (i.e., health and retirement benefits).

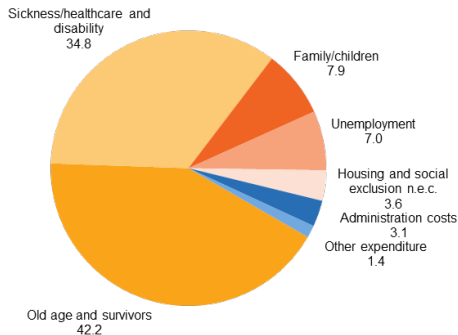CHAPTER 12 ■ SOCIAL INSURANCE: THE NEW FUNCTION OF GOVERNMENT

■ FIGURE 12-1

1953

Other, 21.6%
Income Security, 5.0%
Social Security, 3.6%
Health, 0.4%
Defense, 69.4%

2007

Other, 19.3%
Defense, 20.1%
Income Security, 15.3%
Health, 24.9%
Social Security, 20.3%

Government Spending by Function, 1953 and 2007 • Government today devotes a much larger portion of its budget to social insurance than it did 50 years ago.

Public Finance and Public Policy Jonathan Gruber Third Edition Copyright © 2010 Worth Publishers

3 of 29

Structure of social protection expenditure, EU, 2020
(% of total expenditure)

Sickness/healthcare and disability
34.8

Family/children
7.9

Unemployment
7.0

Housing and social exclusion n.e.c.
3.6

Administration costs
3.1

Other expenditure
1.4

Old age and survivors
42.2

Note: provisional.
Source: Eurostat (online data code: spr_exp_sum)

eurostat

Social protection expenditure, 2020

EU, EA, Germany, Greece, Spain, France, Italy, Lithuania, Hungary, Slovenia, Sweden, Montenegro and Albania: provisional.

North Macedonia: 2017.

Source: Eurostat (online data code: spr_exp_sum)
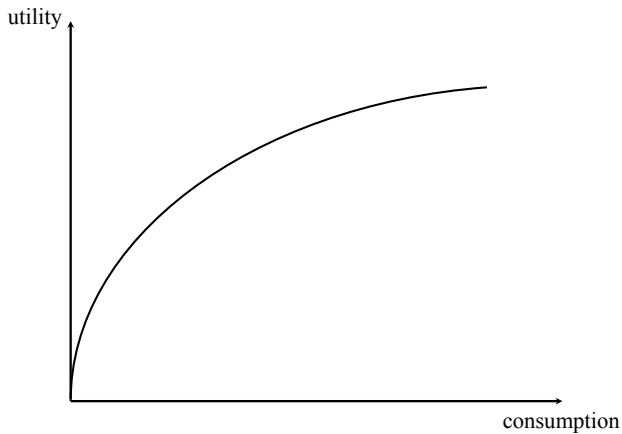
eurostat

Expected Utility Model

Utility function $U(c)$ increasing in consumption c and concave in consumption c: $U'(c) > 0$ and $U''(c) < 0$

Expected utility model: Individuals want to maximize expected utility defined as the weighted sum of utilities across states of the world, where the weights are the probabilities of each state occurring.

If q is probability of adverse event, expected utility (EU) is:

$$EU = (1 - q) \cdot U(\text{no adverse event}) + q \cdot U(\text{adverse event})$$

Actuarially fair premium: Insurance premium that is set equal to the insurer's expected payout.

Person has income W (regardless of health)

Person is sick with probability q

If sick, person incurs medical cost d to get better

Insurance contract: pay premium p always, and receive payout b only if sick

Expected utility:

$$EU = (1 - q) \cdot U(W - p) + q \cdot U(W - p - d + b)$$

Expected profits of insurers: $EP = p - q \cdot b$

Competition among insurers $EP = 0 \Rightarrow b = p/q$

This is called **actuarially fair** insurance.

Individual chooses the level of premiums p to maximize:

$$EU = (1 - q) \cdot U(W - p) + q \cdot U(W - d - p + p/q) \qquad (1)$$

First order condition:

$$dEU/dp = 0 = -(1 - q)U'(W - p) + q[-1 + 1/q]U'(W - d - p + p/q)$$

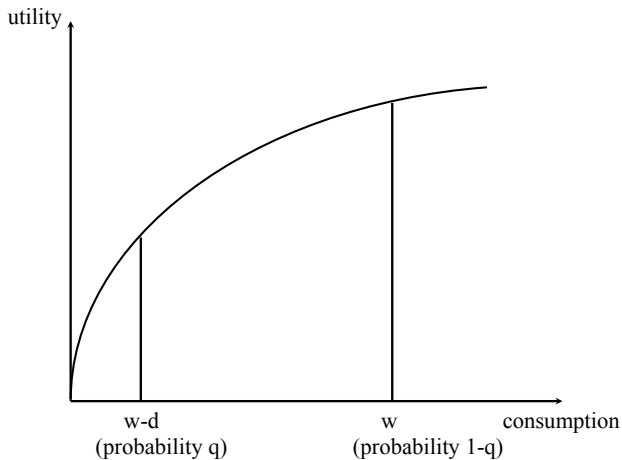$$\Rightarrow U'(W - p) = U'(W - d - p + p/q)$$

$\Rightarrow W - p = W - d - p + p/q$ (because U is concave and hence U' is strictly decreasing and hence invertible)
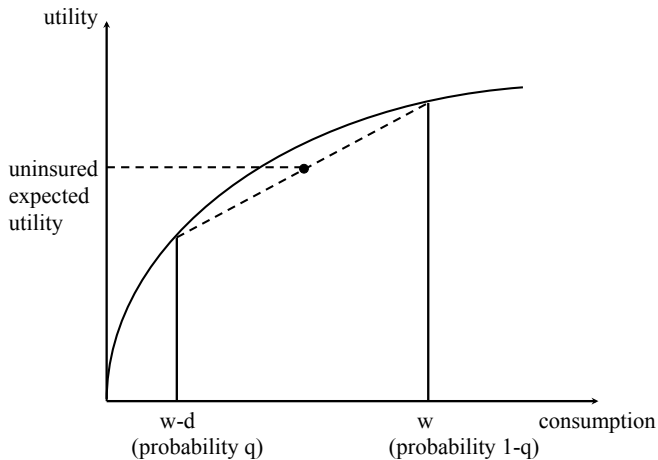
$$\Rightarrow 0 = -d + p/q \Rightarrow p = d \cdot q$$

This implies that the person is perfectly insured: consumption is the same in both states and equal to $W - d \cdot q$
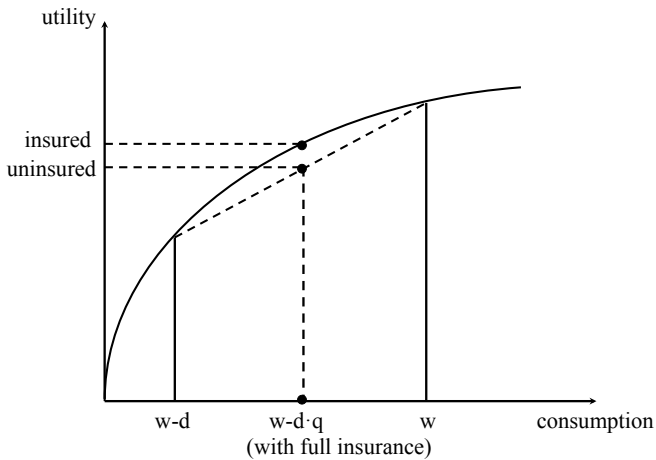
Some intuition: With a concave utility, marginal utility decreases, and it is always desirable to reduce consumption in high-income states to increase consumption in low-income states.

Let's have a look at this graphically...

The Role of Risk Aversion

Risk aversion: The extent to which individuals are willing to bear risk.

- Risk-averse people may still want to buy some insurance even if it is not actuarially fair.

- People may differ in their risk aversion, and if insurance premiums are extremely unfair, then only the most risk-averse will want it.

Why Should the Government Provide Insurance?

Information asymmetry can lead to a key market failure: adverse selection.

Information asymmetry: The difference in the available information to sellers and purchasers in a market.

Adverse selection: The fact that the insured individuals know more about their risk level than the insurer might cause those most likely to have the adverse outcome to select insurance, leading insurers to lose money if they offer insurance.

Risk Heterogeneity Across Individuals

Suppose now that there are two types of individuals: sickly and healthy, where probabilities of sickness satisfy $q_S > q_H$.

Scenario 1 – Symmetric Information: Insurance companies and individuals can observe q_H vs. q_S types.

Then insurance companies will charge two policies, each actuarially fair:

$p_S, b_S = p_S/q_S$ for the sickly and $p_H, b_H = p_H/q_H$ for the healthy

Each type will still choose to buy perfect insurance $b_S = b_H = d$ and $p_S = q_S \cdot d, p_H = q_H \cdot d$.

Pre-existing conditions will lead to inequality in insurance premia and welfare, but no failure in the insurance market.

Scenario 2 – Asymmetric Information: Insurance companies cannot observe q_H vs. q_S types but individuals know their type.

If insurance companies charge the same two policies as before:

$p_S = q_S \cdot d, b_S = d$ for the sickly and $p_H = q_H \cdot d, b_H = d$ for the healthy

Adverse selection arises because everyone has incentives to pretend like they are healthy!

Two equilibrium possibilities:

1) Pooling equilibrium: Insurance companies offer a contract based on average risk.

⇒ This is a good deal for sickly and a mediocre deal for healthy, but still better than no insurance.

2) Separating equilibrium: Insurance companies offer two contracts. One expensive contract with full insurance for the sickly, one cheap contract with partial insurance for the healthy. Each type self-selects into its contract.

⇒ The outcome is not efficient because the healthy are underinsured.

Adverse Selection

Adverse selection is when individuals know more about their risk level than the insurer, and hence, individuals with higher risk are more likely to purchase insurance.

e.g., People with a high risk of getting sick are more likely to buy health insurance on Obamacare exchanges than people with a low risk of getting sick (as insurers cannot discriminate based on pre-existing conditions).

What can the government do?

The natural solution is to make insurance **mandatory**.

If the price is the same for everybody, low-risk people subsidize high-risk people...

Other Reasons for Social Insurance

(1) Health Care is a right.

⇒ Low-income families can't pay for it, so there is a need for government funding.

(2) Redistribution: Society may want to compensate high-risk people because being high-risk is often not the person's fault.

⇒ Universal health insurance funded by taxation effectively redistributes from low-risk people to high-risk people.

Other Reasons for Social Insurance

(3) Externalities: Your lack of insurance can be a cause of illness for me, thereby exerting a negative physical externality.

e.g., flu or covid vaccines

(4) Administrative costs: Government-run Medicare has much lower administrative costs than private insurance.

The administrative costs for Medicare are less than 2% of claims paid. They average about 12% of claims paid for private insurance!

(5) Paternalism and individual failures: Governments may feel that people would choose to buy too little insurance for themselves.

Moral Hazard

Moral hazard: Adverse actions taken by insured individuals in response to insurance against adverse outcomes.

e.g., If you are insured for health-related hazards, you might start taking more risky behaviors.

Moral Hazard exists with both private and social insurance as long as the insurer cannot perfectly monitor the person insured.

Central trade-off of social insurance: insurance is desirable for consumption smoothing, but it creates moral hazard.

Some Dimensions of Moral Hazard

In examining the effects of insurance, three types of moral hazard play a particularly important role:

(1) Reduced precaution against entering the adverse state (e.g., auto insurance)

(2) Increased odds of staying in the adverse state (e.g., unemployment insurance)

(3) Increased expenditures when in the adverse state (e.g., health insurance)

$\Rightarrow$ Overall, moral hazard increases the cost of providing insurance.

Optimal Social Insurance

Optimal social insurance trades-off two considerations:

(1) The benefit of social insurance is the amount of consumption smoothing provided by social insurance programs.

(2) The cost of social insurance is the moral hazard caused by insuring against adverse events.

⇒ Optimal social insurance systems should partially, but not completely, insure individuals against adverse events.

Conclusion

Asymmetric information in insurance markets has two implications:

(1) It can cause **adverse selection** in private insurance provision (as insurers cannot perfectly observe risk types), hence the need for **social insurance**.

(2) It can cause moral hazard (as insurers cannot perfectly monitor behavior), hence the need to **limit the generosity** of insurance.

The ironic feature of asymmetric information is, therefore, that it simultaneously motivates and undercuts the rationale for government intervention through social insurance.

REFERENCES

Jonathan Gruber, Public Finance and Public Policy, Fourth Edition, 2019 Worth Publishers, Chapter 12